

Hong Kong Airworthiness Notices

Issue 125
30 April 2024

CAD 455

**Civil Aviation Department
Hong Kong, CHINA**

HKAN

Enquires on the contents of the Hong Kong Airworthiness Notices (HKAN) should be addressed to:

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notices

ISSUE 125

30 April 2024

CONTENTS

<i>Notice No.</i>	<i>Issue</i>	<i>Date</i>	<i>Subject</i>
1	23	8 November 2018	Foreword
1A	13	31 July 2022	Definitions
2	4	31 July 2017	Aviation Legislation of Hong Kong
3	26	28 June 2019	Licensed Aircraft Maintenance Personnel - Certification Responsibilities of Type Rated/Authorised Personnel in relation to Articles 9 and 11 of the Air Navigation (Hong Kong) Order 1995 and Hong Kong Aviation Requirements HKAR 145.50
4	18	31 October 2023	Aircraft Maintenance Licence - Application Procedures
<i>Appendix No. 1</i>	5	31 October 2023	<i>HKAR-66 Aircraft Maintenance Licence Examination Centres</i>
5	3	30 October 2001	Tyre Wear Limitations
6	16	31 October 2016	Airworthiness Publications - General Information
<i>Appendix No. 1</i>	15	28 June 2019	<i>Other Airworthiness Publications – General Information</i>
7*#	5	15 July 2020	Placards
7A*#	4	3 March 2023	Symbolic Exit Signage
7B*#	2	28 June 2019	Exterior Markings
8	13	31 October 2023	Renewal of Aircraft Maintenance Licence
9	5	30 April 2024	Aircraft Registration and Deregistration
9A	2	31 October 2016	Measurements of the Nationality & Registration Marks
9B	2	30 April 2024	Export Certificate of Airworthiness

Notice No.	Issue	Date	Subject
10	17	30 November 2011	HKAR-66 Aircraft Maintenance Licences - Type Ratings
<i>Appendix No. 1</i>	4	31 July 2018	<i>Aircraft for which Maintenance is carried out and certified under Company Approval</i>
11	2	5 December 2014	Noise Certificates
12	26	30 July 2021	Experience from Incidents
<i>Appendix No. 63</i>	1	30 September 2004	<i>Functional Check and Control System Check on Fly-by-wire Aircraft</i>
<i>Appendix No. 67</i>	3	31 July 2011	<i>Mode 'S' Transponder ICAO 24-Bit Aircraft Addresses</i>
<i>Appendix No. 68</i>	2	30 September 2006	<i>Foreign Object Damage to Aircraft and Engines</i>
<i>Appendix No. 69</i>	2	31 July 2013	<i>ATC Transponders and Traffic Alert and Collision Avoidance Systems (TCAS) Ground Testing</i>
<i>Appendix No. 70</i>	1	31 July 2013	<i>Aircraft Washing and Rinsing</i>
14	12	1 February 2023	Approval of Maintenance Organisations
<i>Appendix No. 1</i>	5	31 January 2002	<i>Authorisation of Non HKAR-145 Aircraft Maintenance Organisations</i>
<i>Appendix No. 2</i>	4	30 May 2008	<i>Approval of Organisations Holding European JAR-145 or EASA Part 145 Maintenance Approval</i>
<i>Appendix No. 5</i>	2	31 January 2002	<i>Limited Authorisation – Guidance Material</i>
15	9	8 November 2018	Accident, Serious Incident and Mandatory Occurrence Reporting
16	11	31 July 2014	The Process for Acceptance of Used Engines, Engine Modules, Auxiliary Power Units (APUs) and Propellers for Use on Aircraft Requiring A Hong Kong Certificate of Airworthiness
17	10	18 November 2021	The Acceptance of Aircraft Components
<i>Appendix No. 1</i>	19	30 April 2024	<i>Organisations Accepted for Release of New or Maintained (Used) Components</i>
<i>Appendix No. 2</i>	4	31 July 2014	<i>Special guidance on particular aircraft component sources</i>
17A	4	18 November 2021	Acceptance of Aeronautical Products
18	4	31 July 2018	Implementation of HKAR-21 and HKAR-183
19	7	15 February 2009	The Problem of Bogus Parts
20*#	7	28 June 2019	Cotton, Linen and Synthetic Fabric-covered Aircraft

<i>Notice No.</i>	<i>Issue</i>	<i>Date</i>	<i>Subject</i>
21	1	1 June 1990	Microbiological Contamination of Fuel Tanks of Turbine Engined Aircraft
26*#	6	30 September 2022	Ground Proximity Warning System
27*	8	31 October 2023	Emergency Locator Transmitter (ELT)
Appendix No. 1	6	31 October 2023	<i>Coding and Registration of Hong Kong 406 MHz ELTs</i>
27A	1	31 January 2005	Guidance on Testing 406 MHz Emergency Locator Transmitters (ELT)
27B	2	30 July 2021	False Alerts of Emergency Locator Transmitters (ELT)
28	13	30 September 2022	Approval of Organisations
Appendix No. 1	1	30 September 2022	<i>Non-Compliance Findings</i>
29	9	10 December 2012	Civil Aviation Department Airworthiness Office and Personnel Licensing Office
30	7	31 December 2021	Cooperation Arrangement on Joint Maintenance Management between Civil Aviation Administration of China, Civil Aviation Department of The Hong Kong Special Administrative Region Government, China and Civil Aviation Authority of the Macao Special Administrative Region, China
Appendix No. 1	1	31 December 2021	<i>Recognition of the Maintenance Organisations</i>
Appendix No. 2	1	31 December 2021	<i>Recognition of the Maintenance Training Organisations</i>
Appendix No.3	1	31 December 2021	<i>Acceptance of the Aircraft Maintenance Licence Holders</i>
30A	4	30 April 2024	Technical Arrangement on Aviation Maintenance between the Civil Aviation Authority of Singapore and the Civil Aviation Department of the Hong Kong Special Administrative Region Government, China
30B	1	30 September 2006	Technical Arrangement on Aircraft Maintenance between the Civil Aviation Department of Hong Kong and the Transport Canada Civil Aviation Directorate
31	7	30 April 2024	Aircraft Radio and Radio Navigation Equipment
32*#	1	1 February 2023	Aircraft Weight Schedule

Notice No.	Issue	Date	Subject
<i>Appendix No. 1</i>	1	1 February 2023	<i>Conduct of Weighing</i>
<i>Appendix No. 2</i>	1	1 February 2023	<i>Example of Aircraft Weight Schedule</i>
<i>Appendix No. 3</i>	1	1 February 2023	<i>Example of Aircraft Weight and Balance Report</i>
35	6	30 May 2005	Light Aircraft Piston Engine Overhaul Periods
<i>Appendix No. 1</i>	4	30 May 2005	<i>(Supplementary information for AN No. 35)</i>
<i>Appendix No. 2</i>	4	30 May 2005	<i>Reference Table: Light Aircraft Piston Engine Overhaul Periods</i>
<i>Appendix No. 3</i>	1	30 May 2005	<i>Light Aircraft Piston Engine Maintenance Requirements for Operation Beyond Manufacturers' Recommended Overhaul Periods</i>
36	16	28 February 2011	Mandatory Modifications, Inspections and Changes to Approved Documentation
<i>Appendix No. 1</i>	5	31 January 2002	<i>Hong Kong Mandatory Airworthiness Requirement</i>
36B*	2	30 September 2003	Cargo Compartment Class Change
36E*	4	28 June 2019	Cockpit Security
36F*#	11	30 September 2022	Serviceability Checks of Flight Recorders
36G*	1	23 February 2009	Operations of Single-engine Turbine-powered Aeroplanes at Night and/or in Instrument Meteorological Conditions (IMC) and Helicopters in Performance Class 3 in IMC Except Special Visual Flight Rules (VFR) Flights
38	7	31 January 2005	Painting of Aircraft
39	5	31 January 2002	The Selection and Procurement of Electronic Components
41*	7	18 November 2021	Carbon Monoxide Contamination Minimisation and Detection in General Aviation Aircraft
43	4	28 June 2019	Aircraft Field Loadable Software (FLS) and Database Field Loadable Data (DFLD)
<i>Appendix No. 1</i>	1	30 September 2005	<i>FLS and DFLD Control, Tooling and Loading</i>
44*#	4	31 January 2002	Gas Turbine Engine Parts Subject to Retirement or Ultimate (Scrap) Lives
45*	5	28 June 2019	Software Management

<i>Notice No.</i>	<i>Issue</i>	<i>Date</i>	<i>Subject</i>
<i>Appendix No. 1</i>	<i>1</i>	<i>1 June 1987</i>	<i>Definition of European Criticality Categories</i>
45A*	6	28 June 2019	Software Management and Certification Guidelines
<i>Appendix No. 1</i>	<i>4</i>	<i>31 January 2003</i>	<i>Relationship between Function Criticality Category and Software Level</i>
<i>Appendix No. 2</i>	<i>3</i>	<i>31 January 2003</i>	<i>Software Accomplishment Summary of DO-178B/ED-12B</i>
47	6	30 September 2006	Licensed Aircraft Maintenance Engineers - Personal Responsibility When Medically Unfit or under the Influence of Drink or Drugs
<i>Appendix No. 1</i>	<i>2</i>	<i>31 January 2003</i>	<i>Types of medicine in common use which may impair work performance</i>
49	2	31 January 2003	Eligibility of Organisations for Design and Production Approval
50	5	30 September 2005	Deterioration of Wooden Aircraft Structures
51	1	1 February 2023	No Technical Objection
52	7	31 July 2015	Maintenance Concession Control
53*#	5	31 January 2004	Vertical Speed Indicators on Imported Aircraft
54	5	31 July 2023	Aircraft, Engine & Variable-Pitch Propeller Log Books for Aircraft Not Exceeding 2730 Kg MTWA
<i>Appendix No. 1</i>	<i>1</i>	<i>31 July 2023</i>	<i>Modification Record Book</i>
55*	2	30 September 2003	Fuel Tank Safety Review
56*	7	29 January 2016	Emergency Floor Path Lighting System
57*	4	31 January 2002	Toilet Flush Motor
58*	5	30 September 2006	Flame Resistant Furnishing Materials
59*	3	31 January 2002	Aircraft Seats and Berths – Resistance to Fire
60*	6	28 June 2019	Cockpit, Cabin and Toilet Fire Protection
60A*#	3	30 December 2016	Fire Extinguishing Agents
61*	4	30 May 2006	Improved Flammability Test Standards for Cabin Interior Materials
62	4	31 January 2002	Fatigue Lives

<i>Notice No.</i>	<i>Issue</i>	<i>Date</i>	<i>Subject</i>
65	1	31 January 2006	Continuing Airworthiness and Safety Standards of Passenger Service and In-flight Entertainment Systems
<i>Appendix No. 1</i>	1	31 January 2006	<i>Guidance on the Development of IFE scheduled Maintenance Tasks and Solutions</i>
67*	3	31 January 2002	Portable Oxygen Equipment Pressure Relief
69	6	5 December 2014	Approval of Test Houses Holding CNAS/HKAS/UKAS Accreditation
70*	4	30 May 2006	Tyre Bursts in Flight - Inflation Media
71	4	8 November 2018	Maintenance Error Management Systems
72	3	28 June 2019	Critical Maintenance Tasks
74	6	31 December 2015	Airworthiness Concessions in respect of Aircraft without a Hong Kong Type Certificate
<i>Appendix No. 1</i>	2	1 June 1994	<i>Aeroplanes Considered to have a Proven and Satisfactory Record</i>
<i>Appendix No. 2</i>	6	31 December 2015	<i>Criteria Applied by the Director-General when Considering Concessions against Hong Kong Certification Requirements</i>
75*	5	30 May 2004	Maintenance Requirements for Variable Pitch Propellers Installed on Aircraft Holding a Hong Kong Certificate of Airworthiness
<i>Appendix No. 1*</i>	5	30 May 2004	<i>(Supplementary information for AN No. 75)</i>
76*	3	30 September 2006	Electrical Power Supplies for Aircraft Radio Systems
77*	4	31 January 2007	Counter/Pointer Altimeters
78	1	31 January 2007	Safety Management Systems
80*	4	31 January 2002	Class C and D Cargo or Baggage Compartment – Fire Containment Capability
81*	5	30 May 2006	Emergency Power Supply for Electrically Operated Gyroscopic Bank and Pitch Indicators (Artificial Horizons)
82*	5	28 June 2019	Electrical Generation Systems – Aircraft Not Exceeding 5700 Kg Maximum Total Weight Authorised (MTWA)

<i>Notice No.</i>	<i>Issue</i>	<i>Date</i>	<i>Subject</i>
83*#	11	30 July 2021	No Smoking Placard – Aircraft Toilets
84*	5	15 February 2009	Airborne ILS (Localiser) VOR and VHF Communication Receivers – Improved FM Broadcast Interference Immunity Standards
85*	2	31 July 2009	HF Communication System
86*	1	15 February 2009	Aircraft Equipment
87*	1	15 February 2009	Time-Piece and Rate of Climb and Descent Indicator
88*	5	8 November 2018	Electrical Generation Systems – Bus-bar Low Voltage Warning Single-engined Aircraft with a Hong Kong Certificate of Airworthiness
94	9	28 June 2019	<i>(Deleted)</i>
95	5	31 January 2002	Use of High Intensity Ultra-violet Lamps in Fluorescent Penetrant and Magnetic Particle Inspections
96	2	31 January 2002	Disposition of Scrap Aircraft Parts & Materials
97	6	7 February 2020	Return to Service of Aircraft Items* Recovered from Aircraft Involved in Accidents/Incidents and Unserviceable Aircraft
101*#	1	30 September 2008	Equipment Approval
101A*#	7	7 February 2020	Personnel Restraint System
101B*#	1	30 September 2008	Life Jacket
101C*#	4	1 February 2023	Public Address Systems
101D*#	12	30 July 2021	Flight Recorders
101E*#	3	8 November 2018	First-Aid Kits and Medical Supplies
101F*	1	15 February 2009	Helicopters Cabin Crew Seats
101G*	2	8 November 2018	Safety Harness
101H*	2	8 November 2018	Airborne Collision Avoidance System (ACAS)
101I*	1	30 January 2014	Secondary Surveillance Radar (SSR) ATC Mode S Transponder
101J*#	1	29 January 2016	Exit Identification
101K*	1	31 July 2014	Helicopter Landing Lights

<i>Notice No.</i>	<i>Issue</i>	<i>Date</i>	<i>Subject</i>
101L*	2	8 November 2018	Weather Radar System
101M*#	2	8 November 2018	Forward-looking Wind Shear Warning System
101P*#	1	29 January 2016	Underwater Locating Device
101Q*	3	8 November 2018	Helicopter Liferaft Installation
101R*#	1	8 November 2018	Survival Suit
101S*#	1	8 November 2018	Oxygen Dispensing Units and Supply
101T*#	1	8 November 2018	Lifjacket for Single-engined Aeroplane Flying Over Water
101U*#	2	31 July 2022	Automatic Dependent Surveillance Broadcast (ADS-B) Out
101V*#	1	30 September 2022	Turbine Aeroplane – Runway Overrun Awareness and Alerting System
102	3	4 March 2022	Airworthiness Requirements of Specific Approvals
103*	1	31 July 2011	Fuel Tank Flammability Reduction
104*	3	7 February 2020	Carriage of Supernumeraries in Cargo Aeroplane
105*	2	8 November 2018	Vibration Health Monitoring System for Helicopter
106*	2	31 July 2014	Aircraft Registration Plate Location
107*	1	30 April 2015	Facilitation of the Transport of Persons with Disabilities – Access to Air Services
109*#	6	30 September 2022	Location of an Aeroplane in Distress
110	3	1 February 2023	Permit to Fly for Ferry Purpose
<i>Appendix No. 1</i>	<i>1</i>	<i>28 February 2017</i>	<i>Evidence to Substantiate Applications</i>
111	3	31 October 2023	Public Health Risk Mitigation Measures In Response to COVID-19 Pandemic
111A	4	1 February 2023	Re-Establishment of Aircraft Operations After Long Term Parking or Storage
<i>Appendix No. 1</i>	<i>2</i>	<i>31 December 2020</i>	<i>Aircraft Airworthiness Assurance Checklist</i>

[*] : Airworthiness Notices and/or Appendices marked with * constitute the Definitive List the compliance status of which are required to be declared for the purpose of issue of Certificate of Airworthiness and incorporation of any modifications.

[#] : Airworthiness Notices and/or Appendices marked with # constitute the Definitive List the compliance status of which are required to be declared for the purpose of renewal of Certificate of Airworthiness.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 1
Issue 23
8 November 2018**

FOREWORD

1 General

CAD 455 ‘Hong Kong Airworthiness Notices’ is issued by the Director-General of Civil Aviation to circulate information to all concerned with the airworthiness of civil aircraft.

2 ICAO Compliance Statement to CAD 455 ‘Hong Kong Airworthiness Notices’

2.1 It is the policy of the Chief Executive to exercise his various discretionary powers by reference to certain documents with a view to ensuring effective implementation of International Civil Aviation Organisation (ICAO) Standards. In order to ensure that all these ICAO Standards are reflected in Hong Kong aviation legislation, this ICAO compliance statement to Civil Aviation Document (CAD) CAD 455 is issued.

2.2 This document CAD 455 is published in support of the powers of the Chief Executive contained in Article 8(3) of the Air Navigation (Hong Kong) Order 1995. The document includes international Standards, and where appropriate Recommended Practices, contained in the following ICAO Annexes to the Chicago Convention:

- Annex 1 ‘Personnel Licensing’
- Annex 6 Part I ‘International Commercial Air Transport – Aeroplanes’
- Annex 6 Part II ‘International General Aviation – Aeroplanes’
- Annex 6 Part III ‘International Operations – Helicopters’
- Annex 7 ‘Aircraft Nationality and Registration Marks’
- Annex 8 ‘Airworthiness of Aircraft’
- Annex 16 ‘Environmental Protection – Volume I – Aircraft Noise’
- Annex 16 ‘Environmental Protection – Volume II – Aircraft Engine Emissions’
- Annex 16 ‘Environmental Protection – Volume III – Aeroplane CO₂ Emissions’

- Annex 19 'Safety Management'

2.3 It is the policy of the Chief Executive to have reference to this document when exercising the discretionary powers referred to above and in particular he will normally exercise those powers so as to ensure effective implementation of any such international Standards.

3 Definition

3.1 "Director-General" or "Director" means the Director-General of Civil Aviation who is authorised for the purpose under the Air Navigation (Hong Kong) Order 1995 by the Chief Executive of Hong Kong Special Administrative Region and any person who is delegated for that purpose.

3.2 "Chief Executive" means the Officer for the time being administering the Government of Hong Kong Special Administrative Region.

4 Contents List and Cancellations

4.1 The contents list will be reissued with each batch of Notices and gives particulars of all current Notices.

4.2 Cancellation of a Notice will be indicated in the contents list by the deletion of all details except for the number. The word "Cancelled" and the customary marginal line will be added. At the next issue of the contents list the number of the cancelled Notice will be removed.

5 Arrangement

5.1 Each Notice is identified by a number, followed by an issue number and an issue date. This information is listed in sequence in the contents list.

5.2 When a procedure, which has already been the subject of a Notice, is changed, the particular Notice is re-issued under the same number, but bearing a new issue number and issue date.

5.3 Material differences between issues are marked by marginal lines.

5.4 All Notices are concerned with matters affecting the airworthiness of civil aircraft. Notices issued or amended prior to Airworthiness Notice Issue No. 62 were printed on colour papers. The colour of paper, on which they are printed, indicates the type of information contained therein.

- (a) **Pink paper:** Notices covering matters which have a direct effect on airworthiness.

(b) **Yellow paper:** Notices covering administrative and technical procedures.

(c) **White paper:** Notices containing general information on administrative matters.

As of 'Hong Kong Airworthiness Notices' Amendment Issue No. 62 dated 30 May 2004, all newly issued or amended Notices (including Appendices) are to be printed on white papers only and the colour coding of Notices (and Appendices) as prescribed above will cease effect at the same time. All Notices (and Appendices) are demarcated into two kinds: mandatory or non-mandatory. For Notices (and Appendices) carrying mandatory requirements, the statement "This Notice Gives Details of a Mandatory Action" will appear on the title of those Notices. Notices (and Appendices) previously printed on colour papers will be replaced by white paper Notices at the time they are amended.

6 **Publication and Distribution**

6.1 Airworthiness Notices are published on the Hong Kong Civil Aviation Department website at www.cad.gov.hk/english/publications_press_release.html.

6.2 As of 'Hong Kong Airworthiness Notices' Amendment Issue No. 68, hardcopy amendments to the Hong Kong Airworthiness Notices will no longer be available. Holders of hardcopy Hong Kong Airworthiness Notices should visit the Hong Kong Civil Aviation Department website, shown in paragraph 6.1 above, for up-to-date Airworthiness Notices.

7 **Enquiries**

Any enquiries regarding technical content of Airworthiness Notices should be made to the Civil Aviation Department Headquarters, Airworthiness Office, 1 Tung Fai Road, Hong Kong International Airport, Lantau, Hong Kong.

8 **Cancellation**

This Notice cancels Airworthiness Notice No. 1, Issue 22, dated 10 December 2012, which should be destroyed.

Simon LI

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 1A
Issue 13
31 July 2022**

DEFINITIONS

1. Introduction

This Airworthiness Notice is intended to supplement the definitions of airworthiness related terms that are not included in the Air Navigation (Hong Kong) Order 1995 and Hong Kong Aviation Requirements.

2. Definitions

Airworthy. The status of an aircraft, engine, propeller or part when it conforms to its approved design and is in a condition for safe operation.

Applicable standard. A manufacturing / design / maintenance / quality standard, method, technique or practice approved by or acceptable to the Director-General.

Appropriate Airworthiness Requirements. The comprehensive and detailed airworthiness codes established, adopted or accepted by the Director-General for the class of aircraft, engine or propeller under consideration.

Associated Aircraft Systems. Those aircraft systems drawing electrical/pneumatic power from an auxiliary power unit during ground operations.

Automatic Deployable Flight Recorder (ADFR). A combination flight recorder installed on the aircraft which is capable of automatically deploying from the aircraft.

Auxiliary Power Unit (APU). A self-contained power unit on an aircraft providing electrical/pneumatic power to aircraft systems during ground operations or in-flight, separate from the propulsion engine(s).

Category A Helicopter. A multi-engined helicopter designed with engine and system isolation features specified in Part IVB of ICAO Annex 8 and capable of operations using take-off and landing data scheduled under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight or safe rejected take-off.

Category B Helicopter. A single-engine or multi-engined helicopter which does not meet Category A standards. Category B helicopters have no guaranteed capability to continue safe flight in the event of an engine failure, and a forced

landing is assumed.

Commercial air transport operation. An aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

Continuing Airworthiness. The set of processes by which an aircraft, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life.

Continuing Airworthiness Records. Records which are related to the continuing airworthiness status of an aircraft, engine, propeller or associated part.

Critical Power-Unit(s). The power-unit(s) failure of which gives the most adverse effect on the aircraft characteristics relative to the case under consideration.

Note: On some aircraft there may be more than one equally critical power-unit. In this case, the expression “the critical power-unit” means one of those critical power-units.

Derived Version of an Aeroplane. An aeroplane which, from the point of view of airworthiness, is similar to the noise certificated prototype but incorporates changes in type design which may affect its noise characteristics adversely.

Note 1: Where the certifying authority finds that the proposed change in design, configuration, power or mass is so extensive that a substantially new investigation of compliance with the applicable airworthiness regulations is required, the aeroplane should be considered to be a new type of design rather than a derived version.

Note 2: “Adversely” refers to an increase of more than 0.10 dB in any one of the noise certification levels unless the cumulative effects of changes in type design are tracked by an approved procedure in which case “adversely” refers to a cumulative increase in the noise level in any one of the noise certification levels of more than 0.30 dB or the margin of compliance, whichever is smaller.

Derived Version of a Helicopter. A helicopter which, from the point of view of airworthiness, is similar to the noise certificated prototype but incorporates changes in type design which may affect its noise characteristics adversely.

Note 1: In applying the Standards of ICAO Annex 16 Volume I, a helicopter that is based on an existing prototype but which is considered by the certifying authority to be a new type design for airworthiness purposes shall nevertheless be considered as a derived version if the noise source characteristics are judged by the certifying authority to be the same as the prototype.

Note 2: “Adversely” refers to an increase of more than 0.30 EPNdB in any one of the noise certification levels for helicopters certificated according to ICAO Annex 16 Volume I Part II Chapter 8 and 0.30 dB(A) in the certification level for helicopters certificated according to ICAO Annex 16 Volume I Part II Chapter 11.

Director-General. The Director-General of Civil Aviation who is authorised for the purpose under the Air Navigation (Hong Kong) Order 1995 by the Chief Executive of Hong Kong Special Administrative Region and any person who is delegated for that purpose.

Electric Torch. A battery powered portable light source and can be regarded as an independent portable light.

Engine. A unit used or intended to be used for aircraft propulsion. It consists of at least those components and equipment necessary for functioning and control, but excludes the propeller (if applicable).

Fire Resistant. The capability to withstand the application of heat by a flame for a period of 5 minutes.

Note: The characteristics of an acceptable flame can be found in ISO 2685.

Fireproof. The capability to withstand the application of heat by a flame for a period of 15 minutes.

Note: The characteristics of an acceptable flame can be found in ISO 2685.

Fireproof Material. A material capable of withstanding heat as well as or better than steel when the dimensions in both cases are appropriate for the specific purpose.

Fleet. A fleet is a set of aircraft of the same model, with the same specification and with the same overall customisation.

Flight Recorder. Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

General Aviation Operation. An aircraft operation other than a commercial air transport operation or an aerial work operation.

Head-of-Version. The Head-of-Version is the first aircraft of the fleet that is manufactured first.

Helicopter External Equipment. Any instrument, mechanism, part, apparatus, appurtenance, or accessory that is attached to or extends from the helicopter exterior but is not used nor is intended to be used for operating or controlling a helicopter in flight and is not part of an airframe or engine.

Helicopter Operating in performance Class 1 or performance Group A. Operations with performance such that, in the event of a critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, unless the failure occurs prior to reaching the take-off decision point (TDP) or after passing the landing decision point (LDP), in which cases the helicopter must be able to land within the rejected take-off or landing

area.

Helicopter Operating in performance Class 2 or performance Group A (Restricted). Operations with performance such that, in the event of critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, except when the failure occurs early during the take-off manoeuvre or late in the landing manoeuvre, in which cases a forced landing may be required.

Helicopter Operating in performance Class 3 or performance Group B. Operations with performance such that, in the event of an engine failure at any time during the flight, a forced landing will be required.

Inspection. The examination of an aircraft/aircraft component to establish conformity with an applicable standard.

Integrated Survival Suit. A survival suit which meets the combined requirements of the survival suit and life jacket.

Landing Decision Point (LDP). The point used in determining landing performance from which, an engine failure occurring at this point, the landing may be safely continued or a balked landing initiated.

Note: LDP applies only to helicopters operating in performance Class 1 or performance Group A.

Maintenance. The performance of tasks on an aircraft, engine, propeller or associated part required to ensure the continuing airworthiness of an aircraft, engine, propeller or associated part including any one or combination of overhaul, inspection, replacement, defect rectification, and the embodiment of a modification or repair.

Maintenance Records. Records that set out the details of the maintenance carried out on an aircraft, engine, propeller or associated part.

Maintenance Release. A document which contains a certification confirming that the maintenance work to which it relates has been completed in a satisfactory manner in accordance with appropriate airworthiness requirements.

Maximum Approved Passenger Seating Configuration (MAPSC). MAPSC is the maximum passenger seating capacity of an individual aircraft, excluding pilot seats or flight deck seats and cabin crew seats as applicable, used by the operator, approved by the Director-General and specified in the Certificate of Airworthiness.

Maximum Passenger Seating Capacity. The maximum certificated number of passengers for the aeroplane type design.

Note: This definition is defined in the First Edition of the ICAO Annex 16 Volume III.

Modification. A change to the type design of an aircraft, engine or propeller.

Note: A modification may also include the embodiment of the modification which is a maintenance task subject to a maintenance release.

Navigation Specification. A set of aircraft and aircrew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specification:

RNAV specification – A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

RNP specification - A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.

Overhaul. The restoration of an aircraft/aircraft component by inspection and replacement in conformity with an applicable standard to extend the operational life.

Powerplant. The system consisting of all the engines, drive system components (if applicable), and propellers (if installed), their accessories, ancillary parts, and fuel and oil systems installed on an aircraft but excluding the rotors for a helicopter.

Power-Unit. A system of one or more engines and ancillary parts which are together necessary to provide thrust, independently of the continued operation of any other power-unit(s), but not including short period thrust-producing devices.

Prototype Aircraft. A Prototype aircraft is an aircraft which is the first of the type to be investigated for the issue of a Hong Kong Certificate of Airworthiness.

Recertification. Certification of an aircraft with or without a revision to its certification noise levels, to a Standard different to that to which it was originally certificated.

Repair. The restoration of an aircraft, engine, propeller or associated part to an airworthy condition in accordance with the appropriate airworthiness requirements after it has been damaged or subjected to wear.

Series Aircraft. A Series aircraft is an aircraft, including engines and equipment, the design of which is similar in every essential respect to the design of an aircraft for which a Hong Kong Certificate of Airworthiness has previously been issued.

Series Modified Aircraft. A Series modified aircraft is an aircraft that incorporates modifications or repairs classified as major, relative to Hong Kong certified aircraft build standard, that require Director-General's approval for the issue of a Certificate of Airworthiness.

Specific Approval. A specific approval is an approval which is documented in

the Operations Specifications for commercial air transport operations or in the list of specific approvals for non-commercial operations.

State of Design. The State having jurisdiction over the organisation responsible for the type design.

State of Design of Modification. The State having jurisdiction over the individual or organisation responsible for the design of the modification or repair of an aircraft, engine or propeller.

State of Manufacture. The State having jurisdiction over the organisation responsible for the final assembly of the aircraft, engine or propeller.

State of Registry. The State on whose register the aircraft is entered.

Note: In the case of the registration of an international operating agency on other than a national basis, the States constituting the agency are jointly and severally bound to assume the obligations which, under the Chicago Convention, attach to a State of Registry. See, in this regard, the Council Resolution of 14 December 1967 on Nationality and Registration of Aircraft Operated by International Operating Agencies which can be found in Policy and Guidance Material on the Economic Regulation of International Air Transport (Doc 9587).

Take-off Decision Point (TDP). The point used in determining the take-off performance from which, an engine failure occurring at this point, either a rejected take-off may be made or a take-off safely continued.

Note: TDP applies only to helicopters operating in performance Class 1 or performance Group A.

Type Certificate. A document issued by a Contracting State to define the design of an aircraft, engine or propeller type and to certify that this design meets the appropriate airworthiness requirements of that State.

Note: In some Contracting States a document equivalent to a Type Certificate may be issued for an engine or propeller type.

Variant aircraft. A Variant aircraft is the first aircraft on the Hong Kong register to embody changes to the type designation which requires an amendment to the information in the Type Certificate Data Sheet.

3. **Cancellation**

This Notice cancels Airworthiness Notice No. 1A Issue 12, dated 31 December 2021, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 2
Issue 4
31 July 2017**

AVIATION LEGISLATION OF HONG KONG

1 General

Civil Aviation Ordinance (CAP. 448) and Civil Aviation (Aircraft Noise) Ordinance (CAP. 312) are the primary aviation legislation of Hong Kong. The Ordinances provide the legal power for the Director-General to carry out Chicago Convention, any Annex thereto relating to international standards and recommended practices and generally for regulating air navigation.

2 Civil Aviation Ordinance (CAP. 448)

Chapter 448 (CAP. 448) of the Laws of Hong Kong, cited as the Civil Aviation Ordinance, is the Ordinance to repeal and re-enact with appropriate modifications certain provisions relating to civil aviation. The following are the subsidiary legislation (sub. leg.), being regulations or orders, made under the Ordinance.

2.1 CAP. 448 sub. leg. A – Air Transport (Licensing of Air Services) Regulations

These regulations are provisions for the licences and operating permits for the carriage of passengers, mail or cargo by air for hire or reward on scheduled journeys and upon journeys other than the scheduled journeys.

2.2 CAP. 448 sub. leg. B – Hong Kong Civil Aviation (Investigation of Accidents) Regulations

2.2.1 These regulations are provisions for the investigations of any accident arising out of or in the course of air navigation and occurring in or over Hong Kong, or occurring elsewhere to civil aircraft registered in Hong Kong.

2.2.2 The fundamental purpose of investigating accidents under these regulations shall be to determine the circumstances and causes of the accident with a view to the preservation of life and the avoidance of accidents in the future; it is not the purpose to apportion blame or liability.

2.3 CAP. 448 sub. leg. C – Air Navigation (Hong Kong) Order 1995

The Air Navigation (Hong Kong) Order 1995 (AN(HK)O) is the Order with provisions made for regulating air navigation.

2.3.1 The AN(HK)O consists of the following ten parts and sixteen schedules:

Part I – Registration and Marking of Aircraft

Part II – Air Operators' Certificates

Part III – Airworthiness and Equipment of Aircraft

Part IV – Aircraft Crew and Licensing

Part V – Operation of Aircraft

Part VI – Fatigue of Crew

Part VII – Documents and Records

Part VIII – Control of Air Traffic

Part IX – Aerodromes, Aeronautical Lights and Dangerous Lights

Part X – General

Schedule 1 – Part A. Table of General Classification of Aircraft

Part B. Nationality and Registration Marks of
Aircraft Registered in Hong Kong

Part C. Aircraft Dealer's Certificate – Conditions

Schedule 2 – A and B Conditions

Schedule 3 – Categories of Aircraft

Schedule 4 – Aerodrome Manual

Schedule 5 – Aircraft Equipment

Schedule 6 – Radio and Radio Navigation Equipment to be carried
in Aircraft

- Schedule 7 – Aircraft, Engine and Propeller Log Books
- Schedule 8 – Areas Specified in connection with the Carriage of Approved Navigational Equipment on Public Transport Aircraft
- Schedule 9 – Flight Crew of Aircraft, Licences and Ratings
- Schedule 10 – Aircraft Traffic Controllers: Ratings
- Schedule 11 – Public Transport - Operational Requirements
- Schedule 12 – Documents to be carried by Aircraft Registered in Hong Kong
- Schedule 13 – Penalties
- Schedule 14 – Rules of the Air
- Schedule 15 – Air Navigation (General) Regulations
- Schedule 16 – The Air Navigation (Dangerous Goods) Regulations

2.4 CAP. 448 sub. leg. D – Hong Kong Air Navigation (Fees) Regulations

These regulations provide the fees payable to the Hong Kong Special Administrative Region government in connection with matters prescribed by or under the AN(HK)O.

2.5 CAP. 448 sub. leg. E – Air Navigation (Flight Prohibition) Order

This Order is made to give provisions on aircraft flying over Prohibition Area.

2.6 CAP. 448 sub. leg. F – Civil Aviation (Insurance) Order

This Order is made to give provisions on aircraft insurance.

3 **Civil Aviation (Aircraft Noise) Ordinance (CAP. 312)**

The Civil Aviation (Aircraft Noise) Ordinance is made to control the emission of noise by aircraft and for matters ancillary thereto or connected therewith. There is one subsidiary legislation made to the Ordinance:

3.1 CAP. 312 sub. leg. A – Civil Aviation (Aircraft Noise) (Certification) Regulations

These regulations are provisions for issue, suspension and cancellation of noise

certificates and also enforcement of the related aircraft noise requirements.

4 Publication

- 4.1 The loose-leaf edition of the CAP. 448 and CAP. 312 may be ordered from the Publications Sales Unit of Information Services Department at the following address: Room 626, 6/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong. They may also be ordered online at <http://www.isd.gov.hk/eng/bookorder.htm>.
- 4.2 The CAP. 448 and CAP. 312, together with other Chapters of the Laws of Hong Kong, can be accessed online at the Hong Kong e-Legislation (<http://www.elegislation.gov.hk>) and also the Bilingual Laws Information System (<http://www.blis.gov.hk>). The amendments to the Laws of Hong Kong are notified by means of the Government of the Hong Kong Special Administrative Region Gazette available online at <http://www.gld.gov.hk/egazette>.

5 Cancellation

This Notice cancels Airworthiness Notice No. 2 Issue 3, dated 31 January 2002, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 3
Issue 26
28 June 2019**

**LICENSED AIRCRAFT MAINTENANCE PERSONNEL – CERTIFICATION
RESPONSIBILITIES OF TYPE RATED / AUTHORISED PERSONNEL IN
RELATION TO ARTICLES 9 AND 11 OF THE AIR NAVIGATION (HONG KONG)
ORDER 1995 AND HONG KONG AVIATION REQUIREMENTS HKAR 145.50**

1 General

The purpose of this Notice is to describe the certification responsibilities of Licensed Aircraft Maintenance Personnel. Such personnel are the holders of an Aircraft Maintenance Licence issued under HKAR-66. The responsibilities apply when issuing certifications either as a Type Rated licence holder or a certifying staff holding a certification authorisation. It also describes the privileges of the various Type Rated licences.

It should be noted that when the holders of a licence is performing maintenance activities on an aircraft on which he or she is not appropriately licensed, i.e. acting as a non-certifying staff, they are still expected to act responsibly and carry out such work in accordance with the procedures and standards identified in the following paragraphs.

A licence issued by the Director-General does not confer any certification privileges with respect to aircraft which are not registered in Hong Kong unless the licence holder is entitled to certify for such activities by way of having the licence validated by the relevant Airworthiness Authority and/or is authorised by a maintenance organisation approved by that Authority.

NOTES: (1) A HKAR-66 Aircraft Maintenance Licence does not normally confer any certification privileges on the holder in their own right (except for that allowed under Airworthiness Notice No. 10). Such licence must be used in conjunction with a certification authorisation. See paragraph 1.10.

(2) In the context of this Notice, reference to an authorisation means an authorisation issued by a HKAR-145 approved maintenance organisation to allow the holder to issue Certificate of Release to Service within the limitations shown on the authorisation.

1.1 The Certificate referred to under Article 9 of the Air Navigation (Hong Kong) Order 1995 ('the Order') is a Certificate of Maintenance Review to be issued following completion of the review required by the Order. The certificate

referred to under Article 11 of the Order is a Certificate of Release to Service to be issued on completion of maintenance of aircraft or components, either required or not required to be maintained under the provisions of HKAR-145.

1.2 In connection with the issue of Certificate of Release to Service, the following definitions apply:

- (a) (i) **Maintenance** means the performance of tasks required to ensure the continuing airworthiness of an aircraft, including any one or combination of overhaul, inspection, replacement, defect rectification, and the embodiment of a modification or repair. (Applicable until 4 November 2020)
- (ii) **Maintenance** means the performance of tasks on an aircraft, engine, propeller or associated part required to ensure the continuing airworthiness of an aircraft, engine, propeller or associated part including any one or combination of overhaul, inspection, replacement, defect rectification, and the embodiment of a modification or repair. (Applicable as of 5 November 2020)
- (b) **Overhaul** means the restoration of an aircraft/aircraft component by inspection and replacement in conformity with an approved standard to extend the operational life.
- (c) (i) **Repair** means the restoration of an aeronautical product to an airworthy condition to ensure that the aircraft continues to comply with the design aspects of the appropriate airworthiness requirements used for the issuance of the type certificate for the respective aircraft type, after it has been damaged or subjected to wear. (Applicable until 4 November 2020)
- (ii) **Repair** means the restoration of an aircraft, engine, propeller or associated part to an airworthy condition in accordance with the appropriate airworthiness requirements after it has been damaged or subjected to wear. (Applicable as of 5 November 2020)
- (d) **Inspection** means the examination of an aircraft/aircraft component to establish conformity with an approved standard.
- (e) **Replacement** is any work operation which involves the removal and replacement of the same part or the substitution of an approved alternative part.

- (f) **Modification** is a change to the type design of an aircraft, engine or propeller.

NOTE 1: A modification may also include the embodiment of the modification which is a maintenance task subject to a maintenance release.

NOTE 2: **Defect rectification** normally consists of an element of inspection and troubleshooting followed by repair and replacement of the defective item.

NOTE 3: Inspection includes:

- (i) **Mandatory Inspection**, an inspection classified as Mandatory by the Director-General, where the inspection itself is the work. (See HKAR-1 Sub-section 1.6-6)
- (ii) **Scheduled Maintenance Inspection**, an inspection or maintenance including tests required by the Approved Maintenance Schedule or Programme.

1.3 Although many terms in common usage describe the various aspects of aircraft engineering, the meanings assigned to such terms are not always the same. For the purpose of this Notice, in relation to airworthiness, the following definitions apply:

- (a) **Condition** – the physical state of an item.
- (b) **Assembly** – that items are fitted, assembled, attached, installed, connected, secured or adjusted in the approved manner.
- (c) **Functioning** – operation in the approved manner achieving such performance, range of movement and freedom of movement as may be specified.

The certifying staff shall be responsible for the condition, assembly and functioning of the aircraft or its components for maintenance that has been certified under the privileges of a Type Rated licence or an authorisation.

1.4 The certifying staff shall be responsible for ensuring that work is performed and recorded in a satisfactory manner taking into account the following:

- (a) Whenever work is carried out on an aircraft, it is the duty of all persons to whom this Notice applies to ensure that the work, for which they are responsible, progresses in a managed and controlled manner. Where they are supported by additional staff to carry out the work, consideration shall be given by them before starting the work to the manpower resource available and the abilities of the staff concerned. This is to ensure that the certifying staff determines and exercises an adequate degree of supervision over such staff.

- (b) In relation to work carried out on an aircraft, it is the duty of all persons to whom this Notice applies to ensure that an adequate record of the work carried out is maintained. This is particularly important where such work is carried on beyond a working period or shift, or is handed over from one person to another. The work accomplished, particularly for disassembly or disturbance of components or aircraft systems, should be recorded as the work progresses or prior to undertaking a disassociated task. In any event, records should be completed no later than the end of the work period or shift of the individual undertaking the work. Such records should include 'open' entries to reflect the remaining actions necessary to restore the aircraft to a serviceable condition prior to release to service. In the case of complex tasks which are undertaken frequently, consideration should be given to the use of pre-planned stage sheets to assist in the control, management and recording of these tasks. Where such sheets are used, care must be taken to ensure that they accurately reflect the current requirements and recommendations of the manufacturer and that all key stages, inspections, or replacements are recorded.
- (c) It is also the duty of all persons to whom this Notice applies to consider the effect such work may have, directly or indirectly, on items which are the responsibilities of other such persons. In all cases where an overlap of responsibility between licence categories occurs, the person primarily responsible for the item must involve all other trade disciplines affected. Every person to whom this Notice applies must therefore be conversant with all other relevant paragraphs of this Notice. Certificate of Release to Service for each relevant trade category must be issued by all persons concerned, each assuming responsibility of and certifying those aspects of the work for which the licence/authorisation holder is entitled to assume responsibility.

1.5 A Certificate of Release to Service shall only be issued on completion of maintenance when the signatory is satisfied that the work has been properly carried out and accurately recorded, having due regard to the use of:

- (a) up-to-date instructions and maintenance data (including manuals, drawings, specifications, CAD mandatory modifications/inspections, and, where applicable, company procedures);
- (b) recommended tooling and test equipment which has a valid calibration record where applicable; and
- (c) a working environment appropriate to the work being carried out.

When issuing a Certificate of Release to Service for work performed by others, the certifying staff assumes responsibility. The certifying staff must have inspected a sufficiently representative sample of the work and the associated documentation, and be satisfied with the competence of the persons who have

performed the work. For complex tasks this may require progressive inspections to be carried out as the work proceeds. In the case of an aircraft or component where welding a metallic part is considered essential to airworthiness, it is the responsibility of the certifying staff to establish that the welder is approved in accordance with the requirements in HKAR-1 Sub-section 1.8-10.

NOTE: HKAR-66 Aircraft Maintenance Licence holders certifying under the privileges of their licences may not deviate from the manufacturer's maintenance instruction or maintenance data, nor use alternative parts, components or assemblies unless such deviation is supported by the written agreement of the manufacturer, approved as a modification or agreed by the Director-General. The Director-General should be consulted in cases of difficulty. Certifying staff shall comply with all company procedures covering such issues.

- 1.6 (a) When the work involves the assembly or any disturbance of a vital point defined in HKAR-1 Sub-section 1.5-3 or control system, the duplicate inspection / independent inspection required must be completed and certified in accordance with HKAR-1 Sub-section 1.6-2 before the relevant Certificate of Release to Service is issued.
- (b) The holder of a Type Rated HKAR-66 Licence in Category B1 may make certification on aircraft (or their engines, as appropriate) below 5700 kg Maximum Total Weight Authorized for duplicate inspections / independent inspections of minor adjustments to control systems on other types within the Category in which the licence is Type Rated.

NOTES: (1) A minor adjustment is considered to be a single point adjustment or reassembly of a control.

(2) 'Duplicate inspection' will be phased out with effect from 1 January 2020.

- 1.7 The holder of an appropriately Type Rated HKAR-66 licence in Category B1 may issue a Certificate of Release to Service to cover Non-Destructive Test Inspections on aircraft or components, within the privileges of the licence or authorisation held, subject to the work being carried out as follows:
- (a) Inspection requiring the use of Field Kit for the Colour Contrast Dye Penetrant technique may be carried out by persons either Type Rated as above or persons qualified in accordance with Airworthiness Notice No. 94.
- (b) Non-Destructive Test Inspections requiring any other technique, including Fluorescent Penetrant Dye, shall be carried out and signed for by persons appropriately qualified in accordance with Airworthiness Notice No. 94.
- 1.8 Use of either a Type Rated licence or an authorisation to issue a certification requires that, in addition to the licence or authorisation being valid at the time

of certification, the holder has been engaged for periods totalling at least 6 months during the 24 months preceding the date of the certification on work affording experience comparable with that required for the grant of the licence/authorisation.

1.9 A Type Rated licensed certifying staff may issue the certificates identified below in relation to aircraft for which the licence is Type Rated and in accordance with the privileges detailed in the remaining paragraphs to this Notice. An authorised certifying staff may only issue these certificates as permitted within the limitations shown on the authorisation.

(a) Certificate of Release to Service for aircraft not required to be maintained under HKAR-145 — the holder of an appropriately Type Rated licence may issue Certificate of Release to Service subject to compliance with the requirements of HKAR-1 Sub-section 1.6-2 and 1.6-7.

(b) Certificate of Maintenance Review — the Director-General will specify who may issue a Certificate of Maintenance Review. For an organisation approved in accordance with HKAR-145 the signatory will be a person authorised in accordance with the Appendix No.3 to Sub-section 1.8-13. For all other cases the signatory will be an engineer possessing an appropriately type rated HKAR-66 Category B or C Licence valid in the sub-category of the aircraft reviewed.

(c) Certificate of Fitness for Flight — the holder of an appropriately Type Rated HKAR-66 licence in Category B1 may issue Certificate of Fitness for Flight subject to compliance with the Appendix No.3 to Sub-section 1.8-13.

1.10 HKAR-66 Aircraft Maintenance Licences (Aircraft Maintenance Licence with Type Ratings, if applicable) may be used to allow the grant of an authorisation within a HKAR-145 approved maintenance organisation. In addition to the foregoing paragraphs, when working within such organisations, the licensed certifying staff should be aware that he/she is part of a comprehensive maintenance system. It is therefore important to realise that company procedures may further define, or require specific actions, as to how certain issues are to be dealt with and these procedures must be adhered to. It is also important to realise that when working within a HKAR-145 approved maintenance organisation and certifying under the privileges of an authorisation the licensed certifying staff is not certifying under the privileges of the licence.

2 Compass Compensation and Adjustment

The Paragraph 15 Type Rating of Airworthiness Notice No. 10 permits the issue of Certificate of Release to Service by the holder in respect of the compensation and adjustment of direct and remote reading compasses on any aircraft not subject to the

requirements of HKAR-1 Sub-section 1.8-13.

3 HKAR-66 Category A Aircraft Maintenance Licence

- 3.1 A HKAR-66 Category A Aircraft Maintenance Licence may be issued to a person who has demonstrated a competence to complete minor scheduled line maintenance and simple defect rectification. The licence does not entitle the holder to exercise any certification privileges in respect of aircraft until the holder is issued with a corresponding certification authorisation. Such authorisations will be issued by a HKAR-145 maintenance organisation appropriately approved by the Director-General.

NOTE: The holder of a HKAR-66 Category B1 licence is also qualified as a HKAR-66 Category A licence holder in the same sub-category, e.g. Aeroplanes Turbine, and may be issued with HKAR-66 Category A certification authorisation.

- 3.2 These HKAR-66 Category A privileges will be limited to the performance and certification of specific simple maintenance tasks, either individually or in combination, as defined in HKAR-145 AMC 145.30(g) and will require a combination of theoretical and practical training to be undertaken on each aircraft type to qualify for the task authorisation. Such authorisation, issued by a HKAR-145 approved maintenance organisation will specify the limitations of the privileges that may be applicable. HKAR-66 licence holders will therefore be required to act in accordance with the authorisation procedures of the company concerned.

- 3.3 HKAR-66 Category A licences are issued in licence sub-categories which are:

- A1 Aeroplanes Turbine
- A2 Aeroplanes Piston
- A3 Helicopters Turbine
- A4 Helicopters Piston

4 HKAR-66 Category B1 Aircraft Maintenance Licence

- 4.1 A HKAR-66 Category B1 Aircraft Maintenance Licence may be issued to a person who has demonstrated a competence to complete maintenance, including aircraft structure, powerplant and mechanical and electrical systems. Replacement of avionic line replaceable units, requiring simple tests to prove their serviceability, shall also be included in the privileges. The HKAR-66 Category B1 licence is primarily intended to be used for the purposes of qualification of line maintenance staff for authorisation. The licence, in its own right, does not entitle the holder to exercise any certification privileges in respect of aircraft and will be used in conjunction with a HKAR-145 certification authorisation.
- 4.2 Such authorisation will be issued by a HKAR-145 maintenance organisation appropriately approved by the Director-General. HKAR 145.30(g) requires it to be used as a prerequisite for authorisation of staff acting as inspectors or

supervisors within base maintenance (base maintenance technicians). HKAR-66 licence holders will therefore act in accordance with the authorisation procedures of the company concerned.

4.3 HKAR-66 Category B1 licences apply to all aircraft (aeroplanes and helicopters) and are issued in licence sub-categories which are:

- B1.1 Aeroplanes Turbine
- B1.2 Aeroplanes Piston
- B1.3 Helicopters Turbine
- B1.4 Helicopters Piston

NOTES:

- (1) An unrestricted Category B1 sub-category entitles the holder to be granted Category A certification authorisations in the same sub-category, e.g. Aeroplanes Turbine.
- (2) An unrestricted Category B1.2 sub-category permits the holder to be granted Category B3 certification authorisations.
- (3) An unrestricted Category B1.2 or B3 sub-category permits the holder to issue Certificate of Release to Service for simple light aeroplanes after a base maintenance check in the case that such aeroplanes are maintained in a HKAR-145 organisation,

4.4 HKAR-66 Category B1 certification authorisations allow the holder to issue Certificate of Release to Service under HKAR 145.50 for line maintenance on aircraft which are endorsed as individual types on the licence and the corresponding authorisation. HKAR-66 Category B1 licences to the full HKAR-66 standard include scope to allow the issue of a certification authorisation covering work on a combination of the following disciplines:

- airframe and their related systems;
- engines and their related systems (including Auxiliary Power Units);
- electrical power generation and distribution systems (power distribution in respect of airframe and/or engine systems) including lighting systems (this includes all electrical components in mechanical systems such as sensors, motors and control units);
- avionic line replaceable units (LRU).

In respect of avionic LRUs, the work is limited to cases where the serviceability of the system can be established by a simple self test facility (BITE) or by using simple test equipment and it is expected that, for reference purposes, a list of such components will be prepared for each aircraft type by the HKAR-145 approved maintenance organisation. (Defect rectification on avionic systems which requires an element of decision making in its application – other than a simple go/no go decision – cannot be certified).

NOTE: The HKAR-66 Category B1 licence holder is not entitled to certify for any overhaul work.

- 4.5 The certification authorisation can only be issued by a HKAR-145 approved maintenance organisation when the HKAR-66 Aircraft Maintenance Licence holder has the appropriate basic sub-category listed and the aircraft type rating endorsed on the licence. The type training for a HKAR-66 Category B1 type endorsement, conducted under a HKAR-147 approval, will represent the appropriate technologies as specified in HKAR-66. The certification authorisation will specify the privileges for the individual, giving due regard to the company scope of approval and any associated procedures agreed with the Director-General, and will specify any limitations to the authorisation accordingly.

NOTE: A HKAR-66 licence issued on the basis of 'protected rights' may contain technical restrictions equivalent to the limitations of any HKAR-AMEL licence or company authorisations previously held. These 'protected rights' under HKAR-66 are a continuation of certification privileges under an existing licence or certification authorisation which allows current personnel to continue working and certifying without the need to re-qualify. The recognition of these privileges is shown by the inclusion of code 999 against that type rating. Authorisations issued by a HKAR-145 approved maintenance organisation should therefore be similarly restricted in scope. It should be noted that conversion to the full HKAR-66 licence standard is optional.

- 4.6 HKAR-66 Category B1 licences may also be issued with an endorsement allowing the certification, under the provisions of Articles 9 and 11 of the Order, for work outside of a HKAR-145 approved maintenance organisation on aircraft which are not operated for commercial air transport. Such privileges are limited to Hong Kong registered aircraft only. Certifications may only be made for those aircraft types which are endorsed individually or as Group Type Ratings on the licence. The privileges of the endorsement will reflect the certification limitations on the licence.

5 HKAR-66 Category B2/B2* Aircraft Maintenance Licence

- 5.1 A HKAR-66 Category B2/B2* Aircraft Maintenance Licence may be issued to a person who has demonstrated a competence to complete maintenance on avionic and electrical systems. The HKAR-66 Category B2/B2* licence is primarily intended to be used for the purposes of qualification of avionic line maintenance staff for authorisation. The licence, in its own right, does not entitle the holder to exercise any certification privileges in respect of aircraft and will be used in conjunction with a HKAR-145 certification authorisation.
- 5.2 Such authorisations will be issued by a HKAR-145 maintenance organisation appropriately approved by the Director-General. HKAR 145.30(h) also requires it to be used as a prerequisite for authorisation of staff acting as inspectors or supervisors within base maintenance (base maintenance technician). HKAR-66 licence holders will therefore act in accordance with the authorisation procedures of the company concerned.

NOTE: A HKAR-66 Category B2/B2* licence cannot be used for the purposes of a HKAR-66 Category A certification authorisation unless the HKAR-66 Category A licence is also held.

5.3 HKAR-66 Category B2/B2* certification authorisations allow the holder to issue Certificate of Release to Service under HKAR 145.50 for the line maintenance on aircraft which are endorsed as individual types on the licence and the corresponding authorisation. HKAR-66 Category B2/B2* licences to the full HKAR-66 standard include scope to allow the issue of a certification authorisation covering work on a combination of the following aircraft systems:

- instruments;
- automatic pilots (aeroplanes, helicopters and autoland systems);
- radio communication/navigation;
- radio radar;
- electrical power generation and distribution systems (power distribution in respect of avionic systems) including lighting systems.

Scope may not include for authorisation in respect of work on electrical power distribution systems or electrical/avionic components in mechanical systems. (Licences issued on the basis of 'protected rights' may include such scope where so endorsed.)

NOTES (1): The HKAR-66 Category B2/B2* licence holder is not entitled to certify for any overhaul work.

(2): A category B2* aircraft maintenance licence shall permit the holder to issue Certificate of Release to Service following minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorisation referred to in HKAR 145.35. This certification privilege shall be restricted to work that the licence holder has personally performed in the maintenance organisation which issued the certification authorisation and limited to the ratings already endorsed in the B2* licence.

5.4 The certification authorisation can only be issued by a HKAR-145 approved maintenance organisation when the licence holder has the appropriate basic HKAR-66 Category B2/B2* listed and the aircraft type rating endorsed on the HKAR-66 Aircraft Maintenance Licence. The type training for a HKAR-66 Category B2/B2* type endorsement, conducted under a HKAR-147 approval, will represent the appropriate technologies as specified in HKAR-66. The certification authorisation will specify the privileges for the individual, giving due regard to the company scope of approval and any associated procedures agreed with the Director-General, and will specify any limitations to the authorisation accordingly.

NOTE: A HKAR-66 licence issued on the basis of 'protected rights' may contain technical restrictions equivalent to the limitations of any HKAR-AMEL licence or company authorisations previously held. These 'protected rights' under HKAR-66 are a continuation of certification privileges under an existing licence or certification authorisation which allows current personnel to continue working and certifying without the need to re-qualify. The recognition of these privileges is shown by the inclusion of code 999 against that type rating. Authorisations issued by a HKAR-145 approved maintenance organisation should therefore be similarly restricted in scope. It should be noted that conversion to the full HKAR-66 licence standard is optional.

- 5.5 HKAR-66 Category B2/B2* licences may also be issued with an endorsement allowing the certification, under the provisions of Articles 9 and 11 of the Order, for work outside of a HKAR-145 approved maintenance organisation on aircraft which are not operated for commercial air transport. Such privileges are limited to Hong Kong registered aircraft only. Certification may only be made for those aircraft types which are endorsed individually or as Group Type Ratings on the licence. The privileges of the endorsement will reflect the certification limitations on the licence.

6 HKAR-66 Category B3 Aircraft Maintenance Licence

- 6.1 A HKAR-66 Category B3 Aircraft Maintenance Licence may be issued to a person who has demonstrated a competence to act in the role of a certifying engineer for maintenance of simple light aeroplanes. The licence, in its own right, does not entitle the holder to exercise any certification privileges in respect of aircraft and will be used in conjunction with a HKAR-145 certification authorisation.

NOTE: HKAR-145 does not require a HKAR-66 Category C certifying staff for the certification of simple light aeroplanes as Category B1.2 or B3 covers all maintenance.

- 6.2 Such authorisations will be issued by a HKAR-145 maintenance organisation appropriately approved by the Director-General.

NOTE: A HKAR-66 Category B3 licence cannot be used for the purpose of a HKAR-66 Category A certification authorisation unless the Category A licence is also held.

- 6.3 HKAR-66 Category B3 certification authorisations allow the holder to issue Certificates of Release to Service under HKAR 145.50 for maintenance on simple light aeroplanes which are endorsed as individual aeroplane types, aeroplane manufacturers group types, aeroplane group types and/or wooden aeroplane group types on the licence and the corresponding authorisation. HKAR-66 Category B3 licences to the full HKAR-66 standard include scope to allow the issue of a certification authorisation covering work on a combination of the following disciplines:

- airframe and their related systems;

- engines and their related systems;
- electrical power generation and distribution systems (power distribution in respect of airframe and/or engine systems) including lighting systems;
- avionic line replaceable units (LRU).

In respect of avionic LRUs, the work is limited to cases where the serviceability of the system can be established by a simple self test facility (BITE) or by using simple test equipment and it is expected that, for reference purposes, a list of such components will be prepared for each aircraft type by the HKAR-145 approved maintenance organisation. (Defect rectification on avionic systems which requires an element of decision making in its application – other than a simple go/no go decision – cannot be certified).

NOTE: The HKAR-66 Category B3 licence holder is not entitled to certify for any overhaul work.

- 6.4 The certification authorisation can only be issued by a HKAR-145 approved maintenance organisation when the licence holder has the appropriate basic HKAR-66 Category listed and the aircraft type rating endorsed on the HKAR-66 Aircraft Maintenance Licence. The type training for a HKAR-66 Category B3 type endorsement, conducted under a HKAR-147 approval, will represent the appropriate technologies as specified in HKAR-66. The certification authorisation will specify the privileges for the individual, giving due regard to the company scope of approval and any associated procedures agreed with the Director-General, and will specify any limitations to the authorization accordingly.

NOTE: A HKAR-66 licence issued on the basis of 'protected rights' may contain technical restrictions equivalent to the limitations of any HKAR-AMEL licence or company authorisations previously held. These 'protected rights' under HKAR-66 are a continuation of certification privileges under an existing licence or certification authorisation which allows current personnel to continue working and certifying without the need to re-qualify. Authorisations issued by a HKAR-145 approved maintenance organisation should therefore be similarly restricted in scope. It should be noted that conversion to the full HKAR-66 licence standard is optional.

- 6.5 HKAR-66 Category B3 licences may also be issued with an endorsement allowing the certification, under the provisions of Articles 9 and 11 of the Order, for work outside of a HKAR-145 approved maintenance organisation on aircraft which are not operated for commercial air transport. Such privileges are limited to Hong Kong registered aircraft only. Certifications may only be made for those aircraft types which are endorsed individually or as Group Type Ratings on the licence. The privileges will reflect the limitations for the relevant licence categories.

7 HKAR-66 Category C Aircraft Maintenance Licence

- 7.1 A HKAR-66 Category C Aircraft Maintenance Licence may be issued to a

person who has demonstrated a competence to release an aircraft following base maintenance. The privileges apply to the aircraft in its entirety in a HKAR-145 maintenance organisation. The licence, in its own right, does not entitle the holder to exercise any certification privileges in respect of aircraft and will be used in conjunction with a HKAR-145 certification authorisation.

NOTE: HKAR-145 does not require a HKAR-66 Category C certifying staff for the certification of simple light aeroplanes as Category B1.2 or B3 covers all maintenance.

- 7.2 Such authorisations will be issued by a HKAR-145 maintenance organisation appropriately approved by the Director-General. HKAR-66 licence holders will therefore act in accordance with the authorisation procedures of the company concerned.
- 7.3 HKAR-66 Category C certification authorisations allow the holder to issue Certificate of Release to Service under HKAR 145.50 following the completion of base maintenance on aircraft which are endorsed on the licence and the corresponding authorisation as individual types. Such persons are in essence certifying for the completion of the process associated with base maintenance and are supported by appropriately qualified and experienced HKAR-66 Categories B1 and B2/B2* staff who will inspect and supervise the actual work. The scope of coverage therefore reflects the whole aircraft and is not limited to certification of solely mechanical or avionic systems.
- 7.4 It should be noted that a HKAR-66 Category C licence holder cannot be authorised to act as a line maintenance certifying engineer, exercising line maintenance certification privileges, nor conducting base maintenance, in the role of an inspector or supervisor clearing individual tasks, unless the licence is also endorsed with the appropriate HKAR-66 Category B1 and/or B2/B2* licence with the relevant type rating endorsements.
- 7.5 The certification authorisation can only be issued by a HKAR-145 approved maintenance organisation when the HKAR-66 licence holder has the basic Category C listed and the aircraft type rating endorsed on the HKAR-66 Aircraft Maintenance Licence. The type training for a HKAR-66 Category C type endorsement, conducted under a HKAR-147 approval, will represent the appropriate mix of systems knowledge as specified in HKAR-66. The certification authorisation will specify the privileges for the individual, giving due regard to the company scope of approval and any associated procedures agreed with the Director-General.

NOTE: A person qualified to HKAR-66 Category B1 or B2/B2* level with type endorsements will also be eligible for a Category C type authorisation, providing the basic HKAR-66 Category C licence is held.

8 HKAR-66 General

Holders of HKAR-66 Aircraft Maintenance Licence with type endorsements may be

required to undertake appropriate differences type training where the aircraft type to be authorised embodies significant variations in the equipment fitted or the aircraft systems configuration. The responsibility for determining the training to be undertaken will remain with the HKAR-145 approved maintenance organisation.

9 Cancellation

This Notice cancels Airworthiness Notice No. 3 Issue 25, dated 31 July 2018, which should be destroyed.

Simon LI
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 4
Issue 18
31 October 2023**

**AIRCRAFT MAINTENANCE LICENCE
APPLICATION PROCEDURES**

1 General

The information has been transferred to HKAR-66 Section 4 Appendix XII.

2 Cancellation

This Notice cancels Notice No. 4 Issue 17, dated 31 January 2010, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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HKAR-66 AIRCRAFT MAINTENANCE LICENCE EXAMINATION CENTRES

1 General

The information has been transferred to HKAR-66 Section 4 Appendix XII.

2 Cancellation

This Notice Appendix cancels Airworthiness Notice No. 4 Appendix No. 1 Issue 4, dated 10 December 2012, which should be destroyed.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 5
Issue 3
30 October 2001**

TYRE WEAR LIMITATIONS

1 Introduction

- 1.1 Hong Kong Aviation Requirements require that for certification of new types of aircraft, the depth of tyre tread below which wet braking friction characteristics are impaired should be specified at the time of certification; it is also required that it should be possible to determine, in operational conditions, when the tread depth is worn below this limit.
- 1.2 This Notice provides general guidance on the subject of tyre wear limitations for operators of all public transport aeroplanes of more than 5700 kg Maximum Total Weight Authorised on the Hong Kong Register for which a limiting tyre tread depth is not otherwise available.

2 Discussion

- 2.1 Accidents and incidents, resulting from both loss of braking friction and loss of directional control on wet runways, continue to occur. While the scheduled accelerate-stop and landing distances provide some allowance for deterioration in friction, it has been established that this allowance is not sufficient to maintain the required level of safety if tyres which are more than 80% worn are used in wet runway operations.
- 2.2 As it is not possible fully to allow for this by increasing the scheduled distances (because of the frequency of incidents caused by loss of directional control, even on the most favourable wheel arrangements), the Director-General favours the retention of current scheduled distances, together with a recommended minimum tread depth applicable to all aircraft tyres.

3 Recommendation

In the absence of evidence of the safety of a lower limit for a particular aircraft/tyre/operation combination, it is recommended that a tyre be withdrawn from service when it is worn to such an extent that its wet runway performance would be seriously impaired. This may be defined as when:-

- (a) it is worn such that any groove has a depth of less than 2 mm of tread for more

than one quarter of the tread circumference

or

- (b) at any place on the circumference the tread pattern is worn to a depth of less than 2 mm across the whole width of the tread in contact with the runway.

NOTE: This is not a rigid definition and equivalence may be provided if, for example, tyre wear is such that whilst one groove is less than 2 mm all the others are 3 mm or more.

4 **Cancellation**

This notice cancels Airworthiness Notice No. 5 Issue 2, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 6
Issue 16
31 October 2016**

AIRWORTHINESS PUBLICATIONS - GENERAL INFORMATION

- 1 This Notice gives details of the various airworthiness publications which may in general be available on CAD website at <http://www.cad.gov.hk> under “Publications and press release”. Some of them however may still be obtained in hardcopy format from the CAD Airworthiness Office, 1 Tung Fai Road, Hong Kong International Airport, Lantau, Hong Kong (Tel. (852)29106179, Fax. (852)23624250). The prices and versions of those hardcopy format airworthiness publications are available on the aforementioned CAD website under “Publications and press release” then ‘Other Publications for Subscription’.

General information on airworthiness publications published by UKCAA, JAA and EASA are described in the Appendix No.1 to this Notice.

2 **Airworthiness Requirements**

2.1 **Hong Kong Aviation Requirements (HKAR)**

These comprise minimum requirements and constitute the basis for the issue of approvals and certificates required by the Air Navigation (Hong Kong) Order 1995 (hereinafter referred to as AN(HK)O).

HKAR-1	Airworthiness Procedures (CAD 554)
HKAR-2	Administrative & Guidance Material (CAD 2)
HKAR-21	Certification of Aircraft and Related Products, Parts and Appliances, and of Design and Production Organisations (CAD 21)
HKAR-66	Licensing of Maintenance Personnel (Certifying Staff – Maintenance) (CAD 66)
HKAR-145	Approved Maintenance Organisations (CAD 145)
HKAR-147	Approved Maintenance Training/Examination (CAD 147)
HKAR-MMEL/MEL	Master Minimum Equipment List/Minimum Equipment List (CAD 549)

3 Airworthiness Notices (CAD 455)

- 3.1 Airworthiness Notices are published on the aforementioned CAD website.
- 3.2 This document CAD 455 is published in support of the powers of the Director-General contained in Article 8(3) of the AN(HK)O. The document includes international standards contained in Annexes to the Chicago Convention.

4 Syllabuses of Examination for Aircraft Maintenance Personnel

4.1 Aircraft Maintenance Licence

The syllabus for Aircraft Maintenance Licence is contained in HKAR-66 Licensing of Maintenance Personnel (Certifying Staff – Maintenance) (CAD 66).

5 Type Certificate Data Sheets (CAD 477)

These Data Sheets constitute the documentation associated with Type Certificates which are issued by the Director-General to signify approval of the design of certain types of aircraft.

NOTE: The description 'Type Certificate Data Sheet' is only applicable to Type Certificates for aircraft.

6 Log Books

The following are available:

Aircraft Exceeding 2730 kg MTWA:

Aircraft Log Book (CAD 408)
Engine Log Book (CAD 391)
Variable Pitch Propeller Log Book (CAD 388)
Modification Record Book (CAD 395)

Aircraft Not Exceeding 2730 kg MTWA:

Aircraft Log Book (CAD 398)
Engine Log Book (CAD 399)
Variable Pitch Propeller Log Book (CAD 400)
Time Limited Task and Component Change Record (CAD 543)

7 **Air Navigation (Hong Kong) Order 1995**

The Statutory Instruments concerned with Air Navigation are published by the Government Printer, Hong Kong Special Administrative Region and are obtainable from the Government Publications Centre, Low Block, Ground floor, Queensway Government Offices, 66 Queensway, Hong Kong (Fax: (852)25237195). The AN(HK)O, being the Subsidiary Legislation C of CAP.448 Civil Aviation Ordinance, can be accessed on Internet at <http://www.justice.gov.hk>. (Please note that the Internet version is not to be relied on as an authentic version of the law.)

8 **Condition Monitored Maintenance: An Explanatory Handbook (CAD 418)**

This publication provides general information and guidance on the concepts and practices of aircraft maintenance control by the use of Condition Monitoring. This is a process in which in-service information is collected and analysed on a continuing basis, as a means of implementing corrective procedures.

9 **Air Operators' Certificates Requirements Document (CAD 360)**

This publication gives information for use by applicants for, and holders of, Air Operators' Certificates, regarding the engineering support arrangements to be provided by the Operator, in order to obtain the grant, variation or continuation of an Air Operator's Certificate. The requirements have sections covering Maintenance Support Arrangements, Contracting Out Maintenance, Airworthiness Control Procedures, Maintenance Facilities, Quality Control and Assurance, the Engineering Manual and the Technical Log.

10 **Approval of Aircraft Maintenance Schedules (CAD 452)**

This publication presents information as a guide for those operators or maintenance organisations submitting an aircraft maintenance schedule for approval by the Director-General.

| 11 **(Deleted)**

12 **The Mandatory Occurrence Reporting Scheme – Information and Guidance (CAD 382)**

The purpose of the publication is to describe the Civil Aviation Department (CAD) Mandatory Occurrence Reporting Scheme and to provide guidance to those who, by the associated legislation, are involved in its operation.

| 13 **Extended Diversion Time Operations (EDTO) (CAD 513)**

The publication states an acceptable means (but not necessarily the only means) by

which approval may be given for Hong Kong registered twin-engined aeroplanes to operate over a route that contains a point further than 60 minutes flying time (in still air) at the normal one-engine-inoperative cruise speed from an adequate aerodrome.

14 **Safety Management Systems (SMS) for Air Operators and Maintenance Organizations (CAD 712)**

This publication, focusing on air transport operations and maintenance activities, sets out to inform and aid air operators and maintenance organisations such that an effective SMS can be developed for managing safety appropriate to the size and scope of any particular organisation. It also provides general guidance and principles to implement an effective SMS.

15 **Cancellation**

This Notice cancels Airworthiness Notice No. 6 Issue 15, dated 10 December 2012, which should be destroyed.

Simon LI

Director-General of Civil Aviation

OTHER AIRWORTHINESS PUBLICATIONS - GENERAL INFORMATION

- 1 This Appendix gives details of the various airworthiness publications which may in general, be obtained from the United Kingdom Civil Aviation Authority (UKCAA). Many of these are now available on the UKCAA website at <https://www.caa.co.uk>.

2 **Airworthiness Requirements**

2.1 **British Civil Airworthiness Requirements (BCAR)**

These comprise minimum requirements and constitute the basis for the issue of approvals and certificates required by the UK Air Navigation Order. The constituent sections of BCAR together with their amendment status can be viewed via UKCAA website at <https://www.caa.co.uk/Our-Work/Publications/Publications>.

2.2 **European Union Aviation Safety Agency (EASA) Certification Specifications (CS)**

CS are published by the EASA. Their status is that they must be used as the reference standard for the certification of those aircraft which come under the auspices of EASA (a definition of the aircraft covered may be found in CAP 747).

The EASA CS were developed from the JAR and cover the same subjects. They are listed in EASA website at <https://www.easa.europa.eu/document-library/certification-specifications>.

3 **Civil Aircraft Airworthiness Information and Procedures (CAP 562)**

Civil Aircraft Airworthiness Information and Procedures (CAAIP) are published by the UKCAA providing information on a variety of matters concerned with civil aircraft during manufacture, overhaul, repair and maintenance. It can be viewed via UKCAA website at <https://www.caa.co.uk/Our-Work/Publications/Publications>.

4 **UKCAA Airworthiness Notices (CAP 455)**

All Airworthiness Notices (ANs), previously published in CAP 455, have now been cancelled or transferred to CAP 747 (Mandatory Requirements for Airworthiness) or CAP 562 (Civil Aircraft Airworthiness Information and Procedures).

5 **UKCAA Foreign Airworthiness Directives**

5.1 **Foreign Airworthiness Directives Volumes I and II – CAA Additional Airworthiness Directives (CAP 473)**

This publication has been withdrawn. Data applicable to products of USA design should be obtained from the Federal Aviation Administration (FAA) website at <https://rgl.faa.gov> under the database 'Airworthiness Directive'. UKCAA Additional Airworthiness Directives published previously in CAP 473 that remain in force are published in CAP 747.

5.2 **Foreign Airworthiness Directives Volume III (CAP 474)**

This publication will no longer be amended. At final issue CAP 474 lists Foreign Airworthiness Directives published before October 2004 that are applicable to aircraft, engines, propellers and equipment designed outside the USA and the UK. Foreign Airworthiness Directives should be obtained directly from the State of Design of the product in question. CAA Additional Airworthiness Directives published previously in CAP 474 that remain in force are published in CAP 747.

6 **UKCAA Mandatory Aircraft Modifications and Inspections Summary (CAP 476)**

This publication will no longer be amended. At final issue CAP 476 lists with their associated Airworthiness Directive numbers, modifications, inspections and Service Bulletins declared mandatory by the UKCAA before October 2004. All UKCAA Airworthiness Directives issued after that date are published in CAP 747. Deletions from CAP 476 at final issue will be notified in CAP 747.

7 **UKCAA Mandatory Requirements for Airworthiness (CAP 747)**

This publication is the primary reference document for all Airworthiness Directives and other Mandatory Airworthiness Information applicable to aircraft registered in the UK.

8 **UKCAA Aircraft Equipment**

8.1 **UKCAA Aircraft Radio Equipment (CAP 208)**

Volume 1 and 2 of CAP 208 were withdrawn and are now obsolete. The information that this publication used to contain is now maintained as part of the database of all approved aircraft equipment.

8.2 **UKCAA Aircraft Equipment Approval Records System (AEARS)**

The Aircraft Equipment Approval Records System (AEARS) is available on UKCAA website. The database can be accessed through the link <https://siteapps.caa.co.uk/aears>.

9 UKCAA Light Aircraft Maintenance Scheme

9.1 Light Aircraft Maintenance Schedules

These Maintenance Schedules have been prepared for use with aeroplanes and helicopters the Maximum Total Weight Authorised (MTWA) of which does not exceed 2730 kg. Separate Schedules, approved by the UKCAA, are available for aeroplanes (CAP 411) and helicopters (CAP 412) (see also Generic Requirement No. 15 in CAP 747 – Mandatory Requirements for Airworthiness).

9.2 Light Aircraft Maintenance (CAP 520)

This publication provides general guidance on the implementation of the light aircraft maintenance scheme (LAMS) for aircraft not exceeding 2730 kg MTWA, with a Certificate of Airworthiness in the Transport, Aerial Work or Private Category (see also Generic Requirement No. 15 in CAP 747 – Mandatory Requirements for Airworthiness).

NOTE: CAP 520 has been withdrawn because it has become obsolescent due to the introduction of EASA Part-M.

10 Occurrence Publications

These contain summarised information derived from occurrence reports covering not only airworthiness but a broad field of aircraft incidents and defects which could affect the safe operation of aircraft. Occurrence reports can be viewed via UKCAA website <https://www.caa.co.uk> under the heading 'Data and analysis' and then sub-heading 'Safety and security'. Meanwhile, 'Follow-up Action on Occurrence Report (FACTOR)' is available on the UKCAA website <https://www.caa.co.uk> under the heading 'Publications' and then search through the Category 'General Aviation'.

11 General Aviation Safety Information Leaflet (GASIL)

This Leaflet contains summaries of the more serious occurrences affecting general aviation aircraft and operations. Factual information, UKCAA comments and, when appropriate, advice on remedial or preventative measures, are included. In addition it contains other items of interest to general aviation including airspace information.

NOTE: GASIL is not aviation law and will not be amended as regulations change.

12 UK Additional Requirements and Special Conditions (CAP 480)

This publication has been withdrawn. Requirements published previously in CAP 480 that remain in force are published in CAP 747.

13 UKCAA Airworthiness Specifications

13.1 The UKCAA recognises certain general Industry Specifications dealing with aeronautical products (e.g. BSI Specifications). However, over a number of years it has become necessary for the UKCAA also to issue certain Specifications, where no suitable Industry Specification has been developed.

No. 1	Safety Belts	Issue 6, 12 March 2004
No. 2	Inflatable Liferafts.....	Issue 2, 1 Nov 1985
No. 5	Inflatable Lifejackets.....	Issue 2, 23 Nov 1979
No. 6	(Deleted)	
No. 7	(Deleted)	
No. 9	Child's Flotation Cot	Issue 1, 9 Apr 1957
No. 10	Flight Data Recorder Systems.....	Issue 1, 1 May 1974
No. 10A	Flight Data Recorder for Aeroplane Accidents Investigation.....	Issue 1, 1 Jun 1990
No. 11	Cockpit Voice Recorder Systems	Issue 3, 13 Aug 1983
No. 12	Underwater Sonar Location Devices Approval, Installation and Maintenance	Issue 1, 1 May 1974
No. 14	Ground Proximity Warning Systems	Issue 2, Sep 1976
No. 15	Public Address Systems	Issue 2, 13 Sep 2012
No. 16	Automatically Deployable Emergency Locator Transmitters for Helicopters	Issue 2, 1 Dec 1991
No. 17	Aeroplane Wheels and Wheel Brake Assemblies - Minimum Performance	Issue 1, 18 Sep 1986
No. 18	Flight Data Recorder for Helicopter Accident Investigation	Issue 1, 1 Jun 1990
No. 19	Helicopter Crew Member Immersion Suits	Issue 1, 15 Apr 1991
No. 20	(Deleted)	
No. 21	Helicopter Public Address Systems	Issue 1, 28 Mar 1998

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|--------|---|
| No. 22 | Global Positioning Systems (GPS) for use in Rotocraft for En-route Navigation..... Issue 1, 25 Apr 2005 |
| No. 23 | State Helicopter Flight Recorders Standards ....Issue 2, 28 Jun 2018 |
-
- 13.2 It should be noted that EASA has issued ETSO which states the procedures to be followed where it is wished to obtain approval and identify an article with an ETSO marking. The UKCAA intends that where a Specification is issued in the ETSO series, and the UKCAA finds that it adequately covers the subject matter and applicability of one of the UKCAA Specifications here, it will then withdraw the UKCAA Airworthiness Specification.
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- 14 **Master Minimum Equipment Lists (MMEL)**
-
- 14.1 The MMEL defines those systems and items of equipment which may be unserviceable at the commencement of a flight. UKCAA Civil Aviation Publication CAP 549 defines and explains the UKCAA policy in regard to MMELs and provides guidelines for manufacturers in the preparation of an MMEL.
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- 14.2 The aircraft types, registered in Hong Kong, for which there are currently UKCAA approved MMELs are listed in the Publications area of the UKCAA website at <https://www.caa.co.uk>. Electronic copies of MMELs produced by UKCAA are available from this website address.
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- 15 **Mandatory Permit Directives (CAP 661)**
-
- It is for aircraft operating on a Permit to Fly and contains Mandatory Permit Directives (MPD) that are required to be complied with by UK Owners and Operators of Permit to Fly aircraft. This publication is frozen as at the January 2012 amendment.
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- Refer to '<http://www.caa.co.uk/Commercial-industry/Aircraft/Airworthiness/>' for a separate Alphabetical Index which will be updated each time a new MPD is published.
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- 16 **Cancellation**
-
- This Notice Appendix cancels Airworthiness Notice No. 6 Appendix No. 1 Issue 14, dated 30 May 2005, which should be destroyed.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 7
Issue 5
15 July 2020**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

PLACARDS

1 Applicability

This Airworthiness Notice is applicable to all aircraft registered in Hong Kong.

2 Introduction

- 2.1 For the purpose of this Notice, placards include markings.
- 2.2 The purpose of this Notice is to standardise placards and ensure proper usage of the Chinese translations in bilingual placards.
- 2.3 Placards that are purely pictorial in nature are not affected by this Notice. Symbolic placards for certain emergency equipment and passenger information signs published in FAA Advisory Circular AC25-17A, Appendix 2 “Symbolic Regulatory Messages”, or approved as part of the aircraft type design, are acceptable to the Director-General.
- 2.4 Placards regulated in the Air Navigation (Hong Kong) Order 1995 (the Order) are not affected by this Notice.

3 Compliance

- 3.1 All aircraft identified in paragraph 1 of this Notice shall comply with the requirements specified in sub-paragraph 4.1 of this Notice.
- 3.2 All aircraft identified in paragraph 1 of this Notice with a Certificate of Airworthiness in Transport Category (Passenger) shall comply with the requirements specified in sub-paragraphs 4.2, 4.3.1 and 4.4 of this Notice.

Note: This sub-paragraph is not applicable to cargo aeroplanes equipped with supernumerary area notwithstanding requirements specified in AN 104 sub-paragraph 4.1.3.

- 3.3 All aircraft identified in paragraph 1 of this Notice for which bilingual placards are installed voluntarily (anywhere in the aircraft) shall comply with the requirements specified in sub-paragraphs 4.3.1 and 4.4 of this Notice.
- 3.4 With effect from 31 July 2020, all aircraft identified in paragraph 1 of this Notice:
- 3.4.1 with a Certificate of Airworthiness in Transport Category (Passenger) first issued in Hong Kong on or after 31 July 2020; or
 - 3.4.2 for which bilingual placards are installed voluntarily (anywhere in the aircraft) and with a Certificate of Airworthiness first issued in Hong Kong on or after 31 July 2020; or
 - 3.4.3 for which major modification affecting bilingual placards is embodied on or after 31 July 2020,
- shall comply with the requirements specified in sub-paragraphs 4.3.2 and 4.3.3 of this Notice.

4 Requirement

4.1 Placards for Emergency Equipment

Placards indicating emergency equipment shall be approximately at eye level and shall not blend in with surrounding décor. A colour contrast that complies with CS/FAR 25.811(f)(2) is acceptable. If the emergency equipment is located in an upper or lower compartment, the eye level placard should have an arrow indicating the compartment. Each compartment containing emergency equipment such as life preservers, rafts, slides, slide/rafts, or fire extinguishers shall be placarded as to its contents. For small aircraft which may not allow placards to be located at eye level, the placards shall be located at a conspicuous location as practicable.

4.2 Bilingual Placard

Placards that convey a written warning, instruction or information to passengers are to utilise both Chinese and English narrative or purely pictorial in nature. Purely pictorial placards should be installed as far as possible.

Note 1: Placards intended for exclusive use by cabin crew are not considered for passenger use if the aircraft is required to carry cabin crew by article 18(7)(a) of the Order or by aircraft flight manual.

Note 2: Placards are considered for passenger use if the area may be left unattended by cabin crew. For example, the galley area may be left unattended by cabin crew in long haul flights. In this case, the placards for waste disposal in this area shall meet the requirements of this sub-paragraph.

4.3 Chinese Words and Translation

4.3.1 Chinese words may be presented in either traditional characters (繁體字) or simplified characters (簡體字). Mixed types of Chinese characters shall not be utilised in the same aircraft.

Note: The Chinese words “出口”, “緊急出口”, “緊急切破處”, “非供出口用” prescribed in Article 46 of the Order are not affected by this sub-paragraph. They shall be marked in accordance with the Order notwithstanding the requirements of this sub-paragraph.

4.3.2 The height of Chinese characters shall be no less than that of the corresponding English letters.

Note: For placard in English with both capital and lower cases, the height should be that of the capital letter.

4.3.3 The Chinese translations of bilingual placards shall be approved by the Director-General.

4.4 Bilingual Placard List (BPL)

4.4.1 Each operator shall maintain a current record of all bilingual placards for each aircraft in a BPL.

4.4.2 The BPL shall include at least the aircraft effectivity by registration mark(s), the English text and the corresponding Chinese text.

4.4.3 The BPL shall be approved by the Director-General or by an appropriately approved organisation under a procedure agreed with the Director-General.

5 Additional Information

5.1 The principles and process for approval of new Chinese translations by the Director-General are prescribed in the Civil Aviation Document No. 7 (CAD 7), ‘Bilingual Placard Handbook (BPH)’.

5.2 A list of Chinese translations approved by the Director-General is published in Appendix 1 to CAD 7.

6 Cancellation

This Notice cancels Airworthiness Notice No. 7 Issue 4, dated 5 December 2014, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice


**No. 7A
Issue 4
3 March 2023**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
SYMBOLIC EXIT SIGNAGE**

1 Applicability

This Airworthiness Notice is applicable to all aircraft registered in Hong Kong.

2 Introduction

- 2.1 Article 46(3) of the Air Navigation (Hong Kong) Order 1995 (the Order) requires that every exit from a public transport aircraft registered in Hong Kong shall be marked with the words “Exit” or “Emergency Exit” in English in capital letters and “出口” or “緊急出口” in Chinese.
- 2.2 Article 46(4) of the Order requires that every exit from the aircraft shall be marked with instructions in English and Chinese and with diagrams, to indicate the correct method of opening the exit.
- 2.3 Article 46(7) of the Order requires that the exit signs, exit opening instructions and exit opening diagrams shall be red in colour.
- 2.4 Article 46(8)(b) of the Order requires that if one exit from an aircraft becomes inoperative, among other conditions and arrangements, the words “Exit” and “出口” or “Emergency Exit” and “緊急出口” shall be covered, and the exit is marked by a red disc at least 23 centimetres in diameter with a horizontal white bar across it bearing the words “No Exit” in red letters and “非供出口用” in red characters.
- 2.5 Some type certificate holders in conforming to their local certification regulations have produced the exit signs, exit opening instructions and exit opening diagrams in green (Red is for Stop and Prohibition; Green is for Safe Conditions and Means of Escape). To avoid the interpretation of languages in the exit signs by international passengers, the type certificate holders use universal symbols (such as ) instead of words.

- 2.6 Many civil aviation authorities including the EASA and the FAA have since accepted the change and introduced such change into their respective regulations.
- 2.7 Universal symbols are also adopted by the Fire Services Department and published in the “Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment” for buildings in Hong Kong. Green in colour is also adopted in the Codes of Practice.
- 2.8 In accordance with the certification basis established by the State of Design, some type certificate holders opted to use the universal symbols in lieu of “EXIT” written in full for the exit locators and markers in the cabin. However, the green symbolic exit sign specification does not meet AN(HK)O Article 46 paragraph (3) and Article 46 paragraph (7)(b).
- 2.9 All aircraft shall comply with the certification basis established in the Hong Kong type certificate data sheet.
- 2.10 Aircraft fitted with universal symbols instead of traditional exit signage due to certification requirements are required to apply for an exemption from the requirements of relevant sub-paragraphs of Article 46 of the Order.

NOTE: An exemption will not normally be issued unless the operator could provide relevant substantiation to justify a genuine need for the intended exemption.

3 Compliance

If symbolic exit signage must be equipped, the aircraft shall comply with the requirements specified in paragraph 4 of this Notice.

4 Requirement

- 4.1 The design of exit signs must be chosen to be consistent throughout the cabin.
- 4.2 Every exit shall be marked with a green universal symbolic exit sign.
- 4.3 Every exit shall be marked with instructions in English and Chinese and with diagrams, to indicate the correct method of opening the exit.
- 4.4 The markings with instructions in English and Chinese and with diagrams to indicate the correct method of opening the exit shall be the same as the colour of the universal symbolic exit signs, and in any case in which the colour of the adjacent background is such as to render the markings not readily visible, be outlined in white or some other contrasting colour in such a manner as to render them readily visible.
- 4.5 The green universal symbolic exit signs and the green markings with exit opening instructions and diagrams shall be highlighted to the passengers during the safety briefings.

- 4.6 The images portrayed on the passenger safety cards if so required by paragraph 3.2 of Part One of CAD 360 'Air Operator's Certificates' shall reflect the colour of the markings on the said aircraft.
- 4.7 The design and location of all symbolic exit signs (including locators, markers and identifiers) shall be approved by the Director-General.
- 4.8 If one, but not more than one, exit from an aircraft becomes inoperative at a place where it is not reasonably practicable for it to be repaired or replaced, nothing in Article 46(8)(b) of the Order shall prevent that aircraft from carrying passengers until it next lands at a place where the exit can be repaired or replaced provided that in accordance with arrangements so approved, the exit is fastened by locking or otherwise, the universal symbolic exit sign is covered, and the exit is marked by a red disc at least 23 centimetres in diameter with a horizontal white bar across it bearing the words "No Exit" in red letters and "非供出口用" in red characters.

5 Additional Information

- 4.1 Fire Services Department "Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment" dated April 2012.
- 4.2 Joint Aviation Authorities (JAA) Notice of Proposed Amendment (NPA) 25D-327 "Graphical exit signs as an alternative to red exit signs for passenger aircraft" dated March 2003.

6 Cancellation

This Notice cancels Airworthiness Notice No. 7A Issue 3, dated 31 July 2017, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 7B
Issue 2
28 June 2019**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

EXTERIOR MARKINGS

1 Applicability

This Airworthiness Notice is applicable to all aircraft registered in Hong Kong.

2 Introduction

- 2.1 Article 46(7)(b) of the Air Navigation (Hong Kong) Order 1995 (the Order) requires that markings required by Article 46 except in the case of the markings required by Article 46(6) of the Order shall be red in colour, and in any case in which the colour of the adjacent background is such as to render red markings not readily visible, be outlined in white or some other contrasting colour in such a manner as to render them readily visible.
- 2.2 Article 46(7)(c) of the Order requires that markings required by Article 46(6) of the Order shall be of a colour clearly contrasting with the background on which it appears.
- 2.3 Article 5(2) of the Order requires that the registration marks to be borne by aircraft registered in Hong Kong shall comply with Part B of Schedule 1 to the Order. Paragraph 3 of Part B of Schedule 1 to the Order requires that the nationality and registration marks shall be of equal height and they, and the hyphen, shall all be of same single colour which shall be clearly contrast with the background on which they appear.
- 2.4 This Notice provides requirements to satisfy the intent of the regulations of the Order in relation to ‘readily visible’ and ‘clearly contrast’.
- 2.5 For the purpose of this Notice, ‘Exterior Markings’ mean:
 - 2.5.1 Each exterior marking required by Article 46 of the Order; and
 - 2.5.2 The nationality and registration marks and the hyphen required by Article 5(2) of the Order.

3 Compliance

- 3.1 All aircraft identified in paragraph 1 of this Notice and for which the certificate of airworthiness is first issued in Hong Kong on or after 1 June 2017 shall comply with the requirements specified in paragraph 4 of this Notice.
- 3.2 With effect from 1 June 2018, all aircraft identified in paragraph 1 of this Notice shall comply with the requirements specified in paragraph 4 of this Notice.

4 Requirement

4.1 Contrasting Colour

Each 'Exterior Marking' shall have colour contrast to be readily distinguishable from the surrounding fuselage surface. The contrast shall be such that if the reflectance of the darker colour is 15% or less, the reflectance of the lighter colour shall be at least 45%. 'Reflectance' is the ratio of the luminous flux reflected by a body to the luminous flux it receives. When the reflectance of the darker colour is greater than 15%, at least a 30% difference between its reflectance and the reflectance of the lighter colour must be provided.

4.2 Outline

- 4.2.1 If an 'Exterior Marking' is required to be outlined in white or some other contrasting colour to render them meeting the requirements specified in sub-paragraph 4.1 of this Notice, the width of the outline shall be at least (i) the height of the text or (ii) the width of the diagram in the marking as the case may be, except that the width of the outline need not exceed 5 centimetres.
- 4.2.2 If the width of an outline does not meet the requirements specified in sub-paragraph 4.2.1 of this Notice, the design approval holder of the marking shall demonstrate to and satisfy the Director-General that the marking is 'readily visible' and 'clearly contrast' for acceptance.

5 Additional Information

- 5.1 European Union Aviation Safety Agency Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes CS 25.811(f)(2).
- 5.2 Federal Aviation Administration Advisory Circular AC No. 25-17A "Transport Airplane Cabin Interiors Crashworthiness Handbook" dated 18 May 2009.

Cancellation

This Notice cancels Airworthiness Notice No. 7B Issue 1, dated 31 May 2017, which should be destroyed.

Simon LI

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 8
Issue 13**

31 October 2023

RENEWAL OF AIRCRAFT MAINTENANCE LICENCE

1 Introduction

1.1 The information has been transferred to HKAR-66 Section 4 Appendix XII.

2 Cancellation

This Notice replaces Airworthiness Notice No. 8 Issue 12, dated 30 September 2007, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 9
Issue 5
30 April 2024**

AIRCRAFT REGISTRATION AND DEREGISTRATION

1 GENERAL

- 1.1 According to Article 3 of the Air Navigation (Hong Kong) Order 1995 (AN(HK)O), an aircraft shall not fly in or over Hong Kong unless it is registered in Hong Kong, a Contracting State or some other countries in relation to which there is in force an agreement between the Central People's Government or the Government of the Hong Kong Special Administrative Region (HKSAR) and the Government of that country that has made provision for the flight over Hong Kong of aircraft registered in that country.
- 1.2 An aircraft registered in Hong Kong shall bear a valid Certificate of Registration (C of R).
- 1.3 The following aircraft flying in Hong Kong do not require to be registered:
- (a) Captive balloon;
 - (b) any balloon which at any stage of its flight is not more than 2 metres in any linear dimension including any basket or other equipment attached to the balloon;

NOTE: For an unmanned free balloon with a payload operating for commercial purpose, the operator has to inform Civil Aviation Department the date, time and location of release, the type of balloon in writing before the release of the balloon.

- (c) any kite;
- (d) any other aircraft weighing not more than 7 kg without its fuel;
- (e) any parachute including a parascending parachute; and

- (f) on any flight which begins and ends in Hong Kong without passing over any other country and which is in accordance with the ‘B Conditions’ [except paragraph (1)(a)] set forth in Schedule 2 to the AN(HK)O.

- 1.4 The issue of a C of R to an aircraft registered in Hong Kong shall be subject to the compliance of the Article 4 of AN(HK)O.

2 APPLICATION FOR REGISTRATION

- 2.1 Application for the registration of an aircraft in Hong Kong shall be made in writing to the Director-General. CAD Form DCA 99 shall be duly completed and forwarded to the Director-General together with the necessary documents (as described below) and registration fee [as stipulated in the Hong Kong Air Navigation (Fees) Regulations (CAP. 448 Subsidiary Legislation D)].

- 2.2 Relevant documents should be submitted to support the rights to be considered as a qualified person within AN(HK)O Article 4(3).

- 2.3 For application by natural person, a copy of his/her identification document should be submitted.

- 2.4 For application by body corporate, CAD shall assess its compliance on Incorporation and Principal Place of Business (IPPB) requirements. Documentary proof demonstrating the applicability of the following are required:

- 2.4.1 Whether it is incorporated in the HKSAR or other parts of China;

- 2.4.2 Whether the central and ultimate management and control of the applicant’s business is effectively exercised in the HKSAR;

- 2.4.3 Whether the applicant is an airline independent of any other foreign airline, and if not, the nature and extent of the relationship and the synergy between them;

- 2.4.4 The relationship between the applicant and its non-local associated

company or companies in terms of the applicant's operations, financial arrangements, commercial and management arrangements, etc.;

2.4.5 The location of the applicant's shareholders and their interest in other airline business;

2.4.6 The voting powers among the applicant's shareholders;

2.4.7 The ordinary residence of the applicant's directors;

2.4.8 Whether (and the extent to which) the applicant carries out its operations in HKSAR;

2.4.9 Whether the senior management is employed by the applicant and if not, by whom it is employed; and

2.4.10 Whether the majority of staff of the applicant are employed locally.

2.5 Acceptable documentary proof of the above includes but not limited to:

2.5.1 Certificate of Incorporation, or equivalent;

2.5.2 Business Registration Certificate, or equivalent;

2.5.3 Relevant sections in Articles of Association; and

2.5.4 Annual Return to the Companies Registry.

2.6 Application shall include or be accompanied by the particulars and evidence relating to the aircraft, the ownership and chartering thereof as the Director-General may require determining whether the aircraft may properly be registered in Hong Kong.

2.7 The Director-General also requires confirmation of non-registration from the exporting country which should be provided by the applicant either before, or

at the time, Hong Kong registration is required.

- 2.8 Once determined that the aircraft fulfils the requirements of AN(HK)O, the Director-General shall register the aircraft on the Hong Kong Civil Aircraft Register and furnish the registered owner (certificate holder) a C of R.

3 CHANGE OF PARTICULARS TO THE REGISTRATION OF AN AIRCRAFT

- 3.1 According to Article 4(12) of AN(HK)O, any person who becomes the owner of an aircraft registered in Hong Kong shall inform the Director-General within 28 days in writing to that effect.
- 3.2 For any change of the furnished particulars at the registration of the aircraft such as particulars of certificate holder, the change from owner to charterer or vice versa (change and termination of the demise charter), the certificate holder of the aircraft shall inform the Director-General in writing. CAD Form DCA 99A shall be duly completed and forwarded to the Director-General.
- 3.3 Any change of particulars printed on the C of R shall be amended. In this case, the certificate holder shall pay a fee for the re-issuance of C of R in accordance with the CAP. 448 Subsidiary Legislation D.
- 3.4 The certificate holder has to submit to the Director-General any such information the Director-General may require for ascertaining whether an unqualified person has become entitled to a legal or beneficial interest by way of ownership in the aircraft concerned or a share therein.

4 DEREGISTRATION OF A HONG KONG REGISTERED AIRCRAFT

- 4.1 When an aircraft is to be removed from the Hong Kong Civil Aircraft Register for any of the reasons below, the certificate holder shall inform the Director-General in writing together with a completed CAD Form DCA 99B, and return the original C of R for cancellation:
- 4.1.1 Change of ownership upon sale abroad or termination of a demise charter, and expecting to re-register outside Hong Kong;

4.1.2 Permanently withdrawn from use;

4.1.3 Destroyed.

4.2 CAD Form DCA 99B1 shall be duly completed to declare the removal of the following Hong Kong registered items from the aircraft for the deregistration:

4.2.1 Nationality and Registration marks;

4.2.2 Fireproof registered owner plates;

4.2.3 Aircraft Mode “S” transponder address code; and

4.2.4 ELT address codes.

4.3 The aircraft is not necessary to be deregistered at the time of issuance of Export Certificate of Airworthiness (CoA). The certificate holder should be aware that sufficient time is required for the investigation of issuing Export CoA.

NOTE: Refer to Airworthiness Notice No. 9B for the details of the Export CoA

4.4 There is no fee for the deregistration of an aircraft from the Hong Kong Civil Aircraft Register.

5. CANCELLATION

This Notice cancels Airworthiness Notice No. 9 Issue 4, dated 31 July 2023, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 9A
Issue 2
31 October 2016**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

| MEASUREMENTS OF THE NATIONALITY & REGISTRATION MARKS

1. Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft.

2. Introduction

2.1 This Airworthiness Notice is intended to supplement the measurements of the nationality and registration marks required by the Air Navigation (Hong Kong) Order 1995 ('the Order').

2.2 ICAO Annex 7 specifies requirements for the registration and identification of aircraft.

3. Compliance

3.1 All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements specified in paragraph 4 of this Notice.

4. Requirement

4.1 The marks to be borne by the aircraft shall comply with Part B of Schedule 1 to the Order.

4.2 If a lighter-than-air aircraft does not possess parts of sufficient size to accommodate the marks as required by Section II (b) of Part B of Schedule 1 to the Order, the measurements of the marks shall be determined by the Director-General, taking account of the need for the

aircraft to be identified readily.

5. Additional Information

ICAO Annex 7 - Aircraft Nationality & Registration Marks.

6. Cancellation

This Notice cancels Airworthiness Notice No. 9A Issue 1, dated 31 July 2014, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 9B
Issue 2
30 April 2024**

EXPORT CERTIFICATE OF AIRWORTHINESS

1. Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft.

2. Introduction

2.1. An Export Certificate of Airworthiness (C of A) is not a statutory document under the Air Navigation (Hong Kong) Order 1995. When issued by the Director-General it signifies as at the date of issue, that, except for those derogations from the requirements listed in paragraph 4 of this Notice, the aircraft is such that a Hong Kong C of A could be issued or renewed, as appropriate, in accordance with the related requirements.

2.2. The Export C of A does not by itself give authority for the aircraft to be flown. Such flight authority is by means of a valid C of A meeting Part II Chapter 3 of ICAO Annex 8 Standards issued by the importing Authority.

2.3. Under Article 7 of Air Navigation (Hong Kong) Order 1995, aircraft without a valid C of A shall not fly.

2.4. The Export C of A will not certify compliance with the airworthiness requirements of the importing country.

3. Application

3.1. Application for Export C of A shall be made on Form DCA 581, and submitted to the Director-General together with the required supporting documents.

3.2. A duly completed application should be made at least one month prior to

the date of the intended export of the aircraft.

3.3. The applicant shall also apply for deregistration of the aircraft in conjunction with the application of Export C of A.

4. **Derogations from the Requirements**

The following Exceptions may be listed on the Export C of A if applicable: -

- (a) Derogations from Hong Kong airworthiness requirements.
- (b) Mandatory modifications and inspections with which compliance has not been shown.
- (c) In respect of equipment prescribed in the Air Navigation (Hong Kong) Order 1995: -
 - (i) Such equipment which is fitted, but has not been approved by the Director-General.
 - (ii) Equipment appropriate to the approved type design, where this is not fitted.

5. **Additional Information**

ICAO Doc 9760 Part III Chapter 6 – Airworthiness Approval for Export

6. **Cancellation**

This Notice cancels Airworthiness Notice No. 9B Issue 1, dated 1 February 2023, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 10
Issue 17
30 November 2011**

HKAR-66 AIRCRAFT MAINTENANCE LICENCES – TYPE RATINGS

1 Introduction

- 1.1 This Airworthiness Notice No. 10 sets out the Type Ratings that may be endorsed upon a HKAR-66 Aircraft Maintenance Licence (AML) issued by the Director-General in respect of the certification of aircraft registered in Hong Kong, including also their engines and systems.

Note: A licence can only be used to certify for non-commercial air transport. Aircraft which are operated for commercial air transport must be maintained by a HKAR-145 approved maintenance organisation and all staff who certify for maintenance within those organisations must be in possession of a valid certifying authorisation (see Airworthiness Notice No. 14).

- 1.2 The extent to which the privileges of a Type Rated Licence may be exercised is shown in the current issue of Airworthiness Notice No. 3 in conjunction with paragraph 3 of this Notice.

2 General

- 2.1 The requirements for the grant, variation or renewal of Aircraft Maintenance Licences are contained in the current issue of HKAR-66. For full understanding of the requirements, HKAR-66 must be read in conjunction with the relevant HKAR-2 Administrative and Guidance Material, this Airworthiness Notice No. 10 and, where appropriate, HKAR-145. Unless endorsed to the effect that certification privileges, in respect of Hong Kong registered aircraft which are not used for commercial air transport, may be exercised, a HKAR-66 licence must be used in conjunction with a HKAR-145 certification authorisation (see HKAR-145 and Airworthiness Notice No. 3).
- 2.2 The requirements of HKAR-66 recognise the standards prescribed by the International Civil Aviation Organisation (ICAO) for the grant and extension of licences.

3 Applicability

- 3.1 Under the current Hong Kong Aviation Requirements for certifying staff in

relation to type ratings specified in HKAR-66, the AML holders may hold individual aircraft types. The aircraft types are listed in Appendix 2 to HKAR-2 Chapter 22 and will be granted only where type training approved by the Director-General or by an appropriately approved HKAR-147 maintenance training organisation has been completed to the appropriate HKAR-66 Category B1, B2, B3 or C syllabus and the required practical experience, if appropriate, can be demonstrated. This includes aircraft types which are not on the Hong Kong register but may be maintained under a HKAR-145 approval.

NOTE: It is possible to obtain a type rating for aircraft types which are listed in paragraph 14 of this Notice in accordance with the provisions of this requirement.

- 3.2 In accordance with HKAR 66.45 and AMC 66.45, under certain conditions, the AML holder may hold specific aircraft manufacturers group type or specific aircraft group type ratings.
- 3.3 HKAR-AMEL licence holders are entitled to 'protected rights' under HKAR-66 on existing licence and authorisation privileges. HKAR-AMEL group type ratings, when transferred onto HKAR-66 licences, are for purposes of reflecting continuing privileges, and aircraft types may need to be individually identified. Where a type of aircraft (or its engines or systems) is defined by one of the Group Type Ratings in paragraphs 5 to 9, 12, 13 or 15 of this Notice, an engineer may exercise the certification privileges in respect of that type, subject in particular to the provisions of Airworthiness Notice No. 3 and provided that:-
- (a) he/she holds a valid HKAR-66 Type Rated Licence in the appropriate Category, endorsed with the appropriate Sub-Division of this Notice, and
 - (b) an aircraft of the type is registered in Hong Kong and holds a Hong Kong Certificate of Airworthiness.

NOTE: Sub-paragraphs indicated thus * in paragraphs 5, 6, 7, 8, 9, 12, 13 and 15 of this Notice are not obtainable as new endorsements on an HKAR-66 licence.

- 3.4 Where a type of aircraft (or its engines or systems) is listed individually within paragraphs 5, 6 and 7 of this Notice, the licence holder has certification privileges in respect of the individual types as listed on the licence, subject in particular to the provisions of Airworthiness Notice No. 3.
- 3.5 Where a type of aircraft (or its engines or systems) is not defined by a Group Type Rating or is not listed by name, an application for the Type Rating of a licence in respect of that type of aircraft, engines or systems, will be considered provided that:-

- (a) an aircraft of the type is registered in Hong Kong and holds a Hong Kong Certificate of Airworthiness, or
- (b) an aircraft is not of the type registered in Hong Kong but may be maintained under a HKAR-145 approval.

4 **Reserved.**

5 **Certification Privileges - Aeroplanes**

- * 5.0 Composite Materials Aeroplanes Not Exceeding 5700 kg MTWA.
- * 5.1 Wooden and Wood and Metal Aeroplanes:-

 Aeroplanes where the primary structure is manufactured from wood or combinations of wood and metal.
- * 5.2 Unpressurised metal aeroplanes not exceeding 2730 kg MTWA.
 - * 5.2.1 Unpressurised metal aeroplanes not exceeding 2730 kg MTWA with fixed landing gear only.
- * 5.3 Unpressurised metal aeroplanes not exceeding 5700 kg MTWA.
 - * 5.3.1 Unpressurised metal aeroplanes not exceeding 5700 kg MTWA with fixed landing gear only.
- * 5.4 Unpressurised metal aeroplanes, but excluding aeroplanes defined in paragraph 14 of this Notice.
- * 5.5 Pressurised metal aeroplanes not exceeding 5700 kg MTWA and all unpressurised metal aeroplanes, but excluding aeroplanes defined in paragraph 14 of this Notice.
 - * 5.5.1 Pressurised and unpressurised metal aeroplanes not exceeding 2730 kg MTWA.
- * 5.6 Pressurised aeroplanes exceeding 5700 kg MTWA, but excluding those aeroplanes defined in paragraph 14 of this Notice.

6 **Certification Privileges - Engines**

- * 6.1 Unsupercharged reciprocating piston engines fitted with a fixed pitch propeller.
- * 6.2 Unsupercharged reciprocating piston engines fitted with a fixed or variable

pitch propeller.

- * 6.3 Piston engines in Aeroplanes.

Piston engines not exceeding 500 kW (670 bhp) in Aeroplanes/Rotorcraft/Airships.

- * 6.3.1 Piston engines, in Aeroplanes not exceeding 2730 kg MTWA.

- * 6.4 Jet-turbine engines in Aeroplanes not exceeding 22.25 kN (5000 lbf) static thrust including where so endorsed the associated APU installations.

- * 6.5 Propeller turbine engines in aeroplanes including, where so endorsed, the associated APU installations:-

Garret Airesearch TPE 331

- * 6.6 Jet turbine engines, in aeroplanes, exceeding 22.25 kN (5000 lbf) static thrust including where so endorsed the associated APU installation.

7 Certification Privileges - Rotorcraft

- * 7.1 Piston-engined rotorcraft.

7.2 Reserved.

- * 7.3 Turbine-engined rotorcraft not exceeding 2730 kg MTWA.

NOTE: This paragraph includes the Allison 250 and Turbomeca Arriel engines. For an engine annotated #, removal/replacement of main casings **including** those whose removal results in concurrent removal of a rotating assembly from the engine, **provided this is accomplished solely by disconnecting at the casing flanges.** No dismantling of main rotating assemblies is permitted.

- * 7.4 Sikorsky S76 with Turbomeca Arriel #

NOTE: For an engine annotated #, removal/replacement of main casings **including** those whose removal results in concurrent removal of a rotating assembly from the engine, **provided this is accomplished solely by disconnecting at the casing flanges.** No dismantling of main rotating assemblies is permitted.

8 Certification Privileges - Instruments

- (a) A Rating granted in relation to any of the sub-paragraphs 8.1 to 8.4 inclusive, includes all of the instruments fitted to those aircraft in which are installed systems defined by or listed in that sub-paragraph excluding those aircraft listed in paragraph 14, and as limited by paragraph 3 of this Notice.

- (b) A Rating granted in relation to sub-paragraph 8.8 relates to Instruments – Direct and remote reading compasses only, but excludes compasses on those aircraft listed in paragraph 14, and is limited by sub-paragraph 3.3 of this Notice.

NOTES: (1) A Type Rated Licence which is valid for paragraphs 8.2, 8.3 or 8.4 also includes paragraph 8.1.

(2) Where a system is a combined flight director/automatic pilot the rating does not include items of equipment associated solely with the automatic pilot.

- * 8.1 General aircraft instrument systems but excluding instruments installed on any aircraft which has installed a Flight Director System.
- 8.2 Reserved.
- * 8.3 Flight Director Systems employing air driven gyroscopes (attitude).
- * 8.4 Flight Director Systems employing electrically driven gyroscopes (attitude) but excluding those systems defined in sub-paragraph 8.2.
- 8.5 Reserved
- 8.6 Reserved
- 8.7 Reserved
- * 8.8 'X' Instruments (compasses)
Direct and remote reading compasses.

9 Certification Privileges - Electrical

A rating granted in relation to any sub-paragraph of paragraph 9 of this Notice includes the generation system and the electrical installation in aircraft as defined by that sub-paragraph, as limited by paragraph 3 of this Notice.

NOTES: A Type Rated Licence which is valid for paragraph 9.2 or 9.3 also includes paragraph 9.1.

- * 9.1 Aircraft in which the main generation system output is dc (including alternators having a self-contained rectifier system) and in which secondary alternators having an individual power rating not exceeding 1.5 kVA may be fitted.
- * 9.2 Aircraft in which the main generation system output is dc and which have installed 'frequency wild' alternators with an individual power rating exceeding 1.5 kVA for auxiliary services.

* 9.3 Aircraft in which the main generation system output is 'frequency wild' ac and dc power is supplied from transformer rectifier units.

* 9.4 Aircraft in which the main generation system output is 'constant frequency' ac from alternators driven by constant speed drive units, or variable speed constant frequency (VSCF) generator/converter systems, and dc power is supplied from transformer rectifier units.

10 **Reserved**

11 **Reserved**

12 **Certification Privileges - Radio**

A rating granted in relation to any sub-paragraph of paragraph 12 of this Notice includes all the types of radio systems listed in that sub-paragraph, as limited by paragraph 3 of this Notice.

NOTE: Certification Privileges - Radio includes Ground Proximity Warning Systems only when the licence is endorsed to that effect.

* 12.1 Airborne Communication Systems.

* 12.2 Airborne Communication Systems, Airborne Navigation Systems.

* 12.3 Airborne Radar Systems.

13 **Certification Privileges - Automatic Pilots**

A rating granted in relation to any sub-paragraph of paragraph 13 of this Notice includes all the automatic pilot systems defined by that sub-paragraph when installed in aircraft, excluding those aircraft listed in paragraph 14, and as limited by paragraph 3 of this Notice.

NOTES: (1) A Type Rated Licence which is valid for paragraph 13.2 also includes paragraph 13.1.

A Typed Rated Licence which is valid for paragraph 13.3 also includes paragraphs 13.1 and 13.2.

A Typed Rated Licence which is valid for paragraph 13.5 also includes paragraph 13.4.

(2) For the purpose of licensing, automatic stabilisers are deemed to be automatic pilots.

(3) Automatic pilots include related systems such as yaw dampers and/or roll dampers, mach trim systems and automatic throttle systems.

* 13.1 Non-Radio-Coupled Automatic Pilots (Aeroplanes)

- * 13.2 Radio-Coupled Automatic Pilots (Aeroplanes) excluding ILS Coupled (LOC and GS) Automatic Pilots
- * 13.3 ILS Coupled (LOC and GS) Automatic Pilots (Aeroplanes)
- * 13.4 Non-Radio-Coupled Automatic Pilots (Rotorcraft)
- * 13.5 Radio-Coupled Automatic Pilots (Rotorcraft)

14 Aircraft for which maintenance is carried out and certified under company approval

Refer to Appendix 1 to this Notice No.10 for the current list of aircraft types.

*** 15 Compass compensation and adjustment**

16 Cancellation

This Notice cancels Airworthiness Notice No. 10 Issue 16, dated 30 September 2008, which should be destroyed.

Norman LO
Director-General of Civil Aviation

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**AIRCRAFT FOR WHICH MAINTENANCE IS CARRIED OUT AND CERTIFIED
UNDER COMPANY APPROVAL**

1 Introduction

- 1.1 A Hong Kong registered aircraft, with either a Transport Category (Passenger) or Transport Category (Cargo) Certificate of Airworthiness, which is operated for Commercial Air Transport, must be maintained by a HKAR-145 Approved Maintenance Organisation.
- 1.2 Due to the complexity of the aircraft systems, certain types of aircraft and non-rigid airships that are currently registered in Hong Kong are required to have their maintenance accomplished and certified by HKAR-145 Approved Maintenance Organisations in accordance with the requirements of HKAR-1 Sub-section 1.8-13 Appendix No. 3.
- 1.3 Subject to the acceptance by the Director-General, the aircraft listed in paragraph 2.3 may be maintained/certified by an appropriately type rated HKAR-66 Aircraft Maintenance Licence holder, when it is not operated for Commercial Air Transport.

2 The list current at the date of this Notice is:-

2.1 Pressurised Aeroplanes

Airbus A300 Series
Airbus A320/A321 Series
Airbus A330 Series
Airbus A340 Series
Airbus A350 Series
Boeing 747 Series
Boeing 777 Series
Bombardier BD-700 Series
Bombardier CL600 Series
Jetstream 4100
Gulfstream GIV/GIV-SP Series
Gulfstream GIV-X Series
Gulfstream GV
Gulfstream GV-SP Series
Gulfstream GVI

2.2 **Unpressurised aeroplanes:-**

None

2.3 **Rotorcraft:-**

Leonardo S.p.A. Helicopters AW139

Airbus Helicopters AS332 Series

Airbus Helicopters EC135 Series

Airbus Helicopters EC155 Series

Airbus Helicopters EC175 Series

MD Helicopters 900 Series

2.4 **Airships:-**

None

3 **Cancellation**

This Notice Appendix cancels Airworthiness Notice No. 10 Appendix No. 1 Issue 3, dated 31 July 2017, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 11
Issue 2
5 December 2014**

NOISE CERTIFICATES

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft.

2 Introduction

2.1 ICAO Annex 16 Volume I requires the documents attesting noise certification shall be approved by the State of Registry and shall be required by that State to be carried on the aircraft.

2.2 The owner or operator of an aircraft registered in Hong Kong when applying to the Director-General for a grant of a noise certificate in relation to that aircraft in accordance with Civil Aviation (Aircraft Noise) (Certification) Regulations (CAP. 312 sub. leg. A) regulation 4 shall adhere to the following requirements.

3 Applicable Noise Requirements

Refer to HKAR 21.18 and Subpart I of HKAR-21.

4 Application for noise certificate

Refer to GM 21.204(a) of HKAR-21.

5 Cancellation

This Notice cancels Airworthiness Notice No. 11 Issue 1, dated 15 February 2009, which should be destroyed.

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Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 12
Issue 26
30 July 2021**

EXPERIENCE FROM INCIDENTS

- 1 From time to time incidents occur, usually in aircraft operations, which, in the opinion of the Director-General, reflect the need for a general awareness of possible hazards resulting from practices which may have a wide general application. The purpose of this Notice is to advise all concerned, particularly design and engineering staff engaged in aircraft construction or operation, of such incidents which have come to the notice of the Director-General, and where necessary to prescribe action to be taken.
- 2 New incidents will be advised in Appendices to this Notice, and the List of Current Appendices will be updated with each issue. Periodically older appendices will be withdrawn from this Notice whenever the appendices are cancelled or when the same information has been published in the UKCAA Civil Aircraft Airworthiness Information and Procedures (CAP562) or Information Notice. List 1 below details appendices current to this Notice and List 2 details those appendices which have been cancelled.

LIST 1 – CURRENT APPENDICES

<i>Appendix</i>	<i>Subject</i>	<i>Issue</i>	<i>Date</i>
63	Functional Check and Control System Check on Fly-by-wire Aircraft	1	30.9.2004
67	Mode 'S' Transponder ICAO 24-BIT Aircraft Addresses	2	30.5.2008
68	Foreign Object Damage to Aircraft and Engines	2	30.9.2006
69	ATC Transponders and Traffic Alert and Collision Avoidance Systems (TCAS) Ground Testing	2	31.7.2013
70	Aircraft Washing and Rinsing	1	31.7.2013

LIST 2 – WITHDRAWN APPENDICES

<i>Appendix</i>	<i>Subject</i>	<i>CAAIP Leaflet B-180 Appendix</i>
1	Soft Metal Shims	20-1
2	Crowded Ball Races	20-2
3	Oxygen Fire Risk	35-1
4	Cancelled	
5	Fluids Used in Aircraft	12-1
6	Cancelled	
7	Foreign Objects and Loose Articles - Danger of Jamming	51-7
8	Brake and Anti-Skid Systems	32-1
9	Auto-pilots on Light Aircraft	22-1
10	Cancelled	
11	Unauthorised Alteration of Parts	20-3
12	Maintenance of Radio Navigation Equipment Course and Alarm Signal Current Limits	34-1
13	Bonding of Strobe Lights	33-1
14	Cancelled	
15	Cancelled	
16	Emergency Escape Provisions - Doors and Escape Slides	25-6
17	Self-locking Fasteners	51-6
18	Ground Handling of Transport Aircraft	9-1
19	Flap Systems on General Aviation Aircraft	27-2
20	Single Path Control Systems	76-1
21	Electrical Power Supplies - Light Aircraft, Care and Maintenance	24-1
22	Cancelled	
23	Altimeters in Aircraft	31-1
24	Tyre Maintenance & Reliability	32-2
25	Ambiguous Information	4-1
26	Lock-bolt Failures	51-4
27	Stowage and Accessibility of Lifejackets	25-2

<i>Appendix</i>	<i>Subject</i>	<i>CAAIP Leaflet B-180 Appendix</i>
28	The Use and Interpretation of Unfamiliar Units	4-2
29	Hazards of Damage caused by Arc Burns	20-5
30	Cancelled	
31	Air Intake Filters	72-1
32	Electrical Cable Failure	24-3
33	Hydraulic Fluid Contamination	20-6
34	Aged Components-Permit to Fly Aircraft	5-1
35	Primary Structural Fasteners made of H-11 Steel	51-2
36	Cancelled	
37	Single Lock Airframe Seats and Furnishing Attachments	25-1
38	Cancelled	
39	Lithium Batteries	24-6
40	Thermal Circuit Breakers	24-4
41	Effects of Chloride Based Materials on Stainless Steel and Titanium	70-3
42	Maintenance and Re-Installation of Pipes and Cable Looms	20-4
43	Helicopter Gearbox Oil Level Sightglasses	12-3
44	Battery Terminal Failure-GA Aircraft	24-5
45	Aircraft Marking and Placards	11-1
46	Corrosion Inhibiting (Temporary Protective) Compounds	51-3
47	Cancelled	
48	Cancelled	
49	Control of Precision Cutting Tools	51-5
50	Passenger and Crew Oxygen System	35-2
51	Cancelled	
52	Cancelled	
53	Cancelled	
54	Aircraft Windshields and Transparencies	56-1
55	Control and Use of Rigging Pins	27-3

<i>Appendix</i>	<i>Subject</i>	<i>CAAIP Leaflet B-180 Appendix</i>
56	Damage to Packages or Dangerous Goods Caused by Inadequate Securing of Hold Floors	1-1
57	Control of the Use of Pitot Head and Static Vent Blanking Covers	10-1
58	Cancelled	
59	The Consignment by Air of Aircraft Spares as Cargo which meet the Criteria of 'Dangerous Goods'.	1-2
60	Fire Hazards	26-1
61	Retention of Records – Post Incident and Accident Investigations	4-5
62	Seat Belts in Light Aircraft – Orientation of Stitched Joints	25-5
64	MIL-W-22759/16, 17, 18 and 19 Aircraft Electrical Wire	24-7
65	Control Cable End Fittings	27-4
66	Ice Falls from Aircraft	12-4

3 **Cancellation**

This Notice cancels Airworthiness Notice No. 12 Issue 25, dated 31 October 2016, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

Functional Check and Control System Check on Fly-by-wire Aircraft

- 1 A foreign incident investigation reported a fly-by-wire aircraft has faulty wire installation on the flight control system during maintenance. During the repair on the electrical plug of an Elevator Aileron Computer (ELAC), the connections of two pairs of wires were reversed. As a result of this error, the aircraft reacted in a contrary manner during the initial climb phase of its first flight after maintenance. Right roll input from the Captain sidestick to correct a left bank of the aircraft resulted in the aircraft banked further to the left! Fortunately, by using the First Officer sidestick, the aircraft landed safely without any damage and none of the passengers was injured.
- 2 The investigation report indicated the incident was due to a series of human factors related errors and the ambiguity of manufacturer's instructions and operator's checklists. The subsequent functional check conducted by maintenance personnel was only performed by using one control sidestick which failed to detect the fault.
- 3 To prevent recurrence of similar incident, the Director-General adopts the following with respect to the responsibility of maintenance organisations as recommended by the investigation report:
 - 3.1 Instructions should be issued to require that functional checks and control system checks on fly-by-wire aircraft be performed by using **BOTH** sidesticks; and
 - 3.2 Maintenance procedures and job cards should be amended to include the above requirement.

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MODE 'S' TRANSPONDER ICAO 24-BIT AIRCRAFT ADDRESSES

- 1 A foreign CAA has become aware of incorrect 24-bit addresses being installed / hard wired on individual aircraft. This has happened not only on first installation of a Mode 'S' transponder but also when a modification has been made or following a change of State of Registry. Incorrect installation, such as setting the address to all zeros or inadvertent duplication of an address, can pose a risk to flight safety. In particular, the airborne collision avoidance system (ACAS) operates on the assumption that only a single, and therefore unique 24-bit aircraft address exists per airframe. The performance of ACAS can be seriously degraded and in some cases disabled if an incorrect or duplicate address is installed on an aircraft.
- 2 ICAO has recognised that the present management methodology of aircraft 24-bit addresses presents a genuine safety hazard that needs to be addressed and suitably mitigated in any system that is to make use of the Mode 'S' address.
- 3 In order to ensure that the 24-bit Mode 'S' address is installed correctly at the time of initial Certificate of Airworthiness issue, as well as throughout the in-service life of the aircraft and at the time it leaves the Hong Kong register, the following should be accomplished:
 - (a) A positive check that the correct Mode 'S' address is assigned for each transponder installed on the aircraft.
 - (b) The correct Mode 'S' address is periodically confirmed and recorded for each transponder installed on the aircraft, via a field test set at an appropriate maintenance opportunity (not to exceed a two year periodicity). This task should be incorporated into the Approved Maintenance Schedule or Programme.
 - (c) Ensure whenever the aircraft is subject to modification that the Mode 'S' address has not been changed.
 - (d) The Hong Kong assigned Mode 'S' address is removed when the aircraft leaves the Hong Kong register.
- 4 Operators are requested to review their documented procedures and update them, as appropriate, to ensure the above points are addressed. These procedures should also include a method to record that the applicable actions have been accomplished.

- | 5 Reference should also be made to Airworthiness Notice No.12 Appendix No. 69 which contains advice on testing criteria for Transponders.

NOTE: With the introduction of Mode 'S' Elementary and Enhanced Surveillance functionality, within the transponder, it is envisaged that additional testing of the transponder will be required on a periodic basis (not to exceed two years).

6 Cancellation

- | 6.1 This Notice Appendix cancels Airworthiness Notice No. 12 Appendix No. 67 Issue 2, dated 30 May 2008, which should be destroyed.

FOREIGN OBJECT DAMAGE TO AIRCRAFT AND ENGINES

1 Background

- 1.1 Experiences learnt from a foreign CAA that they continue to receive reports of damage to aircraft and engines caused by foreign objects. Foreign Object Damage (FOD) presents a serious airworthiness threat to any aircraft not to mention the economic impact on the operator. In extreme cases, FOD can lead to an accident and loss of life. FOD damage to airframes and engines can be extremely expensive to rectify and may result in the aircraft being removed from revenue service for significant period of time. There are numerous reports on record of FOD damage to engines (in particular rotating assemblies), nose and main landing gear assemblies and aircraft structure.
- 1.2 A research project led by the foreign CAA revealed that a continuing threat exists from varying amounts of FOD present on aircraft maintenance areas and airport manoeuvring areas, including stands, aircraft taxiways and runways. The study showed the aircraft themselves as the main cause of FOD on the runway and this poses the highest immediate risk. Here, parts of aircraft become detached or tools and equipment, inadvertently left in the aircraft fall out during takeoff or landing. The largest item found on a runway was a wheel chock but metal panels and honeycomb structure were also amongst the larger items. The FOD found on taxiways and stands came mainly from airport vehicles and the equipment they tow such as baggage trolleys, steps, cargo equipment etc. The size and shape of some of these foreign objects make it likely to cause tyre damage and subsequent tyre burst. The cleaning of aircraft cabins and the transfer of waste from cabin to airside rubbish containers is also seen to be a common source of foreign objects in the stand areas. Other typical foreign objects consist of such items as oil cans, spanners, pliers, torches, suitcase items (both internal & external), mobile radios, aircraft catering equipment, cutlery, landing gear ground lock pins, thrust reverser lock-out pins and broken parts of ground servicing equipment/vehicles.
- 1.3 Smaller items could be ingested by an engine. In many cases, FOD damage to engine rotating assemblies has led to vibration leading to air turn-backs, diversions and subsequent engine replacement. Boroscope inspections of engines following reports of engine surging very often reveal internal damage to the engine – such damage can of course be very expensive to repair. Typically, damage to the aircraft can range from damage to horizontal stabilizer leading edges to pressure hull penetration by objects thrown up from the runway, to varying degrees of damage to landing gear assemblies and

mainplanes. It is not unusual for tyre treads (nose and main) to detach as a result of FOD during takeoff and landing causing damage to the fuselage, wings, trailing edge flaps, lift dumpers, engine intakes and compressors. Tyre tread detachment often occurs within several takeoffs/landings of an earlier penetration of the tread by an item of foreign object. It is known that in some cases aircraft have been lost due to FOD to tyre assemblies and has led to significant loss of life.

2 Operator, Maintenance and Ground Handling Organisation – Recommended Best Practice

- 2.1 Aircraft operators should not allow their aircraft to be positioned onto arrival/departure stands unless satisfied that the stand is clean and free from foreign objects. Operators should consider the implementation of procedures whereby their staff or contracted ground handling personnel check parking stand cleanliness standards prior to aircraft arrival on stand and again following its departure from stand prior to being occupied by the next aircraft.
- 2.2 Aircraft operators should ensure that the topic of FOD is placed as a standing agenda item on all airport users committee meetings that they attend and internal airline safety meetings as necessary in order that the topic is adequately covered and remains visible at all times. It is suggested that operators may wish to nominate an individual with responsibility for the implementation of the airline's policy in this area.
- 2.3 Aircraft operators and maintenance organisations should implement procedures that would preclude tools, inspection equipment or other service items being left in the aircraft installations following routine or unscheduled maintenance (e.g. undercarriage bays, engine intakes) and/or at the airport areas where the work took place.
- 2.4 Airport authorities and maintenance organisations should ensure that adequate cleaning/sweeping programmes are in place for those aircraft ramp and maintenance areas under their control. Airport authorities and maintenance organisations should provide sufficient numbers of strategically positioned foreign object bins that should be readily visible and placarded as to their use.
- 2.5 Aircraft operators, maintenance and ground handling organisations should include FOD in their induction and continuation training programmes. For example, the practice of putting chocks and other loose equipment on aircraft tugs in positions from where they can fall unnoticed should be discouraged.
- 2.6 Aircraft operators and maintenance organisations should consider the inclusion of FOD into their ramp area audits ensuring that where problems exist that the persons responsible are notified without delay. Where FOD is a persistent problem and no effort is made to rectify the problem, consideration should be given to reporting matters to the CAD Airport Standards Division.
- 2.7 Aircraft operators should ensure that contracted aircraft cleaning and ground

handling organisations are made aware of their policies regarding the prevention of FOD during cabin cleaning and ground handling operations. This should include the condition of vehicles and the quality of repairs made to them.

- 2.8 Some aircraft types are permitted to back off the stand using high power reverse thrust settings. Operators of such types are reminded that these operations can be susceptible to FOD. Operators carrying out such operations should ensure that they are only carried out in accordance with manufacturer's recommendations and from clean, contamination free ramp areas.

REMEMBER, THE ONLY ACCEPTABLE FOD IS NO FOD!

3 **Cancellation**

This Notice Appendix cancels Airworthiness Notice No. 12 Appendix 68 Issue 1, dated 30 May 2005, which should be destroyed.

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**ATC TRANSPONDERS AND TRAFFIC ALERT AND COLLISION AVOIDANCE
SYSTEMS (TCAS) GROUND TESTING**

1 Introduction

This notice is to provide general guidance material to aircraft maintenance organisations and maintenance personnel relating to ATC Transponder and Traffic Alert and Collision Avoidance Systems (TCAS). It includes the functionality to be tested and information to be considered when ground testing ATC Transponders and TCAS in order to minimise the possibility of causing nuisance message to local Air Traffic Control Units and advisory warnings to TCAS equipped aircraft.

2 ATC Mode S Equipped Aircraft Ground Testing

Testing for correct functionality should include the following items (where applicable):

- 2.1 The Mode S 24-Bit aircraft address.
- 2.2 Altitude reporting including the check of the altitude sensor at adequate intervals from ground to the certified altitude ceiling of the aircraft.
- 2.3 Mode S Elementary Surveillance (ELS) & Downlink Aircraft Parameters (DAPs):
 - Aircraft Identification
 - Capability Report
 - Pressure Altitude
 - Flight Status
- 2.4 Mode S Enhanced Surveillance (EHS) & Downlink Aircraft Parameters (DAPs):
 - Magnetic Heading
 - Indicated Airspeed
 - Mach Number
 - Vertical rate
 - Roll Angle
 - Track Angle Rate or True Airspeed
 - True Track Angle
 - Ground Speed
 - Selected Altitude (and Barometric Pressure Setting where appropriate)

3 Mode C Equipped Aircraft Ground Testing

Testing for correct functionality should include the following items:

- 3.1 Correct operation of the Mode A code.
- 3.2 Altitude reporting including the check of the altitude sensor at adequate intervals from ground to the certified altitude ceiling of the aircraft.

4 TCAS System Ground Testing

- 4.1 Maintenance organisations and personnel who are involved in the ground testing of TCAS equipment are requested to establish procedures and take precautions to ensure that the risks of causing nuisance advisories are recognised and kept to a minimum.
- 4.2 A ground operated transponder may trigger a nuisance advisory on a TCAS equipped aircraft operating in the close vicinity. If the ground target is providing altitude data the TCAS logic should declare the aircraft to be on the ground and ought not to generate an advisory. If no altitude data is provided, the TCAS will generate a TA if the threat criteria are met. If the ground is providing altitude data other than surface altitude, as may happen with a defective altitude encoder, or if a test pressure is being applied to the altitude encoder, the TCAS may generate both a TA and a RA if the threat criteria are met.
- 4.3 It is considered that nuisance advisories may be caused to any TCAS equipped aircraft flying in the vicinity of transponders which are being tested, this may also include aircraft passing overhead at medium altitudes. The problem may be more noticeable where ground testing of transponders takes place at airfields located beneath Terminal Control Areas or in the vicinity of Control Areas and Zones where air traffic movements are likely to be numerous.

5 Interval of Transponder Ground Testing

In order to ensure acceptable transponder system performance, Mode S or Mode C transponders' functionality shall be verified periodically within 24 months, using appropriate and calibrated ramp testing equipment in accordance with applicable maintenance manual procedures.

6 Ground Testing Considerations

The following advice is provided to minimise the possibility of causing nuisance message to local Air Traffic Control Units and advisory warnings to TCAS equipped aircraft when ground testing transponders and/or TCAS:

- 6.1 When not required, ensure all transponders are selected to 'OFF' or 'Standby'.
- 6.2 Before starting any test, contact the local Air Traffic Control Units and advise them of your intention to conduct transponder testing. Advise the Air Traffic Control Units of your start time and test duration. Also inform them of the altitude(s) at which you will be testing, your intended Aircraft Identification (Flight ID) and your intended Mode A code. See paragraph 6.3 and 6.4.

Note: Certain altitudes may not be possible due to over flying aircraft.

- 6.3 Set the Mode A code to 7776 (or other Mode A code agreed with Air Traffic Control Units).

Note: The Mode A code 7776 is assigned as a test code by the Originating Region Code Assignment Method (ORCAM) Users Group, specifically for the testing of transponders.

- 6.4 For Mode S equipped aircraft, set the Aircraft Identification (Flight ID) with the first 8 characters of the company name. This is the name of the company conducting the tests.
- 6.5 For Mode S equipped aircraft, set the on-the-ground status for all Mode S replies, except when an airborne reply is required (e.g. for altitude testing).
- 6.6 Where possible, perform the testing inside a hangar to take advantage of any shielding properties it may provide.
- 6.7 Always use the antenna transmission absorption covers when these are provided with the test set.
- 6.8 When testing the altitude (Mode C or S) parameter, radiate directly into the ramp test set via the prescribed attenuator.
- 6.9 In between testing, i.e. to transition from one altitude to another, select the transponder to 'standby' mode.
- 6.10 If testing transponder parameters other than 'altitude', set altitude to -1000 feet (minus 1000 feet), or over 60000 feet. This will minimise the possibility of TCAS warning to airfield and overflying aircraft.

6.11 The simulation of TCAS operation by the radiation from an antenna located on, or remotely based from a workshop, is not permitted.

Notes: (1) The FAA have advised their staff of operational problems resulting in nuisance advisories caused by ground based transponders installed on hangars for the purpose of testing TCAS installations. Maintenance organisations are reminded that all Hong Kong aeronautical radio stations are required to be licensed by the Office of the Communications Authority.

(2) Air Traffic Control Units may be advised when testing is to be carried out if it is considered that there is a possibility of nuisance advisories being caused by the activity due to its proximity to operational runways.

6.12 When testing is complete select the transponder(s) to 'OFF' or 'Standby'.

AIRCRAFT WASHING AND RINSING

1 General

This notice is to provide general guidance material to aircraft maintenance organisations, maintenance personnel and other organisations relating to aircraft washing and rinsing.

2 Introduction

- 2.1 On 27 November 2008, an Airbus A320-200 crashed into the sea off the coast of Perpignan during an airworthiness check flight and was destroyed, killing all seven occupants.
- 2.2 According to the investigation report published by Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA), the accident was caused by the loss of control of the aeroplane by the crew following the improvised demonstration of the functioning of the Angle Of Attack (AOA) protections, which were inoperable at the time because the AOA sensors had jammed making it impossible for the protections to trigger.
- 2.3 The jamming of the AOA sensors had been caused by freezing of water which was present as a result of incorrect rinsing procedures being used on the aircraft three days before the accident flight.
- 2.4 The purpose of this document is to remind maintenance organisations, maintenance personnel and other organisations which are responsible for washing and rinsing operations on aircraft to adhere to approved maintenance procedures specified by the aircraft manufacturer or the type certificate holder.

3 Background

- 3.1 The aircraft had come to the end of its lease and had been ferried to Perpignan for maintenance and painting work. Following completion of this, and in accordance with its end of lease agreement, a check flight was required prior to the return of the aircraft to its owners.
- 3.2 Prior to being painted the aircraft was rinsed with fresh water using a water jet and without the AOA sensors being protected with masking protections. Both of these processes were contrary to the manufacturer's prescribed procedures in the Aircraft Maintenance Manual. As a result, water penetrated inside at least two of the three AOA sensors. This water remained inside the sensors for three days before the accident flight. The temperatures

encountered during the check flight caused this water to freeze and the AOA sensors to jam. This in turn prevented the AOA protections from triggering during the improvised check of their functioning.

4 Actions to be taken

This accident underlines the importance of adhering to the correct procedures for all aspects of aircraft maintenance. Therefore maintenance organisations, maintenance personnel and other organisations which carry out washing and rinsing operations on aircraft are reminded to adhere to approved maintenance procedures specified by the aircraft manufacturer or the type certificate holder with particular regard to the appropriate protection of all sensors during cleaning and painting tasks.

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 14
Issue 12
1 February 2023**

APPROVAL OF MAINTENANCE ORGANISATIONS

1 Purposes

The purposes of this Airworthiness Notice are:

- 1.1 to provide guidance to the industry on CAD approval policy with respect to HKAR-145 approval of maintenance organisations engaged in the maintenance of aircraft used for commercial air transport or in the maintenance of aircraft components to be fitted to such aircraft; and
- 1.2 to set out CAD policy concerning maintenance approvals and requirements relating to maintenance of aircraft NOT used for commercial air transport and relating to maintenance of aircraft components to be fitted to such aircraft.

NOTES:

- (1) For the purpose of this Airworthiness Notice, 'Aircraft Component' means any part of an aircraft including a complete powerplant and any operational or emergency equipment.
- (2) The acceptance of aircraft components intended for installation in aircraft issued with a Hong Kong Certificate of Airworthiness, irrespective of whether the aircraft is or is not used for commercial air transport, is addressed in Airworthiness Notice No.17.
- (3) The provisions in this Airworthiness Notice do not prevent the HKAR-145 maintenance organisation from performing maintenance on an aircraft which is not registered in Hong Kong or not registered in any Contracting State. Additional information is provided in the Airworthiness Manual (ICAO Doc 9760). (Refer paragraph 8 of this Notice for detailed requirements)

2 Introduction

- 2.1 The publication HKAR-145 Approved Maintenance Organisations prescribes the requirements to be met by an organisation to qualify for the issue, variation or renewal of a HKAR-145 approval for the maintenance of aircraft and aircraft components used for commercial air transport, is available on CAD website: <https://www.cad.gov.hk>.
- 2.2 Other 'maintenance' related Hong Kong Aviation Requirements are CAD 360 Air Operator's Certificates Requirements Document - Part TWO 'Arrangements for Maintenance Support', and HKAR-1 Sub-section 1.8-13 Appendix No. 3 - Authorisation of Personnel.

- 2.3 A HKAR-145 approved maintenance organisation when exercising privileges of its HKAR-145 approval is deemed an approved person for the purposes of Article 11(6)(c) of the Air Navigation (Hong Kong) Order 1995 (“the Order”).
- 2.4 HKAR-145 approved maintenance organisations will have details of their approvals, including their names and addresses, approval reference numbers and extent of approval published on CAD website under “CAD Approved or Accepted Organisations (Airworthiness)”.
- 2.5 Authorisation of non HKAR-145 aircraft maintenance organisations is addressed in Appendix No.1 to this Airworthiness Notice No. 14.
- 2.6 Approval of organisation holding EASA Part 145 Approval is addressed in the Appendix No. 2 to this Airworthiness Notice No. 14.

3 CAD Policy for HKAR-145 Maintenance Organisation Approvals

- 3.1 With effect from 1 December 1995, no organisation may certify for release to service an aircraft with either a Transport Category (Passenger) or Transport Category (Cargo) Certificate of Airworthiness and used for commercial air transport, or for release to service an aircraft component intended for fitment to such an aircraft, unless approved in accordance with HKAR-145.

4 CAD Policy for non HKAR-145 Maintenance Organisation Approvals

- 4.1 Organisations which are solely engaged in the maintenance of aircraft not exceeding 2730 kg MTWA, with a Certificate of Airworthiness in any category (except Special Category), and are NOT used for commercial air transport, may apply for the grant, variation or renewal of an approval, in accordance with the requirements of HKAR-1 Sub-section 1.8-15.
- 4.2 Organisations engaged in the maintenance of aircraft components for which there is no intended use for commercial air transport may also apply for approval in accordance with HKAR-145.

5 CAD Supplementary Approvals

- 5.1 Organisations which hold HKAR-145 approval or an appropriate maintenance approval may continue to be granted these terms of approval as a supplemental approval if they meet the appropriate requirements. There are a number of functions which can be covered by a supplemental approval that are not as yet addressed by HKAR-145 requirements. These functions include (but are not limited to) the following:
 - (a) To issue Certificate of Maintenance Review under Article 9 of the Order in accordance with HKAR-1 Sub-section 1.6-2.

- (b) To provide reports and certify the test / examination in accordance with HKAR-1 Sub-section 1.8-6.
- (c) To issue Certificate of Fitness for Flight under paragraph (4) of “A Conditions” of Schedule 2 to the Order in accordance with HKAR-1 Sub-section 1.3-8.

6 Maintenance of Aircraft - Non-Commercial Air Transport

- 6.1 Aircraft which are not being used for commercial air transport, may continue to be maintained by organisations approved by the Director-General for the purpose or by appropriately type rated HKAR-66 aircraft maintenance licence holders in accordance with the privileges accorded to the licence holder (see Airworthiness Notices No. 3 and 10).
- 6.2 Aircraft on the Hong Kong Register, which are NOT used for commercial air transport with a Certificate of Airworthiness in any category, may have aircraft components fitted, which have been released to service in accordance with HKAR-145.
- 6.3 The person issuing the Certificate of Release to Service for the fitting of an aircraft component to an aircraft on the Hong Kong Register, is responsible for ensuring that the records of that aircraft component are sufficient to enable its maintenance and operating history to be established, including the embodiment of modifications and ADs, service life used etc.

7 Maintenance Arrangements

- 7.1 The Director-General has signed a Cooperation Arrangement on Joint Maintenance Management between the Civil Aviation Administration of China and the Macao Civil Aviation Authority, which permits concerned parties to accept maintenance carried out by organisations approved by respective Authority under the Arrangement. See Airworthiness Notice No. 30 for details.
- 7.2 The Director-General has signed a Technical Arrangement on Aviation Maintenance with the Civil Aviation Authority of Singapore, which permits both parties to accept maintenance carried out by organisations recognised under the Arrangement. See Airworthiness Notice No. 30A for details.
- 7.3 The Director-General has signed a Technical Arrangement on Aircraft Maintenance with the Transport Canada Civil Aviation Directorate, which permits both parties to accept maintenance carried out by organisations recognised under the Arrangement. See Airworthiness Notice No. 30B for details.

8 Maintenance of Aircraft Not Registered in Hong Kong or Not Registered in Any Contracting State

- 8.1 For aircraft not registered in Hong Kong and not maintained under Maintenance Arrangements as depicted in paragraph 7 of this Notice or not registered, the HKAR-145 approved maintenance organisation shall
- 8.1.1 receive, under the national rules of the State of Registry or State in which the aircraft is to be registered (hereinafter referred as “the foreign State”), an approval (including an approval number), which is a separate approval to the HKAR-145 approval already held by the organisation;
- or
- 8.1.2 confirm that the national law of the foreign State clearly states that the release can be performed by a HKAR-145 approved maintenance organisation referring to the HKAR-145 approval number if the foreign aviation authority does not issue its own approval number.
- 8.1.2.1 The HKAR-145 approved maintenance organisation shall perform and release the maintenance following the regulation of the foreign State (release statement referring to the aviation code of the foreign State, and not to HKAR 145.50), but it still refer to the HKAR-145 approval number.
- 8.1.2.2 The release document shall clearly state, in order to avoid any misunderstandings, that it is a release made under the foreign State national law and not a release under HKAR-145.
- 8.2 For Aircraft not registered in Hong Kong and maintained under Maintenance Arrangements as depicted in paragraph 7 of this Notice, the HKAR 145 approved maintenance organisation shall carry out maintenance according to the approval under the corresponding maintenance arrangement.

9. Cancellation

This Notice cancels Airworthiness No. 14 Issue 11, dated 31 December 2021, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**AUTHORISATION OF NON HKAR-145 AIRCRAFT
MAINTENANCE ORGANISATIONS**

1 Applicability

This appendix is applicable to all Hong Kong registered aircraft certified in the Transport Category (Passenger) or Transport Category (Cargo) which are required to be maintained by organisations holding HKAR-145 maintenance approval.

2 Introduction

- 2.1 The Air Navigation (Hong Kong) Order 1995 Article 11(6)(c) provides for persons to be approved as being competent to issue certificates required by this Article. HKAR-145 defines the requirements to be satisfied for the grant of such an approval. All references in this Airworthiness Notice to HKAR-145 Approved Maintenance Organisation should be taken as meaning a person approved in accordance with the aforementioned Article.
- 2.2 HKAR 145.1 requires that the Certificate of Release to Service issued for maintenance carried out on aircraft with either a Transport Category (Passenger) or Transport Category (Cargo) Certificate of Airworthiness, and when used for Commercial Air Transport, must be issued by an organisation suitably approved in accordance with HKAR-145.
- 2.3 The purpose of this appendix is to define the procedures whereby non HKAR-145 Approved Organisations can be investigated and may be subsequently authorised for the purpose of providing line maintenance support for operation of Hong Kong registered aircraft. This authorisation, if granted, would be subject to the provisions of the Air Navigation (Hong Kong) Order 1995 Article 11(6)(d) and is not an approval as specified in paragraph 2.1.
- 2.4 Subject to a satisfactory investigation, the Director-General may, if he considers appropriate to do so, issue a limited Authorisation to a non HKAR-145 Approved Organisation to issue Certificates of Release to Service in respect of work carried out on an aircraft maintained by a HKAR-145 Approved Maintenance Organisation. Such limited authorisations will only be granted to corporate bodies, not to individual persons.
- 2.5 An organisation which is granted a limited Authorisation will be considered by the Director-General to be acting as a subcontractor to the HKAR-145 Approved Maintenance Organisation as defined in HKAR145.75.

3 Compliance

Compliance with this appendix is required by all affected aircraft operators.

4 Requirement

- 4.1 Prior to applying to the CAD Airworthiness Office for the issue of a limited Authorisation to a non HKAR-145 Organisation, the HKAR-145 Approved Maintenance Organisation must first investigate the non HKAR-145 Organisation. The CAD Airworthiness Office will need to be satisfied that the Organisation under investigation can adequately and safely support the operation of the aircraft maintained by the HKAR-145 Approved Maintenance Organisation, in a manner similar to that of a HKAR-145 Approved Maintenance Organisation. The investigation shall include:-
- (a) the corporate structure of the non HKAR-145 Organisation, and its engineering procedures;
 - (b) the facilities of the non HKAR-145 Organisation in respect of hangarage, maintenance support equipment, manuals and other airworthiness information;
 - (c) the requirements for the qualification of persons employed by the non HKAR-145 Organisation together with their training and experience.
- 4.2 A non-HKAR145 Organisation should normally be currently maintaining aircraft of the same, or similar, type to that maintained by the HKAR-145 Approved Maintenance Organisation. They should also hold a suitable maintenance approval granted by their own Regulatory Authority.
- 4.3 A contract for maintenance support must exist between the HKAR-145 Approved Maintenance Organisation and the non HKAR-145 Organisation. The procedures for the control of maintenance activities performed by the non HKAR-145 Organisation and for aircraft parts procurement must be included in the applicable section of the HKAR-145 Approved Maintenance Organisation's Maintenance Organisation Exposition.
- 4.4. The contracted maintenance arrangements must be such that they can satisfy the HKAR-145 Approved Maintenance Organisation's own quality system in respect of tools, equipment, materials, airworthiness data and maintenance procedures. The non HKAR-145 Organisation must also have in place a procedure for issuing and controlling approvals to their own employees.
- 4.5 If, as a result of the investigation carried out, the HKAR-145 Approved Maintenance Organisation submits a favourable report to the Director-General, an Authorisation permitting the nominated non HKAR-145 Organisation to issue

Certificates of Release to Service in respect of work carried out on the aircraft maintained by the HKAR-145 Approved Maintenance Organisation, may be issued. Prior to the issue of an Authorisation, the Director-General may confirm with the Regulatory Authority to whom the nominated non HKAR-145 Organisation is responsible, that there is no objection to the granting of such an Authorisation.

NOTE: The Director-General reserves the right to participate in the investigation of a nominated non HKAR-145 Organisation.

5 Continuation of Authorisation of Non HKAR-145 Organisations

- 5.1 The non HKAR-145 Organisation shall maintain the standards necessary to undertake the work for which the Authorisation is granted.
- 5.2 The HKAR-145 Approved Maintenance Organisation which nominated the non HKAR-145 Organisation shall establish an audit procedure for the purpose of confirming to the Director-General that the necessary standards are being maintained.
- 5.3 Subject to paragraphs 5.1 and 5.2 above, the Authorisation of non HKAR-145 Organisation will be issued for the period of the contract with the HKAR-145 Approved Maintenance Organisation but not normally exceeding one year.
- 5.4 Prior to the expiry date of an Authorisation, it will be the responsibility of the HKAR-145 Approved Maintenance Organisation to apply to the Director-General for renewal.

NOTE: If the contract for maintenance support between the HKAR-145 Approved Maintenance Organisation and the non HKAR-145 Organisation is terminated, the Authorisation will automatically be cancelled.

6 Cancellation

This Notice Appendix cancels Airworthiness Notice No.14 Appendix No.1 Issue 4, dated 30 June 1999, which should be destroyed.

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**APPROVAL OF ORGANISATIONS HOLDING
EUROPEAN JAR-145 or EASA PART 145 MAINTENANCE APPROVAL**

1 Purpose

The purpose of this Appendix is to record policy and provide guidance to organisations located outside of Hong Kong which are approved by the European Joint Aviation Authorities (JAA) or European Aviation Safety Agency (EASA) and are required to undertake maintenance on Hong Kong registered aircraft. This Appendix is applicable to aircraft base and line maintenance activities.

2 Introduction

2.1 Article 11 of the Air Navigation (Hong Kong) Order 1995 (hereinafter referred to as the Order), as amended prescribes that an aircraft registered in Hong Kong, for which a Certificate of Airworthiness is in force, shall not fly unless a Certificate of Release to Service has been issued in accordance with the Order if the aircraft or any part of the aircraft or such of its equipment as is necessary for the airworthiness of the aircraft has been overhauled, repaired, replaced or modified, or has been inspected as provided in the Order, as the case may be.

2.2 Airworthiness Notice No.14 prescribes that with effect from the 1 December 1995, a Certificate of Release to Service, as required by Article 11 of the Order, for aircraft or an aircraft component used for commercial air transport can only be issued by an organisation appropriately approved in accordance with HKAR-145.

2.3 The Director-General is satisfied that the standards required by the JAA/EASA for the approval of maintenance organisations are equivalent to the standards required by HKAR-145. This will be taken into account with a view to reducing CAD involvement to the minimum necessary to process the application.

3 General

3.1 Following acceptance of an application for approval of an organisation already approved by the JAA or EASA in accordance with JAR-145 or EASA Part 145 respectively, the Director-General will carry out an investigation which will concentrate primarily on the legal and procedural differences between JAR-145 and HKAR-145, or EASA Part 145 and HKAR-145 respectively.

3.2 The organisation will be required to submit to the Director-General a copy of the Maintenance Organisation Exposition (MOE) Part 1 with suitable amendments to address the following subjects:-

- (i) Accountable Manager's statement HKAR 145.70(a)(1).
- (ii) Revised contents list reflecting amendments for HKAR-145.
- (iii) Reporting of unairworthy conditions HKAR 145.60.
- (iv) Scope of work applicable to Hong Kong approval HKAR 145.70(a)(9).
- (v) Notification procedure for organisational changes HKAR 145.70(a)(10).
- (vi) The documentation to release an aircraft HKAR 145.50.

These amendments can be in a stand-alone supplement to the MOE Part 1. In addition, the organisation will need to assess whether procedures need to be added to other parts of the MOE to cater for the particular requirements of the Hong Kong Operator.

3.3 HKAR-145 Approvals granted in accordance with the policy defined above will normally be subject to monitoring by the Director-General when Hong Kong registered aircraft are undergoing maintenance at the organisation. Such approvals will be issued for a two-year period and the organisation will need to reapply if the approval is to continue past this period.

4 Cancellation

This Notice Appendix cancels Airworthiness Notice No. 14 Appendix No.2 Issue 3, dated 31 January 2002, which should be destroyed.

LIMITED AUTHORISATION - GUIDANCE MATERIAL

1 General

- 1.1 Appendix No.4 to Airworthiness Notice No.14, permits persons to be granted, by the holder of a HKAR-145 approval issued by the Director-General, Limited Authorisations to issue Certificates of Release to Service when the conditions of such authorisations have been agreed by the Director-General. This Appendix provides guidance to HKAR-145 Approved Maintenance Organisations that wish to issue Limited Authorisations, to assist in determining conditions which may be agreed by the Director-General.

NOTE: It should be noted that the introduction of HKAR-66 will render the Limited Authorisation concept that is defined here obsolete. New Limited Authorisations may not therefore be issued to certifying staff after 1 April 2004. Limited Authorisations in effect at that date may continue until the individual leaves the employ of the relevant organisation.

- 1.2 Organisations wishing to issue Limited Authorisations shall develop suitable procedures to determine the competence of staff to hold such authorisations, and to manage and control the process within their Organisation. These procedures shall clearly define the limits to which Limited Authorisations can be granted. The proposed procedure shall be submitted to the Director-General for approval. These procedures will require to be amended or deleted by 1 April 2004 to reflect the introduction of HKAR-66 and its effect upon authorisation systems.

- 1.3 The Director-General has chosen not to define in detail, acceptable boundaries in respect of defect diagnosis and the types of test equipment which are compatible with the Limited Authorisation concept. Such definitions would inevitably produce a set of unnecessarily restrictive requirements.

- 1.4 The following guidelines shall be observed in developing suitable procedures in addition to detailed guidance given in later paragraphs:

- (a) Limited Authorisation tasks, with the exception of Paragraph 5.2 and 5.3 Avionic Extension Authorisations, must not include any element of defect diagnosis and must be restricted to:
- unscheduled line maintenance tasks
 - minor scheduled maintenance tasks

- one aircraft type or comparable tasks on different aircraft types
 - periods of validity not exceeding three years.
- (b) Checks to determine serviceability must not require anything other than operational checks, simple functional tests or the use of Built in Test Equipment (BITE). On non-complex systems simple general test equipment may be used.
- (c) Responsibility for the determination of serviceability in relation to a Limited Authorisation task rests solely with the person authorised. This cannot be fulfilled by a presumption of the competence of any other person therefore the signatory can only certify for tasks they have personally performed, or in the situation described in Paragraph 2.2, have personally *seen* performed.
- (d) Formal training, including on the job training (OJT) on the specific task to be authorised, will always be necessary for the grant/extension of a Limited Authorisation. Periodic continuation or refresher training will be required in order to revalidate the Authorisation. A record of such training must be maintained.

2 **Assessment of Tasks and Criteria for the Issue of Limited Authorisation**

2.1 The Director-General will normally only agree Limited Authorisation procedures the limits of which are determined by Approved Organisations using the following criteria:

- (a) It must be assumed that the limited authorisation holder is only proficient in the tasks for which they are authorised.
- (b) The Organisation shall carefully consider the scope of the authorisation to ensure that the holder is fully aware of the limits of the authorisation. For example, the Limited Authorisation holder should be aware that what appears to be a straightforward condition indication may be a symptom of a defect with totally different diagnostic implications, an example of this would be a heat pack which may be worn to limit as a result of progressive normal wear or by premature excessive wear caused by a braking system defect. The Limited Authorisation holder should therefore be aware of the implications of repetitive defects and that suitable steps should be taken to ensure that the defect does not fall into this category and as a result lie outside the limits of authorisation.
- (c) Use of test equipment should be limited by a determination of whether or not the test sequence is in itself self-explanatory. The test sequence should be straightforward and produce a clear GO or NO GO result and

not require further analysis of the results.

- 2.2 A task may be acceptable for Limited Authorisation, but the associated functional test may be more complex. For example, replacement of a pressure switch on an engine could be considered a Limited Authorisation task but the required low power ground run to check for leaks would not. In such circumstances the requirement to *complete* the task in accordance with the approved airworthiness data and issue a Certificate of Release to Service cannot be met. However, the low power ground run, to check for leaks, can be carried out by operational flight crews with the Limited Authorisation holder completing the task by personally seeing the effects of the ground run and issue a Certificate of Release to Service for the *completed* task as required by HKAR145.50(a).

3 **Limited Authorisations – Non LWTR Maintenance personnel**

- 3.1 Paragraph 2.2.2 of Appendix No.4 to Airworthiness Notice No.14 introduces the concept of 'Line Maintenance Certifying Mechanic' (LMCM) that is a Limited Authorisation intended for issue to maintenance personnel who do not hold a HKAR-AMEL LWTR. This Limited Authorisation is task specific although authorised personnel may hold multiple authorised tasks on one or more aircraft types.

- 3.2 With effect from 1 April 2002, previously unapproved 'Line Maintenance Certifying Mechanic' schemes will need to meet the requirements of HKAR-66. This requires the applicant to hold a HKAR-66 Category A Aircraft Maintenance Licence in the appropriate basic category. Existing schemes may continue as agreed with the Director-General until 1 April 2004. Thereafter, schemes for the issue of such authorisations will need to have been amended to reflect the full requirements of HKAR-66 for Category A certifying staff. The procedures associated with such authorisations will need to be submitted to the Director-General for approval.

NOTE: Existing schemes may not be eligible for the transfer of privileges under the provision of 'protected rights' in accordance with HKAR-66 until such times as the Director-General can be satisfied that the basis for qualification represents equivalence to that provided for by HKAR-66 Category A.

- 3.3 Limited authorisations, when granted in accordance with this LMCM concept, will permit the holder to issue a Certificate of Release to Service following minor scheduled line maintenance and defect rectification for those tasks listed in the authorisation. Minor scheduled line maintenance is limited to checks up to daily inspections. It is important to note that the rectification of any defects revealed during the course of such scheduled line maintenance may not fall within the certification authorisation privileges of the individual.

- 3.4 Holders of Limited Authorisations issued in accordance with this paragraph will not be permitted to defer defects.

4 Limited Authorisations – Flight Crew

4.1 Paragraphs 2.2.1 (b) and (c) of Appendix No.4 to Airworthiness Notice No.14 make provision for the issue of Limited Authorisations to certain holders of Flight Crew Licences. These authorisations are intended to allow the accomplishment and issue of a Certificate of Release to Service for specified simple tasks or inspections whilst operating away from a supported maintenance location. It should be borne in mind that the authorisations are issued by the HKAR-145 Approved Maintenance Organisation to an operator's flight crew and will be valid only whilst that HKAR-145 Approved Maintenance Organisation is contracted to provide maintenance support. As such, personnel authorised in this manner are responsible to the maintenance organisation when performing authorised tasks and shall adhere to procedures and instructions issued by the HKAR-145 Approved Maintenance Organisation.

4.2 Holders of a valid Commercial Pilot's licence for the type of aircraft concerned may be granted Limited Authorisations for recurring short periods inspections required by Airworthiness Directives.

4.2.1 Where there is a requirement to carry out inspections associated with short period recurring Airworthiness Directives (AD), authorisations may be issued only where the AD (see also Airworthiness Notice No.36 Paragraph 3.2) specifies that:

- the inspections may be performed by flight crew
- the inspections do not require disassembly or removal of components
- the inspections can be readily achieved by visual inspection or function tests not requiring test equipment.

It is not intended that these limited authorisations obviate the need for line support where aircraft regularly use certain airports. They may however be used for ad-hoc or charter operations subject to the need for such authorisation being agreed by both the Airworthiness Office and Flight Standards Office in CAD.

4.3 Holders of a valid Flight Engineer's Licence may in respect of the types for which that licence is valid, be granted Limited Authorisations for recurring AD inspections as for paragraph 4.2 above. In addition, they may also be authorised for defect rectification in accordance with the guidance specified in paragraph 3 of this Appendix. The scope of such authorisations shall be agreed by the Director-General.

4.4 Limited Authorisations granted under the provisions of this paragraph 4 accept

that the Flight Crew member has a knowledge of the type as a result of his/her existing qualifications and experience. HKAR-145 Approved Maintenance Organisations shall, however, prior to the grant of any such authorisation, establish the competence of the individual in respect of each task and provide specific OJT on the task to be authorised and any additional basic theory if required. The HKAR-145 Approved Maintenance Organisation shall provide continuation training to Flight Crew members who have been granted Limited Authorisations to ensure that they retain the competence to accomplish the authorised tasks.

5 Limited Authorisation – Extended privileges for other Categories

- 5.1 Personnel who hold at least an authorisation in one complete Category (HKAR-AMEL: LWTR Categories) on the aircraft type concerned may be granted Limited Authorisations in other Categories. With the exception of paragraph 5.2 below these authorisations shall be granted as for the provisions of paragraph 3 of this Appendix.

NOTE: It should be noted that provision for Limited Authorisations is not included in HKAR-66 and HKAR-145. This reflects the broader scope of the Category B1 and B2 licence coverage under HKAR-66. The Limited Authorisations provided for under this paragraph, and including paragraphs 5.2 to 5.6, will not be able to be issued after 1 April 2004 and the associated procedures will need to be withdrawn. Existing authorised staff will be able to continue to hold such authorisations under 'protected rights' until they are HKAR-66 licensed.

- 5.2 Personnel who hold authorisations on an aircraft type in both HKAR-AMEL Categories 'A' Aircraft and 'C' Engines may be granted extended privileges, which may be referred to as an Avionic Extension, on that type to allow the replacement and certification of certain Avionic Line Replaceable Units.

NOTE: This Limited Authorisation provision is automatically included in the basic scope of a full Category B1 licence under HKAR-66.

- 5.3 The following guidance shall be considered when developing a scheme, to propose to the Director-General, for Limited Authorisations, with extended privileges to other Categories.

- 5.3.1 An Avionic Line Replaceable Unit (ALRU) is defined as a unit which has no mechanical input or output mechanism, but contains electronic components that:-

- control
- monitor
- display

which forms an integral part of the operation of an aircraft system and does not require specialist knowledge or techniques to:-

- secure
- connect
- test

5.3.2 In relation to ALRUs, it should be noted that the primary responsibility for certification of maintenance shall be that of the certifying technician responsible for the system of which the ALRU forms an integral part, as defined by the manufacturer's ATA designation. In the main, therefore, the extended privileges for the HKAR-AMEL 'A' and 'C' certifying technician relate to those ALRUs found in systems covered by ATA Chapters 22, 23, 24, 31, 34 and 45.

NOTE: Replacement of certain ALRUs affects the status of Autoland systems. Unless specifically agreed by the Director-General, Limited Authorisation holders may not certify for Automatic Landing System re-instatement checks and the autoland status must be downgraded until the appropriate checks are performed and certified by an appropriately fully authorised avionic certifying technician.

5.4 The extended privileges conferred via a paragraph 5.2 Limited Authorisation system allow the diagnosis of defects where the checks to determine serviceability do not require anything other than operational checks, simple functional tests or the use of BITE. Defect diagnosis beyond this level is not permissible and would require the involvement of an avionic certifying technician. It should also be noted that these authorisations are limited to those components, including where identified in the relevant aircraft maintenance manuals printed circuit boards or electronic cards, considered to be Line Replacement Units (LRU). This does not permit the adjustment of items supplied as bench tested units or the replacement of internal components within the LRU.

NOTE: The same principles apply to the Category B1 avionic privileges under HKAR-66.

5.5 It is clear that advances in aircraft technology have introduced more comprehensive BITE and centralised fault reporting and diagnostic system (CFDS) to modern aircraft. With such systems, the ability to determine serviceability across a wider range of ALRUs and systems is improved, requiring less use of specialised test equipment or complex procedures. Furthermore where the aircraft makes use of CFDS (or equivalent), the aircraft systems themselves and the Maintenance Manual guide the technician in the diagnosis and rectification process. The benefits of such technology warrant consideration of a wider range of components under the extended privileges. Organisations should therefore, in the development of authorisation systems,

consider the technology level and the use of integrated systems in determining the limits of authorisations on different aircraft types.

- 5.6 Organisations shall ensure, as for previous Limited Authorisation systems, that the basic knowledge of the individual is adequate prior to authorisation. Where necessary, basic training in avionic system fundamentals and system operation may be required. In relation to the tasks to be authorised, specific training should be carried out on the item and task(s) concerned and should include OJT and classroom system training as appropriate. All training should also include instruction on the use of BITE on individual units, integrated systems and CFDS as applicable.

6 **Cancellation**

This Notice Appendix cancels Airworthiness Notice No. 14 Appendix No.5 Issue 1, dated 30 June 1999, which should be destroyed.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 15
Issue 9
8 November 2018**

**ACCIDENT, SERIOUS INCIDENT AND MANDATORY OCCURRENCE
REPORTING**

1 General

This notice gives advice on the reporting of accidents, serious incidents and mandatory occurrences.

2 Aircraft Accident and Serious Incident

2.1 As defined in the Hong Kong Civil Aviation (Investigation of Accidents) Regulations (Chapter 448 Subsidiary Legislation B of Hong Kong Law):

"Accident" means —

- (1) An occurrence associated with the operation of an aircraft that takes place after the time any person boards the aircraft with the intention of flight and no later than the time all persons who boarded with that intention have disembarked, if applicable, in which—
 - (a) a person is fatally or seriously injured as described in paragraph (2);
 - (b) the aircraft sustains structural failure or damage as described in paragraph (3); or
 - (c) the aircraft is missing or is completely inaccessible.
- (2) For paragraph (1)(a)—
 - (a) the death or injury must result from the person's—
 - (i) being in the aircraft;
 - (ii) direct contact with any part of the aircraft, including parts that have become detached from the aircraft; or
 - (iii) direct exposure to jet blast;
 - (b) the death or injury must not be from a natural cause, self-inflicted or inflicted by another person; and
 - (c) the person must not be a stowaway hiding outside the areas normally available to the passengers and crew.
- (3) For paragraph (1)(b), the failure or damage must—
 - (a) adversely affect the structural strength, performance or flight characteristics of the aircraft;

- (b) be such as would normally require major repair or replacement of the affected component; and
- (c) be none of the following—
 - (i) engine failure or damage that is limited to a single engine (including its cowlings or accessories);
 - (ii) damage that is limited to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens or the aircraft skin (such as small dents or puncture holes);
 - (iii) minor damage to main rotor blades, tail rotor blades, landing gear, or resulting from hail or bird strike (including holes in the radome).

"Incident" means an occurrence, other than an accident, associated with the operation of an aircraft that affects or could affect the safety of the operation.

"Serious Incident" means an incident that—

- (1) is associated with the operation of an aircraft involving circumstances indicating that there was a high probability of an accident; and
- (2) takes place after the time any person boards the aircraft with the intention of flight and no later than the time all persons who boarded with that intention have disembarked;”.

"Serious Injury" means an injury which is sustained by person in an accident and which—

- (1) requires hospitalization for more than 48 hours commencing within 7 days from the date on which the injury was received; or
- (2) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or
- (3) involves lacerations which cause nerve, muscle or tendon damage or severe haemorrhage; or
- (4) involves injury to any internal organ; or
- (5) involves second or third degree burns or any burns affecting more than 5 per cent of the body surface; or
- (6) involves verified exposure to infectious substances or injurious radiation,

and "seriously injured" shall be construed accordingly.

2.2 Aircraft accidents and serious incidents shall be notified in accordance with the procedure laid down in Regulation 5 of the said Regulations.

3 **Mandatory Occurrence Reports**

3.1 Article 86 of the Air Navigation (Hong Kong) Order 1995 specifies the provisions under which a person or persons shall make a report to the Chief Executive of any reportable occurrence which is of a description specified in Regulation 16 in Schedule 15 to the said Order.

- 3.2 These reports, using reporting forms acceptable to the Director-General, shall be forwarded to the Flight Standards and Airworthiness Division within the period specified in paragraph (3) of Regulation 16 in Schedule 15 to the said Order.
- 3.3 The Director-General encourages the use of company reporting procedures to produce timely and consistent reports using agreed forms. However, this does not absolve a person specified in the Order from making a report if he/she is legally required to do so, should a report not have been submitted by the company.
- 3.4 CAD Document No. 382 (CAD 382) describes the Civil Aviation Department Mandatory Occurrence Reporting (MOR) Scheme and provides guidance to those personnel who, by the Air Navigation (Hong Kong) Order 1995, are involved in its operation. CAD 382 is available on CAD website <http://www.cad.gov.hk>.
- 3.5 To enable assessments to be made by the organisation responsible for: (i) the type design of the aircraft or (ii) the design of the modification when the continuing airworthiness safety issue is associated with a modification, the owner or the lessee of a Hong Kong registered aeroplane over 5700 kg or helicopter over 3150 kg Maximum Total Weight Authorised, shall ensure that information on faults, malfunctions, defects and other occurrences that cause or might cause adverse effects on the continuing airworthiness of the aircraft, in addition to the MOR made to the CAD, is transmitted to the above-mentioned organisations.

4 **Cancellation**

This Notice cancels Airworthiness Notice No. 15 Issue 8, dated 31 May 2017, which should be destroyed.

Simon LI
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 16
Issue 11
31 July 2014**

**THE PROCESS FOR ACCEPTANCE OF USED ENGINES, ENGINE MODULES,
AUXILIARY POWER UNITS (APUs) AND PROPELLERS FOR USE ON AIRCRAFT
REQUIRING A HONG KONG CERTIFICATE OF AIRWORTHINESS**

1 Introduction

1.1 For the purposes of this Notice, engines, engine modules, APUs, and propellers are hereafter referred to as Powerplants.

1.2 Article 8(7) of the Air Navigation (Hong Kong) Order 1995 states that a Certificate of Airworthiness shall cease to be in force if the aircraft is overhauled, repaired or modified otherwise than in a manner and with material of a type approved by the Director-General.

Similarly, for non Commercial Air Transport, Article 11(5)(a) requires that a Certificate of Release to Service (CRS) be issued when an aircraft has been overhauled, repaired, modified or maintained in a manner and with material of a type approved by the Director-General.

For Commercial Air Transport, HKAR 145.50(a) requires that a CRS be issued when all the required maintenance has been carried out by the HKAR-145 approved maintenance organisation in accordance with a HKAR145.70 Maintenance Organisation Exposition.

1.3 For Powerplants obtained from sources not under the direct airworthiness control of the Director-General, this Notice defines a procedure which owners/operators must follow in order to meet the requirements of Article 8(7) and 11(5)(a) of the Air Navigation (Hong Kong) Order 1995 and HKAR 145.50(a).

1.4 Instructions are also included regarding both pool and lease/loan/power-by-the-hour arrangements and the alignment of maintenance programmes.

2 General Requirements

It must be established by the owner's/operator's HKAR-145 approved maintenance organisation or an appropriately type rated Hong Kong Licensed Aircraft Maintenance Engineer, as appropriate, that:

- (a) The Powerplant is of a type approved by the Director-General.
- (b) Civil identification plates are fitted.
- (c) Log books or their equivalent, as appropriate, are issued.
- (d) Original or certified true copies of any relevant documents (e.g. confirming modification standard, test results, etc) arising from construction or previous Hot Section Inspection (H.S.I.)/Refurbishment/Overhaul/Performance Restoration are provided with the CRS.
- (e) The Powerplant is in compliance with all applicable Airworthiness Directives/Additional Airworthiness Directives of the State of Design and the Director-General.

NOTE: In the case of a Pool Powerplant only the Airworthiness Directives of the State of Design are required as a minimum (see paragraph 8).

- (f) Any period of storage has been in accordance with the manufacturer's recommendations and that the Powerplant has not become unserviceable due to operational abuse, damage or the removal of components.
- (g) The hours and cycles accrued of any life limited parts are clearly defined.
- (h) All modifications and repairs embodied in the Powerplant have been approved by the Type Certifying Authority of the Powerplant or the Director-General.

3 Alignment of Maintenance Programmes

Powerplant types which, in the Hong Kong operator's maintenance programme are subject to fixed H.S.I./Refurbishment/Overhaul/Performance Restoration intervals, must have the time remaining to these intervals agreed by the Director-General when the previous operator's maintenance programme does not specify the same shop visit requirements or intervals.

4 **Powerplants with a Joint Aviation Authorities (JAA), European Aviation Safety Agency (EASA), Federation Aviation Administration (FAA), Joint Maintenance Management (JMM), Civil Aviation Authority of Singapore (CAAS), Transport Canada (TC) or Civil Aviation Safety Authority Australia (CASA) Authorised Release Document**

Note: Pursuant to the Cooperation Arrangement signed between HKCAD, CAAC and AACM, Authorised Release Document under JMM means the Authorised Release Certificate issued by the aforementioned civil aviation authorities. Details can be referred to AN 30.

4.1 Powerplants which meet the requirements of paragraph 2 of this Notice and have not been operated since the last H.S.I./Refurbishment/Overhaul/Performance Restoration are acceptable for use if received with an Authorised Release Document as defined in paragraphs 4.3 to 4.9 of Appendix 1 to Airworthiness No. 17.

4.2 If the Powerplant satisfies all of the requirements of paragraphs 2 and 4.1 of this Notice, then the following statement, signed by the person issuing the CRS must be entered into the appropriate log book:

'Part S/N has been accepted under procedures complying with Airworthiness Notice No.16, paragraphs 2 and 4'.

5 **Powerplants Operated under the Airworthiness Control of the JAA, EASA, FAA, JMM, CAAS, TC or CASA since Last H.S.I./Refurbishment/Overhaul/Performance Restoration**

5.1 Powerplants which meet the requirements of paragraph 2 and the Authorised Release Document requirements of paragraph 4 of this Notice, but which have been operated since last H.S.I./Refurbishment/Overhaul/Performance Restoration, will be acceptable for use provided that:

- (a) A serviceability statement is obtained from the previous operator declaring any restrictions in hours or cycles relating to inspection, lubrication, replacement or overhaul as necessary to maintain the airworthiness of the Powerplant.
- (b) All defects have been rectified or recorded.
- (c) The Powerplant has been maintained to a JAA, EASA, FAA, JMM, CAAS, TC or CASA approved maintenance programme.

Note: Approved maintenance programme under JMM means the

maintenance programmes approved by HKCAD, CAAC or AACM.

- 5.2 If the Powerplant satisfies all of the requirements in paragraphs 2 and 5.1 of this Notice, then the following statement, signed by the person issuing the CRS, must be entered into the appropriate log book:

'Part S/N has been accepted under procedures complying with Airworthiness Notice No.16, paragraphs 2 and 5.'

6 Powerplants from Other Sources or Those Requiring Further Substantiation

- 6.1 This paragraph applies when any of the following circumstances exist:

- (a) It is not possible to satisfactorily confirm the origin, traceability or serviceability of the Powerplant.
- (b) The Powerplant is obtained without a JAA, EASA, FAA, JMM, CAAS, TC or CASA Authorised Release Document (as described in paragraph 4 of this Notice).
- (c) The Powerplant has not been under the airworthiness control of the JAA, EASA, FAA, JMM, CAAS, TC or CASA operator since the last H.S.I./Refurbishment/Overhaul/Performance Restoration.
- (d) The Powerplant does not meet all of the requirements of paragraph 2.

NOTE: Owners and operators are advised to review the requirements of paragraphs 6.2 and 6.4 of this Notice prior to entering into a commercial agreement to purchase a Powerplant.

- 6.2 The owner's or operator's HKAR-145 approved maintenance organisation or an appropriately type rated Hong Kong Licensed Aircraft Maintenance Engineer, as appropriate, must demonstrate to the satisfaction of the Director-General the Powerplant's acceptability, taking into account the following:

- (a) The details of any un-approved modifications and repairs which have been embodied in the Powerplant.
- (b) Confirmation that military Powerplants which are similar to a civil equivalent have been modified to comply with civil requirements in conjunction with the manufacturer in each particular case, unless agreed otherwise with the Director-General.
- (c) Confirmation that the last H.S.I./Refurbishment/Overhaul/Performance Restoration was undertaken to a specification, and by an organisation

or person, acceptable to the Director-General.

- (d) A statement certifying serviceability (i.e. an Authorised Release Document or equivalent), issued by either the last H.S.I./Refurbishment/Overhaul/Performance Restoration organisation or the previous operator's maintenance organisation, as appropriate. This organisation must be appropriately authorised by its national airworthiness authority to make such a statement. Alternatively, a statement certifying serviceability issued by the appropriate national airworthiness authority may be acceptable.

- 6.3 If the Director-General accepts the Powerplant, the following statement, signed by a CAD Airworthiness Officer, must be entered into the appropriate log book:

'Part S/N has been accepted by the Director-General in accordance with Airworthiness Notice No.16, paragraphs 2 and 6.2.'

- 6.4 If the serviceability cannot be adequately established then the Powerplant must be dismantled and inspected.

A suitably approved HKAR-145 maintenance organisation or an appropriately type rated Hong Kong Licensed Aircraft Maintenance Engineer, must dismantle and inspect the Powerplant. The manufacturer's recommendations must be used as the basis of the work scope for this activity, which must be sufficient to determine if either of the declarations below can be made. Rectification action must be taken where necessary.

If it cannot be established that the records are accurate and complete, all life limited parts must be scrapped. In addition, the applicant must make reference to the Director-General for a decision on whether any other parts should be scrapped in the absence of satisfactory records.

- 6.5 If serviceability is established, one of the following statements, signed by the HKAR-145 approved maintenance organisation or the appropriately type rated Hong Kong Licensed Aircraft Maintenance Engineer, as applicable, must be entered into the appropriate log book, either:

'Part S/N has been examined in accordance with Airworthiness Notice No.16 paragraph 6.4, and no evidence of operational abuse, inadequate maintenance or unsuitable storage has been revealed.'

or

'Part S/N has been examined in accordance with Airworthiness Notice No.16 paragraph 6.4, and appropriate action has

been taken to restore serviceability.'

7 Lease/Loan/Power-By-The-Hour Powerplants

7.1 When a Powerplant is obtained on a long-term lease, loan or 'power-by-the-hour' arrangement from a supplier who is either (a) the original manufacturer, or (b) a JAA, EASA, FAA, JMM, CAAS, TC or CASA approved maintenance organisation or repair station defined in paragraph 4 of this Notice, then the operator must confirm that:

- (a) The Powerplant complies with the requirements of paragraph 2.
- (b) The supplier has issued a serviceability statement declaring any restrictions in hours or cycles relating to inspection, lubrication, replacement or overhaul as necessary to maintain the airworthiness of the Powerplant.
- (c) The Powerplant has been maintained to either the manufacturer's maintenance programme, or a JAA, EASA, FAA, JMM, CAAS, TC or CASA approved maintenance programme.
- (d) All defects have been rectified or recorded.

7.2 The following statement, signed by the person issuing the CRS for the Powerplant, must be entered into the appropriate log book:

'Part S/N has been accepted under procedures complying with Airworthiness Notice No.16 paragraph 7.'

8 Pool Powerplants

8.1 A 'Pool' Powerplant, interchanged between certain operators on a temporary basis (limited to a maximum of 200 hours), is permitted provided:

- (a) The conditions relating to airworthiness which apply to the pooling agreement are laid down in advance by the operator, agreed by the Director-General and lodged permanently in the operator's Maintenance Management Exposition. These conditions require consideration of not only the history of the Powerplant but also the acceptability of the source of the H.S.I./Refurbishment/Repair/Overhaul/Performance Restoration where this is other than by the pool partner.
- (b) The Powerplant is in compliance with all applicable Airworthiness Directives of the State of Design.

- (c) The Hong Kong operator obtains from the previous operator a signed statement certifying the Powerplant is airworthy when released on loan, declaring any restrictions in cycles or hours, etc., relating to inspection, lubrication, replacement or overhaul as necessary to maintain the airworthiness of the Powerplant during the period of loan.

8.2 The following statement, signed by the person issuing the CRS for the Powerplant, must be entered into the appropriate log book:

'Part S/N has been accepted under procedures complying with Airworthiness Notice No.16 paragraph 8.'

9 **Cancellation**

This Notice cancels Airworthiness Notice No.16 Issue 10, dated 31 January 2010, which should be destroyed.

Norman LO

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 17
Issue 10
18 November 2021**

THE ACCEPTANCE OF AIRCRAFT COMPONENTS

1 Purpose

- 1.1 The purpose of this Airworthiness Notice is to provide guidance on the acceptance of aircraft components to the persons issuing the Certificates of Release to Service for the installation of the components such that responsibilities under the Air Navigation (Hong Kong) Order 1995 may be satisfied in a manner acceptable to the Director-General.
- 1.2 Where the criteria in the Airworthiness Notices referred to in Appendix No.2 is at variance with this Notice, then the relevant Appendix No.2 Notice shall be complied with.

2 Introduction

- 2.1 The Air Navigation (Hong Kong) Order 1995 prescribes that an aircraft registered in Hong Kong, for which a Certificate of Airworthiness is in force, must not fly unless a Certificate of Release to Service has been issued in accordance with the Order if the aircraft or any part of the aircraft or such of its equipment as is necessary for the airworthiness of the aircraft has been overhauled, repaired, replaced, modified, maintained, or has been inspected as provided in the Order, as the case may be.

NOTE: The Air Navigation (Hong Kong) Order 1995 also requires a Certificate of Release to Service to be issued for radio and certain specified equipment.

- 2.2 The Air Navigation (Hong Kong) Order 1995 further prescribes that the Certificate of Release to Service will certify that the overhaul, repair, replacement, modification or maintenance, as the case may be, has been carried out in a manner and with material of a type approved by the Director-General either generally or in relation to a class of aircraft or the particular aircraft. The Certificate must identify the task to which it relates and must include particulars of the work done. The foregoing requirements also apply to the inspection specified in an Approved Maintenance Schedule and Mandatory Inspections.
- 2.3 Where an aircraft component is replaced with a newly manufactured (unused) component, the Authorised Release Certificate issued with the component by the manufacturer may form the basis for the issue of the required Certificate of Release to Service and, therefore, the fitness of a correctly identified

component to be installed on an aircraft.

- 2.4 It follows that the person issuing the Certificate of Release to Service for the installation of an aircraft component must be satisfied that its overhaul, repair, modification or inspection was carried out in a manner and with material of a type approved by the Director-General, or that the component is new. The following paragraphs provide guidance on how this can be established.

Note: Authorised Release Document accepted under this Airworthiness Notice and its appendices are only for the purpose of maintenance or manufacturing of component and do not constitute the approval of design data. Modifications or repairs that consist of design approval recorded on the Authorised Release Document are subject to approval by the Director-General under HKAR-21.

3 Definition

For the purpose of this Airworthiness Notice the following definitions apply:-

- (a) **Aircraft Component** means any part of an aircraft including a complete powerplant and any operational or emergency equipment.
- (b) **Standard Parts** A part is considered as a standard part where it is designated as such by the design approval holder responsible for the product, part or appliance in which the part is intended to be used.

In order to be considered a standard part, all design, manufacturing, inspection data and marking requirements necessary to demonstrate conformance of that part must be in the public domain and published as part of a national or international specification.

Note: Parts which are the subject of specific product or equipment approvals such as Technical Standard Orders (TSO), Joint Technical Standard Orders (JTSO) or European Technical Standard Orders (ETSO) are not considered as standard parts.

When designating a standard part, the design approval holder should ensure that the effect on the design of any manufacturing tolerances within the specification are fully taken into account in the intended application. If it is found necessary to apply additional qualification or selection criteria over and above the published specification in order to satisfy the intended design requirements (such as enhanced levels of inspection, burn-in, or environmental tests etc.) then the design approval holder should allocate its own part number reference and such parts cannot be considered as standard parts.

- (c) **Certifying Person** is a person appropriately authorised in accordance with the Exposition of an Approved organisation, or an appropriately Type Rated HKAR-66 Aircraft Maintenance Licence holder who issues the Certificate of Release to Service for a complete aircraft, or the installation of a component(s) in an aircraft, its engines or propellers.

- (d) **Part-used Components** are parts or equipment which have a defined overhaul, inspection or finite (retirement) life, which have been previously installed in an aircraft, or by virtue of the expiry of a calendar period, have been used for a known proportion of their available working life.

4 Certifying Person - Responsibilities in Respect of Aircraft Components from Sources Acceptable to the Director-General

4.1 The Certifying Person is entitled to accept aircraft components which have been either manufactured, overhauled, repaired, modified or inspected by organisations approved by the Director-General for the purpose or by an organisation acceptable to the Director-General and have been released on the correct certification documentation. Appendix No.1 lists the approved and accepted organisations.

4.1.1 Part-used components which have been overhauled, repaired, modified or inspected must be accompanied by release documentation pertaining to the life used and the maintenance/build history except where the component was submitted for overhaul, repair, modification or inspection by the Certifying Person already holding such records.

4.2 The Certifying Person must ensure that the component is to the required design and modification standard for fitment. This may be determined by reference to the aircraft, engine or propeller manufacturers parts catalogue as appropriate. Care must also be exercised in ensuring compliance with applicable Airworthiness Directives and the status of any life limited parts fitted to the aircraft component.

4.3 The Certifying Person is responsible for ensuring that the component is in a satisfactory condition for fitment and that all required functional and installation checks are carried out to ensure the particular system serviceability or structural integrity.

5 Certifying Person - Responsibilities in Respect of Aircraft Components From Sources other than those Specified in Paragraph 4

5.1 Extreme caution must be exercised by the Certifying Person before acceptance of components which have been manufactured, overhauled, modified, repaired or inspected by an organisation not specified in Appendix No.1.

5.1.1 Unless specifically exempted by the Director-General in a particular case, such an aircraft component must be dismantled sufficiently to establish satisfactory condition and any necessary replacement of life limited parts, and that the component is to the required design and modification standard. Only parts listed in the Equipment Maintenance Manual parts list may be fitted. The issue of a component Certificate of Release to Service, after all certification requirements have been completed on reassembly by an organisation listed in Appendix No.1, is thus permitted. Life-limited parts do not

need to be replaced when satisfactory evidence of life used is available and such parts are in a satisfactory condition. (See also paragraph 4.2.)

- 5.1.2 The requirements of sub-paragraphs 4.2 and 4.3 must also be satisfied before the Certifying Person may issue the Certificate of Release to Service for installation of the component in the aircraft.

5.2 Aircraft Component Distributors

Distributors provide an essential service in the supply of aircraft components and whilst the Certifying Person remains responsible for acceptance of the aircraft component, the Distributor can provide good support to the Certifying Person by compliance with paragraph 5.2.1 and providing reasonable access to enable paragraph 5.2.2 to be satisfied.

- 5.2.1 Aircraft Component Distributors are not required to be approved by the Director-General and when acting in the Distributor role are not required to possess the necessary technical expertise to establish the status of aircraft components. It follows that Distributors must use Appendix No.1 organisations if they wish Certifying Persons to accept such components with a minimum of investigation. Where a Distributor uses an Appendix No.1 source, it is acceptable for Distributor documentation to be endorsed:

'The aircraft components identified above have been obtained from or maintained by a CAD AN 17 Appendix No. 1 source.'

When the source utilised by the Distributors is not listed in Appendix No.1, then paragraph 5.1.1 must be complied with by the user to verify the condition of the component.

- 5.2.2 It is necessary for the Certifying Person to establish confidence that the Distributor can demonstrate traceability to an Appendix No.1 organisation. Whilst the Certifying Person may demand source authentication in all cases to satisfy the Air Navigation (Hong Kong) Order 1995 it is reasonable, as an alternative and subject to the approval of the Director-General, for the Certifying Person to establish a frequent and random sampling system of source authentication combined with an on-receipt inspection and internal feedback on the in-service performance of aircraft components acquired from Distributors. The Director-General, in carrying out its audit of the Certifying Person, may also require evidence of source authentication in a particular case.

5.3 Aircraft components obtained from another Operator or Maintenance Organisation

When an aircraft is grounded at a location other than the main line station or main maintenance base due to the non-availability of an aircraft component

with the appropriate release certificate, it is permissible to temporarily fit an aircraft component without the appropriate release certificate for a maximum of 30 flight hours or until the aircraft first returns to the main line station or main maintenance base, whichever is the sooner, subject to the aircraft operator agreement and said component having a suitable serviceable tag but otherwise in compliance with CAD 360 Air Operator's Certificate Requirements Document and all other HKAR-145 requirements. Such aircraft components must be removed by the specified time unless an appropriate release certificate has been obtained in the meantime.

Aircraft components from the above sources which are then sold surplus to requirements must be accompanied by the original Certification Documentation and continuing airworthiness records, as appropriate. Where the original Certification Documentation is not available, the maintenance organisation may issue a CAD Form One (if approved for the maintenance of the particular component by the Director-General) endorsed 'Inspected', but it must be remembered that the organisation issuing this CAD Form One bears full responsibility for ensuring the original organisation was an Appendix No. 1 organisation.

- 6 The Director-General is aware that some Distributors are using a release form which is almost identical to the Authorised Release Certificate JAA Form One / FAA 8130-3 / CAD Form One, but omitting the reference to the Regulatory Authority and Authorisation. Such documents are not acceptable alternatives to the JAA Form One/FAA 8130-3 / CAD Form One.

7 **Cancellation**

This Notice cancels Airworthiness Notice No. 17 Issue 9, dated 31 July 2014, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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**ORGANISATIONS ACCEPTED FOR RELEASE OF NEW OR MAINTAINED
(USED) COMPONENTS**

1 Introduction

- 1.1 The following organisations are considered to be acceptable sources for aircraft components when certifying work within the scope of their approval or authorisation.
- 1.2 Authorised Release Document is required for any aircraft component which is to be installed in an aircraft, except that it is not required for standard parts as defined in Airworthiness Notice No. 17.
- 1.3 Unless otherwise specified, Authorised Release Document must be in accordance with the particular National Aviation Authority (NAA) requirements and completed in English.

2 Newly Manufactured Components (Exclude Parts Manufacturer Approval Components)

- 2.1 Any organisation approved by the Director-General in accordance with HKAR-21 Subpart G which releases the aircraft component on CAD Form One.
- 2.2 Any organisation located in Australia and appropriately approved under Civil Aviation Safety Authority Australia (CASA) which releases the aircraft component on CASA Form 1.
- 2.3 Any organisation located in Canada and appropriately approved under Transport Canada, Civil Aviation Directorate (TCCA) which releases the aircraft component on TCCA Form One (previously Form 24-0078).
- 2.4 Any organisation located either in or outside the European Union and approved under EASA Part 21, which releases the aircraft component on EASA Form 1.

- 2.5 Any organisation approved under JAR-21 which releases the aircraft component on JAA Form One issued before 28 September 2005.
- 2.6 Any organisation located in or outside the United States of America (USA) and appropriately approved by the Federal Aviation Administration (FAA) which releases the aircraft component on FAA Form 8130-3.
- 2.7 Any organisation that is the original equipment manufacturer of aircraft component. The Director-General accepts such aircraft component with the Authorised Release Document issued in accordance with the respective NAA requirements, in lieu of the foregoing release documentation, provided that the component has been certified under the aircraft, engine or propeller Type Certificate or Supplemental Type Certificate validated or accepted by the Director-General. The Director-General should be consulted should there be any doubt on the acceptance of the Authorised Release Document.

3. Parts Manufacturer Approval (PMA) Components

- 3.1 Any organisation approved by the Director-General in accordance with HKAR-21 Subpart K which releases the aircraft Parts Manufacturer Approval (PMA) component on CAD Form One.
- 3.2 The Director-General's position regarding FAA-PMA (Parts Manufacturer Approval of Title 14, Code of Federal Regulations (14 CFR) 21.303) parts is that a company can accept all non-critical PMA components and all PMA 'licence' components (i.e. with the permission of the Design Holder to make the part) using an appropriate FAA 8130-3 release and without further conditions being imposed. Other critical PMA components may be accepted with an appropriate Form 8130-3 release, providing that they are for fitment to an aircraft, engine or propeller where the FAA is the authority of the State of Design, or with prior authorisation from the Director-General, where the PMA component is manufactured with the permission of the Type Certificate / Supplemental Type Certificate holder.

Note: **Critical part** is an article identified critical by the design approval holder during the product type validation process, or otherwise by the exporting authority. Typically, such components include articles for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations section or the certification maintenance requirements of the manufacturer's maintenance manual or Instructions for Continued Airworthiness.

- 3.3 Under the Cooperation Arrangement on Mutual Acceptance of Parts Manufacturer Approvals (PMA) between Civil Aviation Administration of China (CAAC) and CAD, the Director-General accepts all CAAC-PMA parts manufactured from organisations located in mainland China provided that the part is released in the form of CAAC Form AAC-038.

Note: The CAAC Form AAC-038 may be completed in Chinese.

Further information regarding the Cooperation Arrangement and the Schedule of Implementation Procedures for PMA can be found in CAD website:
<http://www.cad.gov.hk>

4 **Maintained (Used) Components**

NOTE: For the purposes of this Appendix 'Maintenance' means any one or combination of overhaul, repair, inspection, modification or defect rectification of an aircraft component.

- 4.1 Any organisation approved by the Director-General in accordance with HKAR-145 for the maintenance of components which releases the aircraft component on CAD Form One.
- 4.2 Any organisation appropriately approved by the NAA of any member of the Joint Aviation Authorities (JAA) which releases the aircraft component on JAA Form One before 28 November 2004.
- 4.3 Any organisation located in Australia and appropriately approved under Civil Aviation Safety Authority Australia (CASA) which releases the aircraft component on CASA Form 1.
- 4.4 Any organisation located either in or outside the European Union and approved under EASA Part-145 which releases the aircraft component on EASA Form 1.
- 4.5 Any repair station located in or outside the USA and appropriately certificated under FAR Part 145 which releases the aircraft component on the FAA Form 8130-3.
- 4.6 Any organisation recognised under the Cooperation Arrangement on Joint Maintenance Management between CAAC, CAD and Civil Aviation Authority of the Macao Special Administrative Region China (AACM) (detailed in Airworthiness Notice No. 30) which releases the aircraft component on CAAC Form AAC-038 or AACM Form One where appropriate.

Note: The CAAC Form AAC-038 may be completed in Chinese.

- 4.7 Under the Technical Arrangement on Aviation Maintenance between CAD and Civil Aviation Authority of Singapore (CAAS) (detailed in Airworthiness Notice No. 30A), any organisation located in Singapore and appropriately approved by CAAS which releases the aircraft component on CAAS(AW)95.
- 4.8 Under the Technical Arrangement on Aircraft Maintenance between CAD and TCCA (detailed in Airworthiness Notice No. 30B), any organisation located in Canada and appropriately approved by TCCA which releases the aircraft component on TCCA Form One (previously Form 24-0078).
- 4.9 Any organisation that is the original equipment manufacturer of aircraft component. The Director-General accepts such aircraft component with the Authorised Release Document issued in accordance with the respective NAA requirements, in lieu of the foregoing release documentation, provided that the component being certified under the aircraft, engine or propeller Type Certificate or Supplemental Type Certificate validated or accepted by the Director-General. The Director-General should be consulted should there be any doubt on the acceptance of the Authorised Release Document.

5 Cancellation

This Notice Appendix cancels Airworthiness Notice No. 17 Appendix No. 1 Issue 18, dated 31 July 2023, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

AIRWORTHINESS NOTICE NO. 17
APPENDIX NO. 2

Issue 4
31 July 2014

Specific guidance on particular aircraft component sources can be found in the following:-

Airworthiness Notice No. 16	The Process for Acceptance of Used Engines, Engine Modules, Auxiliary Power Units (APUs) and Propellers for Use on Aircraft Requiring a Hong Kong Certificate of Airworthiness.
Airworthiness Notice No. 19	The Problem of Bogus Parts.
Airworthiness Notice No. 39	The Selection and Procurement of Electronic Components.
Airworthiness Notice No. 97	Return to Service of Aircraft Items Recovered From Aircraft involved in Accidents/Incidents and Unserviceable Aircraft.

Cancellation

This Notice Appendix cancels Airworthiness Notice No.17 Appendix No.2 Issue 3, dated 31 January 2002, which should be destroyed.

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Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 17A
Issue 4
18 November 2021**

ACCEPTANCE OF AERONAUTICAL PRODUCTS

1 Purpose

- 1.1 The purpose of this Airworthiness Notice is to specify the Special Requirements that shall be met when importing civil aeronautical Class I, II and III products to the Hong Kong Special Administrative Region (HKSAR).

2 Definition

- 2.1 For the purpose of this Airworthiness Notice the following definitions apply:-
- (a) Class I Product means a complete aircraft, aircraft engine, or propeller.
 - (b) Class II Product means a major component of an aircraft, aircraft engine, or propeller, the failure of which would jeopardize the safety of a Class I product; or any part, material, or appliance, approved and manufactured under the Hong Kong Technical Standard Order (HTSO) system in the “C” series.
 - (c) Class III Product means any part or component that is not a Class I or Class II product and includes standards parts.
 - (d) Standard Parts are defined in Airworthiness Notice No. 17.

3 Acceptance Of Design For Imported Aeronautical Products

- 3.1 The Civil Aviation Department of HKSAR (CAD) will require the information necessary to become conversant with the design of aircraft intended for the issue of a Hong Kong Certificate of Airworthiness. CAD may then issue Additional Requirements to cover certain features that would otherwise not meet the standards and that are implicit to HKAR-1, HKAR-21 and the Air Navigation (Hong Kong) Order 1995.
- 3.2 Aircraft that are type certificated by the European Union Safety Agency (EASA) or the United States Federal Aviation Administration (FAA) are accepted by CAD as in full compliance with the basic certification of the

Hong Kong airworthiness standards.

- 3.3 An aircraft engine or propeller that is part of the aircraft is accepted by CAD and requires no further approval when listed on the aircraft's EASA or FAA approved type certificate data sheet.
- 3.4 An aircraft engine or propeller that is not part of an offered aircraft may require a preliminary CAD investigation to establish the standards for Hong Kong certification and, where necessary, any Additional Requirements that may apply.
- 3.5 An appliance approved under an EASA European Technical Standard Order (ETSO) or FAA Technical Standard Order (TSO) will be accepted provided it is accompanied by the documents specified in Paragraph 4.2 of this Notice.
- 3.6 A replacement or modification part produced under an FAA Parts Manufacturer Approval (PMA) will be accepted provided it satisfies Airworthiness Notice No. 17 and is accompanied by the documents specified in Paragraph 4.3 of this Notice.
- 3.7 Noise certification. CAD acknowledges that the FAA does not issue a separate noise or emission certificate. Noise certification is accomplished as part of the aircraft type certification as stated on the FAA aircraft type certificate data sheet. Any change in the product's type design that effects noise or emissions will require re-substantiation of the noise and emission data.

4 Acceptance of Aeronautical Products

4.1 Class I Products

4.1.1 New Aircraft

4.1.1.1 Each imported aircraft of a type/model/series validated/accepted by CAD must be accompanied by the following documents:

- (a) Export Certificate of Airworthiness (Export C of A). The year of manufacture and serial number of the aircraft, as well as the serial number for each aircraft engine and/or propeller, must be stated on the Export C of A.
- (b) Statement of non-registration or de-registration.
- (c) *A copy of the type certificate and type certificate data sheet.
- (d) Statement of Build Standard and Letter of Definition

/ Letter of Conformity.

- (e) A listing of all incorporated Supplemental Type Certificates (STC) for approved major modifications.
- (f) A listing of all customer options (modification, equipment, service bulletins) incorporated.
- (g) State of Design Approved Flight Manual, Operating Manual/Owners Manual.
- (h) List of applicable and incorporated Airworthiness Directives, to include:
 - (1) A declaration of compliance with all Airworthiness Directives issued by the State of Design, and where optional means of compliance are offered, the means chosen shall be stated; and
 - (2) Identification of Airworthiness Directives containing repetitive compliance requirements. Information as to when the next compliance is due must also be provided.
- (i) List of incorporated Service Bulletins as part of the aircraft records retained.
- (j) Service Life & Time Limits Manual.
- (k) * Master Minimum Equipment List.
- (l) Current weight and balance report.
- (m) Aircraft/engine/propeller/APU logbooks.
- (n) Production flight test report, if available.
- (o) A list of defects to be rectified by the HKSAR operator at the time of issue of the Export C of A, if any.
- (p) ** Seating configuration approval document, where appropriate.
- (q) *** Maintenance Review Board Report, where applicable.
- (r) Electrical Load Analysis Report.
- (s) Manuals including:

- (1) * Maintenance Manual.
- (2) * Weight and balance loading procedures.
- (3) * Overhaul Manual.
- (4) * Structural Repair Manual.
- (5) * Component Maintenance Manual.
- (6) * Engine Maintenance and Overhaul Manual.
- (7) * Standard Practices Manual.
- (8) * Non-Destructive Testing Manual.
- (9) * Structural Significant Items, where applicable.
- (10) * Maintenance Planning Document.
- (11) * Illustrated Parts Catalog.
- (12) * Wiring Diagrams Manual.
- (t)** Record of compass system and magnetic compass swings.
- (u)** Record of rigging checks.
- (v)** Detailed list of radio equipment constituting the radio station.
- (w)** List of serial number of significant component parts.
- (x)** Antenna performance pattern, when available.
- (y)** Software criticality list.
- (z)** * Noise type certificate.
- (aa)** List of manufacturing concessions/deviations.
- (bb)** Declaration of Mode 'S' code.
- (cc)** Declaration of emergency locator transmitter code (406 MHz).
- (dd)** Declaration of SELCAL code.
- (ee)** Flight data recorder/cockpit voice recorder compliance statement.
- (ff)** * Data frame structure of flight data recorder.

(gg) Placard / Marking Manual

Notes: * Required only with first aircraft of a particular type and model imported to HKSAR.

** Normally only required for aircraft over 2,730 kg (6,000 lbs.) in Public Transport Category.

*** Both of foregoing apply.

4.1.2 Used Aircraft

4.1.2.1 In addition to the requirements in 4.1.1.1 (a) through (gg) above, the following is required for used aircraft:

- (a)** Continuing Airworthiness records (historical records, logbooks, or equivalent).
- (b)** Record of most recent altimeter and transponder tests and inspection.
- (c)** ** The maintenance program to which the aircraft has previously been maintained including:
 - (1) Previous check cycle.
 - (2) Future check cycle.
 - (3) Certification Maintenance Requirements status and compliance, as applicable.
- (d)** ** Component overhaul life summary, including details of service life remaining and modification standards.
- (e)** ** Compliance with structural inspection program and corrosion prevention and control program. This should include details of any structure-sampling program in which the aircraft has been included, together with details of the aircraft position in the program.
- (f)** Modification status report and repair records.
- (g)** Specific approval status and compliance, such as Reduced Vertical Separation Minima, Required Navigation Performance, All Weather Operation and Extended Diversion Time Operations status.

Note: ** Normally only required for aircraft over 2,730 kg (6,000 lbs.) in Public Transport Category.

4.1.3 Aircraft Engine or Propeller (not installed on an aircraft)

4.1.3.1 Each imported new or used aircraft engine or propeller not installed on an aircraft shall be accompanied by the following documents:

- (a) An Export C of A or an Authorised Release Document as defined in AN16 paragraph 4.
- (b) A list of all incorporated STC for approved major modifications.
- (c) A list of applicable and incorporated Airworthiness Directives, to include:
 - (1) A declaration of compliance with all Airworthiness Directives issued by the State of Design, and where optional means of compliance are offered, the means chosen shall be stated; and
 - (2) Identification of State of Design Airworthiness Directives containing repetitive compliance requirements. Information as to when the next compliance is due must also be provided.
- (d) A list of incorporated Service Bulletins.
- (e) Identification of life limited parts.
- (f) Continuing Airworthiness records (historical records, logbooks, or equivalent) as applicable.

4.2 Class II Products

4.2.1 The following documents are required for each imported new or used Class II product:

- (a) Documents specified in Airworthiness Notice No. 17.
- (b) List of incorporated Airworthiness Directives, as applicable.
- (c) List of incorporated Service Bulletins, as applicable.
- (d) Maintenance related documents and repair records, if applicable.
- (e) Record of life limited parts, if applicable.

4.3 Class III Products

4.3.1 Documents specified in Airworthiness Notice No. 17 are required for imported Class III products.

5 Cancellation

This Notice cancels Airworthiness Notice No. 17A Issue 3, dated 30 October 2020, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 18
Issue 4
31 July 2018**

IMPLEMENTATION OF HKAR-21 AND HKAR-183

1 Introduction

- 1.1 The Director-General has published the Hong Kong Aviation Requirements HKAR-21 entitled "*Certification of Aircraft and Related Products, Parts and Appliances, and of Design and Production Organisations*".
- 1.2 The Director-General has published the Hong Kong Aviation Requirements HKAR-183 entitled "*Representatives of the Director-General*".
- 1.3 HKAR-21 and HKAR-183 supersede some requirements regarding certification in Hong Kong Aviation Requirements HKAR-1 entitled "*Airworthiness Procedures*".
- 1.4 The purpose of this Notice is to prescribe the implementation plan to phase in the certification activities under HKAR-21 and HKAR-183 and phase out the corresponding certification activities under HKAR-1 in an orderly manner.

2 Phase-In of HKAR-21/HKAR-183

2.1 HKAR-21

- 2.1.1 HKAR-21 has become effective on 1 February 2007.
- 2.1.2 Approvals for “Certification of Aircraft and Related Products, Parts and Appliances, and of Design and Production Organisations” under HKAR-21 may be applied for on or after the effective date.

2.2 HKAR-183

- 2.2.1 HKAR-183 has become effective on 21 March 2012.
- 2.2.2 Approvals for “Representatives of the Director-General” under HKAR-183 may be applied for on or after the effective date.

3 Phase-Out of HKAR-1

3.1 Classification of Certification Activities under HKAR-1

For the purpose of this Notice, certification activities under HKAR-1 are classified as Class A or Class Z as shown in Table 1. As Class A certification activities are covered in HKAR-21 or HKAR-183, these activities are to be phased out. Class Z certification activities are not covered in HKAR-21 or HKAR-183 yet and hence they will be dealt with in a later stage.

Note: Certification activities under HKAR-1 referred in this Notice include the approval of design and manufacture of aeronautical products, the approval of organisations, and the activities for approval of other airworthiness functions.

3.2 New Applications for Approvals for Certification Activities under HKAR-1

3.2.1 New applications for Class A approvals under HKAR-1 will no longer be accepted.

3.2.2 (Deleted)

3.2.3 New applications for Class Z approvals under HKAR-1 will continue to be accepted until further notice.

3.3 Certification Activities Privileges Exercised by HKAR-1 Approved Organisations

3.3.1 Organisations holding HKAR-1 approvals shall no longer exercise their privileges for Class A activities.

3.3.2 (Deleted)

3.3.3 (Deleted)

3.3.4 (Deleted)

3.3.5 (Deleted)

3.3.6 Organisations holding HKAR-1 approvals may continue to exercise their privileges for Class Z activities until further notice.

3.4 (Deleted)

3.5 Approval of Modifications and Repairs

3.5.1 New application for approval of modifications and/or repairs shall be made under relevant subparts of HKAR-21.

3.5.2 Approval of modifications and/or repairs issued under HKAR-1 before 5 August 2011 remains valid. Embodiment of these modifications

and repairs is not allowed on or after 31 July 2018.

Note: Modifications and/or repairs embodied before 31 July 2018 are not affected.

4 **Surrender of HKAR-1 Organisation Approvals**

HKAR-1 Organisation Approvals will be revoked upon issuance of corresponding approvals for Certification of Design and/or Production Organisations under HKAR-21 or Representatives of the Director-General under HKAR-183. HKAR-1 organisation approval certificates shall be returned to the Director-General for cancellation within 30 days.

5 **Cancellation**

This Notice cancels Airworthiness Notice No. 18 Issue 3, dated 31 May 2012, which should be destroyed.

Table 1: Classification of HKAR-1 Certification Activities

Section	Sub-section	Description	Class
1.1		General – Categories of Aircraft	Z
1.2		Approval of the Type Design	A
1.3		Certificates of Airworthiness and other Provisions for Legal Flight	A
1.4		Design and Manufacture of Products other than Aircraft	A
1.5		Continued Airworthiness – Responsibilities of the Type Design Organisation	
	1.5-2	Maintenance Review Board	A
	1.5-3	Maintenance, Overhaul and Repair Manuals	A
	1.5-4	Weight and Balance of Aircraft	Z
	1.5-6	Mandatory Modifications and Inspections: Procedures for Classifications	Z
	1.5-7	Master Minimum Equipment Lists	A
	1.5-8	Mandatory Action on Aircraft Operating in accordance with a Permit to Fly	Z
1.6		Continued Airworthiness – Responsibilities of the Operator	Z
1.7		Procedures for the Approval of Documents and Manuals for Operation and Maintenance of Aircraft	Z
1.8		Approvals	
	1.8-1	(Deleted)	
	1.8-2	(Deleted)	
	1.8-3	(Deleted)	
	1.8-4	(Deleted)	
	1.8-5	(Deleted)	
	1.8-6	Test Houses Group B4	Z
	1.8-8	(Deleted)	
	1.8-9	Organisations – Approval for Flight under ‘B’ Conditions	Z
	1.8-10	Approval of Welders	Z
	1.8-11	Procedures for Approval of Organisations Concerned with Radiographic Inspection of Aircraft during maintenance and Overhaul	Z
	1.8-12	Procedures for Approval of Organisations Concerned with Ultrasonic Inspection of Aircraft during maintenance and Overhaul	Z
	1.8-13	Aircraft and Aircraft Component Maintenance Organisations	Z
	1.8-14	Approval of Organisations to Recommend Certificate of Airworthiness Renewal of Aeroplanes & Rotorcraft Above 2730 Kg MTWA	Z
	1.8-15	Aeroplanes and Rotorcraft Not Exceeding 2730 KG – Maintenance Organisation – Group M3	Z

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 19
Issue 7
15 February 2009**

THE PROBLEM OF BOGUS PARTS

1 Introduction

- 1.1 The Director-General is aware of the worldwide concern about the quantity and variety of unapproved parts which are finding their way on to aircraft, in particular helicopters. These counterfeit and/ or fraudulently identified parts are being imported from various sources.
- 1.2 Installing bogus parts onto aircraft has serious airworthiness implications. To illustrate just how serious, the following two examples are quoted:
 - (a) A helicopter main rotor blade complete with release documentation was traced as having been scrapped by the manufacturer during the manufacturing process.
 - (b) An engine mount described as fitted new to an aircraft in 1979 was traced as having been factory installed in 1966.

2 Unapproved Part

- 2.1 For the purpose of this Notice an unapproved part is a part or material intended for installation on a type certificated product/aircraft, which has been neither manufactured according to approved procedures, nor conforms to an approved type design; or it fails to conform to declared specifications or accepted industry standards (i.e. standard parts).
- 2.2 Unapproved parts include, but are not limited to:
 - (a) Parts specified in the Illustrated Parts Catalogues (IPC) of a type certificated aircraft, but which have been manufactured, reclaimed or reworked and then marked by an unauthorised source and provided with documents which indicate falsely that the part(s) are genuine and conform to the approved type design, or meet a particular industry standard and are offered for use as conforming with an aircraft manufacturers authorised IPC.

- (b) Parts shipped directly to users by, manufacturers, suppliers, or distributors who do not themselves hold appropriate production approvals for the parts, and have not been authorised to make direct shipments to users or stockists, by the type certificate holder, who alone has production approval e.g. production overruns.
- (c) Parts which have not been maintained, overhauled or repaired in accordance with the requirements of approved airworthiness data and/or statutory requirements, or that have been maintained, overhauled or repaired by persons not authorised to perform and certify these functions.

3 Parts Originating from the Surplus United States Military Stock

- 3.1 The United States Department of Defence (DOD) has a programme called 'BREAKOUT'. Under this programme the DOD use manufacturers' approved drawings, obtained under the terms of production contracts with the original equipment manufacturer and seek bids from anyone who wishes to make the parts.
- 3.2 The suppliers of the BREAKOUT parts may not have the stringent quality controls that are required by the aircraft/component type certificate holder to satisfy FAA requirements. For example, periodic conformity inspections and destructive tests to assure the continued quality of the product may not have been undertaken.
- 3.3 The United States government may also substitute military specifications in lieu of originally approved material and process specifications, thereby developing parts that do not conform to the FAA approved civil type design.

4 FAA Suspect Unapproved Parts Notifications

- 4.1 The FAA has intensified efforts to educate the public regarding the potential safety threat posed by aeronautical parts that do not meet applicable design, manufacturing or maintenance requirements. To achieve this, the FAA established a Suspect Unapproved Parts programme (Sups) and issued guidance in an Advisory Circular 21-29C.
- 4.2 Suspect Unapproved Parts Notifications can be found on FAA Internet site: "www.faa.gov/aircraft/safety/programs/sups/".

5 Mandatory Occurrence Reporting Procedures

- 5.1 Users of aircraft components and spares are reminded that suspected unapproved parts should be reported to the Director-General through the Mandatory Occurrence Reporting procedures (MOR).
- 5.2 Although the MOR procedure does not extend to piston engined aircraft used for Aerial Work or privately operated, and any aircraft with a Permit to Fly, users of aircraft parts or material for this class of aircraft are encouraged to use the procedure where suspect parts are identified.
- 5.3 On receipt of an MOR, and where appropriate, the Director-General will pass the details to the FAA. In addition to assisting the FAA, who is implementing a vigorous campaign against unapproved parts, this procedure will enable the Director-General to establish the dimensions of the problem as it affects Hong Kong SAR.
- 5.4 To assist in tracing unapproved parts or material, persons raising an MOR should, as far as possible, provide the following information on their report:
- (a) The name of the suspected unapproved part.
 - (b) Part number, or any other number on the part.
 - (c) Serial number of part.
 - (d) List next higher assembly that suspected unapproved part is assembled into (i.e. fuel pump, engine, and landing gear) and list part number, if known.
 - (e) Quantity of suspected unapproved parts found or identified.
 - (f) Make and model number of the aircraft or component that the suspected unapproved part is applicable to.
 - (g) The identification of the commercial source of the suspected unapproved part. If the part is identified with Part Manufacturer or Distributor marking, this should be quoted.
 - (h) Describe any pertinent facts relating to the suspected unapproved part and identify where part may be inspected (provide photos, invoices, etc., if available). The description should also include particular colours, markings, dimensions, and features common to the unapproved part which distinguish it from the genuine item, and the nature of any accompanying documentation.
 - (i) The date suspected unapproved part was discovered.
 - (j) Name and address in full or the location where suspected unapproved part(s) was discovered.

5.5 Further to 5.1 above, users of aircraft components and spares should also report to the Type Certificate holders and their regulatory authorities, of any suspected unapproved parts in addition to the MOR procedures. Users may approach CAD for assistance on such reporting.

6 Foreign aircraft and approved component manufacturers can be contacted by users through their agent or direct, for verification that specific serial numbered items purported to be manufactured by them are in fact recorded in their archives.

7 **The Certifying Person and User Responsibility**

7.1 The Certifying Person (User) can be either the approved organisation, a person authorised in accordance with that organisation's Exposition, or an appropriately Type Rated HKAR-66 Aircraft Maintenance Licence holder, who issues the Certificate of Release to Service for installation of an aircraft part into an aircraft, its engine(s), propeller(s) or equipment.

7.2 The User of an aircraft part is responsible for ensuring that the part is serviceable and conforms to the standard determined by the appropriate type certificate holder as being suitable for the intended application. In order to discharge this responsibility to the satisfaction of the Director-General, the User must, when obtaining an aeronautical part from a supplier, ensure that the purchase order contains accurate definition of the aircraft parts and full details of the quality control and certification requirements to be met by the supplier in satisfying the order. The User must also take all necessary steps to verify that the supplier is meeting the requirements of the purchase order. This may require the User visiting the supplier's facilities.

7.3 In order to contain the serious problem of unapproved parts, Commercial Air Transport Operators (Public Transport) and associated Maintenance Organisations who are users of aircraft spares should ensure that their aircraft spares purchasing policy and procedures are unequivocally stated in their company expositions/engineering procedural documents. They should also ensure that any deviation from that policy must be approved by the quality manager in accordance with procedures acceptable to the Director-General.

7.4 Other organisations and private owners who purchase aircraft parts or materials can only be advised to exercise extreme caution and remember they will have to convince the user of the authenticity of such spares.

8 Airworthiness Notice Numbers 16, 17 and 97 provide advice on the acquisition of aircraft or material parts for aircraft with Certificates of Airworthiness.

9 **Cancellation**

| This Notice cancels Notice No. 19 Issue 6, dated 31 January 2008, which should be destroyed.

Norman LO
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 20
Issue 7
28 June 2019**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

COTTON, LINEN AND SYNTHETIC FABRIC-COVERED AIRCRAFT

1 Introduction

This Notice contains requirements in respect of the issue or renewal of Certificate of Airworthiness and Permit to Fly applicable to aircraft excluding microlights, that have fabric covering. Fabric coverings may be manufactured from natural materials such as linen or cotton, or other aviation approved fabrics produced from polyester or glass fibre.

2 Structural Damage and Deterioration

2.1 Removal of the fabric covering of some older types of aircraft has revealed cases of unsuspected structural damage and deterioration. It is therefore important that during routine inspections, any sign of distortion, slackness, wrinkling or discoloration of the covering material is investigated and the cause established.

2.2 The use of good maintenance practices, incorporation of adequate and correctly placed drain holes, regular cleaning and storage of the aircraft in a dry hangar will retard deterioration. Damage will be reduced by using proper ground handling techniques and equipment. Planned periodic inspections of aircraft coverings, structural elements and their attachments are essential in preventing damage and deterioration from going unnoticed.

2.3 Following incidents such as heavy landings, high 'g' loadings, ground loops and collisions, the aircraft must be inspected to detect any hidden damage or distortion.

2.3.1 This may involve removal of the covering material or provision of access openings and may include inspections using NDT techniques. Experience has shown that structures can appear undamaged until manually loaded during a physical check. Wherever possible, the manufacturer's inspection recommendations should be used. In the absence of specific guidance, refer to UKCAA CAP 562 Civil Aircraft

Airworthiness Information and Procedures (CAAIP) and/or consult a specialist organisation.

- 2.4 Details of the incident, inspections/repairs carried out should always be entered in the aircraft log book.

3 **Fabric Coverings**

- 3.1 Many factors can influence the life and condition of covering fabrics, such as age, contamination, exposure to high humidity, ultra violet light, utilisation and type of operation for which the aircraft has been employed. The type of covering material used will also need to be ascertained as natural materials are much more susceptible to adverse climatic conditions than synthetic materials. However, the improved longevity of synthetic materials often means that internal structures are inspected much less frequently and deterioration can go undetected.

- 3.2 The airworthiness of covering fabrics should be assessed using a method acceptable to the Director-General, these being detailed in the manufacturer's airworthiness data or where appropriate UKCAA CAAIP Leaflet 51-150.

NOTE: With suitable training and experience an engineer can usually assess the condition of fabric covering by its appearance, tension and reaction to thumb pressure. Failing this ability, a suitable type of fabric tester should be used. The tester and its method of operation are described in UKCAA CAAIP Leaflet 51-150.

- 3.3 Cotton and linen fabrics may be replaced with synthetic materials providing they are of a type manufactured and approved for aeronautical use in their country of origin and acceptable to the aircraft manufacturer as an alternative covering material. Replacement materials must also be appropriate for the intended purpose having properties no less than the original fabric in terms of strength and durability. Application must be in accordance with the manufacturer's procedures with control surfaces re-balanced to the original limits specified. Rib stringing and other materials must have a compatible life expectancy to the replacement covering.

NOTE: Care must be exercised when tautening synthetic fabric using the application of heat. Lightly built wooden structures covered with these materials can become distorted or crushed during the shrinking process. The application of non-tautening dope should be also considered in these cases.

4 **Certification Requirements**

4.1 **Certificate of Airworthiness**

- 4.1.1 Certificate of Airworthiness will only be issued or renewed in respect of used aircraft if the requirements of paragraphs 4.1.2 and 4.1.3 have been complied with.

4.1.2 Certified evidence must be produced to show that an internal inspection sufficient to establish continued structural integrity has been carried out within the period specified in the applicable maintenance schedule. The depth of the inspection must be relative to the age of the aircraft, inspection history, known usage, storage conditions/hangarage and the elapsed time since the last full inspection. This should be determined by the certifying person using data from the organisation responsible for Type Design, a maintenance programme agreed by the Director-General and the guidance material contained in UKCAA CAAIP and Hong Kong Airworthiness Notices. Access holes may have to be cut to facilitate inspections and these reinforced in accordance with the manufacturer's requirements (refer to covering schedule).

4.1.3 Certification of the inspections and work carried out must be made by an appropriately HKAR-66 Type Rated aircraft maintenance licence holder, persons specifically authorised for the purpose or personnel operating under the approval granted to a maintenance organisation. Log book entries must be made in sufficient detail to provide an accurate record indicating the extent of the access, inspections carried out, repairs and overhauls performed and any re-covering required since the last structural inspection.

NOTE: Airworthiness Notice No. 3 describes the certification responsibilities of Hong Kong Licensed Aircraft Maintenance Engineers in relation to Articles 9 and 11 of the Air Navigation (Hong Kong) Order 1995 and HKAR 145.50.

4.2 **Permit to Fly**

4.2.1 Permit to Fly will only be issued or renewed in respect of used aircraft if the requirements of paragraph 4.2.2 have been complied with.

4.2.2 At initial issue or the first annual inspection (as applicable) after 1 October 1999, all fabric covered aircraft must be internally inspected to establish and suitably record their structural integrity. The depth of the inspection must be relative to the age of the aircraft, inspection history, known usage, storage conditions/hangarage and the elapsed time since the last full inspection. This must be certified by persons specifically authorised by the Director-General or an organisation approved by the Director-General to issue a Flight Release Certificate (see paragraph 7 of Airworthiness Notice No. 110) in order to qualify for issue or renewal of the Permit to Fly. Thereafter, inspections must be performed at a frequency not exceeding 3 years. Access holes may have to be cut to facilitate inspections and these reinforced in accordance with the design requirements (refer to covering schedule).

- 4.2.3 Log book entries must be made in sufficient detail to provide an accurate record indicating the extent of the access, inspections carried out, repairs and overhauls performed and any re-covering required since the last structural inspection.

5 **Guidance**

- 5.1 Guidance material relating to fabric covered aircraft may be found in a number of publications which include:

UKCAA CAAIP Leaflet 51-150	Fabric Covering
UKCAA CAAIP Leaflet 51-160	Doping
UKCAA CAAIP Leaflet 51-10	Inspection of Wooden Structures
UKCAA CAAIP Leaflet 51-50	Inspection of Metal Aircraft Structures
UKCAA CAAIP Leaflet 51-120	Rigging checks on Aircraft
FAA AC 43.13	Acceptable Methods, Techniques and Practices

- 5.2 Attention is drawn to Airworthiness Notice No. 50 which refers to deterioration in wooden structures and in glued joints in aircraft, and Airworthiness Notice No. 110 'Issue and Reissue of Permits to Fly'.

6 **Cancellation**

This Notice cancels Notice No. 20 Issue 6, dated 30 May 2006, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 21
Issue 1
1 June 1990**

**MICROBIOLOGICAL CONTAMINATION OF FUEL
TANKS OF TURBINE ENGINED AIRCRAFT**

1 Introduction

- 1.1 Reports have been received that aircraft regularly operating in climatic conditions such as those prevailing between the latitudes 30° North and 30° South have been contaminated in the fuel tanks by a fungus. Another aircraft, regularly operating from the United Kingdom, was found to have localised areas of heavy growth when inspected after standing in a heated hangar for two months with fuel in the tanks. It is considered that the storage conditions were a contributory factor.
- 1.2 In one case contamination was found during an investigation into the cause of erratic fuel contents indication, when white crusty deposits and brown stains were seen on the probes. Further examination revealed the presence of brown/black slimes adhering to horizontal upward facing surfaces within the tanks. Examination by the Commonwealth Mycological Institute, Kew, confirmed that this substance was a fungal growth of the type *Cladesporium Resinae*.

2 Effects of Contamination

- 2.1 The problems associated with microbiological growths have been known for some years and research into their behaviour has been conducted throughout the world. In the case of *Cladesporium Resinae*, the spores of the fungus can exist in a dormant state in kerosene fuels in most parts of the world. These will only develop when in contact with water in fuel at temperatures such as those reached when the aircraft or storage tanks are exposed to a warm ambient temperature such as radiation from the sun for long periods in a tropical or sub-tropical environment, or prolonged periods in a heated hangar. If developing fungus forms on water not drained off and which adheres to the tank surfaces, the fungus is able to absorb water later introduced with fuel or condensing following a cold soak.
- 2.2 Where fungus has formed there is a probability that corrosion will occur. Corrosion has been found where fungus had formed on the bottom tank skin, on the chordal support member in the wing root and on fuel pipes within the tank. In some cases aircraft have been sufficiently affected to necessitate replacement

of some component parts.

- 2.3 The fungus itself, if dislodged by fuel during refuelling, can obstruct fuel filters.

3 Inspection

- 3.1 Operators uplifting fuel or operating regularly in areas having high normal ambient temperatures and high humidity or where fungus development is known to have been encountered, are advised to scrutinise tank areas for signs of fungus whenever access is gained for any purpose. It is further recommended that, for aircraft operating under these conditions, Maintenance Schedules should be amended to include a visual internal tank check at periods prescribed by the aircraft constructor. It is also important, whenever fuel tanks are inspected, to ensure that all passage ways between rib cleats, etc., are not obstructed, so that a drainage path for water is maintained at all times. If the aircraft has been standing in a heated hangar for prolonged periods the fuel in the tanks should be treated with a biocide (see paragraph 4).
- 3.2 If contents gauges give suspect indications, immediate consideration should be given to the possibility that tank probes may be contaminated with water and/or fungus and appropriate inspections should be carried out.
- 3.3 Whenever fuel filters are checked they should be closely examined for the presence of slimes of any colour.
- 3.4 The need to prevent water collection by good maintenance practices and control of fuel supplies is emphasised. A high degree of protection can be maintained by strict adherence to water drain checks before and after refuelling and, if the aircraft has been standing for any length of time, again before the next flight. Fuel quality control checks should be rigorously applied.

4 Treatment

- 4.1 If fungus is discovered, the fuel system should be cleaned as soon as possible by a method approved by the aircraft constructor and the engine manufacturer. It must be appreciated that if the fungus is allowed to develop, cleansing and rectification could become a major operation involving grounding of the aircraft for a long period.
- 4.2 It is strongly recommended that when aircraft operate in an area where fungal growth can be encountered, or where there is any possibility of temperatures in the fuel tanks frequently rising above 25 °C, a fungicide additive should be used in the fuel as approved by the aircraft constructor and the engine manufacturer. The frequency of treatment and the dilutions prescribed by the aircraft constructor and the engine manufacturer must be adhered to. Introduction of an unapproved fungicide or inhibitor may jeopardise the safe operation of the aircraft.

P. K. N. LOK
Director of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 26
Issue 6
30 September 2022**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

GROUND PROXIMITY WARNING SYSTEM

1 Applicability

This Airworthiness Notice is applicable to Hong Kong registered aircraft issued with a Certificate of Airworthiness.

2 Introduction

- 2.1 The introduction of ground proximity warning system (GPWS) equipment resulted in a significant reduction in controlled flight into terrain (CFIT) accidents.
- 2.2 International Civil Aviation Organization (ICAO) has published Standards in Part I, II and III of Annex 6 that require GPWS to be installed in certain aircraft as defined in the Standards and Recommended Practices.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

- 3.1 **Compliance requirements for aeroplanes certificated in the Transport Category**
 - 3.1.1 All turbine-engined aeroplanes of a maximum total weight authorised in excess of 5,700 kg or with Maximum Approved Passenger Seating Configuration (MAPSC) of more than nine passengers shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

- 3.1.2 All turbine-engined aeroplanes of a maximum total weight authorised of 5,700 kg or less and with MAPSC of more than five but not more than nine passengers, for which the individual Certificate of Airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 June 2016, shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.
- 3.1.3 All turbine-engined aeroplanes of a maximum certificated take-off mass of 5,700 kg or less and authorized to carry more than five but not more than nine passengers for which the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 January 2026, shall be equipped with a ground proximity warning system which provides the warnings in paragraph 3.1.6 a) and c), warning of unsafe terrain clearance and a forward looking terrain avoidance function.
- 3.1.4 The operator shall implement database management procedures that ensure the timely distribution and update of current terrain and obstacle data to the ground proximity warning system.
- 3.1.5 A ground proximity warning system, as required in this paragraph 3.1, shall provide automatically a timely and distinctive warning to the flight crew when the aeroplane is in potentially hazardous proximity to the earth's surface.
- 3.1.6 A ground proximity warning system, as required in this paragraph 3.1.1 to 3.1.3 shall provide, unless otherwise specified therein, warnings of the following circumstances:
- (a) excessive descent rate;
 - (b) excessive terrain closure rate;
 - (c) excessive altitude loss after take-off or go-around;
 - (d) unsafe terrain clearance while not in landing configuration;
 - (i) gear not locked down;
 - (ii) flaps not in a landing position; and
 - (e) excessive descent below the instrument glide path.
- 3.1.7 All piston-engined aeroplanes of a maximum total weight authorised in excess of 5,700 kg or with MAPSC of more than nine passengers shall be equipped with a ground proximity warning system which provides the warnings in paragraph 3.1.6 (a) and (c), warning of unsafe terrain clearance and a forward looking terrain avoidance function.

3.2 Compliance requirements for aeroplanes certificated in the Aerial Work, Private and Special Categories

- 3.2.1 All turbine-engined aeroplanes of a maximum total weight authorised in excess of 5,700 kg or with MAPSC of more than nine passengers shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.
- 3.2.2 The operator shall implement database management procedures that ensure the timely distribution and update of current terrain and obstacle data to the ground proximity warning system
- 3.2.3 A ground proximity warning system, as required in this paragraph 3.2, shall provide automatically a timely and distinctive warning to the flight crew when the aeroplane is in potentially hazardous proximity to the earth's surface.
- 3.2.3 A ground proximity warning system, as required in this paragraph 3.2.1 shall provide as a minimum, warnings of at least the following circumstances:
 - (a) excessive descent rate;
 - (b) excessive altitude loss after take-off or go-around; and
 - (c) unsafe terrain clearance.

3.3 Compliance requirements for helicopters certificated in the Transport Category

- 3.3.1 All helicopters when operating in accordance with Instrument Flight Rules and of a maximum total weight authorised in excess of 3,175 kg or with MAPSC of more than nine, for which the individual Certificate of Airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 June 2016, shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function meeting the standards of FAA TSO C-194 or EASA ETSO C-194.

4 Additional Information

Nil.

5 Recommendations

- 5.1 ICAO Annex 6 Part I Chapter 6 recommends all commercial air transport turbine-engined aeroplanes of a maximum total weight authorised of 5,700 kg or less and with MAPSC of more than five but not more than nine passengers, should be equipped with a ground proximity warning system which provides the warnings of paragraph 3.1.6 (a) and (c), warning of unsafe terrain clearance and a forward looking terrain avoidance function.
- 5.2 ICAO Annex 6 Part II Chapter 2 recommends all turbine-engined aeroplanes of a maximum total weight authorised of 5,700 kg or less and with MAPSC of more than five but not more than nine passengers, should be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.
- 5.3 ICAO Annex 6 Part II Chapter 2 recommends all piston-engined aeroplanes of a maximum total weight authorised in excess of 5,700 kg or with MAPSC of more than nine passengers, should be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.
- 5.4 ICAO Annex 6 Part II Chapter 2 recommends a ground proximity warning system should provide, as a minimum, warning of at least the circumstances stipulated in paragraph 3.1.6 (a) to (e).
- 5.5 ICAO Annex 6 Part III Section II Chapter 4 recommends all helicopters when operating in accordance with Instrument Flight Rules and of a maximum total weight authorised in excess of 3,175 kg or with MAPSC of more than nine, should be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

6 Cancellation

This Notice cancels Notice No. 26 Issue 5, dated 30 October 2020, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 27
Issue 8
31 October 2023**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
EMERGENCY LOCATOR TRANSMITTER (ELT)**

1 Applicability

This Airworthiness Notice is applicable to Hong Kong registered aircraft issued with a Certificate of Airworthiness or Permit to Fly.

2 Introduction

- 2.1 International Civil Aviation Organization (ICAO) has published Standards and Recommended Practices in Annex 6 that require emergency locator transmitters to be installed in certain aircraft as defined in the Standards and Recommended Practices.
- 2.2 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Interpretation

The following terms are interpreted for the purpose of this Airworthiness Notice:

Emergency locator transmitter (ELT) A generic term describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated. An ELT may be any of the following:

- ***Automatic fixed ELT (ELT(AF))***. An automatically activated ELT which is permanently attached to an aircraft.
- ***Automatic portable ELT (ELT(AP))***. An automatically activated ELT which is rigidly attached to an aircraft but readily removable from the aircraft.

- ***Automatic deployable ELT (ELT(AD)).*** An ELT which is rigidly attached to an aircraft and which is automatically deployed and activated by impact, and in some cases, also by hydrostatic sensors. Manual deployment is also provided.
- ***Survival ELT (ELT(S)).*** An ELT which is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by survivors.
- ***Distress Tracking ELT (ELT(DT)).*** An ELT which is either manually activated by flight crew, automatically by a trigger during flight, or remotely from ground by a responsible agency. In-flight distress events and detection criteria are defined in EUROCAE Specification ED-237. Aircraft position data is transmitted autonomously once triggered and can only be deactivated using the same mechanism that activated it.

Performance Class 1 helicopter A helicopter with performance such that, in case of critical power-unit failure, it is able to land on the rejected take-off area or safely continue the flight to an appropriate landing area, depending on when the failure occurs.

Performance Class 2 helicopter A helicopter with performance such that, in case of critical power-unit failure, it is able to safely continue the flight, except when the failure occurs prior to a defined point after take-off or after a defined point before landing, in which cases a forced landing may be required.

Performance Class 3 helicopter A helicopter with performance such that, in case of power-unit failure at any point in the flight profile, a forced landing must be performed.

4 Compliance for applicable aeroplanes

4.1 All aeroplanes authorised to carry more than 19 passengers shall be equipped with either:

- (a) at least two ELTs, one of which shall be automatic; or
- (b) at least one ELT and a capability that meets the requirements of ICAO Annex 6 Part I paragraph 6.18 (Location of an aeroplane in distress).

Note: In the case where the requirements of ICAO Annex 6 Part I paragraph 6.18 (Location of an aeroplane in distress) are met by another system, no automatic ELT is required.

4.2 Except as provided for in paragraph 4.1, all aeroplanes shall carry one automatic ELT.

4.3 ELT equipment carried to satisfy the requirements of paragraphs 4.1 and 4.2, shall operate in accordance with the relevant provisions of ICAO Annex 10, Volume III, Part II, Chapter 5 (See paragraph 6 of this Notice).

- 4.4 The choice of ELT type and placement of the ELT on aeroplanes and associated floatable life support systems must ensure the greatest chance of ELT activation in the event of an accident for aircraft operating over water or land. Placement of transmitter units is a vital factor in ensuring optimal crash and fire protection. The placement of the control and switching devices (activation monitors) of automatic fixed ELT and their associated operational procedures will also take into consideration the need for rapid detection of inadvertent activation and convenient manual switching by crew members. These shall be acceptable to the Director-General.

5 Compliance for applicable helicopters

- 5.1 All Performance Class 1 and 2 helicopters operating on flights over water at a distance from land corresponding to more than 10 minutes at normal cruise speed shall be equipped with one automatic ELT and one Survival ELT for each raft carried (but not more than a total of two Survival ELT are required).
- 5.2 Except as provided for in paragraph 5.1, all Performance Class 1 and 2 helicopters shall be equipped with one automatic ELT and one Survival ELT.
- 5.3 All Performance Class 3 helicopters operating on flights over water beyond autorotational or safe forced landing distance from land shall be equipped with one automatic ELT and one Survival ELT for each raft carried (but not more than a total of two Survival ELT are required).
- 5.4 Except as provided for in paragraph 5.3, all Performance Class 3 helicopters having a Maximum Total Weight Authorised of 2730 kg or less shall be equipped with one automatic ELT.
- 5.5 Except as provided for in paragraphs 5.3 and 5.4, all Performance Class 3 helicopters shall be equipped with one automatic ELT and one Survival ELT.
- 5.6 ELT equipment carried to satisfy the requirements of paragraphs 5.1, 5.2, 5.3, 5.4 and 5.5 shall operate in accordance with the relevant provisions of ICAO Annex 10, Volume III, Part II, Chapter 5 (See paragraph 6 of this notice).
- 5.7 For paragraphs 5.1, 5.2, 5.3, 5.4 and 5.5, the choice of ELT type and placement of the ELT on helicopters and associated floatable life support systems must ensure the greatest chance of ELT activation in the event of an accident for aircraft operating over water or land. Placement of transmitter units is a vital factor in ensuring optimal crash and fire protection. The placement of the control and switching devices (activation monitors) of automatic fixed ELT and their associated operational procedures will also take into consideration the need for rapid detection of inadvertent activation and convenient manual switching by crew members. These shall be acceptable to the Director-General.

6 **Additional Information**

6.1 Highlights of ICAO Annex 10, Volume III, Part II, Chapter 5:

6.1.1 ELT shall operate on 406 MHz and 121.5 MHz simultaneously.

6.1.2 The technical characteristics for the 406 MHz component of an integral ELT shall be in accordance with paragraph 5.3 of ICAO Annex 10, Volume III, Part II, Chapter 5.

6.1.3 The technical characteristics for the 121.5 MHz component of an integral ELT shall be in accordance with paragraph 5.2 of ICAO Annex 10, Volume III, Part II, Chapter 5.

6.2 Coding and registration of Hong Kong 406 MHz ELT

6.2.1 Details regarding the coding and registration of Hong Kong 406 MHz ELT are contained in Appendix No. 1 to this notice.

7. **Recommendation**

ICAO Annex 6 Part I Chapter 6 and Part II Chapter 2 recommend that all aeroplanes should carry an automatic ELT.

8 **Cancellation**

This Notice cancels Airworthiness Notice No. 27 Issue 7, dated 8 November 2018, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

CODING AND REGISTRATION OF HONG KONG 406 MHz ELTs

1 General

- 1.1 This Airworthiness Notice Appendix provides information to Hong Kong operators on the coding and registration requirements of the 406 MHz ELTs installed on Hong Kong registered aircraft.
- 1.2 In addition to ICAO Annex 10, further information related to 406 MHz ELTs may be obtained from the Cospas-Sarsat system documents which can be downloaded from their website at <http://www.cospas-sarsat.int>. The prime documents that can be referenced are:
- a) G.003 – Introduction to the C-S System;
 - b) G.005 – Guidelines on 406 MHz Beacon Coding, Registration and Type Approval; and
 - c) S.007 – Handbook of Regulations on 406 MHz and 121.5 MHz Beacons.

2 Coding of ELT

- 2.1 Each message sent by a 406 MHz ELT must include the unique identification of the beacon. The complete ELT identification code is typically provided as a 15-hexadecimal character string (15 Hex ID) and includes the protocol flag, protocol code, country code and identification data.
- 2.2 Acceptable ELT coding options for aviation use in Hong Kong are as follows:

Protocols	Identification Data
Serial User	Unique ELT Serial Number *
User-Location	
ELT(DT) Location	Aircraft 24-bit Address

Note: (*) Serial number means a unique number assigned by a beacon manufacturer. Assigned serial numbers shall provide a unique beacon identification when used with the Cospas-Sarsat type approval certificate number assigned to that beacon model.

- 2.3 Details of the abovementioned coding methods are available in Chapter 3 of Cospas-Sarsat G.005 document.
- 2.4 The Country Code used to generate an ELT's unique 15 Hex ID must be 477 (three-digit decimal country code assigned by International Telecommunication Union (ITU) to Hong Kong Special Administrative Region of China).

3 ELT Registration

- 3.1 All 406 MHz ELTs must be registered with the Hong Kong Civil Aviation Department (CAD), even if not fitted to an aircraft. Many ELTs are inadvertently activated when in storage or transit, and these false alerts invariably result in search and rescue action if the owner cannot be identified and questioned. It is of extreme importance that a 24-hour telephone contact number is provided when registering ELTs. Whenever an ELT is installed in an aircraft, a CAD Form DCA 406, which can be downloaded from the CAD website, shall be used for the ELT registration.
- 3.2 In the case of ELT replacement on wing with an associated 15 Hex ID change, re-registration is required as per paragraph 3.1.
- 3.3 Whenever an ELT is removed from a deregistered aircraft, such information is required to be provided using Form DCA 406.
- 3.4 For those spare ELTs not fitted in the aircraft, their information is required to be provided by the ELT owner using Form DCA 406.
- 3.5 It is the owner's responsibility to ensure that the details registered to an ELT remain current and accurate for search and rescue purpose.

4 Cancellation

This Notice Appendix cancels Airworthiness Notice No.27 Appendix No.1 Issue 5, dated 30 July 2021, which should be destroyed.

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 27A
Issue 1
31 January 2005**

**GUIDANCE ON TESTING 406 MHz EMERGENCY LOCATOR TRANSMITTERS
(ELT)**

1 Introduction

- 1.1 This Airworthiness Notice is to provide general guidance material to aircraft maintenance organisations, maintenance personnel and AOC holders relating to the procedures to be used for testing Emergency Locator Transmitters (ELT). It includes information on the precautions to be considered when testing ELT to prevent unnecessary deployment of emergency rescue services.

2 Logistical Problems Associated With Testing of ELT

- 2.1 ELT that transmit in the 406 to 406.1 MHz band are required to have a test facility which, when selected, changes the signal so that it is not reported as a genuine Search and Rescue (SAR) alert. Although this minimises the risk of false alerts, COSPAS-SARSAT satellites have a finite capacity to store data and any 406 MHz ELT activated in a non-distress situation degrades the capacity of the system to the detriment of genuine alerts.

3 Testing Considerations

- 3.1 Previously, it has been possible, to request for permission to perform a live ELT test, providing that the request was supported by the appropriate justification. However, the volume of ELT being installed in aircraft and marine vehicles is now so great that the SAR organisations and the Distress and Diversion cells distributed throughout the world are no longer able to deal with requests for live testing. As a consequence of this, live testing of ELT is now prohibited.
- 3.2 Although many ELT in the 406 to 406.1 MHz band have self test functions that emit a recognisable test pulse that would not result in SAR teams being deployed, these transmissions do require satellite processing time. The volume of ELT now installed in aircraft and marine craft has also had a serious impact on the ability of the COSPAS-SARSAT system to process distress calls and the extent of this problem has now become so great that the

ban on live testing of ELT has also been extended to those which transmit on 406 MHz.

3.3 It is accepted that aircraft operators do need to test their ELT on a regular basis to demonstrate their continued serviceability and the Director-General has established that the following options exist:

- (a) For ELT that can be removed from the aircraft (e.g. Survival ELT and Automatic Portable ELT) the operator can remove the ELT from the aircraft and test it in either a shielded room or a shielded bag. Shielded ELT test bags can be obtained from most ELT manufacturers.
- (b) For ELT that cannot be removed from the aircraft (or those which the operator wishes to test in situ) an antenna cap should be used to prevent the ELT transmission from going beyond the aircraft. Antenna caps can be obtained from either an antenna manufacturer or, in some cases, from the ELT manufacturer. Operators may also use self-manufactured antenna caps provided that they can be shown to prevent transmission from the aircraft.
- (c) Some ELT have test functions that do not actively transmit on the emergency frequencies or which send codes that are not recognised by the COSPAS-SARSAT satellites. In these cases live testing can be performed as long as the operator can demonstrate that it will not cause an interaction with any of the SAR services.

3.4 In all cases, procedures for testing ELT should be based on the manufacturer's recommended testing practices and, where applicable, should be performed using their recommended test equipment unless this would result in unshielded testing.

4 Additional Reference Information On Aircraft ELT

4.1 Additional information on COSPAS-SARSAT, including information on the carriage, coding, registration and testing of ELT, can be found at the following website address: www.cospas-sarsat.org.

4.2 Many ELT manufacturers also provide Frequently Asked Question (FAQ) sheets on related topics.

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Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 27B
Issue 2
30 July 2021**

FALSE ALERTS OF EMERGENCY LOCATOR TRANSMITTERS (ELT)

1 Introduction

- 1.1 ELT should only be activated when the aircraft or person is in grave and imminent danger and requires immediate assistance. Upon receipt of a distress signal, search and rescue crews will treat it as real distress to prepare and deploy the search and rescue services.
- 1.2 However, worldwide data illustrated a high percentage of false alerts. This Airworthiness Notice is to emphasise the importance of preventing false alerts in order to avoid unnecessary deployment of emergency search and rescue services.

2 Impact of ELT False Alerts

- 2.1 A false alert is an activation of an emergency beacon in a non-distress situation. Examples of false alerts include accidentally turning on or improperly testing an ELT, or improperly handling of stored or disposed ELT.
- 2.2 False alerts have a negative impact on search and rescue resources worldwide. They occupy personnel, equipment and resources that would otherwise be available to respond to a real distress call. False alerts are costly and may put search and rescue personnel at risk in adverse environments.
- 2.3 A false alert may interfere with genuine emergency transmissions and hinder or prevent the timely location of crash sites. Frequent false alerts may also reduce the vigorous reaction that must be attached to all ELT distress signals.

3 Factors Contributing to False Alerts

3.1 Mishandling of ELT

It includes improper installation, testing, maintenance, disposal of an ELT with battery installed, and inadvertently turning on an ELT.

3.2 Malfunction of ELT

Faulty activation switch, water ingress, low battery, and test mode malfunction may cause inadvertent activation of an ELT.

3.3 ELT Mounting Failure

Mounting failure, such as strap or bracket damage, release mechanism damage and faulty mounting for externally mounted ELT, may dislodge the ELT and trigger the transmission of distress signal.

4 Prevention of False Alerts

4.1 All ELTs shall be registered as stipulated in AN 27 Appendix 1 such that the ELT can be promptly identified after triggered. It is of extreme importance that a contact telephone number is provided and manned 24 hours a day for the search and rescue crews to determine whether it is a real distress.

4.2 ELT testing shall follow the guidance as stipulated in AN 27A.

4.3 ELT shall be properly maintained in accordance with an approved maintenance schedule. Low battery can cause erroneous signals and generate false alerts.

4.4 Operators shall establish procedures to handle the transportation, storage and particularly the disposal of ELT. Disposed ELT should be made inoperable by removing its battery. If an ELT is to be returned to workshop or manufacturer with the battery still installed, it should be well protected to prevent inadvertent transmission of signals during shipment.

4.5 The vast majority of false alerts are caused by human factors due to inadequate knowledge. Operators have the responsibility to educate users about the consequences of false alerts and should therefore establish procedures to handle and prevent ELT false alerts.

NOTE: When maintenance or flight crews are aware that an ELT is inadvertently turned on, they should report at once to Aerodrome Control Tower at +852 2910 6822.

5 **Additional Information**

- 5.1 Conclusion APANPIRG/27/25 of the 27th Meeting of the ICAO Asia/Pacific Air Navigation Planning and Implementation Regional Group
- 5.2 United States National Oceanic and Atmospheric Administration (NOAA) - Search and Rescue Satellite Aided Tracking (SARSAT)
website: www.sarsat.noaa.gov/index.html

Captain Victor LIU
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 28
Issue 13
30 September 2022**

APPROVAL OF ORGANISATIONS

1 Introduction

- 1.1 This Notice gives general guidance for organisations seeking approval for the type of work to be approved by the Director-General.
- 1.2 The Director-General grants approval to the organisations which are capable of authorising suitable persons to make certifications and/or furnish reports in accordance with the regulations of the Air Navigation (Hong Kong) Order 1995 (the Order).
- 1.3 Organisation approvals are based on various Hong Kong Aviation Requirements (HKARs). These HKARs contain the requirements prescribed for the grant, renewal and variation of approval.

2 Eligibility for Approval

- 2.1 Any organisation located in Hong Kong is eligible to make application for approval referred in paragraph 1.
- 2.2 Any organisation located outside the territories of Hong Kong may make application for approval referred in paragraph 1. However substantiation must be provided to the satisfaction of the Director-General on a need of such service(s) sought by Hong Kong aviation industry and presented in the form of a letter or a Memorandum of Understanding (MoU) from an organisation based in Hong Kong and approved by the Director-General with the reason(s) for the need. In addition, an assessment report demonstrating compliance with the relevant HKAR should be prepared by the organisation which issues the letter or MoU to support the applicant.

3 Application Procedures for Grant of Approval

Application procedures are prescribed in the respective HKARs.

4 **Oversight of Approval**

- 4.1 Upon an initial approval granted, the organisation will be subject to regular oversight through an audit and surveillance programme established by the Civil Aviation Department (CAD). The scope and frequency of audit will be determined according to operational scale, complexity and safety performance of the organisation.
- 4.2 Any finding identified during CAD's audit and surveillance activity will be notified to the organisation for their action. Appendix 1 to this Notice provides further information on findings and the corresponding actions.

5 **Application Procedures for Renewal or Variation of Approval**

Application procedures are prescribed in the respective HKARs.

6 **Other information**

- 6.1 Various HKARs are published in the CAD website:
<https://www.cad.gov.hk/english/airworthiness.html>
- 6.2 Lists of CAD approved or accepted organisations (airworthiness) are published in the CAD website:
https://www.cad.gov.hk/english/approved_organisations_aw.html
- 6.3 The charges payable to the Hong Kong Special Administrative Region Government in respect of grant, renewal and variation of approvals are laid down in the Hong Kong Air Navigation (Fees) Regulations (Cap. 448D).
<https://www.elegislation.gov.hk/hk/cap448D>

7 **Cancellation**

This notice cancels Airworthiness Notice No. 28 Issue 12, dated 10 December 2012, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

NON-COMPLIANCE FINDINGS

1 Introduction

- 1.1 There are occasions that the Director-General when carrying out an audit to an organisation for compliance with the Order, HKARs or CAD 360 will record non-compliance finding(s) or observation(s).
- 1.2 In most HKARs relating to organisation approvals, "Findings" and "Observations" have been defined according to the nature and level prescribed in the respective requirements. This Appendix provides definitions of "Finding" and "Observation" in a broad term. Nevertheless, the definitions prescribed in the HKARs should take precedence if any contradictory information exists.
- 1.3 "Findings" are categorised into 2 groups of which "Level 1" represents major non-compliance and "Level 2" represents minor non-compliance. Those findings are recorded in the "Finding Level" Block of CAD Audit and Corrective Action Report (ACAR).
- 1.4 "Observations" do not represent any non-compliance but record potential problems that could lead to non-compliance. Those observations are recorded as "Level 3" in the "Finding Level" Block of the ACAR.
- 1.5 In the absence of such information, e.g. in HKAR-1 and CAD 360 Part Two, holders of the respective approval should always refer to this Appendix on the definitions of finding and observation.
- 1.6 After receipt of notification of findings, the organisation should initiate a corrective action plan and demonstrate the corrective action be accomplished to the satisfaction of the Director-General within an agreed period.

2 Level 1 Finding

- 2.1 "Level 1 finding" means any significant non-compliance with regulations or requirements which lowers the safety standard and hazards seriously the safety of flight or aircraft.
- 2.2 The following sub-paragraphs provide examples of "Level 1 finding" which are not exclusive:
 - a. A significant non-compliance with the HKAR-145 requirements against a complete product line or CAD 360 requirements on maintenance responsibilities, maintenance management, quality system, maintenance

management exposition, aircraft maintenance programme, technical log and maintenance records.

Note: A complete product line is defined as all the aircraft, engine or component of a particular type.

- b. The calibration control of equipment as specified in HKAR 145.40(b) had previously broken down on a particular type product line such that most "calibrated" equipment were affected from that time.
- c. The management of an aircraft maintenance programme was broken down some time ago on a particular type of aircraft such that all aircraft of that type were affected from that time.
- d. Failure to gain access to the approved organisation during normal operating hours of the organisation after two written requests.
- e. Failure to gain access to the aircraft during normal operating hours after two written requests.

2.3 The corresponding actions for "Level 1 finding" are as follows:

- a. The organisation shall demonstrate corrective action to the satisfaction of the Director-General within a period of no more than twenty-one working days after written notification of the finding.
- b. The organisation approval may be revoked, limited, or suspended in whole or in part depending on the extent of the Level 1 finding, until the corrective action has been taken by the organisation and satisfied by the Director-General.
- c. The subsequent renewal or variation of organisation approval will not be proceeded until corrective action has been completed.

3 Level 2 Finding

3.1 "Level 2 finding" means any non-compliance with regulations or requirements which is not classified as "Level 1 finding".

3.2 The following sub-paragraphs provide examples of "Level 2 finding" which are not exclusive:

- a. A non-compliance with the requirements specified in paragraphs 2.2 against one product.
- b. One time non-compliance with the maintenance programme for a specific aircraft.
- c. One time use of a component without any serviceable tag.

d. The training documents of the certifying staff not completed.

3.3 The corresponding actions for “Level 2 findings” are as follows:

- a. All Level 2 findings must be addressed by the organisation to the satisfaction of the Director-General before the approval can be renewed or varied.
- b. The corrective action period granted by the Director-General is subject to the nature of the finding but in any case initially not more than three months.

4 Observation (Level 3 Finding)

- 4.1 An "Observation" does not constitute a non-compliance with the Order, HKARs or CAD 360. However it means an item where it has been identified, by objective evidence, to contain potential problems that could lead to non-compliance.
- 4.2 No corresponding action for an “Observation” is required. The organisation is encouraged to reply in the ACAR with the information on how the problems are addressed and return the completed ACAR to CAD within three months.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 29
Issue 9
10 December 2012**

**CIVIL AVIATION DEPARTMENT
AIRWORTHINESS OFFICE AND PERSONNEL LICENSING OFFICE**

- 1 The CAD Airworthiness Office is located at:-

CAD Headquarters
1 Tung Fai Road
Hong Kong International Airport
Lantau
Hong Kong

Tel.: (852) 2910 6179
Fax: (852) 2362 4250
E-mail: awo@cad.gov.hk

- 2 The CAD Personnel Licensing Office is located at:-

CAD Headquarters
1 Tung Fai Road
Hong Kong International Airport
Lantau
Hong Kong

Tel.: (852) 2910 6095
Fax: (852) 2329 8595
E-mail: plo@cad.gov.hk (for HKAR-66 licensing enquiry)

- 3 The CAD web is available on Internet at <http://www.cad.gov.hk/>.

4 **Cancellation**

This Notice cancels Airworthiness Notice No. 29 Issue 8, dated 15 February 2009, which should be destroyed.

Norman LO
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 30
Issue 7
31 December 2021**

**COOPERATION ARRANGEMENT
ON
JOINT MAINTENANCE MANAGEMENT
BETWEEN
CIVIL AVIATION ADMINISTRATION OF CHINA,
CIVIL AVIATION DEPARTMENT OF THE HONG KONG SPECIAL
ADMINISTRATIVE REGION GOVERNMENT, CHINA AND
CIVIL AVIATION AUTHORITY OF THE MACAO SPECIAL ADMINISTRATIVE
REGION, CHINA**

1 Introduction

- 1.1 Civil Aviation Department of the Hong Kong Special Administrative Region Government, China (HKCAD) had entered into a Cooperation Arrangement on mutual recognition of Aircraft Maintenance Organisations with the Civil Aviation Administration of China (CAAC) and Civil Aviation Authority of the Macao Special Administrative Region, China (AACM) on 21 May 2002.
- 1.2 HKCAD, CAAC and AACM, hereinafter referred to as the “Authority” or collectively the “Authorities”, signed an Addendum to the aforementioned Cooperation Arrangement on 18 February 2004. The purpose of the addendum was to extend the scope of the Cooperation Arrangement to include the maintenance of engines and propellers.
- 1.3 The Authorities signed a Cooperation Arrangement on 2 June 2006 with the purpose of superseding the abovementioned Cooperation Arrangement and Addendum and extending the scope of mutual recognition to include aircraft maintenance.
- 1.4 The Authorities signed another Cooperation Arrangement on 29 October 2013 on mutual recognition of Aircraft Maintenance Training Organisations.
- 1.5 The Authorities signed a new Cooperation Arrangement (CA) under the captioned title on 30 November 2021. The CA combines mutual recognition of Aircraft Maintenance Organisations and Aircraft Maintenance Training Organisations, and includes mutual acceptance of Aircraft Maintenance Licence

holders. The Cooperation Arrangements mentioned in paragraph 1.1 to 1.4 are repealed from the effective date of the new CA.

2 The Cooperation Arrangement

The CA along with the associated Joint Maintenance Procedures (JMP) are available on HKCAD website: <https://www.cad.gov.hk/english/arrangement.html>

3 Definitions

For the purpose of this Notice, definitions of terms stipulated in the CA and the JMP shall apply.

4 Applicability

The CA applies to:

- 4.1 the recognition by one Authority of the maintenance organisations approved by the other Authorities in respect of the issuance of certificate of release to service by the maintenance organisations;
- 4.2 the recognition by one Authority of the maintenance training organisations approved by the other Authorities in respect of maintenance training; and
- 4.3 the acceptance by one Authority of the holders of Aircraft Maintenance Licence issued by the other Authorities to work in maintenance organisations located in jurisdictional area of the Authority.

5 Recognition of the Maintenance Organisations

- 5.1 Pursuant to paragraph 4.1, the certification of maintenance functions by a HKAR-145 approved maintenance organisation under the jurisdictional area of HKCAD will be recognised by the CAAC and AACM for the certification of the same functions by their respective approved maintenance organisations.
- 5.2 The certification of maintenance functions carried out by a CCAR-145 and MAR-145 approved maintenance organisation under the jurisdictional area of the respective Authorities will be recognised by HKCAD for the same certification carried out by HKAR-145 approved maintenance organisation.
- 5.3 Details of recognition of the maintenance organisations are provided in Appendix 1 to this Notice.

6 Recognition of the Maintenance Training Organisations

- 6.1 Pursuant to paragraph 4.2, the performance of maintenance training by a HKAR-147 approved maintenance training organisation under the jurisdictional area of HKCAD will be recognised by CAAC and AACM for the performance of the same training by their respective approved maintenance training organisations respectively.
- 6.2 The maintenance training performed by a CCAR-147 or MAR-147 approved maintenance training organisation under the jurisdictional area of the respective Authorities will be recognised by HKCAD for the same training performed by HKAR-147 approved maintenance training organisation.
- 6.3 Details of recognition of the maintenance training organisations are provided in Appendix 2 to this Notice.

7 Acceptance of the holders of Aircraft Maintenance Licence

- 7.1 Pursuant to paragraph 4.3, a holder of HKAR-66 Aircraft Maintenance Licence will be accepted for the granting of maintenance authorisation by CCAR-145 or MAR-145 approved maintenance organisations under the jurisdictional area of the respective Authorities to perform certification of maintenance functions within the approved scope of the maintenance organisations concern.
- 7.2 A holder of CCAR-66 Aircraft Maintenance Personnel Licence or MAR-66 Aircraft Maintenance Engineer Licence will be accepted for the granting of maintenance authorisation by HKAR-145 approved maintenance organisations under the jurisdictional area of HKCAD to perform certification of maintenance functions within the approved scope of the maintenance organisations concern.
- 7.3 Details of acceptance of the Aircraft Maintenance Licence holders are provided in Appendix 3 to this Notice.

8 Cancellation

This Notice cancels Airworthiness Notice No. 30, Issue 6, dated 30 January 2014, Airworthiness Notice No. 30C, Issue 1, dated 1 May 2014 and Airworthiness Notice No. 30C Appendix No.1, Issue 1, dated 1 May 2014, which should be destroyed

Captain Victor LIU
Director-General of Civil Aviation

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RECOGNITION OF THE MAINTENANCE ORGANISATIONS

1. Scope of the Maintenance Functions under the Cooperation Arrangement

- 1.1 The maintenance functions performed by a HKAR-145 approved maintenance organisation within the maintenance classes and ratings specified in paragraph 6.12(b) of the JMP will be recognised by CAAC and AACM.
- 1.2 The maintenance functions performed by a CCAR-145 or MAR-145 approved maintenance organisation within the maintenance classes and ratings specified in paragraph 6.12(a) or 6.12(c) of the JMP respectively will be recognised by HKCAD.
- 1.3 Certificates of release to service issued under the provision of paragraph 6.3 of the JMP are mutually recognised.

2. Application for Recognition – HKAR-145 Approved Maintenance Organisation

- 2.1 A HKAR-145 approved maintenance organisation is automatically recognised under the CA. No separate application is required.

Note: The JMM Acceptance Certificates previously issued to HKAR-145 approved maintenance organisations are no-longer required and should be returned to HKCAD.

- 2.2 The HKAR-145 approved maintenance organisation shall demonstrate its HKAR-145 approval valid and be located within Hong Kong except as provided otherwise in paragraph 6.2 of the JMP.
- 2.3 The HKAR-145 approved maintenance organisation shall meet the conditions specified in paragraph 6.1 to 6.11 of the JMP on implementation of the CA.

3. List of Recognised Maintenance Organisations

The websites given in paragraph 6.13 of the JMP provide access to the lists of the recognised maintenance organisations.

RECOGNITION OF THE MAINTENANCE TRAINING ORGANISATIONS

1. Scope of the Maintenance Trainings under the Cooperation Arrangement

- 1.1 The maintenance training courses conducted by a HKAR-147 approved maintenance training organisation within the training scopes specified in paragraph 7.2(b) of the JMP will be recognised by CAAC and AACM.
- 1.2 The maintenance training courses conducted by a CCAR-147 or MAR-147 approved maintenance training organisation within the training scopes specified in paragraph 7.2(a) or 7.2(c) of the JMP respectively will be recognised by HKCAD.
- 1.3 The HKAR-147 Certificate of Recognition issued for the courses under paragraph 1.1 will be recognised by CAAC and AACM.
- 1.4 The CCAR-147 Training Certificate or MAR-147 Certificate of Recognition issued for the respective training courses under paragraph 1.2 will be recognised by HKCAD.

2. Application for Aircraft Type Rating Endorsement on HKAR-66 Aircraft Maintenance Licence (AML)

- 2.1 Applicant must satisfy all relevant requirements as stipulated in HKAR-66 Licensing of Maintenance Personnel in particular the requirements on the endorsement of an appropriate aircraft type rating.
- 2.2 Pursuant to paragraph 1.2, the applicant should demonstrate satisfactory completion of the relevant training course conducted by a CCAR-147 or MAR-147 approved maintenance training organisation.
- 2.3 A copy of the training certificate issued under the provision of paragraph 1.4 should be submitted by the applicant. The completion date of training course displayed on the certificate must be on or after 29 October 2013.

3. Application for Recognition - HKAR-147 Approved Maintenance Training Organisations

- 3.1 A HKAR-147 approved maintenance training organisation is automatically recognised under the CA. No separate application is required.
- 3.2 The HKAR-147 approved maintenance training organisation shall demonstrate its HKAR-147 approval valid and be located within Hong Kong.

4. List of Recognised Maintenance Training Organisations

The websites given in paragraph 7.4 of the JMP provide access to the lists of the recognised maintenance training organisations.

ACCEPTANCE OF THE AIRCRAFT MAINTENANCE LICENCE HOLDERS

1. Scope of acceptance of the Aircraft Maintenance Licence (AML) Holders under the Cooperation Arrangement

- 1.1 The Aircraft Type Ratings endorsed on a HKAR-66 AML under the Categories specified in paragraph 8.1 (b) ii) of the JMP will be accepted by CCAR-145 or MAR-145 approved maintenance organisations.
- 1.2 The Aircraft Type Ratings endorsed on a CCAR-66 Aircraft Maintenance Personnel Licence with Technical English level 3 or 4 endorsement under the Categories specified in paragraph 8.1 (b) i) of the JMP will be accepted by HKAR-145 approved maintenance organisations.
- 1.3 The Aircraft Type Ratings endorsed on a MAR-66 Aircraft Maintenance Engineer Licence under the Categories specified in paragraph 8.1 (b) iii) of the JMP will be accepted by HKAR-145 approved maintenance organisations.

2. Acceptance requirements for HKAR-66 AML holders to work in MAR-145 or CCAR-145 Approved Maintenance Organisations

Pursuant to paragraph 1.1, the HKAR-66 AML holders must satisfy the conditions specified in paragraph 8.1 of the JMP as the acceptance basis under the CA.

3. Acceptance requirements for HKAR-145 Approved Maintenance Organisations to grant Maintenance Authorisation to a CCAR-66 or MAR-66 Licence holder

- 3.1 Pursuant to paragraph 1.2 and 1.3, the HKAR-145 approved maintenance organisations must ensure that their employed CCAR-66 or MAR-66 Licence holders meet the conditions specified in paragraph 8.1 and 8.2 of the JMP and the relevant requirements stipulated in HKAR-145 before issuing the maintenance authorisation to the Licence holders concerned.

- 3.2 The HKAR-145 approved maintenance organisations must satisfy the conditions specified in paragraph 8.3(a) of the JMP during the exercise of maintenance authorisation by the CAAR-66 and MAR-66 Licence holders and should report to HKCAD in case any action(s) specified in paragraph 8.3(b) of JMP is imposed on the Licence holders concerned.

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 30A
Issue 4
30 April 2024**

**TECHNICAL ARRANGEMENT ON AVIATION MAINTENANCE
BETWEEN
THE CIVIL AVIATION AUTHORITY OF SINGAPORE AND
CIVIL AVIATION DEPARTMENT OF THE
HONG KONG SPECIAL ADMINISTRATIVE REGION GOVERNMENT, CHINA**

1 Introduction

The Civil Aviation Department of the Hong Kong Special Administrative Region Government, China (hereinafter referred to as ‘HKCAD’) has entered into an enhanced Technical Arrangement (TA) with the Civil Aviation Authority of Singapore (hereinafter referred to as ‘CAAS’) on 17 October 2023. The TA is an expansion of the one signed on 29 August 2008 that allowed for both the HKCAD and CAAS, hereinafter referred to as the “Authority” or collectively the “Authorities”, to recognise each other’s approvals given to maintenance organisations on aircraft and engine maintenance. The enhancement includes provisions for facilitating further collaboration between the Authorities on areas such as capacity building, exchange of maintenance-related safety data, and implementation of safety management systems, and to update certain terms to align with the Annexes to the Chicago Convention and international practices.

2 The Technical Arrangement

The TA is available on HKCAD website:
<https://www.cad.gov.hk/Arrangement/TA%20-%20Singapore.pdf>

3 Definition

For the purpose of this Notice, definitions stipulated in the TA shall apply.

4 Scope

4.1 The TA applies to:

- (a) the acceptance by one Authority of Aeronautical Product maintenance performed under the maintenance system of the other Authority;

- (b) the acceptance by one Authority of the evaluation and approval of maintenance organisations performed by the other Authority;
- (c) the exchange of information regarding maintenance standards and maintenance certification systems; and
- (d) co-operation and assistance with respect to the maintenance of Aeronautical Products.

4.2 Unless otherwise agreed between the Authorities in a particular case, this TA only applies to maintenance organisations that are located within the Area of the Overseeing Authority.

5 Maintenance and Certification

Details of acceptance on maintenance and certification of the Aeronautical Product covered by the TA are provided in Paragraphs 11 to 14 of the TA.

6 Application for Recognition of HKAR-145 Approved Maintenance Organisation under the TA

- 6.1 An HKAR-145 approved maintenance organisation shall write to HKCAD to apply for recognition under the TA.
- 6.2 The HKAR-145 approved maintenance organisation shall be located within Hong Kong and its HKAR-145 approval is valid.
- 6.3 The HKAR-145 approved maintenance organisation shall include in its Exposition, either within the body of the manual or by means of a suitable supplement, the items specified in Paragraph 4 of Annex 1 of the TA.

7 List of Recognised Maintenance Organisations

A list of the recognised maintenance organisations under the TA is available on HKCAD website: https://www.cad.gov.hk/english/pdf/TA_CAAS_organisations.pdf

8 Cancellation

This Notice cancels Airworthiness Notice No. 30A Issue 3, dated 30 September 2008, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 30B
Issue 1
30 September 2006**

**TECHNICAL ARRANGEMENT ON AIRCRAFT MAINTENANCE
BETWEEN
THE CIVIL AVIATION DEPARTMENT OF HONG KONG
AND THE TRANSPORT CANADA CIVIL AVIATION DIRECTORATE**

1 Introduction

- 1.1 The Civil Aviation Department of Hong Kong (hereinafter referred to as 'HKCAD') has entered into a Technical Arrangement with the Transport Canada Civil Aviation Directorate (hereinafter referred to as 'TCCA') on 22 March 2006. The Technical Arrangement is available for access on the CAD website <http://www.cad.gov.hk>.

2 The Technical Arrangement

- 2.1 The HKCAD and TCCA (hereinafter referred to as "the parties") agree that their respective laws, regulations, standards, practices, procedures and systems for the approval and monitoring of aircraft maintenance in general, and approved maintenance organisations in particular, are sufficiently comparable to permit the acceptance of each other's maintenance certification systems, subject to the procedures described in the Technical Arrangement.
- 2.2 Without prejudice to the obligations of each of the parties under its own regulations, the purpose of the Technical Arrangement is to avoid duplication of inspections and evaluations by:
- (a) Enabling each party to give the same validity to the other party's inspection and evaluation findings for the approval of maintenance organisations as to its own inspection and evaluation findings; and
 - (b) Enabling each party to give the same validity to the other party's system for the release of aeronautical products to service after maintenance as to its own release system.

2.3 Definitions

- 2.3.1 Within the Technical Arrangement, the following terms have the

meanings as specified:

- (a) **"Area"**, in relation to Hong Kong means the Hong Kong Special Administrative Region, consisting of Hong Kong Island, Kowloon and the New Territories and in relation to Canada, means the national territory of Canada.
- (b) **"Aeronautical product"** means any civil aircraft, and any aircraft engine, propeller, sub-assembly, appliance, material, part or component to be installed thereon.
- (c) **"Maintenance"** means the inspection, overhaul, repair, modification and the replacement of any aeronautical product.
- (d) **"Overseeing authority"** means the Civil Aviation Authority having jurisdiction over a maintenance organisation that performs maintenance function covered by the Technical Arrangement.
- (e) **"Responsible authority"** means the Civil Aviation Authority having legal responsibility for regulating and controlling an aircraft.
- (f) **"Technical records"** means the documents that an owner or operator is required to maintain in respect of an aeronautical product. Technical records include but are not limited to: data about journey, airframe, engine, propeller and component logs, weight and balance reports, technical drawings, x-ray films, and other NDT reports, laboratory reports and flight test records.

2.4 Scope

2.4.1 The Technical Arrangement applies to:

- (a) The acceptance by one party of aeronautical product maintenance performed under the maintenance system of the other party;
- (b) The acceptance by one party of the evaluation and approval of maintenance organisations, performed by the other party;
- (c) The exchange of information regarding maintenance standards and maintenance certification systems; and
- (d) Co-operation and assistance with respect to the maintenance of aeronautical products.

- 2.4.2 Unless otherwise agreed between the parties, recognition by the responsible authority of maintenance organisations is only valid when they are located within the Area of the overseeing authority.

2.5 Maintenance and Certification

- 2.5.1 Maintenance organisations performing or certifying maintenance under the terms of the Technical Arrangement must have prior acceptance from the overseeing authority.
- 2.5.2 A maintenance organisation may not perform work under the Technical Arrangement that is outside the scope of the domestic approval issued by the overseeing authority.
- 2.5.3 Any document containing certifications made in accordance with the Technical Arrangement shall include a reference to that effect.
- 2.5.4 Subject to 2.5.3, the certification of aeronautical product maintenance pursuant to the Technical Arrangement will be accepted by the parties as follows:
- (a) A Canadian Maintenance Release issued in accordance with the Technical arrangement will be accepted by HKCAD as equivalent to a Certificate of Release to Service issued in accordance with Hong Kong Aviation Requirements (HKAR).
 - (b) A HKAR Certificate of Release to Service issued in accordance with the Technical Arrangement will be accepted by TCCA as equivalent to a Canadian Maintenance Release.
 - (c) A TCCA Authorised Release Certificate issued in accordance with the Technical Arrangement will be accepted by HKCAD as equivalent to a CAD Form One.
 - (d) A CAD Form One issued in accordance with the Technical Arrangement will be accepted by TCCA as equivalent to a TCCA Authorised Release Certificate.
- 2.5.5 Approval of the design of any repairs and modifications shall be in accordance with the requirements of the responsible authority.

- 2.5.6 Where maintenance involves the installation of an aeronautical product that has undergone maintenance, the maintenance of that aeronautical products must have been performed under the terms of an existing technical arrangement entered into by the responsible authority, or by an organisation that is approved by or otherwise acceptable to, the responsible authority.
- 2.5.7 Technical records shall be kept in accordance with the requirements of the responsible authority.

2.6 Mutual Co-operation and Technical Assistance

- 2.6.1 The parties will provide information regarding the terms of the Technical Arrangement, and will develop appropriate advisory publications and circulate these publications through established methods in their respective Area to inform the public of the terms of the Technical Arrangement and outline the special requirements necessary for persons to perform and certify work under the terms of the Technical Arrangement.
- 2.6.2 The parties agree to provide each other with technical evaluation assistance upon request, to further the purposes and objectives of the Technical Arrangement. Such assistance may include, but is not limited to reporting on maintenance organisation's continued compliance with the requirements of the Technical Arrangement.
- 2.6.3 The parties will provide each other with any regulations, standards, guidance material, policies, practices and interpretations relevant to the Technical Arrangement, and will ensure that such documents are updated in a timely manner. In addition, each party will notify the other party of any proposal to amend such documents and provide the other party the opportunity to review and comment on the proposals.
- 2.6.4 Where urgent or unusual situations develop that are within the scope of the Technical Arrangement but are not specifically addressed therein, the parties will review and consult each other, and upon mutual consent, take appropriate action, including amendment to the Technical Arrangement where required.
- 2.6.5 The parties will by mutual co-operation and with reasonable prior notice, allow each party to participate in the other's inspections and audits as an observer.
- 2.6.6 Subject to reasonable prior notification, the parties will allow each other to conduct independent inspections of each other's maintenance organisations to investigate issues relating to aircraft safety and the effective application of the Technical Arrangement.

2.7 Notification of Non-Compliance

- 2.7.1 Each party will notify the other party of any instance of unsatisfactory compliance with any regulations or any condition set forth in the Technical Arrangement that affects the ability of an organisation to comply with the terms of the Technical Arrangement.
- 2.7.2 The overseeing authority will promptly advise the other party of any investigations or enforcement action, including revocation, suspension or change of scope in respect of maintenance organisations recognised in accordance with the Technical Arrangement.

3 Recognition of Maintenance Organisations

- 3.1 The overseeing authority will ensure that the following criteria are met by each organisation authorised to maintain aeronautical products in accordance with the Technical Arrangement.
- 3.2 Except as provided otherwise in accordance with paragraph 2.4.2, the maintenance organisation must be located within the Area of the overseeing authority. Organisations outside the Area of the overseeing authority may be accepted in specific cases by mutual consent of the two authorities.
- 3.3 Work may be subcontracted by the maintenance organisation to:
 - 3.3.1 organisations approved by the responsible authority;
 - 3.3.2 organisations located within the Area of the overseeing authority and accepted under the terms of the Technical Arrangement;
 - 3.3.3 any other organisations within the Area of the overseeing authority, provided that the organisation responsible for the release of the work extends its quality system in accordance with the regulations of the overseeing authority to cover the activity; or
 - 3.3.4 organisations located outside the Area of the overseeing authority, only where the organisations concerned are directly approved by the responsible authority, are accepted via other technical arrangements entered into by the responsible authority, or are otherwise recognised by the responsible authority.

4 Maintenance Organisation Exposition Supplement

- 4.1 The maintenance organisation shall include in its Exposition or Maintenance Policy Manual, either within the body of the manual or by means of a suitable supplement:

- 4.1.1 A statement signed by the current CEO or accountable executive directing that personnel of the organisation must comply with the policies and procedures contained therein.
- 4.1.2 Confirmation that failure to comply with the terms of the Technical Arrangement, or with the policies and procedures described in the company Exposition or Maintenance Policy Manual, may be grounds for suspension or cancellation of any privileges granted pursuant to the Technical Arrangement.
- 4.1.3 Confirmation that the responsible authority may have access to the organisation to confirm compliance with the requirements of the Technical Arrangement.
- 4.1.4 Procedure to ensure that:
 - (a) Any parts installed have been manufactured or maintained by organisations that are acceptable to the responsible authority.
 - (b) The owner or operator of the aeronautical product being maintained has obtained the approval of the responsible authority in respect of any major modifications and repairs.
 - (c) Maintenance is performed in accordance with the regulations of the overseeing authority.
 - (d) Technical records are completed in accordance with the requirements of the responsible authority.
 - (e) Any mandatory reportable conditions found in aeronautical products are reported to the owner or operator.
 - (f) Aeronautical products are released using the appropriate certification required by the overseeing authority.
 - (g) The authorized release certificate clearly states that maintenance performed is released in accordance with the Technical Agreement.
 - (h) Where applicable, procedures for the review and re-release of parts in respect of which the maintenance has been performed before the Technical Arrangement was signed.

- 4.1.5 Once the above criteria are met and have been approved by the overseeing authority, the overseeing authority will notify the responsible authority of the approval and the scope of work that may be performed by the organisation.
- 4.1.6 The responsible authority will establish means of notifying potential clients of organisations approved under the Technical Arrangement of the identities and scope of approval of organisations so approved.
- 4.1.7 Notwithstanding any of the foregoing, either party may revoke the privileges of an organisation pursuant to the Technical Arrangement, where the party finds that the organisation is not maintaining the applicable standards or is otherwise not achieving the intent of the Technical Arrangement.

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Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 31
Issue 7
30 April 2024**

AIRCRAFT RADIO AND RADIO NAVIGATION EQUIPMENT

1 Introduction

Article 14(5) of the Air Navigation (Hong Kong) Order 1995 (“the Order”) prescribes that all aircraft radio and radio navigation equipment (hereinafter referred as “Aircraft Radio Equipment”) shall be of a type approved by the Director-General in relation to the purpose for which it is to be used, and shall be installed in a manner approved by the Director-General. Article 57(2) and Schedule 12 of the Order further stipulate that the licence in force in respect of the aircraft radio station installed in the aircraft shall be carried by the aircraft.

2 Approval of Aircraft Radio Equipment Installations

- 2.1 Aircraft Radio Equipment installations are approved through the Certificate of Airworthiness issuance process at the time of aircraft induction; or
- 2.2 Where a modification to Aircraft Radio Equipment installations is desired, approval of the modification shall be made in accordance with the requirements of HKAR-21.

3 Aircraft Station Licence from the Office of the Communications Authority (OFCA)

- 3.1 An Aircraft Station Licence from the OFCA is required “for the installation and use of radio equipment” for each aircraft, and such licence shall be carried by the aircraft as required by Schedule 12 of the Order. Applications for the Aircraft Station Licence shall be submitted to the OFCA.
- 3.2 It should be noted that a change of aircraft ownership details, or modifications to any approved Aircraft Radio Equipment, invalidates the Aircraft Station Licence and a new application shall be submitted to the OFCA.

4 Cancellation

This Notice cancels Airworthiness Notice No. 31 Issue 6, dated 31 October 2023, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 32
Issue 1
1 February 2023**

AIRCRAFT WEIGHT SCHEDULE

1 Introduction

Pursuant to Article 16 of the Air Navigation (Hong Kong) Order 1995 ('the Order'), this Notice prescribes the requirements for weighing an aircraft including helicopters, the determination of the centre of gravity of such aircraft and preparation of a Weight and Centre of Gravity Schedule and Weight and Balance Report.

2 Definitions

For the purpose of this Airworthiness Notice the following definitions apply: -

- (a) **Basic Weight** is the weight of the aircraft and of such items of equipment as are indicated in the weight schedule or such other weight as may be approved the Director-General, plus that of the declared quantity of unusable fuel, trapped fuel and unusable oil. In the case of turbine-engined aircraft and aircraft the Maximum Total Weight Authorised (MTWA) of which does not exceed 5700 kg, it may also include the weight of usable oil.
- (b) **Basic Equipment** is the unconsumable fluids, and the equipment which is common to all roles in which the operator intends to use the aircraft.
- (c) **Variable Load** is the weight of the crew, of items such as the crew's baggage, removal units and other equipment the carriage of which depends upon the role for which the operator intends to use the aircraft for the particular flight.
- (d) **Operating Weight.** The sum of the Basic Weight and the total Variable Load required for the role in which the operator intends to use the aircraft.
- (e) **Disposable Load (Loading information)** is the weight of all persons and items of load, including fuel and other consumable fluids, carried in the aircraft, other than the Basic Equipment and Variable Load.

Note: To obtain the total loaded weight it is necessary to add to the Basic Weight, the weights of the Variable and Disposable Load items which are to be carried for the particular role in which the aircraft is to be used.

3 Weighing Requirement

- 3.1 Aircraft shall be weighed when all manufacturing processes have been completed. Aircraft weighing shall be conducted in accordance with procedures acceptable to the Director-General. The aircraft weighing report shall be prepared and certified by a qualified person. Essential aspects of the conduct of weighing are given in Appendix No. 1.

Note: The Director-General will consider applications from aircraft constructors and operators to weigh certain types of aircraft on a sampling basis (i.e. representative aircraft, as weighed, would be acceptable for others of the same standard).

- 3.1.1 For Aircraft, the Maximum Total Weight Authorised (MTWA) of which exceeds 5700 kg, shall be re-weighed within two years after the date the Certificate of Airworthiness is first issued in Hong Kong, and subsequent check weighing shall be made at intervals not exceeding five years, and at such times as the Director-General may require.
- 3.1.2 For aircraft, the MTWA below 5700 kg with the first Certificate of Airworthiness issued in Hong Kong on or before 31 December 2022, the aircraft shall be re-weighed within two years after the date the Certificate of Airworthiness is first issued in Hong Kong or 31 December 2024, whichever occurs later, and subsequent weighing shall be made at intervals not exceeding five years, and at such times as the Director-General may require.
- 3.1.3 For aircraft, MTWA below 5700 kg with the first Certificate of Airworthiness issued in Hong Kong after 31 December 2022, the aircraft shall be re-weighed within two years after the date the Certificate of Airworthiness is first issued in Hong Kong, and subsequent weighing shall be made at intervals not exceeding five years, and at such times as the Director-General may require.
- 3.2 When an aircraft is weighed, the condition of the aircraft (i.e. the equipment, the position of movable items and other items of load such as fluids in tanks) shall be recorded. The equipment installed at the time of weighing should not differ from that in the declared basic equipment list associated with the aircraft Weight and Centre of Gravity Schedule or the aircraft Weight and Balance report. Otherwise, in determining the basic weight and the corresponding centre of gravity position, corrections will have to be made for items that have been weighed but that are not basic equipment items, and for basic equipment items not installed in the aircraft during the weighing.
- 3.3 The Director-General may require that the actual weight of the items of Variable Load be ascertained.

- 3.4 Weighing results and related calculations shall be recorded in a weighing report which shall be retained by the operator. It shall be made available to the Director-General. When the aircraft is again weighed the previous weighing records must be retained with the aircraft records.
- 3.5 The accumulated effects of modifications and repair on the weight and balance shall be accounted for and properly documented. Aircraft shall be reweighed if the effect of modifications or repairs on the weight and balance is not accurately known.
- 3.6 The operator shall maintain records of all known weight and centre of gravity changes which occur after the aircraft has been weighed and such records shall be retained by the operator.

4 Weight and Balance Report

- 4.1 A Weight and Balance Report shall be produced for each aircraft. A copy of each report shall be made available upon request from the Director-General.

Note: An aircraft MTWA of which below 5700 kg, the information of the Weight and Balance Report may be given as part of the Weight and Centre of Gravity Schedule.

- 4.2 The Weight and Balance Report shall record the essential loading data to enable the particular aircraft to be correctly loaded and to include sufficient information for an operator to produce written loading instructions in accordance with the requirements of the Order.

- 4.3 The Weight and Balance Report shall include the following items:

- (a) Reference number and date of issue.
- (b) Type and model number of the aircraft and its nationality and registration mark.

(c) Basic Weight

The basic weight and centre of gravity of the aircraft as derived from the Weight and Centre of Gravity Schedule shall be presented. A copy of the Weight and Centre of Gravity Schedule, including the Basic Equipment list, and any referenced weighing report, shall be attached to the Report or made reference to the document file.

(d) Datum definition

A diagram or a description of the datum (e.g. in relation to the fuselage frame numbering system or other identifiable points) shall

be included.

(e) Variable Load

Information on the weight and lever arms appropriate to Variable Load items may be detailed for as many roles as the operator wishes and for every role the total weight and moment change shall be given.

Note: Weights of crew members may be assumed at not less than the weight shown in the Order, provided that the aircraft has a total seating capacity of 12 or more persons. Otherwise the weight of each person must be determined by weighing.

(f) Loading Information

This shall include all relevant information so that, knowing the disposable load which is intended to be carried, the weight and the position of the centre of gravity of the aircraft can be calculated. At least the following shall be given:

- (1) The lever arm of the centre of gravity of an occupant of each seat.
- (2) The lever arm of each compartment or area in the aircraft where disposable load, such as luggage or freight, may be placed.
- (3) Any significant change in the centre of gravity of the aircraft (change in moment) which will result from a change in configuration, such as the retraction and extension of the landing gear.
- (4) The lever arm of the centre of gravity of fuel and oil in each tank including the variation of the lever arm with the quantity loaded if this variation is significant.
- (5) The maximum total usable capacities of the fuel and oil tanks and the weight of fuel and oil when the tanks are filled to their capacities assuming typical densities of these fluids.

(g) A statement that the Report supersedes all earlier issues.

- 4.4 The weights, distances, moments and quantities may be given in any units provided that these are used consistently and agree with the markings and placards on the aircraft.
- 4.5 A copy of the Report shall be included in the Flight Manual of all aircraft not exceeding 5700 kg MTWA. If a Flight Manual is not applicable, the Report shall be displayed or retained in the aircraft in a suitably identified

stowage.

- 4.6 Operators shall revise the Weight and Balance Report when there is a change to any of the items in paragraph 4.3.
- 4.7 The Weight and Balance Report may be in the form given in Appendix No. 3. Variations in presentation are permitted, but must be acceptable to the Director-General.

5 Weight and Centre of Gravity Schedule

- 5.1 A Weight and Centre of Gravity Schedule shall be provided for each aircraft. Each Schedule shall be identified by the aircraft type and model number, the nationality and registration marks and the aircraft serial number. The date of issue and the reference number of the Schedule shall be given and the Schedule shall be prepared and certified by a qualified person. A statement shall be included stating that the Schedule supersedes all earlier issues. A copy of each Weight and Centre of Gravity Schedule shall be provided to the Director-General.

Note: An aircraft MTWA of which exceeds 5700 kg, the information of variable load and disposable load (loading information) of the Weight and Centre of Gravity Schedule may be given as part of the Weight and Balance Report.

- 5.2 The schedule shall present the derivation of the weight and the centre of gravity from the most recent weighing report or other acceptable information. The Schedule shall include the current Basic Equipment list showing the weight and lever arm of each item or make reference to the document in which such a list is included.
- 5.3 The date and reference number of the most recent weighing report or other acceptable information, upon which the weighing report is based, shall be given.
- 5.4 The aircraft Weight and Centre of Gravity Schedule may be in the form given in Appendix No. 2. Variations in presentation are permitted, but must be acceptable to the Director-General. In the case of helicopters, it may be necessary to present lever arms and moments about more than one axis, depending on the centre of gravity limits specified in the Flight Manual.
- 5.5 The datum which is defined in the Basic Weight may be different from the datum defined in the Flight Manual to which the centre of gravity limits relate. When a different datum is used it shall be adequately defined, its precise relationship to the datum in the Flight Manual shall be given, and any lever arms and moments which appear in any part of the Schedule shall be consistent with the datum so declared.

- 5.6 The aircraft Weight and Centre of Gravity Schedule shall be retained by the operator of the aircraft and where the Schedule has been revised the previous issue must be retained for a period of 6 months with the aircraft records.
- 5.7 The operator shall maintain records of all known weight and centre of gravity changes which occur after the aircraft has been weighed and such records shall be retained by the operator.
- 5.8 Operators shall revise the aircraft Weight and Centre of Gravity Schedule when the weight and centre of gravity are known to have undergone changes in excess of a maximum figure, which has been agreed by the Director-General as applicable to a particular aircraft type.

Note: The following changes in basic weight or centre of gravity position are considered significant and must be reported to the Director-General:

- (a) Aeroplanes whose empty weight has changed by more than 0.5% of the maximum total weight authorised or whose basic centre of gravity position has changed by more than 0.5% of the mean aerodynamic chord.
- (b) Helicopters whose empty weight has changed by more than 1% of the maximum total weight authorised or whose basic centre of gravity position has changed by more than 0.5 inch or 10% of the maximum permissible centre of gravity range whichever is the lesser.

Captain Victor LIU
Director-General of Civil Aviation

CONDUCT OF WEIGHING

- 1 The following aspects should be adhered to and included in company weighing procedures:
 - (a) Weighing shall be carried out under the control of a person authorised by an Approved Maintenance Organisation.
 - (b) Weighing equipment should be suitable for the purpose. Evidence should be available, if necessary, to show that the equipment is regularly inspected and calibrated and its errors are within the tolerances specified by the equipment manufacturer or local weights and measure authority requirements.
 - (c) The staff are trained and handling equipment is adequate to permit weighing to be made accurately and safely.
 - (d) Unless otherwise agreed to by the Director-General a weighing shall consist of two independent weighings made with the aircraft longitudinal datum horizontal. The load must be removed from the weighing equipment between the weighing. Any discrepancy in the weighing shall not exceed 0.2 per cent of the gross weight or 10 kg whichever is greater. If this tolerance is exceeded further weighing should be performed until the results between two consecutive weighings agree within the tolerance.
 - (e) A weighing report should be produced to provide a record of all measurements and calculations pertinent to the weighing. The report should include a list of equipment installed on the aircraft at the time of weighing.

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EXAMPLE OF AIRCRAFT WEIGHT SCHEDULE**SPECIMEN BASIC WEIGHT SCHEDULE**

Reference Number	- XXX/BWS/1234
Date of Issue	- 31 December 1988
Aircraft Type and Model	- Flynow 2E
Nationality and Registration Marks	- B-ABC
Aircraft Serial Number	- 44

COMPUTATION OF BASIC WEIGHT AND CENTRE-OF-GRAVITY POSITION

Description	Weight (kg)	Arm (in)	Moment (kg-in)
Aircraft weight as per weighing report WR/789 dated 30 December 1988	2475	126	311850
Total of items weighed but not part of Basic Equipment (listed to be given)	-25	26	-650
Total of Basic Equipment items not weighed (list to be given)	+50	126	+6300
Basic Weight	2500	127	317500

Or

Description	Weight (kg)	Arm (in)	Moment (kg-in)
Aircraft basic weight as per Basic Weight Schedule XXX/BWS/245 dated 20 June 1988	2475	126	311850
Total of Basic Equipment items removed (list to be given)	-25	26	-650
Total of Basic Equipment items added (list to be given)	+50	126	+6300
New Basic Weight	2500	127	317500

Note: The datum is at fuselage station O situated 114 inches forward of the wing leading edge. This is the datum defined in the Flight Manual. All lever arms are distances in inches aft of datum.

Current Basic Equipment List (may be given on separate sheets and attached to Schedule)

Item	Weight (kg)	Arm (in)
Two Marzell propeller type BL – H3Z30	57.6 each	76
Two engine driven 100 ampere alternative type GE-361	12.2 each	117
One 13 AH Ni-Cd battery CB-7	14	153
etc.	etc.	etc.

This Schedule was prepared on _____ (date) and supersedes all previous issues.

Name and Designation: _____

Signed: _____

EXAMPLE OF AIRCRAFT WEIGHT AND BALANCE REPORT

SPECIMEN WEIGHT AND BALANCE REPORT

Reference Number	- NAL/WBR/286
Date of Issue	- 1 January 1989
Produced by	- Win Aviation Ltd
Aircraft Type and Model	- Flynow 2E
Nationality and Registration Marks	- B-ABC
Constructor	- HELLO Co Ltd.
Constructor's Serial Number	- 44
Maximum Total Weight Authorised	- 3320 kg
Centre-of-Gravity Limits	- Refer to Flight Manual reference number FM/946

PART A - BASIC WEIGHT

The basic weight of the aircraft as derived in the Basic Weight Schedule NAL/BWS/246 dated 31 December 1988 is - 2500 kg

The centre of gravity of the aircraft in the same condition at this weight and with the landing gear extended is - 127 in. aft of datum

The total moment about the datum in this condition in kg-in/100 is - 3175

Note:

- (1) The datum is at fuselage station 0 situated 114 inches forward of the wing leading edge. This is the datum defined in the Flight Manual. All lever arms are distances in inches aft of datum.
- (2) The basic weight includes the weight of 11 kg unusable fuel and 2.2 kg unusable oil.

PART B - VARIABLE LOAD

The weight, lever arm and moment of items of Variable Load are shown below. The Variable Load depends upon the equipment carried for the particular role.

Item	Weight (kg)	Lever Arm (in)	Moment (kg-in/100)
Pilot (one)	-	108	-
De-icing fluid 1½ gallon	5.5	140	8
Life-jackets (7)	6.4	135	9
Row 1 passenger seats (two)	27.2	173	47
Row 2 passenger seats (two)	27.2	215	58
Row 3 passenger seats (two)	27.2	248	68
Table	3.6	256	9
One stretcher and attachments (in place of seats rows 2 and 3)	20.5	223	46
Medical Stores	6.8	250	17

PART C - LOADING INFORMATION (DISPOSABLE LOAD)

The total moment change when the landing gear is retracted is 8.2 kg-in/100. The appropriate lever arms are:

Item	Weight (kg)	Lever Arm inches	Capacity Imp.Gallon
Fuel in tanks 1 and 2	620*	145	190
Engine oil	23*	70	5.6
Forward baggage		21	
Rear baggage		261	
Passengers in row 1 seats		171	
Passengers in row 2 seats		213	
Passengers in row 3 seats		246	
Patient in stretcher		223	

Fuel density 3.26 kg/gal and oil density 4.1 kg/gal.

In accordance with the Order, it is a requirement that the pilot satisfies himself before take-off that the load is of such a weight, and is so distributed and secured, that it may safely be carried on the intended flight.

Note: To obtain the total loaded weight of aircraft, add to the Basic Weight the weights of the Variable and Disposable Load items to be carried for the particular role.

This Report was prepared on _____ (date) _____ and supersedes all previous issues.

Name and Designation _____

Signed: _____

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 35
Issue 6
30 May 2005**

LIGHT AIRCRAFT PISTON ENGINE OVERHAUL PERIODS

- 1 Article 9 of Air Navigation (Hong Kong) Order 1995 requires that aircraft registered in Hong Kong for which a certificate of airworthiness is in force be maintained in accordance with a maintenance schedule approved by the Director-General. The approved maintenance schedule requirements relating to overhaul of light aircraft piston engines are normally defined as the engine manufacturers' recommended overhaul periods, where this has been promulgated under a system approved by the airworthiness authority responsible for the engine. CAD policy in respect of extensions to the recommended overhaul periods (operating time and calendar time) for piston engines used in light aircraft is set out in this Notice.

"Light aircraft piston engine" in this context means either:-

- (a) a piston engine installed in an aircraft, the Maximum Total Weight Authorised of which does not exceed 2730 kg, or
- (b) a piston engine of 400 hp (298 kW) or less.

NOTE: For the purpose of this Notice 'engine' includes those components and equipment necessary for satisfactory functioning and control. The propeller and its associated equipment are excluded except for those components that are part of the engine type design.

- 2 It is emphasised that the Director-General has taken the decision to allow extension of overhaul periods as defined in 3.1.1 and 3.1.2 on the basis of the effect on airworthiness only. The economics of operation is not the responsibility of the Director-General, although this may have been considered by the manufacturer in establishing the recommended overhaul periods. Owners/Operators must make their own decisions on these other aspects. Unless satisfied that the engine remains in an airworthy condition, the Owner/Operator should have the engine overhauled.

- 3 Continuation in service shall be subject to compliance with paragraph 3.1, as qualified by paragraphs 3.1.1 to 3.1.2, as appropriate.

- 3.1 Unless otherwise stated, engines may be operated to the periods between overhauls which have been recommended by the manufacturer and promulgated under a system approved by the airworthiness authority responsible for the engine. All such recommendations, whether stated in terms of operating time or calendar time, constitute a recommended overhaul

period for the purposes of this Notice, including recommendations by the manufacturer for reduced overhaul periods with particular types of operation or particular service bulletin/modification configurations.

3.1.1 Engines that have reached the operating time or calendar time limitation of a recommended overhaul period may continue in service for a further period of operation not exceeding 20% of the recommended operating time or calendar time, whichever occurs first, subject to (a), (b), (c), (d) and (e).

- (a) Compliance being shown with the appropriate limitations specified in Appendix No.1 paragraph 5 to this Notice.
- (b) Compliance being shown with any applicable Airworthiness Directive which requires compliance at engine overhaul, unless otherwise agreed by the Director-General.
- (c) The engine must have been operated in an aircraft registered in Hong Kong for a period of at least 200 hours immediately prior to completion of the engine manufacturer' overhaul period recommendation.
- (d) The engine being inspected in accordance with paragraph 4 in order to assess its condition immediately prior to the increase, and subsequently at 100 hour or yearly intervals, whichever occurs first.
- (e) The data obtained during the inspections of paragraph 4 being entered in the engine log book.

3.1.2 Engines that have complied with paragraphs 3.1 and 3.1.1, and have completed the 120% of the recommended operating time or calendar time, whichever occurs first, may continue in service indefinitely, subject to (a), (b), (c) and (d).

- (a) The engine being installed in aircraft which is not used for the purpose of Public Transport or Aerial Work.
- (b) Compliance being shown with the appropriate limitations specified in Appendix No.1 to this Notice.
- (c) The engine being inspected in accordance with paragraph 4 in order to assess its condition before exceeding 120% of the recommended operating time or calendar time, whichever occurs first, and subsequently being inspected and re-assessed at 100 hour or yearly intervals, whichever occurs first.

- (d) The data obtained during the inspections of paragraph 4 being entered in the engine log book.
- 3.2 In the event that the inspection referred to in paragraphs 3.1.1 and 3.1.2 results in rejection, a thorough engineering investigation must be carried out to establish the maintenance actions required to return the engine to an airworthy condition.
- 4 The inspections referred to in paragraph 3.1.1 and 3.1.2 to assess the condition of engines shall be in accordance with Appendix No. 3 to this Notice and shall be carried out by persons or organisations as follows:
- (a) Engines installed in aircraft that are used for the purpose of Public Transport or Aerial Work by a CAD360 Operator under an Air Operator's Certificate, shall be inspected by a HKAR-145 maintenance organisation appropriately approved for the purpose.
- (b) All other engines shall be inspected by an appropriately type rated HKAR-66 Aircraft Maintenance Licence holder or an organisation specifically approved for the purpose.
- 5 In no case shall any mandatory restrictions be exceeded, and the compliance with mandatory bulletins/modifications/inspections shall be completed at the specified time.
- 6 In the case of engines not incorporating all the service bulletins/modifications or parts that would enable it to qualify for any overhaul period recommended by the engine manufacturer as defined in paragraph 3.1 of this Notice, or of engine types not included in the manufacturers' bulletins, a specific recommendation in writing must be sought from the engine manufacturer, and if this is not obtainable, an application must be made to the Director-General. The Director-General need not be consulted in a case where the only question is that an engine manufacturer's documents restrict recommended overhaul periods to engines embodying only parts specified by the engine manufacturer: the Director-General will not require such restrictions to be applied provided that all parts are acceptable under the provisions of Airworthiness Notice No. 17, and there has been no adverse experience relating to the use of such parts.
- 7 For clarity, the requirements of paragraph 3 are presented in tabular form in Appendix No.2.
- 8 **Cancellation**
- This Notice cancels Airworthiness Notice No. 35 Issue 5, dated 31 January 2002, which should be destroyed.

Norman LO
Director-General of Civil Aviation

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AIRWORTHINESS NOTICE NO. 35
APPENDIX NO. 1

Issue 4
30 May 2005

- 1 The concept of allowing engines to run beyond the manufacturer's recommended overhaul period depends upon it being possible to assess the condition of the engine by prescribed inspections carried out at defined intervals. It is not intended to provide a freedom to run until the engine fails.
- 2 Although it is possible to identify engine degradation in many areas of the engine, there are some potential failure modes (e.g. crankshaft cracking, counterweight wear) for which predictive checks would not be effective without engine disassembly.
- 3 For the above reasons, the overhaul period extensions defined in paragraph 3.1.1 and 3.1.2 of Airworthiness Notice No. 35 may not be applied unless adequate in service reliability has been demonstrated, particularly in relation to failures which cannot be prevented by on-wing inspection. Those engine types that are not eligible to make use of the provisions of Airworthiness Notice No. 35 are detailed in paragraph 5.
- 4 The UKCAA has sought the advice of the manufacturers of the majority of the piston engines currently used in light aircraft to try to identify those engine components which service experience has shown to have running time limits beyond which it would not be reasonable to operate, (i.e. components the failure of which are not susceptible to prior detection but which would result in either an unacceptably high failure rate or a hazardous failure). The Director-General has adopted the aforementioned and any limits identified are reflected in paragraph 5 below.

5 Limitations

The provisions of the Airworthiness Notice No. 35 are applicable to all light aircraft piston engines except where listed below:

- 5.1 Rolls-Royce Gipsy Major Engines - Prior to running beyond 120% of the manufacturer's recommended overhaul period, engines other than Major 10 and earlier marks incorporating Modification 2385 (splined propeller attachment) must have the taper portion of the crankshaft "Sulfinuz" treated by Modification 2690 or appropriate alternative. In accordance with Rolls-Royce Technical News Sheet G15, engines must not exceed an overhaul period of 1000 hours unless Modification 2495 is embodied.
- 5.2 The following engine types have yet to accumulate sufficient service experience to demonstrate acceptable reliability when operating at the manufacturer's recommended overhaul period. Once acceptable reliability has been demonstrated, requests to extend the applicability of Airworthiness Notice No. 35 to include the particular engine type will be considered. In the

mean time, the provisions of Airworthiness Notice No. 35 are not applicable to:

5.2.1 Societe de Motorisations Aeronautique – All types

5.2.2 Rotax – All types

5.2.3 Thielert – All types

5.2.4 Mid-West Engines – All types

6 Cancellation

This Notice Appendix cancels Airworthiness Notice No. 35 Appendix No.1 Issue 3, dated 31 January 2002, which should be destroyed.

AIRWORTHINESS NOTICE NO. 35
APPENDIX NO. 2

Issue 4
30 May 2005

LIGHT AIRCRAFT PISTON ENGINE OVERHAUL PERIODS

	Aircraft used for the purposes of Public Transport or Aerial Work	Aircraft not used for the purposes of Public Transport or Aerial Work (i.e. used for Private flight only)
Within Recommended Overhaul Period	Manufacturer's recommended overhaul period, defined in operating time and calendar time (if applicable), provided the engine conforms to appropriate service bulletin/modification configuration and types of operation. (Otherwise see paragraph 6 of Airworthiness Notice No. 35)	
Extensions not exceeding 20% of Recommended Overhaul Period (operating time and calendar time)	Acceptable subject to: Compliance with Appendix No.1 paragraph 5 to Airworthiness Notice No.35. Compliance with all applicable Airworthiness Directives required to be incorporated at engine overhauls. Inspections in accordance with paragraph 4 of Airworthiness Notice No.35 at completion of recommended overhaul period (operating time or calendar time) and then at 100 hour or yearly intervals, whichever occurs first.	
Extensions in excess of 20% of Recommended Overhaul Period	No further extension without written approval from the Director-General.	Engines may continue in service indefinitely subject to: (a) Compliance with Appendix No.1 to Airworthiness Notice No.35. (b) Further inspection in accordance with paragraph 4 of Airworthiness Notice No.35 at 120% and then at 100 hour or yearly intervals, whichever occurs first.

NOTE: This Table is intended for easy reference only; for detail the Airworthiness Notice No.35 applies.

Cancellation

This Notice Appendix cancels Airworthiness Notice No.35 Appendix No.2 Issue 3, dated 31 January 2002, which should be destroyed.

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LIGHT AIRCRAFT PISTON ENGINE
MAINTENANCE REQUIREMENTS FOR OPERATION BEYOND
MANUFACTURERS' RECOMMENDED OVERHAUL PERIODS

- 1 This appendix gives guidance on the procedures which are necessary for a light aircraft piston engine to be accepted as being in a condition that will allow operation beyond the recommended overhaul period under the terms of Airworthiness Notice No.35.
- 2 A piston engine that has reached the end of its normal overhaul period may be expected to have suffered some wear to cylinders, pistons, valves, bearings and other moving parts, but an engine that has been carefully operated and maintained may still be in a condition suitable for a further period of service.
 - 2.1 Many factors affect the wear that takes place in an engine. The most important of these include: the efficiency of the air intake filter, the techniques used in engine handling, particularly during starting, the quality of the fuel and oil used in the engine and the conditions under which the aircraft is housed when not in use. Conditions of operation are also relevant; the length of flights, the atmospheric conditions during flight and on the ground, and the type of flying undertaken. Many of these factors are outside the province of the maintenance engineer, but meticulous compliance with the approved Maintenance Schedule and any instructions provided in the form of service bulletins or constructor's recommendations will undoubtedly help to prolong the life of an engine.
 - 2.2 The inspections and tests that may be necessary to assess the condition of an engine in compliance with Airworthiness Notice No.35 are detailed in the following paragraphs.
- 3 **Inspection and Maintenance**

A number of items included in the normal scheduled maintenance of an engine may be repeated to determine the condition of an engine at the end of its normal overhaul period, and additional inspections may also be specified.

3.1 External Condition

The engine should be examined externally for obvious defects such as a cracked crankcase, excessive play in the propeller shaft, overheating and corrosion, which would make it unacceptable for further use.

3.2 Internal Condition

Significant information concerning the internal condition of an engine may be obtained from an examination of the oil filters and magnetic plugs, for metal particle contamination. These checks may be sufficient to show that serious wear or breakdown has taken place and that the engine is unacceptable for further service.

3.3 Oil Consumption

Since the oil consumption of an engine may have increased towards the end of its normal overhaul period, an accurate check of the consumption over the last 10 flying hours would show whether it is likely to exceed the maximum recommended by the constructor, if the overhaul period were to be extended.

3.4 Compression Check

Piston ring or cylinder wear, or poor valve sealing could, in addition to increasing oil consumption, result in a significant loss of power. A cylinder compression check is a method of determining, without major disassembly, the standard of sealing provided by the valves and piston rings. This should be carried out in accordance with the manufacturer's recommendations. In the absence of any published recommendations for a particular engine type, one of the methods of 3.4.1 to 3.4.3 should be used.

3.4.1 On engines with a small number of cylinders, a simple compression check may be carried out by rotating the engine by hand and noting the resistance to rotational as each cylinder passes through its compression stroke. The check should normally be made shortly after running the engine while a film of oil remains on the rubbing surfaces, to assist sealing and prevent scoring the working parts. If this is not possible, the constructor may recommend that oil is introduced into each cylinder and the engine turned through a number of revolutions before making the test.

This method may be used to determine serious loss of compression on a single cylinder or the difference between the compressions of individual cylinders, but may not accurately show a similar partial loss of compression on all the cylinders of an engine.

An alternative method, which will give a more accurate result, is to fit

a pressure gauge (reading up to 1400 kPa (200 lbf/in²)) in place of one sparking plug in each cylinder in turn and note the reading as the piston passes through top dead centre (TDC) on the compression stroke.

3.4.2 Another method of carrying out a direct compression test is by the use of a proprietary type of compression tester equipped with a means of recording cylinder pressure on a graph card. One set of plugs should be removed immediately after an engine run, and the compression tester fitted to each cylinder in turn while rotating the engine by means of the starter motor. The effectiveness of combustion charge sealing can be judged by assessment of the graph records obtained.

3.4.3 A further method of checking engine compression is the differential pressure test. In this test a regulated air supply (normally 560kPa (80 lbf/in²)) is applied to each cylinder in turn and a pressure gauge used to record the actual air pressure in the cylinder. Since some leakage will normally occur, cylinder pressure will usually be less than supply pressure and the difference will be an indication of the condition of the piston rings and valves. By listening for escaping air at the carburettor intake, exhaust and crankcase breather, a defective component may be located. As with the previous tests, it is usually recommended that the differential pressure test is carried out as soon as possible after running the engine.

4 Power Output of Aeroplane Engines

The power developed by an aeroplane engine after initial installation is established in the form of a reference engine speed, which is recorded in the appropriate log book so that a comparison can be made during subsequent power checks. The reference engine speed is the observed engine speed obtained using specified power settings and conditions, corrected, by means of graphs supplied by the engine constructor (or those contained in UKCAA Civil Aircraft Airworthiness Information and Procedures - CAP 562 Leaflet 7-5 Piston Engine Overhaul – Correcting Engine Test Results), to the figure which would be obtained at standard sea-level atmospheric temperature and pressure; changes in humidity do not produce large changes of power and are ignored for the purpose of establishing a reference engine speed or subsequently checking engine power. Power checks should be corrected in the same way.

4.1 Power Checks

The majority of light aeroplane piston engines are air-cooled and rely on an adequate flow of air for proper cooling of the cylinders. This condition can only be obtained during flight, and ground runs should, therefore, be as brief as possible. Cooling can be assisted by facing the aircraft into wind, but high wind conditions must be avoided when making power checks, as they will seriously affect the results obtained. Before running the engine at high

power the normal operating temperatures should be obtained (not the minimum temperatures specified for operation) and during the test careful watch should be kept on oil and cylinder temperatures to prevent the appropriate limitations being exceeded.

4.1.1 Normally-aspirated engines are tested at full throttle and, where a controllable-pitch propeller is fitted, with fully fine pitch selected. The changes in barometric pressure affecting engine power are considered to be balanced by changes in propeller load, so that only a temperature correction is necessary. This correction factor may be obtained from a graph supplied by the engine constructor or, if this is not available, from the graph shown in UKCAA Civil Aircraft Airworthiness Information and Procedures (CAP 562) Leaflet 7-5 Piston Engine Overhaul – Correcting Engine Test Results (Figure 1). The observed full throttle speed multiplied by the correction factor will give the corrected speed.

4.1.2 Although normally-aspirated engines are often fitted with variable-pitch propellers, the engine speed obtained at full throttle is usually less than the governed speed and the propeller remains in fully fine pitch. With supercharged engines, however, the propeller is usually governed to a constant speed at high power settings and small changes in power will not affect engine speed. The power of a supercharged engine is, therefore, checked by establishing a reference speed at prescribed power settings.

(a) Since a supercharged engine is run at a specified manifold pressure regardless of the atmospheric pressure, corrections must be made for both temperature and pressure variations from the standard atmosphere.

(b) The procedure is to run the engine until normal operating temperatures are obtained, open up to maximum take-off manifold pressure, decrease power until a fall in engine speed occurs (denoting that the propeller blades are on their fine pitch stops), then throttle back to the manifold pressure prescribed by the constructor and observe the engine speed obtained.

(c) The correction factor to be applied to the observed engine speed of a supercharged engine may be obtained from graphs supplied by the engine constructor.

4.1.3 Although the engine speed obtained during a check of engine power is corrected as necessary for atmospheric temperature and pressure, no correction is made for humidity, ambient wind conditions or instrument errors and, consequently, the corrected engine speed is seldom exactly equal to the reference speed even if engine condition is

unchanged. However engine power may usually be considered satisfactory if the corrected speed obtained during a power check is within 3% of the reference speed.

- 4.1.4 If it is not possible to assess power deterioration by means of a power check (e.g. due to fitting a different propeller), a rate-of-climb flight test should be carried out.

5 Power Output of Helicopter Engines

The power developed by the engine of a single-engined helicopter is considered to be adequately checked during normal operations; any loss of power should be readily apparent. It is thus not considered necessary to check the power output of a helicopter engine separately specifically for the purpose of complying with Airworthiness Notice No. 35.

6 Power Loss

If the power check (paragraph 4) or normal engine operation reveals an unacceptable loss of power or rough running, it may be possible to rectify this by carrying out certain normal servicing operations or by replacement of components or equipment. The replacement of sparking plugs, resetting of tappets or magneto contact breaker points, or other adjustments to the ignition or carburetion systems, are all operations that may result in smoother running and improve engine power.

7 Servicing

If the engine proves to be suitable for further service, a number of servicing operations will normally be due, in accordance with the approved Maintenance Schedule. Unless carried out previously (paragraph 6) these operations should be completed before the engine is returned to service.

8 Log Book Entries

A record of the checks made, and any rectification or servicing work, must be entered and certified in the engine log book before the engine is cleared to service for its recommended or extended life under the provision of Airworthiness Notice No. 35.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 36
Issue 16
28 February 2011**

**MANDATORY MODIFICATIONS, INSPECTIONS AND CHANGES TO
APPROVED DOCUMENTATION**

1 The requirements and procedures stipulated in this Airworthiness Notice have been transferred and incorporated in the HKAR-1 Sub-section 1.6-6.

2 **Cancellation**

This Notice cancels Airworthiness Notice No. 36 Issue 15, dated 31 January 2008, which should be destroyed.

Norman LO
Director-General of Civil Aviation

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AIRWORTHINESS NOTICE NO. 36
APPENDIX NO. 1

Issue 5
31 January 2002

HONG KONG MANDATORY AIRWORTHINESS REQUIREMENT

- 1 The Mandatory Airworthiness Requirements detailed in this Appendix No.1 to Airworthiness Notice No. 36 are Mandatory Airworthiness Requirements referred to in the Air Navigation (Hong Kong) Order 1995, Article 8(7), as amended as those required by the Director-General to be completed as a condition for a Hong Kong Certificate of Airworthiness to remain in force.

Ref. : -36-A-1

Title : Installation of Engine Magnetic Chip Detectors in accordance with RRSB72- 7911

Issue date : 18.9.85

Applicability : All Rolls Royce RB211 propulsion systems

Compliance : Installation to be completed by 1st June 1986

Description : This modification introduces a new style Magnetic Chip Detector, which incorporates a baulking feature so preventing insertion of the probe unless the first oil sealing ring is located in its sealing bore.

2 **Cancellation**

This Notice Appendix cancels Airworthiness Notice No.36 Appendix No.1 Issue 4, dated 1 November 1996, which should be destroyed.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 36B
Issue 2
30 September 2003**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
CARGO COMPARTMENT CLASS CHANGE**

1 Applicability

This Airworthiness Notice is applicable to Hong Kong registered aeroplanes issued with a Certificate of Airworthiness in either the Transport (Passenger) or Transport (Cargo) Category.

Note: Aeroplanes originally certificated to FAA 14 CFR Part 25 prior to amendment 25-93 and operated under FAA 14 CFR Part 91 or Part 135 before issued with a Certificate of Airworthiness in Hong Kong are not required to comply with this Notice.

2 Introduction

2.1 FAR 25.857 amendment 25-93 deleted the definition of Class D cargo compartments. FAR 25.858 was also revised to include baggage compartments. And most significantly, FAR 121.314 was revised to require that all Class D cargo compartments meet the criteria for Class C compartments or, if an all cargo airplane, for Class E compartments. The revised FAR 121.314 applies to transport category airplanes type certificated after 1 January 1958.

2.2 The Director-General adopts the FAR changes in total except the due date for retrofit.

3 Compliance

3.1 After 1 July 2003, each Class D cargo and baggage compartment classified as per FAR 25.857, regardless of volume, must meet the standards of FAR 25.857(c) and FAR 25.858 for a Class C compartment unless the operation is an all-cargo operation in which case each Class D compartment may meet the standards in FAR 25.857(e) for a Class E compartment.

3.2 After 1 July 2003, each Class D cargo and baggage compartment classified as per JAR 25.857, regardless of volume, must meet the standards of JAR 25.857(c) and JAR 25.858 for a Class C compartment unless the

operation is an all-cargo operation in which case each Class D compartment may meet the standards in JAR 25.857(e) for a Class E compartment.

4 **Cancellation**

This Notice cancels Airworthiness Notice No. 36B Issue 1, dated 1 July 2001, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 36E
Issue 4
28 June 2019**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

COCKPIT SECURITY

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes with a Certificate of Airworthiness in Transport (Passenger) Category:

- 1.1 of a Maximum Total Weight Authorised (MTWA) in excess of 54500 kg; or
- 1.2 of a MTWA in excess of 45500 kg with a Maximum Approved Passenger Seating Configuration (MAPSC) greater than 19; or
- 1.3 with a MAPSC greater than 60.

2 Introduction

- 2.1 International Civil Aviation Organisation (ICAO) has published Amendment 27 to the International Standards and Recommended Practices of Chapter 13 – Security, of Annex 6 to the Convention of International Civil Aviation – Operation of Aircraft. The amended Standards require the installation of a reinforced flight crew compartment door, a means to lock and unlock the door from either pilot's station and a means to monitor the area outside the flight crew compartment.
- 2.2 The subsequent Amendment 43 to Chapter 13 – Security, of Annex 6 changes the applicability of all passenger-carrying aeroplanes as detailed in paragraph 1 above.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended, which gives effect to Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

All applicable Hong Kong registered aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirements

- 4.1 Install flight crew compartment doors to the standards of European Union Aviation Safety Agency CS 25.795 or Federal Aviation Administration 14 CFR 25.795.
- 4.2 Install a means for monitoring from either pilot's station the entire door area immediately outside the flight crew compartment to identify persons requesting entry and to detect suspicious behaviour or potential threat.
- 4.3 Install a means for locking and unlocking the cockpit door from either pilot's station.

5 Additional Information

Nil.

6 Recommendations

ICAO Annex 6 Part I Chapter 13 recommends that:

- 6.1 all passenger-carrying aeroplanes should be equipped with an approved flight crew compartment door, where practicable, that is designed to resist penetration by small arms fire and grenade shrapnel, and to resist forcible intrusions by unauthorised persons. This door should be capable of being locked and unlocked from either pilot's station.
- 6.2 the door should be closed and locked from the time all external doors are closed following embarkation until any such door is opened for disembarkation, except when necessary to permit access and egress by authorised persons; and
- 6.3 means should be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons requesting entry and to detect suspicious behaviour or potential threat.

7 Cancellation

| This Notice cancels Airworthiness Notice No. 36E Issue 3, dated 8 November 2018, which should be destroyed.

Simon LI

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 36F
Issue 11
30 September 2022**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
SERVICEABILITY CHECKS OF FLIGHT RECORDERS**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft required to be equipped with flight recorders. The requirements prescribed in this Airworthiness Notice are operational requirements in addition to Air Navigation (Hong Kong) Order 1995 requirements on the subject.

2 Introduction

- 2.1 International Civil Aviation Organisation (ICAO) has published Standards in Parts I, II and III of Annex 6 that require serviceability checks of flight recorders installed in aircraft.

Note : Crash protected flight recorders comprise one or more of the following: a flight data recorder (FDR), a cockpit voice recorder (CVR), an airborne image recorder (AIR) and/or a data link recorder (DLR). Lightweight flight recorders comprise one or more of the following systems: an aircraft data recording system (ADRS), a cockpit audio recording system (CARS), an airborne image recording system (AIRS) and/or a data link recording system (DLRS).

- 2.2 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended, which gives effect to Chicago Convention, adopts the Standards in accordance with the Convention.

- 2.3 The holder of the airworthiness approval for the installation design of the flight recorder system shall make available the relevant continuing airworthiness information to the operator of the aeroplane to be incorporated in the continuing airworthiness maintenance programme. This continuing airworthiness information shall cover in detail all the tasks required to ensure the continued serviceability of the flight recorder system.

Note 1: The flight recorder system is composed of the flight recorder as well as any dedicated sensors, hardware and software that provide information required per this notice.

Note 2: Conditions related to the continued serviceability of a flight recorder system are defined in paragraph 3 of this notice. The Manual on Flight Recorder System

Maintenance (FRSM) (Doc 10104) provides guidance on maintenance tasks associated with flight recorder systems.

- 2.4 Airworthiness Notices Nos. AN 101 and AN 101D prescribe additional certification requirements for flight recorders.

3 Operational requirements on continued serviceability of flight recorders

- 3.1 Operational checks and evaluations of recordings from the Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) systems shall be conducted to ensure the continued serviceability of the recorders. Procedures for the inspections of the FDR and CVR systems shall be as follows:

- 3.1.1 Prior to the first flight of the day, the built-in test features on the flight deck for the CVR, FDR and Flight Data Acquisition Unit (FDAU), when installed, shall be monitored.

- 3.1.2 Inspections of flight recorder systems shall be carried out as follows:

- (a) FDR systems or Aircraft Data Recording System (ADRS), CVR systems or Cockpit Audio Recording System (CARS) and Airborne Image Recorder (AIR) systems or Airborne Image Recording System (AIRS) shall have recording inspection intervals of one year. Subject to the approval from the Director-General, this period may be extended to two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring. Data Link Recorder (DLR) systems or Data Link Recording System (DLRS) shall have recording inspection intervals of two years. Subject to the approval from the Director-General, this period may be extended to four years provided these systems have demonstrated high integrity of serviceability and self-monitoring;
- (b) an analysis of the recorded data from the flight recorders shall ensure that the recorder operates correctly for the nominal duration of the recording;
- (c) the FDR or ADRS recording from a complete flight shall be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention shall be given to parameters from sensors dedicated to the FDR or ADRS. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;
- (d) the readout facility shall have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;
- (e) an examination of the recorded signal on the CVR or CARS shall

be carried out by replay of the CVR or CARS recording. While installed in the aircraft, the CVR or CARS shall record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards;

- (f) where practicable, during the examination, a sample of in-flight recordings of the CVR or CARS shall be examined for evidence that the intelligibility of the signal is acceptable; and
- (g) an examination of the recorded images on the AIR or AIRS shall be carried out by replay of the AIR or AIRS recording. While installed in the aircraft, the AIR or AIRS shall record test images from each aircraft source and from relevant external sources to ensure that all required images meet recording quality standards.
- (h) an examination of the recorded messages on the DLR or DLRS shall be carried out by replay of the DLR or DLRS recording.

3.1.3 A flight recorder system shall be considered unserviceable if there is a significant period of poor quality data, unintelligible signals, or if one or more of the mandatory parameters is not recorded correctly.

3.1.4 For flight data recording system, documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator. The documentation needs to be sufficient to ensure that the Director-General has the necessary information to read out the data in engineering units.

3.1.5 A report of the recording inspection shall be made available on request to the Director-General for monitoring purposes.

3.1.6 Calibration of the FDR system:

- (a) For those parameters which have sensors dedicated only to the FDR and are not checked by other means, recalibration shall be carried out at an interval determined by the continuing airworthiness information for the FDR system. In the absence of such information, a recalibration shall be carried out at least every five years. The recalibration shall determine any discrepancies in the engineering conversion routines for the mandatory parameters and ensure that parameters are being recorded within the calibration tolerances; and

- (b) When the parameters of altitude and airspeed are provided by sensors that are dedicated to the FDR system, there shall be a recalibration performed at an interval determined by the continuing airworthiness information for the FDR system. In the absence of such information, a recalibration shall be carried out at least every two years.

4 **Cancellation**

This Notice cancels Airworthiness Notice No. 36F Issue 10, dated 30 October 2020, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 36G
Issue 1
23 February 2009**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

**OPERATIONS OF SINGLE-ENGINE TURBINE-POWERED AEROPLANES
AT NIGHT AND/OR IN INSTRUMENT METEOROLOGICAL CONDITIONS
(IMC) AND HELICOPTERS IN PERFORMANCE CLASS 3 IN IMC EXCEPT
SPECIAL VISUAL FLIGHT RULES (VFR) FLIGHTS**

1 Applicability

This Airworthiness Notice is applicable to Hong Kong registered single-engine turbine-powered aeroplanes and performance Class 3 helicopters issued with a Certificate of Airworthiness. The requirements prescribed in this Airworthiness Notice are compliance requirements in addition to Air Navigation (Hong Kong) Order 1995 requirements on the subject.

2 Introduction

2.1 International Civil Aviation Organisation (ICAO) has published Standards in Annex 6 Part I subject on "Additional requirements for operations of single-engine turbine-powered aeroplanes at night and/or in IMC", and Annex 6 Part III subject on "Additional requirements for operations of helicopters in performance Class 3 in IMC, except special VFR flights".

2.2 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, which gives effect to Chicago Convention, adopts the Standards in accordance with the Convention.

3 Additional requirements for operations of single-engine turbine-powered aeroplanes at night and/or in IMC

3.1 For operations of a single-engine turbine-powered aeroplane at night and/or in IMC, the operator shall ensure the airworthiness certification of the aeroplane is appropriate and that the overall level of safety intended by the provisions of ICAO Annexes 6 and 8 is provided by:

- (a) the reliability of the turbine engine;

- (b) the operator's maintenance procedures, operating practices, flight dispatch procedures and crew training programmes; and
- (c) equipment and other requirements provided in accordance with Appendix 3 to ICAO Annex 6 Part I - Additional Requirements For Approved Operations By Single-Engine Turbine-Powered Aeroplanes At Night And/Or In Instrument Meteorological Conditions (IMC).

Note: Guidance on additional requirements for operations of single-engine turbine-powered aeroplanes at night and/or in IMC is contained in the above-mentioned Appendix 3.

- 3.2 All single-engine turbine-powered aeroplanes operated at night and/or in IMC shall have an engine trend monitoring system, and those aeroplanes for which the individual certificate of airworthiness is first issued on or after 23 February 2009 shall have an automatic trend monitoring system.

4 Additional requirements for operations of helicopters in performance Class 3 in IMC, except special VFR flights

- 4.1 For operations of helicopters in performance Class 3 in IMC, except special VFR, the operator shall ensure the helicopter is certificated for flight under Instrument Flight Rules (IFR) and that the overall level of safety intended by the provisions of Annexes 6 and 8 is provided by:

- (a) the reliability of the engines;
- (b) the operator's maintenance procedures, operating practices and crew training programmes; and
- (c) equipment and other requirements provided in accordance with Appendix 2 to ICAO Annex 6 Part III - Additional Requirements for Operations of Helicopters in Performance Class 3 in Instrument Meteorological Conditions (IMC).

Note: Guidance on additional requirements for operations of helicopters in performance Class 3 in IMC is contained in the above-mentioned Appendix 2.

- 4.2 Operators of helicopters operating in performance Class 3 in IMC shall have a programme for engine trend monitoring and shall utilize the engine and helicopter manufacturers' recommended instruments, systems and operational/maintenance procedures to monitor the engines.

- 4.3 It is recommended that in order to minimise the occurrence of mechanical failures, helicopters operating in IMC in performance Class 3 should utilize vibration health monitoring for the tail-rotor drive system.

5 Compliance

With effect from 23 February 2009, all applicable Hong Kong registered aeroplanes and helicopters in performance Class 3 shall comply with the requirements prescribed in paragraphs 3 and 4 respectively of this Notice.

6 Additional Information

Nil.

Norman LO
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 38
Issue 7
31 January 2005**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

PAINTING OF AIRCRAFT

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft issued with a Certificate of Airworthiness.

2 Introduction

Experience has shown that a greater degree of control has to be exercised over the painting of aircraft exteriors. The term painting in this context embraces the associated processes of stripping and such terms as refinishing and refurbishing.

3 Compliance

3.1 All aircraft defined in paragraph 1 which are to have their external finish substantially altered, shall comply with the requirements of this Notice.

3.2 The Owner, Operator or the Approved Maintenance Organisation must assess the proposed task for its airworthiness implication, taking into account the aircraft manufacturers published requirements and precautions in addition to the content of paragraph 6, and make a decision as to the need for a Certificate of Release to Service. Owners and Operators should consult their Approved Maintenance Organisations prior to making such a decision.

3.3 When a Certificate of Release to Service is judged to be necessary, the signatory to the Certificate of Release to Service will take responsibility for the whole process and should, therefore, assess the extent of the work to establish the need to:-

- (a) Carry out on-site supervision including stage inspections.
- (b) Brief the work force to avoid any airworthiness hazard, particularly where significant problems could be concealed by subsequent work processes. The briefing should emphasise the awareness with respect to the correct use and application of sharp instruments, e.g. knives and scrapers etc., which can, if misused, cause damage to aircraft structures, particularly pressurized airframes.

- (c) Ensure that any task carried out is adequately defined by documented process specification containing sufficient information to control the procedure.
- (d) Ensure that all necessary guidance material, including the aircraft manufacturers published data and the paint manufacturers instructions are provided.
- (e) Anticipate potential problems resulting from partial restoration which could mean additional paint weight in significant areas and the need for balancing of control surfaces.
- (f) Make provision to rectify any corrosion detected following paint removal.
- (g) Ensure the restoration of corrosion inhibiting compounds where washing or use of solvents or other paint removal techniques may have removed them in areas adjacent to those being repainted.
- (h) Determine the basic weight and corresponding centre of gravity position.

NOTE: It may benefit the Owner to anticipate any scheduled structural inspections including Non-Destructive Inspections, which could be better accomplished following the paint removal.

4 **Requirement**

When the need for a Certificate of Release to Service has been judged necessary under paragraph 3 of this Notice, for an aircraft which has been externally painted or had some significant change to its finish, such as paint removal and subsequent polishing, then a Certificate of Release to Service must be issued upon completion of the process (see paragraph 6).

5 **Certificate of Release to Service**

- 5.1 The Director-General will not grant specific Approval for painting of aircraft. Therefore, specialist painting organisations will not be entitled to issue any certification in respect of the airworthiness status of an aircraft following painting, unless the organisation holds an appropriate HKAR-145 Approval.
- 5.2 A HKAR-66 Category B1 or B3 Licence holder appropriately type rated, has authority to issue a Certificate of Release to Service for the satisfactory completion of the external finish.
- 5.3 Any other signatory would require direct authorisation from the Director-General.

6 Additional Information

6.1 Examples of likely damage and hazards that must be avoided include:-

- (a) Damage caused during preparation work which could adversely affect the structural integrity of the aircraft, such as:-
 - Reduction in fastener head size by uncontrolled use of power tools and abrasive media.
 - Use of incorrect tools and equipment to remove paint and aerodynamic sealant from lap and butt joints.
 - Surface scratching by use of paint scrapers.
 - Degrading of composite or plastic surfaces by abuse of particle blasting techniques.
 - Aluminium surface contamination by steel wool particles.
 - Use of incorrect chemical paint strippers.
- (b) Damage to transparencies, composites and sealants by solvent and paint removers, due to inadequate protection and/or the retention of these products in crevices.
- (c) Inadvertent deletion of placards and markings, failure to renew them, or failure to comply with the required specification for, e.g. Registration Marks, mandatory door markings and break in zone identification.
- (d) Blockage of vents, drains and other openings by debris, masking tape and residues of paint remover, paint or particle blast material. The possible ingress of water into fuel tanks through vent apertures or past filler cap seals when using high pressure hoses for washing down.
- (e) Loss of correct mass balance moments on flight control surfaces.
- (f) Uncontrolled variations to aircraft basic weight.
- (g) Variation to surface profile and aerodynamic smoothness at critical points such as surface leading edges, by the uncontrolled use of fillers or excessive paint thickness.
- (h) Inadequate knowledge of the manufacturers finishing schemes for antennas and radomes.
- (i) Overly aggressive paint stripping which could damage the sealant around air data ports/orifices on Reduced Vertical Separation

Minimum (RVSM) compliant aircraft. Air flow over these areas is critical for the height keeping capability of the aircraft.

- (j) For fabric coverings, special procedures which ensure proper adhesion and protection from the effects of ultra-violet light. Aggressive removal of the old finish may cause fabric damage. The exposed fabric should be assessed for its serviceability prior to refinishing. The advice published by the manufacturer of synthetic fabric would have to be made available and complied with in full as well as that of the aircraft manufacturer.
- (k) The effects of excessive paint thickness on the application of non-destructive testing techniques using eddy current and ultrasonic methods.
- (l) Jamming of flight control and landing gear mechanisms by preparation treatments and paint.

6.2 Examples of finishing work that would require the issue of a Certificate of Release to Service:-

- (a) Complete repainting from bare metal or fabric, or overcoating an existing finish.
- (b) Reversion from paint finish to polished metal.
- (c) Repainting or reversion to bare metal on flying control surfaces or supercritical lifting surfaces.
- (d) Extensive polishing of bare metal finish using abrasive polishes where skin thickness or fastener head dimensions are critical, particularly where polishing is to be a repetitive requirement.
- (e) Finishing of radomes, antennas and composite materials used in Primary and Secondary structure.
- (f) Painting in areas involving critical orifices or mandatory markings.
- (g) Any alteration to the finish of helicopter main rotor and tail rotor blades or any other critical parts.

NOTES: (1) It is not intended that the requirement for the issue of a Certificate of Release to Service should include minor repairs to surface finish where airworthiness implications are minimal.

(2) The above list of examples is not intended to be exhaustive.

6.3 It is recommended that aircraft issued with a Permit to Fly should be subject to the same principles of compliance with this Notice.

- 6.4 Operators and maintenance organisations are reminded that the use of self-adhesive decals as an alternative to painting may totally preclude both visual and eddy current inspections. Operators and maintenance organisations need to address the impact on structural inspection tasks when using such decals and ensure that the aircraft maintenance programme requires their removal at the appropriate time.

7 **Cancellation**

| This Notice cancels Airworthiness Notice No.38 Issue 6, dated 31 January 2003, which should be destroyed.

Norman LO

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 39
Issue 5
31 January 2002**

THE SELECTION AND PROCUREMENT OF ELECTRONIC COMPONENTS

1 Introduction

The selection and procurement of electronic components for use within aircraft equipment or for direct fitment to airframes continues to present problems for those concerned with airworthiness procedures for civil aircraft. This Notice prescribes how the relevant Hong Kong Aviation Requirements (HKAR) should be applied in order to achieve design and quality control of equipment and components.

2 Definition

2.1 The term 'Electronic Components', as interpreted by the BSI and other agencies, may include such items as microswitches or electrical connectors which are likely to be fitted directly to an airframe. More conventionally the term 'Component' also refers to parts such as capacitors and resistors which have no method of mounting other than by the soldered electrical connections. The application of such terms is usually within an equipment which itself is approved for installation in an aircraft.

2.2 For the purpose of this Notice such items are referred to as:-

- (a) **Aircraft Components**, for items *fitted directly* to airframe or engine, and
- (b) **Component Parts**, for items *fitted within* equipment.

HKAR-1 Sub-section 1.4-8 gives further definition of the terms used in this Notice.

3 Design Responsibility

3.1 **Aircraft Components** The requirements for electrical aircraft components are given in HKAR-1 Sub-section 1.4-8 and JAR 25.1351 to 25.1363. The installation requirements of electrical items are further considered in BCAR Section D6-1.

3.2 For the correct interpretation of this Notice it is important to understand the significance of the terms '**Controlled**' and '**Uncontrolled**' as applied to

electrical components. For items used as 'Aircraft Components' as defined here, the known or probable use will determine the approval category and, for Controlled Items, the requirements of paragraph 5 of HKAR-1 Sub-section 1.4-8 will need to be followed as appropriate. The term 'Uncontrolled' relates solely to the status of items in their functional role in an aircraft and does not imply that such components may be ignored. Paragraph 2 of BCAR Chapter D6-1 requires those designing installations to consider the suitability of 'Unclassified parts and Equipment' and, where necessary, these 'shall be controlled ... to a standard to ensure compliance with the relevant requirements of ... Section D'. Thus the design and build standard of the 'Uncontrolled Item' may still be subject to a measure of control under the CAD procedures prescribed in this Notice to ensure that no new unassessed failure modes are introduced.

3.3 The selection and use of Aircraft Components is normally the responsibility of an Approved Organisation with appropriate Terms of Approval under HKAR-1 procedure. Such organisations need to satisfy themselves, and ultimately the Director-General, as to the suitability of an equipment in a given application. This is most conveniently done by obtaining a Declaration of Design and Performance (DDP) to a format based upon that given in HKAR-1 Sub-section 1.4-8 paragraph 6, BS 3G100 Part 1 or ISOR224. The authorisation of the DDP by an Approved Signatory within an Approved Organisation and its acceptance by the user constitutes Approval under Component Procedures. If the design authority for an equipment additionally obtains approval for their product from the Director-General then the equipment is said to be 'Accessory Approved'. It is important to note, however, that 'Accessory Approval' does not absolve the user from ensuring that the item to be used as an Aircraft Component is suitable for the particular application.

3.4 The assurance that the products obtained are as declared on the DDP is a function of a clearly defined purchase order requiring 'CAD Release'. (See paragraph 5) In the context of this Notice it is essential that users appreciate that generalised claims that an item is 'approved' can only relate to the conformity with specifications, compliance with which may, or may not, have been validated by a third party. Approval for aircraft use is a function of selection by an authorised Design Authority who will, in effect, approve the application of the item.

4 Component Parts - Selection

4.1 The designer of a piece of equipment which utilises individual component parts has freedom of choice in the matter of selection provided that the equipment taken as a whole meets its design specification and the relevant Airworthiness Requirements. The Requirements of HKAR-1 have to be satisfied and this establishes the need for control of the identification, reliability and modification standard of component parts. Users and overhaulers of equipment need to be able to procure component parts which will maintain the established and accepted reliability of the total equipment. It follows that all necessary information regarding special testing, selection or condition of component parts

shall be given in Overhaul Manuals.

- 4.2 Items produced to BS 9000 Specifications may well be suitable if the defined level of quality is compatible with the declared reliability for the total equipment, as further noted in paragraph 7.

5 User Responsibility

- 5.1 Users and overhaulers of equipment are responsible for showing compliance with the requirements of HKAR-1 Sub-section 1.6-7 when obtaining replacement 'component parts' as stated in paragraph 4 of this Notice. It is emphasized that overhaulers of equipment are required to obtain authorisation before making substitutions or in any way deviating from the spares or replacements listed in the relevant Approved Overhaul or Maintenance Manuals of a '**controlled**' item of equipment. In all cases of difficulty in procurement of the items referred to in Approved Manuals, the acceptance of alternatives must include authorisation by an appropriate Design Organisation.
- 5.2 HKAR-1 Sub-section 1.4-8 provides guidance on the control of quality of components obtained from overseas suppliers and Airworthiness Notice No.17 relates to Acceptance of Aeronautical Parts.

6 The CAD Form One

- 6.1 Users are reminded that the function of a CAD Form One issued by a CAD Approved Organisation (who will hold an Approval Number DAI/xxxx/xx or AI/xxxx/xx) is intended to ensure that the purchaser obtains the items which are ordered. The use of a CAD Form One does not automatically confer any 'CAD Approval' status on the product and it is the responsibility of the purchaser to reference the required part or drawing number on his order, together with any other necessary definition. The issue of a proprietary item on a CAD Form One indicates that the producing organisation is approved and that appropriate CAD procedures have been followed, and will be followed in the event of any subsequent enquiry. It is apparent, therefore, that it is not necessary for products to be Design Approved by the Director-General before they are released unless this is a condition of the order.
- 6.2 Purchasers should note that airworthiness procedures are applicable to airborne equipment and requests for 'CAD release' should be restricted to items which fall within the requirements of HKAR and where, therefore, the release has significance.

7 BS 9000 Electronic Components of Assessed Quality

Users proposing to accept components supplied to any form of BS 9000 specification or other specification systems employing similar formats should note and understand the assured quality aspect which is employed. Statistical sampling techniques essentially involve an element of risk which is determined by the Acceptance Quality Level (AQL) and sampling plans referenced in the specifications. The Director-General will

expect users of BS 9000 components to hold copies of specifications concerned and to be in a position to appreciate the significance of the quality assurance techniques employed in these and other specifications involving sampling techniques.

8 **Cancellation**

This Notice cancels Airworthiness Notice No. 39 Issue 4, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

No. 41

Issue 7

18 November 2021

**CARBON MONOXIDE CONTAMINATION MINIMISATION
AND DETECTION IN GENERAL AVIATION AIRCRAFT**

1 Applicability

This Airworthiness Notice is applicable to all general aviation aircraft equipped with piston engines or combustion heaters registered in Hong Kong.

2 Introduction

- 2.1 This Notice is published to raise awareness of the means of minimizing the likelihood of carbon monoxide (CO) contamination, the hazards associated with CO exposure and to provide guidance on the use of CO detectors in general aviation aircraft.
- 2.2 Carbon monoxide, formed by the incomplete combustion of carbon-containing materials, is a colourless, odourless gas that can cause damage to the brain, heart and nervous system. The symptoms of exposure include; headache, fatigue, sleepiness, breathlessness, degradation in performance. Continued exposure to elevated concentrations can cause unconsciousness and death.
- 2.3 The best protection against CO poisoning is to avoid exposure. The physiological effects of CO poisoning are cumulative and take a very long time to disperse. Even a low level of CO ingestion, below the level that causes immediate physical symptoms, will cause a progressive reduction in blood oxygen levels which will reduce pilot performance and potentially cause permanent damage to the brain, heart and nervous system. It is therefore a mistake to assume that a contamination of very low levels of CO is acceptable. Low levels of environmental CO could be considered just as dangerous as high levels, as the cumulative negative effect on human performance may not be noticed.
- 2.4 Preventive maintenance remains the first line of defence against CO exposure during flight. If that fails, effective alerting of its presence in the cockpit can be achieved through the use of an appropriate CO detector. This Notice provides guidance on both topics.

3 Maintenance

- 3.1 Exhaust system failures and/or poor sealing of the bulkhead between the engine compartment and the cabin can cause CO to enter the aircraft cockpit. Ingestion into the cabin can also occur through routes other than the firewall; there is usually a stream of exhaust gas flowing down the outside of the fuselage and poorly fitting cabin doors, access panels, wing root fairings and hatches can provide an entry path into the cabin. Any changes to the position and configuration of the exhaust system over the life of the aircraft can notably affect the amount of CO entering the cockpit. To minimise the likelihood of carbon monoxide contamination during flight, aircraft owners, operators and maintenance personnel are reminded to:
- 3.1.1 Ensure that heating / ventilation and exhaust systems in the aircraft are maintained in accordance with the applicable maintenance data. These can include physical inspection, physical inspection with partial disassembly, internal inspection, NDT and pressure testing.
 - 3.1.2 When conducting visual inspections, ensure that a thorough inspection is conducted with the view of finding potential CO poisoning points/cracks. Whilst the internal condition and thickness of exhaust components is difficult to determine visually, if the component exhibits signs of thinning, cracking, bulging or any exhaust leakage the section should be removed and replaced with a new or serviceable/repaired item. Special attention should be paid to older aircraft because of possible corrosion.
 - 3.1.3 Ensure that any modification or reduction in the length of the tail pipe / exhaust system must be approved in accordance with HKAR-21.
 - 3.1.4 Ensure that approved modifications that include access panels and attachments to firewalls must be resealed following all disturbances to prevent CO entering the cabin. Heating ducts and on/off valves should function correctly, particularly in the off position to allow the pilot to stop the flow of contaminated air entering the cockpit. If an access panel on the engine firewall is opened/removed during maintenance/servicing for gaining access, ensure that the access panel seals/gaskets and hardware are reinstalled correctly to prevent the flow of gases and flammable fluids entering the cockpit and cabin.
 - 3.1.5 Conduct engine run-up tests with cabin heat on and check for CO in the cabin with a hand-held CO detector during 100 hour and annual inspections. The CO level entering the cabin must be less than 1 part in 20,000 parts of air (equivalent to 50 parts per million).
 - 3.1.6 Re-familiarise themselves with relevant guidance, such as, CAA Publication (CAP) 562 'Civil Aircraft Airworthiness Information and Procedures' CAAIPS Leaflet B-190 'CO contamination' which

provides generic expectations for maintenance-related measures to minimise the likelihood of contamination. It addresses the nature and effects of CO, the causes of contamination, the importance of routine inspections and means of testing for contamination. In addition, FAA AC 43-13-1B Chapter 8 Section 3 paragraphs 8-45 to 8-52 provides valuable information on typical failures, hazards, descriptions and inspections including pressure checks, repairs and replacement recommendations.

- 3.2 Fitment of oversize nozzles to combustion heaters will increase the concentration of carbon monoxide in the exhaust gases and may cause operating difficulties with the heater. Therefore it is imperative that only nozzles of the type quoted by the manufacturer are fitted and that servicing, overhaul and inspection standards of combustion heaters and their associated exhaust systems are maintained at a high level. The requirements of this paragraph 3.2 are applicable to all aircraft:
- 3.2.1 Except where otherwise agreed by the Director-General, servicing, overhaul and inspection of combustion heaters and their associated exhaust systems shall be in accordance with the instructions contained in the appropriate manuals produced by the aircraft manufacturer and the equipment manufacturer. If the instructions in the aircraft manufacturer's manual differ from those in the equipment manufacturer's manual, those of the aircraft manufacturer shall be assumed to be overriding.
- 3.2.2 In addition to compliance with the provisions of the approved maintenance schedule and appropriate instructions, compliance shall (unless already accomplished in the course of aircraft maintenance) also be shown with the following sub-paragraphs (a) and (b), at intervals not exceeding 500 heater operating hours or two years, whichever is the sooner (but see paragraph 3.2.3).
- (a) Combustion heaters and their exhaust systems shall be completely dismantled and inspected, and restored to the extent necessary to ensure continued safe operation. Combustion chambers shall, in addition, be pressure tested.
- (b) The hot air outlet ducting adjacent to the heater shall be inspected for exhaust contamination and the appropriate action shall be taken where there is any evidence of contamination.
- 3.2.3 Unless equipment which records heater operating hours is installed, it must be assumed that heater hours are equal to aircraft flying hours; or some percentage of flying hours that has been agreed with the Director-General. Applications for the agreement of a flying hour percentage should be made to the Director-General.

3.3 Where fitted with exhaust type heat exchangers (muff heaters) as a source of cabin and cockpit heat, aircraft owners, operators and maintenance personnel are reminded to detect the deterioration of exhaust type heat exchangers as following:

3.3.1 For heat exchangers wherein the fresh air supply encloses the engine exhaust pipe:

- (a) Remove the heater jacket (when removable) and inspect the outer surface of the inner core (exhaust pipe) for signs of combustion products.
- (b) Thoroughly clean the exhaust pipe of all dirt and corrosion.
- (c) Carefully inspect the exhaust pipe, using a hand-held magnifying glass and light/mirror, for signs of cracks and pinholes. Pay particular attention to welds, seams, and their adjacent areas.
- (d) Any suspect areas are to be further evaluated by a pressure test or other means recommended by the aircraft manufacturer.
- (e) Repair or replace, before further flight, exhaust type heat exchangers containing cracks or holes in the exhaust pipe.

3.3.2 For heat exchangers wherein the fresh air intensifier tube is enclosed by the engine exhaust pipe:

- (a) Remove the intensifier tube (when removable) from the exhaust pipe.
- (b) Ensure that there are no obstructions in the intensifier tube which may restrict the flow of air through the exchanger, and clean thoroughly the exterior of the tube.
- (c) Perform a close visual inspection of the intensifier tube for signs of cracks and pinholes.
- (d) Any suspect areas are to be further evaluated by a pressure test.
- (e) Repair or replace, before further flight, intensifier tubes containing cracks or holes in the exhaust pipe.

4 **Carbon Monoxide Detector**

4.1 Proprietary carbon monoxide detectors are available. Whilst the use of such detectors may be an aid to the detection of carbon monoxide contamination in aircraft, their use is not considered to be a satisfactory substitute for the maintenance procedure detailed in this Notice.

- 4.2 Pilots are strongly recommended to wear personal CO detectors. As not all aircraft are required to have CO detectors fitted, small electronic personal devices are readily available at affordable prices. These devices allow for continual monitoring of CO levels with audible and visual warnings when escalated CO levels are detected.
- 4.3 Aircraft certified and hard-wired products are also available that can be installed subject to approval by the Director-General under HKAR-21. Reliance on only the visual CO indicator placard, that changes colour in the presence of CO, is considered suboptimal.
- 4.4 If the aircraft is only fitted with the placard type CO indicator, the operator should ensure the placard is placed in the field of view of the pilot, is regularly checked to ensure that the placard is not time expired and that the indicator is not faded from ultraviolet exposure or contamination. Whilst better than no detector, the clear disadvantage of placard type CO indicators is that they lack attention-getting capability. Bearing in mind the nature of CO, this is not ideal.

5 **Cancellation**

This Notice cancels Airworthiness Notice No. 41 Issue 6, dated 30 March 2012, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 43
Issue 4
28 June 2019**

**AIRCRAFT FIELD LOADABLE SOFTWARE (FLS) AND DATABASE FIELD
LOADABLE DATA (DFLD)**

1 Introduction

- 1.1 The purpose of this Airworthiness Notice is to provide guidance for operators and maintenance organisations on the configuration management, procurement, embodiment and tracking of aircraft FLS and DFLD to ensure continued airworthiness and operating safety standards are met.
- 1.2 The content of this Notice is based upon established as well as developing international standards.
- 1.3 It is recognised that operators and maintenance organisations may have already implemented satisfactory alternatives that meet the intent of this Notice. It will not be necessary for those organisations to change these procedures if they already meet the intent of this Notice.
- 1.4 The content of this Notice should be used to supplement the content of the Type Certificate (TC) or Supplemental Type Certificate (STC) holder's instructions.
- 1.5 This Notice is technology focused and the content should be considered as applicable to any aircraft using this level of technology.
- 1.6 This Notice does not apply to software applications for Electronic Flight Bags. For guidance on this subject the reader should refer to CAD 562 'Electronic Flight Bag (EFB)'.

2 Definitions

- 2.1 For the purpose of this Notice the following definitions apply:
 - (a) **Aircraft Configuration List (ACL)**

A list of Line Replaceable Units (LRU) and modules with Loadable Software Aircraft Part (LSAP) that are applicable to a specific aircraft. This list may be contained on data supplied by the TC holder in a Service Bulletin (SB), Service Information Letter (SIL) or Illustrated Parts Catalogue (IPC), or as a separate tracking system.

(b) **Field Loadable Software (FLS)**

Software (executable code) that can be loaded without removing the system or equipment from the aircraft. FLS can be loaded onto an aircraft system by a maintenance mechanic/technician in accordance with defined maintenance manual procedures. FLS can be configured as a component of target hardware and thus affect the part number of the target hardware. There are numerous types of FLS, but most can be categorised as follows:

(i) **Loadable Software Aircraft Part (LSAP)**

FLS that is required to meet a specific airworthiness or operational requirement or regulation and not considered as a component of the target hardware, but is considered to be part of the aircraft approved design and therefore an aircraft part requiring formal controlled release documentation (JAA Form One, EASA Form 1 or FAA 8130-3) or an equivalent agreed with the Director-General.

(ii) **User Modifiable Software (UMS)**

Software declared by the aircraft TC holder's design organisation (or STC holder's design organisation) as being intended for modification by the aircraft operator.

(iii) **Option Selectable Software (OSS)**

LSAP that contains approved and validated components and combinations of components that may be activated or modified by the aircraft operator within defined TC/STC holder boundaries.

(c) **Database Field Loadable Data (DFLD)**

Data that is field loadable into target hardware databases.

(i) **Databases**

A term generally misused to describe the "data" that is field

loaded into target hardware. However, the database is actually an embedded item that resides within the target hardware and is not, itself, field loadable. The process normally described as "loading a database" actually loads a data file onto the target hardware's embedded database. The updating of the data held on a database, by the uploading of a new data file, will normally be conducted to provide for modifications to operating functions, including the revision of the aircraft performance or navigational data. It should be noted that whilst "LSAP" is only associated with FLS (executable code), certain DFLD should be treated in the same manner, in that they will have their own part number requiring control as an aircraft part and should be accompanied by controlled release documentation (JAA Form One, EASA Form 1 or FAA 8130-3). The form of release required for different types of DFLD is defined in paragraph 3.

(ii) **Data File**

A specific file that contains the actual data that is the object of the database and is field loaded.

(d) **Target Hardware**

The hardware such as LRU and modules that are intended to be loaded with FLS or DFLD.

- (i) Examples of target hardware for LSAP (FLS) could be: an Electronic Engine Control (EEC), a Digital Flight Data Acquisition Unit (DFDAU), an Auxiliary Power Unit's Electronic Control Unit (ECU), a Flight Guidance Computer (FGC), or an Integrated Modular Avionics (IMA) Unit.
- (ii) Examples of target hardware with databases that could be field loaded with DFLD that need to be tracked in the same manner as an aircraft part, could include: a Flight Management Computer (FMC), a Terrain Awareness Warning System (TAWS), or an IMA Unit.
- (iii) Examples of target hardware for UMS could be: Aircraft Condition Monitoring System (ACMS) and In-Flight Entertainment System (IFE).
- (iv) Examples of target hardware for OSS could be an IMA Unit.

(e) **Media Distribution of FLS or Data Files**

A process whereby FLS or Data files are moved from the production organisation or supplier to a remote site (generally the operator) using storage media.

(f) **Storage Media**

Device that contains a copy of the FLS or Data files such as a diskette, Personal Computer Memory Card International Association (PCMCIA) card, Compact Disc Read Only Memory (CD-ROM), Onboard Replaceable Modules (OBRM), file servers or portable data loaders.

(g) **Electronic Distribution of FLS or Data Files**

A process whereby FLS or DFLD are moved from the producer or supplier to a remote site (generally the operator) without the use of FLS storage media.

3 Release of FLS and DFLD

3.1 Methods of Release

The release of FLS and DFLD is dependent upon whether it is required to meet a specific airworthiness or operational requirement, or certification specification.

3.2 Release of Non-Required FLS or DFLD

For FLS or DFLD that is not required to meet a specific airworthiness or operational requirement or regulation, or certification specification, a Certificate of Conformity should be sufficient.

3.3 Release of Required FLS or DFLD

Where the FLS or DFLD is required to perform a function to meet a specific airworthiness or operational requirement or regulation, or certification specification, the following should be taken into account.

3.3.1 LSAP

A JAA Form One, EASA Form 1 or FAA 8130-3 should accompany any FLS (executable code) that is required to meet a specific airworthiness or operational requirement or regulation, or certification specification, i.e. LSAP. Examples of LSAP that would require such

release could be FLS that is associated with any of the examples of target hardware in paragraph 2.1(d)(i) above.

3.3.2 DFLD

A JAA Form One, EASA Form 1 or FAA 8130-3 should accompany any DFLD (data file) that is required to meet a specific airworthiness or operational requirement or regulation, or certification specification. Examples of DFLD that require such release could be those associated with IMA, as mentioned in paragraph 2.1(d)(ii) above.

3.3.3 Navigational Data

A "Letter of Acceptance" (LOA) as defined on EASA's website or equivalent should accompany the release of any navigational database's DFLD, where approvals are required (e.g. Precision RNAV), because a JAA Form One, EASA Form 1 or FAA 8130-3 cannot be provided.

(a) Type 1 LOA

A Letter of Acceptance granted where a Navigation Database supplier complies with EUROCAE ED-76 / RTCA DO-200A documents with no identified compatibility with an aircraft system. A Type 1 LOA holder confirms that the processes for producing navigation data comply with these Conditions and the documented Data Quality Requirements. A Type 1 LOA holder may not release navigation databases directly to end-users.

(b) Type 2 LOA

A Letter of Acceptance granted where a Navigation Database supplier complies with EUROCAE ED-76 / RTCA DO-200A documents and provides data compatible with specified avionics system(s). A Type 2 LOA holder confirms that the processes for producing navigation data comply with these Conditions and the documented Data Quality Requirements for the avionics systems specified. The Data Quality Requirements must be provided by or agreed with the specified equipment design organisation in accordance with a formal arrangement. A Type 2 LOA holder may release navigation databases directly to end-users. Such releases may also include data packing tools, where the use of such tools has been demonstrated to be ED-76/DO-200A compliant. A Type 2 LOA holder may interface directly with data originators (such as State AIP providers and operators), or may use data supplied by a Type 1 LOA holder in which case interface with data originators may not be necessary.

3.4 Release Equivalency

It should be noted that Certificates of Conformance are not considered to be equivalent to either a JAA Form One, EASA Form 1 or FAA 8130-3.

3.5 Electronic Distribution Release

The Electronic Distribution of FLS or Data files should recognise this requirement and provide an equivalent means of formally controlled release. This will need to be agreed by the Director-General.

4 Procurement and Documentation of FLS and DFLD

4.1 FLS and DFLD

FLS and DFLD are normally delivered with the new aircraft and contained in the Target Hardware and in media sets in binders or storage bins, noting that the part number of the Target Hardware may not necessarily indicate the loaded software part number. (See Appendix No. 1 paragraph 1.4(b).)

4.2 LSAP

Procured LSAP must be obtained from an approved source using the part number specified and accompanied by a JAA Form One, EASA Form 1, FAA 8130-3 or an equivalent acceptable to the Director-General. The part number can typically be confirmed as approved by reference to documents such as the IPC, SB, SIL or to an appropriately approved modification (TC/Amended Type Certificate (ATC)/STC).

4.3 DFLD

DFLD files used for the update of databases such as Navigational Databases, Terrain Databases and Model/Engine Databases should be acquired from a source that is acceptable to the Target Hardware Manufacturer and accompanying documentation and DFLD Storage Media containing the data files should clearly identify this. The DFLD Storage Media should also be annotated with the originator identification and quality/conformity markings. The Electronic Distribution of DFLD should recognise these points and provide an equivalent level of control agreed by the Director-General. The responsibility of obtaining appropriate confirmation of the authenticity, performance specification and accuracy of the DFLD rests with the operator. It is also recommended that a "confidence" check of the received data be accomplished to ensure that the new data satisfies the intended use. The DFLD should be subjected to a configuration control process acceptable to the Director-General. (See Appendix No. 1 paragraph 1.)

4.4 **UMS**

UMS is FLS that is normally modified by the operator, their contracted maintenance organisation or approved vendor using the appropriate methods identified during initial certification. The responsibility for obtaining adequate documentation confirming the appropriateness of the software rests with the operator. If an instance occurs, when a change to target hardware's software that has been defined as UMS actually modifies aircraft performance information presented to the flight crew, Director-General's advice should be sought as approval maybe required and the software classification of UMS may be removed.

4.5 **Distribution of FLS and DFLD**

FLS and Data files can be distributed to the aircraft operator using a variety of methods, which include use of software media (such as diskettes, CD-ROMs, PCMCIA Cards) or electronically such as via the Internet. The operator is responsible for establishing a process to ensure that the FLS or data file received is the FLS or data file approved and that the FLS or data file has not been corrupted (e.g. making use of a Cyclic Redundancy Check (CRC)). Complying with the aircraft manufacturers recommendations and utilising the recommended tooling could achieve this.

4.5.1 **Media Distribution of FLS or DFLD**

If the FLS or DFLD is to be supplied using diskettes, CD-ROMs or PCMCIA cards the following should be considered:

- (a) The FLS or DFLD should be virus checked upon receipt and stored in a controlled location if not being immediately loaded onto an aircraft system. (This requirement assumes that the media store has appropriate protections and controls to prevent unauthorised access to the media. If this is in any doubt, the FLS or DFLD should be virus checked immediately prior to loading it onto an aircraft system). The Target Hardware Manufacturer should provide guidance on how this virus checking should be accomplished.
- (b) The method of transportation should be appropriate to ensure that it does not result in damage or corruption of the storage media or FLS or DFLD. If this is in any doubt, the FLS or DFLD should not be loaded onto an aircraft system.
- (c) The FLS or DFLD should be accompanied by the appropriate release paperwork, as stated in paragraph 3.

4.5.2 Electronic Distribution of FLS or DFLD

Electronic distribution is increasingly being utilised to transfer FLS or DFLD from the supplier to an operator. The obvious advantages of this are the speed of distribution and the removal of the need for physical transport media. This should be accomplished to an acceptable standard (See Appendix No. 1 paragraph 1). Such an acceptable standard would normally be that of meeting the intent of the guidance in this Notice. If the FLS or DFLD is supplied over the Internet this should be accomplished in accordance with a procedure detailed in Appendix No. 1 paragraph 1.3.

5 FLS and DFLD Storage Media Handling

The operator is responsible for ensuring the suitability of any storage media used. In order to ensure FLS and DFLD integrity, the storage media should be kept and processed in an environment that is not detrimental to that storage media, noting any limitations associated with that media. Additional information may be found in Appendix No. 1.

6 FLS and DFLD Loading and Certification

6.1 Prior to Loading

Prior to loading FLS or DFLD onto the aircraft the operator should consider the points in Appendix No. 1.

6.2 Loading FLS or DFLS

Loading FLS or DFLD onto aircraft Target Hardware should be carried out and verified in accordance with the established processes and procedures detailed in the maintenance manual or associated approved maintenance or modification data.

6.3 Recording Aircraft FLS and DFLD Configuration

All FLS and DFLD loading should be recorded in the Aircraft Configuration List (ACL), and a copy kept on board the aircraft with a further copy also kept in the operator's aircraft maintenance records system.

6.4 Aircraft Release to Service

After any loading of FLS or DFLD a Certificate of Release to Service must be issued by an appropriately authorised/licensed person.

7 Replication of FLS and DFLD

7.1 FLS or DFLD Copies

If FLS or DFLD copies are to be made by the aircraft operator for use within their organisation, this should be accomplished using the aircraft type design organisation approved FLS and DFLD Storage Media replication process. This replication should be recorded in an Aircraft FLS/DFLD Replication Register and be traceable to the original source from which copies were made. This is to ensure that this activity could be audited.

7.2 Release Documentation

A copy of the original JAA Form One, EASA Form 1, FAA 8130-3, Letter of Acceptance (for navigation databases) or other release documentation acceptable to the Director-General, as defined in paragraph 3, should accompany the FLS or DFLD Storage Media containing copies of the FLS or DFLD.

8 Procedure

8.1 Configuration Control

It is essential that operators consider use of appropriate procedures such that at any time they can determine the equipment, FLS and DFLD configuration of each aircraft in their fleet.

8.2 Use of Notice Recommendations

Operators involved in the procurement, modification and embodiment of FLS and DFLD should consider producing a documented procedure within their company procedures, Maintenance Management Exposition (MME) or equivalent that describes their means of implementing procedures recommended by this Notice. Further guidance can be found within Appendix No. 1 to this Notice. It is expected that any procedure would cover the complete cycle from procurement specification; distribution methodology (e.g. Electronic Distribution, media type etc.); receipt inspection and assessment through to embodiment; subsequent testing and release to service. This process should also be considered for inclusion in the operator's internal audit programme.

8.3 Staff

Operators should ensure that sufficient numbers of competent staff are retained in order to ensure that the intent of guidance within this Notice is met.

9 Recommended Reference Material

USA	Europe	Description
RTCA DO 178B	EUROCAE Doc. ED 12B	Software Considerations in Airborne Systems and Equipment Certification
RTCA DO 200A	EUROCAE Doc. ED 76	Standards for Processing Aeronautical Information
	JAA TGL 36	JAA Administrative and Guidance Material, Section Four: Operations, Part Three: Temporary Guidance Leaflets (JAR-OPS): Leaflet No. 36: Approval Of Electronic Flight Bags (EFBs)

NOTE: Or any later versions of the above documents.

10 Cancellation

This Airworthiness Notice cancels Airworthiness Notice No. 43, Issue 3, dated 30 September 2005, which should be destroyed.

Simon LI

Director-General of Civil Aviation

FLS AND DFLD CONTROL, TOOLING AND LOADING

1 Procedures for the control of FLS and DFLD

The operator should consider providing the following for the control of FLS and DFLD.

1.1 FLS and DFLD Register

A controlled FLS and DFLD register, which includes the following:

- (a) The version of the FLS and DFLD owned.
- (b) Which aircraft the FLS and DFLD are installed on.
- (c) The aircraft, systems and equipment that they are only applicable to.
- (d) The functions that the recorded FLS or DFLD performs.
- (e) Where it is stored (on or off aircraft location, including the Storage Media) and who has access to it.
- (f) Who can decide whether an upgrade is needed and then authorise that upgrade.
- (g) A record of all replicated FLS/DFLD, traceable to the original source.

1.2 Storage Facility

An appropriate storage facility for the FLS and DFLD. While selecting an appropriate location, the following should be taken into account:

- (a) Access to the location should be appropriately controlled.
- (b) The environmental conditions within the location should be appropriate for the storage of the FLS and DFLD media and provide protection against all forms of environmental contamination, including water, fire, heat and electrical or magnetic fields.
- (c) If the main source of the FLS and DFLD are an electronic store (e.g. a

central database of software programs) that store should be:

- (i) subject to configuration control processes.

NOTE: ED-12B/DO-178B provides criteria for such a process by defining the configuration control process's objectives as:

Configuration items are identified.

Baselines and traceability are established.

Problem reporting, change control, change review, and configuration status accounting are established.

Archive, retrieval, and release are established.

Software load control is established.

Software life cycle environment control is established.

- (ii) appropriately isolated from the rest of the network to prevent unauthorised access or contamination from viruses. This isolation can be achieved using a series of access control functions and firewalls. However, protecting a networked system against viruses is a complex issue and consideration should be given to this store being separated from the network.
- (d) An appropriate number of backups should be maintained utilising standard software backup techniques.

1.3 FLS and DFLD Receipt Procedures

Specific procedures implemented for the receipt of FLS and DFLD that are transferred using electronic distribution techniques should give consideration to the following:

- (a) That the FLS or DFLD has come from an appropriate source and that sufficient configuration control processes are in place to ensure that the correct data and/or executable code will be supplied.
- (b) That they are accompanied by suitable release documentation.
- (c) That a record of purchase is created.
- (d) That suitable controls are in place to prevent use of FLS and DFLD that have become corrupted during its existence in any "open" environment, such as on the Internet.
- (e) That means are provided to allow detection of corruption.

- (f) That connecting a central electronic store for FLS and DFLD storage directly to the Internet is avoided wherever possible. However, where this cannot be avoided, or if the FLS or DFLD are ported straight from the Internet to a central electronic store, a means to detect interference or corruption are provided.

1.4 FLS and DFLD Loading Procedures

Specific procedures implemented for the loading of FLS and DFLD, to Target Hardware, should consider the following:

- (a) The criteria identified within the FLS and DFLD control register, defined in paragraph 1.1 above.
- (b) The appropriate authority to embody FLS onto the aircraft (e.g. aircraft manufacturer's Service Bulletin (SB)) has been issued and received, i.e. aircraft manufacturer's SB or a Supplemental Type Certificate (STC).

NOTE: A vendor SB does not provide the authority to embody a different part number onto the aircraft.

- (c) The need for appropriate verification and recording of Target Hardware and FLS and certain DFLD part number changes:
 - (i) For airborne equipment having separate part numbers for hardware and FLS/DFLD, the FLS/DFLD part numbers need not be displayed on the outside of the unit, as long as it can be verified through some kind of electronic query. When new FLS/DFLD is loaded into the unit, the same requirement applies and the approved FLS/DFLD part number should be verified before the unit is released for service. It should be noted, that in circumstances where only the top level FLS/DFLD part number is displayed for an entire FLS/DFLD load, that affects several items of Target Hardware – such as might be found in Integrated Modular Avionics (IMA) applications – the verification of this number would be necessary.
 - (ii) It is the aircraft operator's responsibility to ensure that the maintenance organisation has entered the FLS/DFLD identification in the aircraft maintenance records such that they can update the aircraft configuration information, such as an Aircraft Configuration List (ACL).

- (iii) If airborne equipment has only one part number, which represents a specific configuration of software and hardware, the unit identification on the nameplate should be changed if new software is loaded. In order for this to be embodied on the aircraft this should be accomplished in accordance with an aircraft manufacturer's SB. The software part number stored in the target computer after data loading should be verified electronically and confirmed to be an approved configuration as detailed in the SB.
- (d) Verification that the upgrade actually is needed.
 - (i) If the system is working as required and the FLS or DFLD upgrade is not introducing a required solution or function addition or change, it is not always necessary to upgrade the FLS or DFLD simply for the sake of upgrading. Equally, it is possible that the upgrade could introduce problems that did not exist before.
 - (ii) It is also necessary to check any support agreements to ensure that customer support for the FLS or DFLD will remain valid.
- (e) Identify what has changed between the different versions of the FLS or DFLD. This should include identifying and recording within the FLS and DFLD register the problems that have been fixed and what functionality has been added or removed. (See paragraph 1.1(d) of this Appendix.)

2 Control of FLS or DFLD Tooling

- 2.1 FLS or DFLD can be loaded into the Target Hardware using a variety of tools as recommended and/or approved by the aircraft or Target Hardware manufacturer. These can include Original Equipment Manufacturer (OEM) supplied tools, Commercial Off The Shelf (COTS) tools or in-house developed tools.
 - 2.1.1 There are a number of issues associated with FLS or DFLD tooling that the aircraft operator would need to take into account if an alternative to the tooling recommended by the aircraft or Target Hardware manufacturer was to be considered. Prior to seeking the aircraft or Target Hardware manufacturer's approval for any alternative tools' use, the aircraft operator should take the following items into account. These are associated with the general tool selection, and the control and the suitability of those tools.

2.2 General Tool Selection

The following general issues should be considered when making a FLS or DFLD tool selection:

- (a) What function is the tool required to perform:
 - (i) Is it simply loading, leaving other tools or processes to perform compatibility checks and validation tasks?
 - (ii) Is it loading and validating the final load, leaving initial compatibility checks to other tools or processes?
 - (iii) Is it providing all the tasks associated with loading (compatibility checks, loading and validation) and providing a diagnostic feature?
 - (iv) Any other combination of the above should be considered.
- (b) Is the tool (which could be a laptop) able to be suitably controlled?
- (c) Does the tool supplier have any previous experience in developing tools for the required purpose?
- (d) Will the tool supplier provide support and training?
- (e) Does the tool provide all the needed functionality or will additional tools or processes be needed?
- (f) Does the tool provide the necessary confirmation of what has been loaded onto the aircraft?
- (g) Do any existing tools that have Director-General's acceptance already provide the required functionality?
- (h) How much dependence will be placed on the tool?
- (i) Will the tool supplier provide support for the tool for the duration of its use?
- (j) Is the tool widely used in the industry and does it have a good reputation?
- (k) If the tool is not widely used in the industry, is there any other way to establish its integrity?
- (l) Will special training be required to use the tool?

- (m) Are there any human factors issues associated with its use?

2.3 Specific Tool Selection – OEM and COTS

The issues detailed above apply to the selection of any tool, regardless of who supplies it. The issues detailed below are specific, additional, considerations that need to be considered for OEM and COTS Tools of software tools. If a tool is going to be supplied by the aircraft Type Certificate (TC) holder (or STC holder) or the equipment manufacturer, or where COTS tooling is going to be supplied (COTS tools are considered to be those which were not supplied by the aircraft TC holder (or STC holder) or the equipment manufacturer, or developed by the airline/maintenance organisation) the following additional issues need to be considered:

- (a) Does the aircraft or Target Hardware manufacturer recommend it?
- (b) Is the tool needed for the FLS or DFLD and aircraft in question?
- (c) Was the tool actually developed for use with the FLS or DFLD and aircraft in question?
- (d) If the tool was not specifically developed for use with the FLS or DFLD and aircraft in question, is it compatible with them?
- (e) Is the tool likely to be compatible with the whole fleet?

2.4 Specific Tool Selection – In-house Developed Tools

If an aircraft operator is considering developing their own tools the following additional issues need to be considered:

- (a) The tool must be developed such that it cannot corrupt the functionality of the aircraft systems it is being used for.
- (b) The aircraft operator or their organisation must have a sufficient understanding of the internal aircraft system functionality to be sure of creating a tool that will work correctly.
- (c) The aircraft operator or their organisation must have personnel that are experienced in writing tools for aircraft maintenance functions and the associated human factors issues.
- (d) The tool should be developed in a suitably controlled fashion.
- (e) The operator should gain acceptance for the use of the tool from the aircraft or Target Hardware manufacturer.

2.5 Control and Suitability of Tools

If tools are to be used by the aircraft operator, specific processes should be introduced to control their use. These processes should ensure that:

- (a) The control of tools including Portable Electronic Devices, such as laptop PCs should prevent the accidental or malicious transfer of viruses.
- (b) Portable Electronic Devices should be equipped with up-to-date virus protection software or virus scanned immediately before they are used to load FLS or DFLD onto an aircraft system's Target Hardware.
- (c) The ability of the tool to actually run the software that enables loading should be considered.
- (d) Access to the tools should be controlled and recorded.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 44
Issue 4
31 January 2002**

**GAS TURBINE ENGINE PARTS SUBJECT TO RETIREMENT
OR ULTIMATE (SCRAP) LIVES**

- 1 The design of gas turbine engines in service is such that certain critical parts, notably compressor and turbine discs, experience cyclic variations of stress as a result of mechanical and thermal effects which are of sufficient magnitude to result in fatigue damage. The failure of these parts can result in damage to the aircraft since under operating conditions they may possess more energy than can be absorbed by the surrounding engine structure. It is therefore necessary to limit the life of all critical parts in order to prevent fatigue damage developing into complete failure. As fatigue damage is not detectable by current inspection techniques until cracking has begun, and because crack propagation to the point of failure can be unacceptably rapid, a safe life for each critical part will have been established and approved as part of the certification procedure.
- 2 These safe lives, also referred to as retirement lives, ultimate lives, scrap lives and low cycle fatigue (LCF) lives, are mandatory limits which must never be exceeded. They are required by HKAR-1 Sub-section 1.5-3 to be published, in the Engine Manuals, for all engines. Manufacturers also publish this information variously in Service Bulletins, Service Memoranda, Notices to Operators, Maintenance Manuals, etc., for the benefit of operators and engine overhaul agencies. It may be possible to extend the published lives as a result of further testing, and this is normally indicated in the publications as an aid to spares provisioning, but such amendments must be approved.
- 3 The Inspection and Test Certificate of an engine issued by a manufacturer or overhaul agency is required to include reference to a certified statement in which is recorded the life consumed, up to the time of release, by each of the life-limited parts fitted in the engine. This statement is normally included in the engine log book, but may be included in any other document which has been approved as an alternative for a particular operator.
- 4 Each operator is responsible for ensuring that parts fitted to the engines being operated do not exceed the published lives. Therefore accurate up-to-date records of the life consumed by each engine are required to be maintained, and this may involve recording flying hours, number of landings, 'touch and go' landings and take-offs, air re-starts, etc., dependent upon each manufacturer's definition of a unit of life. In order to preserve continuity of the records, an up-to-date statement of the life consumed since last release must accompany each engine when despatched by an operator to an overhaul agency for

repair, modification and partial or complete overhaul.

- 5 When a new type of aircraft fitted with a UK manufactured turbine engine is first introduced into service the operator is responsible for determining a 'typical flight cycle', described in engine terms, applicable to its operation. This should be done by sufficient monitoring of service flights, and as necessary training flights, to provide an adequate knowledge of actual engine flight profiles. If these appear to be in any way more severe than those assumed by the engine manufacturer, the operator shall inform the engine manufacturer and the Director-General. Amended approved lives will be published if necessary.

NOTES: (1) As differences between winter and summer operation, and differences in the installed position of engine in the aircraft may make significant difference to the usage experienced, these factors should be taken into account in the monitoring programmes. Also because autothrottle and auto-land systems can affect the envelope of engine speeds used, it is important that any changes to the characteristics of such systems are assessed.

- (2) HKAR-1 Sub-section 1.5-3 requires the engine manufacturer to publish, in the engine manuals, information concerning the engine flight profile assumed for the establishment of safe lives.

- 6 Each operator of an aircraft type (fitted with a UK engine) which he has not previously operated shall, during the first six months of operation, establish that his engines are being used within the flight profile published by the engine manufacturer. If there is any reason to believe that the flight cyclic fatigue usage may be more adverse than currently assumed, the operator shall inform the engine manufacturer and the Director-General with a view to revision of the approved lives.

- 7 The Director-General will, from time to time, review with UK engine manufacturers the total experience applicable to any engine/aircraft type. When this reaches a level at which the engine operation can be regarded as well established, the need for compliance with paragraph 6 will cease, and this will be stated in the engine manufacturers' manual material dealing with this subject.

- 8 Additionally, all operators of UK manufactured engines will be required at yearly intervals to make a formal statement that:-

- (a) in respect of engines having been assessed under paragraph 6, there has been no change to their operation, engine handling, auto-throttle systems, thrust reverse drills, etc.
- (b) in respect of engines covered by paragraph 7, they are permitting no procedures which would result in their engines operating outside the prescribed flight profile to an extent which could significantly affect fatigue life usage, unless an assessment by the engine manufacturer has shown any effect to be unimportant or allowed for by appropriate adjustment of lives.

- 9 Operators of engines manufactured outside the UK may find that the engine manufacturers' manuals contain different information on this subject from that in

manuals for UK engines. Operators must obviously comply with any instruction given, but are additionally advised to inform the engine manufacturer of any conditions of their operation which may be at variance with his instructions. The Director-General will provide assistance if desired in obtaining the manufacturers' assessment of the effects of operations on related lives.

10 **Cancellation**

This Notice cancels Airworthiness Notice No.44 Issue 3, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 45
Issue 5
28 June 2019**

SOFTWARE MANAGEMENT

1 Introduction

1.1 This Notice sets out additional requirements applicable to the certification and continued airworthiness control of software used in aircraft equipment and systems.

1.2 Extensive use is now being made in aircraft of software-based equipment and systems. Typically, software may be used in primary and secondary flight controls, engine controls, electrical generation and distribution, brakes, radio and navigation equipment, flight instruments, and automatic flight control. The software may have a direct influence on aircraft safety. Hence, in meeting the appropriate aircraft requirements and, for Controlled Items, it is necessary to investigate the software design and to control its certification and post-certification configuration in a manner equivalent to that for conventional safety-critical systems.

NOTE: **Controlled Items** are those airframe parts and equipment:

- (1) prescribed in the Air Navigation (Hong Kong) Order and not specifically exempted from approval;
- (2) prescribed in the Requirements;
- (3) on which the airworthiness and safe operation of an aircraft depend;
- (4) the installation or failure of which could adversely affect the airworthiness and safe operation of an aircraft.

1.3 RTCA/EUROCAE document DO-178/ED-12, issued in May 1982, entitled 'Software Considerations in Airborne Systems and Equipment Certification', provides guidance to aircraft manufacturers, equipment manufacturers and aircraft operators on software practices that would support the certification of software-based equipment and systems. This document, or later issues, is acceptable to the Director-General as a basis for the certification of the software in aircraft equipment and systems.

2 Requirements

2.1 General

2.1.1 In addition to the normal assessment of system criticality, the responsible Design Organisation (normally the aircraft manufacturer) shall assign a Software Criticality Category to each software-based equipment or system which shall relate to the severity of the effect of possible software errors within the equipment or system (see Appendix to this Notice). The Software Criticality Category assigned shall be agreed by the Director-General.

2.1.2 Where the equipment or system is to be approved under the aircraft modification procedure of HKAR-21, the Software Criticality Category of the equipment or system shall be declared.

2.1.3 Details of equipment and system Software Criticality Categories should be provided to the aircraft operators to assist in the evaluation of post-certification modifications (see paragraph 2.3).

2.2 Initial Certification

In respect of a software-based equipment or system, the responsible Design Organisation shall provide evidence to the Director-General that the software has been designed, tested and integrated with the hardware in a manner which ensures compliance with HKAR-21 (see paragraph 3.1).

2.3 Post-Certification Modifications

In respect of equipment and systems with software in the Major, Hazardous or Catastrophic Criticality Categories, a modification which affects software shall not be embodied unless it has been approved by the responsible Design Organisation (see paragraph 3.2).

3 Interpretation of Requirements

3.1 Initial Certification

3.1.1 An applicant for the approval of a software-based equipment or system may use the guidance material given in DO-178/ED-12, or later issues, (or an agreed equivalent standard) as a means of securing CAD approval of the associated software.

3.1.2 A software Configuration Management Plan, e.g. as defined in DO-178/ED-12, will be required as a means of software identification and change control to be effective throughout the life of the equipment. The plan will need to be managed by the responsible Design

Organisation.

3.2 Post-Certification Modifications

3.2.1 Modifications to software will be subject to the same approval procedures as are applied to hardware modifications (see HKAR-21). Modified software will need to be identified and controlled in accordance with the procedures stated in the Software Configuration Management Plan. The guidance material given in DO-178/ED-12, or later issues, (or an agreed equivalent standard) may be used as a basis for the approval of software modifications.

NOTE: The term "maintenance" is often used by software specialists when referring to modifications to software.

3.2.2 The Director-General will require the design and investigation of a modification, including those proposed by the aircraft operator, to involve the support service provided by the Design Organisation responsible for the equipment or system. It is unlikely that an aircraft operator could justify the establishment of its own software design capability. Therefore, where the Software Criticality Category is Major, Hazardous or Catastrophic, the aircraft manufacturer would normally be the appropriate Design Organisation, although tasks may be delegated to equipment manufacturers or software organisations.

3.2.3 Aircraft operators will need to ensure that their normal procedures will report software problems to the responsible Design Organisation.

4 Implementation

Software in aircraft systems and equipment are subject to the provisions of this Notice.

5 Cancellation

This Notice cancels Airworthiness Notice No. 45 Issue 4, dated 31 January 2002, which should be destroyed.

Simon LI

Director-General of Civil Aviation

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AIRWORTHINESS NOTICE NO. 45
APPENDIX NO. 1

Issue 1
1 June 1987

DEFINITION OF EUROPEAN CRITICALITY CATEGORIES

Effect on aircraft and occupants of failure condition or design error	FAR 25.1309 & JAR 25.1309 definitions	No significant degradation of aircraft capability or crew ability	Reduction of the aircraft capability or of the crew ability to cope with adverse operating conditions		Prevention of continued safe flight and landing of the aircraft
	JAR 25.1309 and ACJ No.1 to JAR 25.1309 definitions	<ul style="list-style-type: none"> - slight reduction of safety margins - slight increase in workload, e.g. routine changes in flight plan, or - physical effects but no injury to occupants 	<ul style="list-style-type: none"> - significant reduction in safety margins - reduction in the ability of flight crew to cope with adverse operating conditions impairing their efficiency, or - injury to occupants 	<ul style="list-style-type: none"> - large reduction in safety margins - physical distress or workload such that the flight crew cannot be relied upon to perform their tasks accurately or completely, or - serious injury to or death of a relatively small proportion of the occupants 	Loss of aircraft and/or fatalities
Criticality category ACJ No.1 to JAR 25.1309 definition		Minor	Major	Hazardous	Catastrophic
Category of criticality RTCA DO-178		Non essential	Essential		Critical

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 45A
Issue 6
28 June 2019**

SOFTWARE MANAGEMENT AND CERTIFICATION GUIDELINES

1 Introduction

- 1.1 Airworthiness Notice No. 45 was issued to give the CAD recognition to RTCA/EUROCAE Documents DO-178/ED-12, entitled ‘Software Considerations in Airborne Systems and Equipment Certification’. The RTCA/EUROCAE Documents have been updated to reflect industry's experience, and released under references DO-178B/ED-12B. The rigid correlation, required in DO-178/ED-12, between software verification effort and function criticality category has been relaxed. A more flexible approach, in which design techniques are permitted to influence the software verification effort for a given function criticality, is described in DO-178B/ED-12B, or later issues.
- 1.2 The purpose of this Notice is to extend the CAD recognition to the updated Documents and to restate the applicable requirements with appropriate guidance material. Airworthiness Notice No. 45 will continue to apply to systems and equipment for which DO-178/ED-12 was adopted.
- 1.3 RTCA/EUROCAE document DO-178B/ED-12B, issued in December 1992, entitled ‘Software Considerations in Airborne Systems and Equipment Certification’, provides guidance to aircraft constructors, equipment manufacturers and aircraft operators on software design and management practices. This document, or later issues, is acceptable to the Director-General as a basis for the certification of the software in aircraft systems and equipment.

2 Requirements

2.1 General

- 2.1.1 In addition to the normal assessment of system and/or function criticality, the responsible Design Organisation shall assign, to each software-based system or equipment, associated Software Levels which relate to the severity of the effect of possible software errors within the system or equipment (see Appendix 1 to this Notice). The Software Levels so assigned shall be agreed by the Director-General.
- 2.1.2 Where the system or equipment is to be the subject of an application to

the Director-General for approval as part of an engine or propeller, the Software Levels of the system or equipment shall be declared in the Engine or Propeller Type Certificate Data Sheet or the equipment Declaration of Design and Performance, as appropriate.

2.1.3 Where the system or equipment is to be approved under the aircraft modification procedure of HKAR-21, the Software Levels of the system or equipment shall be declared.

2.1.4 Details of system and equipment Software Levels should be made available to the aircraft operators to assist in the evaluation of post-certification modifications (see paragraph 2.3).

2.2 Initial Certification

In respect of a software-based system or equipment, the responsible Design Organisation shall provide evidence to the Director-General that the software has been designed, tested and integrated with the hardware in a manner which ensures compliance with the relevant requirements of HKAR-1 Sub-section 1.3-11 (also see paragraph 3.1).

2.3 Post-Certification Modifications

In respect of systems and equipment with Level A, Level B or Level C Software, a modification which affects software shall not be embodied unless it has been approved by the responsible Design Organisation (see paragraph 3.2).

3 Interpretation of Requirements

3.1 Initial Certification

3.1.1 An applicant for the approval of a software-based system or equipment may use the guidance material given in DO-178B/ED-12B, or later issues, (or an agreed equivalent standard).

3.1.2 A Software Configuration Management Plan, e.g. as defined in DO-178B/ED-12B, or later issues, will be required as a means of software identification and change control to be effective throughout the life of the equipment.

3.2 Post-Certification Modifications

3.2.1 Modifications to software will be subject to the same approval procedures as are applied to hardware modifications (see HKAR-21). Modified software will need to be identified and controlled in accordance with the procedures stated in the Software Configuration Management Plan. The guidance material given in DO-178B/ED-12, or later issues, (or an agreed equivalent standard) may be used as a

basis for the approval of software modifications.

NOTE: The term "maintenance" is often used by software specialists when referring to modifications to software.

3.2.2 The Director-General will require the design and investigation of modifications, including those proposed by the aircraft operator, to involve the support service provided by the responsible Design Organisation. The re-certification effort will need to be related to the Software Levels. Experience has shown that an aircraft operator is unlikely to justify the establishment of its own software design capability. Therefore, where the software is classified in Level A, Level B or Level C, the aircraft, engine or propeller constructor, as appropriate, would normally be the responsible Design Organisation for certification purposes, although related tasks may be delegated to equipment manufacturers or software organisations.

3.2.3 Aircraft operators will need to ensure that their defect reporting procedures will report software problems to the responsible Design Organisation.

4 **Software Documentation**

4.1 The documentation to be made available to the certifying authority is listed in DO-178B/ED-12B, or later issues.

4.2 Where the Director-General is validating an approval granted to a system or equipment by an airworthiness authority other than the Director-General, the Director-General will notify the applicant which documents are to be submitted. In many cases, a reasonably comprehensive Accomplishment Summary, as outlined in paragraph 11.20 of DO-178B/ED-12B, may suffice. Guidance on the preparation of an Accomplishment Summary is given in Appendix 2 to this Notice.

5 **Implementation**

Software in aircraft systems and equipment is subject to the provisions of this Airworthiness Notice, except for existing systems and equipment, where the provisions of Airworthiness Notice No. 45 have already been adopted.

6 **Cancellation**

This Notice cancels Airworthiness Notice No. 45A Issue 5, dated 31 January 2003, which should be destroyed.

Simon LI

Director-General of Civil Aviation

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AIRWORTHINESS NOTICE NO. 45A
APPENDIX NO. 1

Issue 4
31 January 2003

RELATIONSHIP BETWEEN FUNCTION CRITICALITY CATEGORY AND SOFTWARE LEVEL

Effect on aircraft and occupants of failure conditions or design error	FAR 25.1309 and JAR 25.1309 definitions	No significant degradation of aircraft capability or crew ability	Reduction of the aircraft capability or of the crew ability to cope with adverse operating conditions		Prevention of continued safe flight and landing of the aircraft
	ACJ No.1 to JAR 25.1309 definitions	<ul style="list-style-type: none"> - Slight reduction of safety margins, - Slight increase in workload, e.g. routine changes in flight plan, or - Physical effects but no injury to occupants 	<ul style="list-style-type: none"> - A significant reduction in safety margins, - A reduction in the ability of the flight crew to cope with adverse operating conditions as a result of increase in workload or as a result of conditions impairing their efficiency, or - Injury to occupants 	<ul style="list-style-type: none"> - A large reduction in safety margins, - Physical distress or a workload such that the flight crew cannot be relied upon to perform their tasks accurately or completely, or - Serious injury to, or death of, a relatively small proportion of the occupants 	Loss of aircraft and/or fatalities
ACJ No.1 to JAR 25.1309 definition of Criticality Category		Minor Effect	Major Effect	Hazardous/Severe -Major Effect	Catastrophic Effect
FAR Advisory Circular 25.1309-1A definition of Criticality Category		Non essential	Essential		Critical
DO-178B/ED-12B Software level*		Level D	Level C	Level B	Level A

* Note: Using appropriate design and/or implementation techniques, it may be possible to use a Software Level lower than the functional categorisation.

Cancellation

This Notice Appendix cancels Airworthiness Notice No.45A Appendix No.1 Issue 3, dated 31 January 2002, which should be destroyed.

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31 January 2003

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SOFTWARE ACCOMPLISHMENT SUMMARY OF DO-178B/ED-12B

1 General

- 1.1 The Software Accomplishment Summary is considered the primary document for use by the certifying authorities. It should identify all other documents which may be required for information or available for submission. The document is a summary, normally no more than ten pages long. However, its length will depend on the complexity and criticality of the system or equipment and the associated Software Levels. The Accomplishment Summary may evolve from the Plan for Software Aspects of Certification defined in DO-178B/ED-12B or later issue.
- 1.2 Where the application relates to an Equipment Approval, the summary will need to be prepared by the equipment manufacturer. For approval of the installation of the equipment into an aircraft, engine or propeller system, the installer may need only to produce a supplement to the manufacturer's summary to reflect the additional certification effort.
- 1.3 Where a significant change is proposed to the software of an approved system or equipment, the Accomplishment Summary should be reviewed and, where necessary, amended to take account of the change. The Director-General will normally require a copy of the amended summary prior to acceptance of a significant software change.

2 Content

As a minimum, information relevant to the particular software version should be included in the summary under the following headings:-

(a) (i) ***System and Equipment Description***

This section should briefly describe the equipment functions and hardware including safety features which rely on hardware devices or system architecture.

(ii) ***Organisation of Software***

This section should identify the particular software version and briefly describe the software functions and architecture with particular emphasis on the safety and partitioning concepts used. The size of the final software design should be stated, e.g. in terms of memory bytes, number of modules. The language(s) used should also be stated.

(b) ***Criticality Categories and Software Levels***

This section should state the Software Levels applicable to the various parts of the software. The rationale for their choice should be stated, either directly, or by reference to other documents.

(c) ***Design Disciplines***

This section should briefly describe the design procedures and associated disciplines which were applied to ensure the quality of the software. The organisations which were involved in the production and testing (including flight testing) of the software should be identified and their responsibilities stated.

(d) ***Development Phases***

The development phases of the project should be summarised. This information could be included in sub-paragraph (h) below.

(e) ***Software Verification Plan***

This section should briefly summarise the plan and the test results.

(f) ***Configuration Management***

The principles adopted for software identification, modification, storage and release should be briefly summarised.

(g) ***Quality Assurance***

The procedures relating to quality assurance of the software should be summarised including, where applicable, those procedures which applied to liaison between the equipment manufacturer and the aircraft, engine or propeller constructor, as appropriate.

(h) ***Certification Plan***

This section should provide a schedule detailing major milestones achieved and their relationship to the various software releases.

(i) ***Organisation and Identification of Documents***

This section should identify the documents which satisfy the requirements of DO-178B/ED-12B.

(j) ***Software Status***

Any known errors, temporary patches, functional limitations or similar shortcomings associated with the delivered software should be declared and the proposed timescale for corrective action stated.

3 **Cancellation**

This Notice Appendix cancels Airworthiness Notice No.45A Appendix No.2 Issue 2, dated 31 January 2002, which should be destroyed.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

AIRWORTHINESS NOTICE

No. 47

Issue 6

30 September 2006

**LICENSED AIRCRAFT MAINTENANCE ENGINEERS -
PERSONAL RESPONSIBILITY WHEN MEDICALLY UNFIT
OR UNDER THE INFLUENCE OF DRINK OR DRUGS**

1 Introduction

- 1.1 The International Civil Aviation Organisation (ICAO) has introduced an amendment to Annex 1 to the Convention on International Civil Aviation which has the effect of extending certain standards and recommended practices to all licence holders. The changes resulting from the amendment are concerned with medical fitness and the use or abuse of intoxicating liquor, narcotics or drugs.
- 1.2 To implement these changes the Director-General introduced this Airworthiness Notice which prohibits the exercise of the privileges of an aircraft maintenance engineer's licence when the holder knows or suspects that his or her physical or mental condition renders him or her unfit to exercise such privileges. Also, this Notice prohibits the exercise of licence privileges when the holder is under the influence of drink and/or drugs to such an extent as to impair his or her capacity to exercise such privileges.
- 1.3 HKAR-66 became effective on 1 April 2002. HKAR 66.50 imposes a requirement that certifying staff must not exercise the privileges of their certification authorisation if they know or suspect that their physical or mental condition renders them unfit. The associated Acceptable Means of Compliance (AMC 66.50) mentions alcohol and drugs. The guidance material in this Notice should be considered equally applicable to HKAR-66.
- 1.4 It should be noted that HKAR-66 also refers to mental fitness and specifically states that the holder must not exercise the privileges of their licence/authorisation if a 'mental condition renders them unfit to exercise such privileges'. In this sense, mental condition means psychological integrity.

2 General

- 2.1 An aircraft maintenance engineer's licence authorises the holder, subject to any conditions that may be specified on the licence, to issue various certificates relating to aircraft maintenance. The process of issuing these certificates (Certificates of Maintenance Review, Certificates of Release to

Service and Certificates of Fitness for Flight under the 'A Conditions') requires clear decisions to be made that directly affect the airworthiness of the aircraft to which they relate. It follows that the quality of these decisions is directly influenced by the physical or mental state of the certifier at the time of certification, and whether or not he or she is subject to the adverse effects of drink and/or drugs.

2.2 The corporate management of all approved maintenance organisations are required to review this Airworthiness Notice and implement suitable policies and procedures to make all maintenance staff aware of them. This Airworthiness Notice falls on those who certify the completion of maintenance, holding HKAR-66 licences or any other aircraft maintenance licences acceptable to the Director-General. The guidance material contained in this Airworthiness Notice is equally applicable to all non-licensed personnel engaged in aircraft maintenance tasks and in principle should be adopted throughout the aviation industry as a code of practice. Organisations shall also take note of items in paragraph 3 which require their participation in the areas concerned.

2.3 All persons to whom this Airworthiness Notice applies should be aware of the guidance material contained herein. It is the responsibility of the individual concerned to ensure that he or she does not report for duty or certify if he or she is genuinely unfit. Such persons should also be aware of an organisation's own internal policies and monitoring procedures to verify the above.

3 Guidance

3.1 Fitness

In most professions there is a duty of care by the individual to assess his or her own fitness to carry out professional duties. This has been a legal requirement for some time for doctors, flight crew members and air traffic controllers. Licensed aircraft maintenance engineers are also now required by this Airworthiness Notice to take a similar professional attitude.

Cases of subtle physical or mental illness may not always be apparent to the individual but as engineers often work as a member of a team any sub-standard performance or unusual behaviour should be quickly noticed by colleagues or supervisors who should notify management so that appropriate support and counselling action can be taken. In particular, a decrease in mental fitness in many cases may be related to stress from within the working environment or to the personal circumstances of the individual. Instances of aggressive behaviour, vagueness and slippage of personal standards (cleanliness, appearance, etc.) may be indicative of more serious mental issues. Such issues may bring into question the ability of the individual to be trusted or to maintain the necessary levels of concentration to take appropriate decisions on airworthiness matters.

3.2 **Fatigue**

Tiredness and fatigue can adversely affect performance. Excessive hours of duty and shift working, particularly with multiple shift periods or additional overtime, can lead to problems. Individuals should be fully aware of the dangers of impaired performance due to these factors and of their personal responsibilities.

3.3 **Stress**

Everyone is subject to various stresses in their life and work. Stress can often be stimulating and beneficial but prolonged exposure to chronic stress (high levels or differing stress factors) can produce strain and cause performance to suffer allowing mistakes to occur. Stress factors can be varied, physical – e.g. heat, cold, humidity, noise, vibration; they can be due to ill-health or worries about possible ill-health; from problems outside the workplace – e.g. bereavements, domestic upsets, financial or legal difficulties. A stress problem can manifest itself by signs of irritability, forgetfulness, sickness absence, mistakes, or alcohol or drug abuse. Management has a duty to identify individuals who may be suffering from stress and to minimise workplace stresses. Individual cases can be helped by sympathetic and skilful counselling which allows a return to effective work and licensed duties.

3.4 **Eyesight**

A reasonable standard of eyesight is needed for any aircraft maintenance engineer to perform his or her duties to an acceptable degree. Many maintenance tasks require a combination of both distance and near vision. In particular, such consideration must be made where there is a need for the close visual inspection of structures or work related to small or miniature components. The use of glasses or contact lenses to correct any vision problems is perfectly acceptable and indeed they must be worn as prescribed. Frequent checks should be made to ensure the continued adequacy of any glasses or contact lenses. In addition, colour discrimination may be necessary for an individual to drive in areas where aircraft manoeuvre or where colour coding is used, e.g. in aircraft wiring. Organisations should identify any specific eyesight requirement and put in place suitable procedures to address these issues.

3.5 **Hearing**

The ability to hear an average conversational voice in a quiet room at a distance of 2 metres (6 feet) from the examiner is recommended as a routine test. Failure of this test would require an audiogram to be carried out to provide an objective assessment. If necessary, a hearing aid may be worn but consideration should be given to the practicalities of wearing the aid during routine tasks demanded of the individual.

It is important to remind employers of individuals working in areas of high

ambient noise of the requirement which require employers to carry out assessments of noise levels within their premises and take appropriate action where necessary.

3.6 Drug and Alcohol Abuse

Drinking problems or the use of illicit or non-prescribed drugs are unacceptable where aircraft maintenance safety is concerned and once identified will lead to suspension of the licence or company authorisation and possibly further licensing action being considered.

3.7 Medication

Any form of medication, whether prescribed by a doctor or purchased over the counter and particularly if being taken for the first time, may have serious consequences in the aviation maintenance environment unless three basic questions can be answered satisfactorily:

- (a) Must I take medicines at all?
- (b) Have I given this particular medication a personal trial for at least 24 hours before going on duty, to ensure that it will not have adverse effects on my ability to work and make sound decisions?
- (c) Do I really feel fit for work?

Confirming the absence of adverse effects may need expert advice from General Practitioners. Common types of medication in use and their effects are further described in Appendix No.1.

3.8 Alcohol

Alcohol has similar effects to tranquillisers and sleeping tablets and may remain circulating in the blood for a considerable time, especially if taken with food. It should be borne in mind that a person may not be fit to go on duty even eight hours after drinking large amount of alcohol. Individuals should therefore anticipate such effects upon their next duty period. Special note should be taken of the fact that combinations of alcohol and sleeping tablets, or anti-histamines, can form a highly dangerous and even lethal combination.

3.9 Anaesthetics

It should be remembered that following local, general, dental and other anaesthetics, a period of time should elapse before returning to duty. This period will vary depending upon individual circumstances, but may even extend up to 24 or 48 hours. Any doubts should be resolved by seeking appropriate medical advice.

4 **Summary**

The effects of illness, injury or medication on work performance are the direct concern of the individual. Where there is doubt about the ability of an individual to make sound technical decisions the implications of this Airworthiness Notice or HKAR 66.50 must be taken into account, i.e. the individual must not exercise the privileges of his or her licence or authorization whilst unfit. While this Airworthiness Notice gives some guidance on the issues to be considered it cannot be comprehensive. If individual licence holders or their managers have any doubt they should consult the medical sources for advice.

5 **Cancellation**

This Notice cancels Airworthiness Notice No.47 Issue 5, dated 31 January 2003, which should be destroyed.

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Director-General of Civil Aviation

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AIRWORTHINESS NOTICE NO. 47
APPENDIX NO. 1

Issue 2
31 January 2003

- 1 The following are some of the types of medicine in common use which may impair work performance. This list is not exhaustive and care should be taken in ensuring the likely effects of any prescribed drug are adequately known before taking it.
- (i) Sleeping Tablets – These dull the senses, cause mental confusion and slow reaction times. The duration of effect is variable from person to person and may be unduly prolonged. Individuals should have expert medical advice before using them;
 - (ii) Anti-depressants – These can depress the alerting system and have been a contributory cause of mistakes leading to fatal accidents. A person should stop work when starting anti-depressants and only return when it is clear that there are no untoward side effects. It is recommended that individuals seek medical advice from their General Practitioner or appropriate medical specialist before returning to work;
 - (iii) Antibiotics – Antibiotics (penicillin and the various mycins and cyclines) and sulpha drugs may have short term or delayed effects which affect work performance. Their use indicates that a fairly severe infection may well be present and apart from the effects of these substances themselves, the side effects of the infection will almost always render an individual unfit for work;
 - (iv) Anti-histamine – Such drugs are widely used in 'cold cures' and in the treatment of hay fever, asthma and allergic skin conditions. Many easily obtainable nasal spray and drop preparations contain anti-histamines. Most of this group of medicines tend to make the taker feel drowsy. Their effect, combined with that of the condition, will often prevent the basic three questions (paragraph 3.7 of the Notice) from being answered satisfactorily. Admittedly very mild states of hay fever etc., may be adequately controlled by small doses of anti-allergic drugs, but a trial period to establish the absence of side effects is essential before going on duty. When individuals are affected by allergic conditions which require more than the absolute minimum of treatment and in all cases of asthma, one of the above mentioned sources of advice should be consulted;
 - (v) 'Pep' pills (e.g. containing Caffeine, Dexedrine, Benzedrine) used to maintain wakefulness are often habit forming. Susceptibility to each drug varies from one individual to another, but all of them can create dangerous over-confidence. Over-dosage may cause headaches, dizziness and mental disturbances. The use of 'pep' pills whilst working cannot be permitted. If coffee is insufficient, you are not fit for work;

- (vi) Drugs for the relief of high blood pressure are proving to be very effective in controlling this condition. However, antihypertensive agents all have some side effects and should not be administered before adequate assessment of the need for treatment. The prescribing practitioner should be able to advise on any side effects to be considered;
- (vii) Drugs when prescribed for Anti-malaria in normally recommended doses do not usually have any adverse effects. However, the drug should be taken in good time so that the question in paragraph 3.7(b) of the Notice can be answered;
- (viii) Oral contraceptive tablets in the standard dose do not usually have adverse effects, although regular supervision is required;
- (ix) 'SUDAFED' is the trade name of a preparation containing pseudo-ephedrine hydrochloride. This may be prescribed by General Practitioners for relief of nasal congestion. Side effects reported however are anxiety, tremor, rapid pulse and headache. The preparation does not contain anti-histamines which could sedate and cause drowsiness but the effects can nevertheless affect skilled performance. Sudafed, therefore, is not a preparation to be taken when making engineering decisions or performing licensed duties.

Although the above are common groups of drugs, which may have adverse effects on performance, it should be pointed out that many forms of medication, which although not usually expected to affect efficiency may do so if the person concerned is unduly sensitive to a particular drug. Therefore, no drugs or medicines, or combinations, should be taken before or during duty unless the taker is completely familiar with the effects on him or her of the medication and the drugs or medicines have specifically been prescribed for the individual alone. Again, the sources of advice mentioned earlier in this notice should be consulted in cases of doubt.

2 **Cancellation**

This Appendix cancels Appendix No.1 to Airworthiness Notice No.47, Issue 1, dated 1 November 1996, which should be destroyed.

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 49
Issue 2
31 January 2003**

ELIGIBILITY OF ORGANISATIONS FOR DESIGN AND PRODUCTION APPROVAL

1 Purpose

The purpose of this Airworthiness Notice is to clarify the criteria used by the Director-General in determining if approval of an organisation is necessary and appropriate for the regulatory control of airworthiness.

2 Introduction

2.1 Under the CAP.448 Civil Aviation Ordinance, the Director-General is entrusted through the Air Navigation (Hong Kong) Order 1995 (AN(HK)O), as amended, with responsibility for the regulation of the airworthiness and flight safety standards of aircraft (and aircraft components which are intended for fitment to such aircraft) and the safety of aircraft occupants. To facilitate the discharge of this duty the AN(HK)O provides various means of enabling technical tasks to be undertaken by the aviation industry. One such provision is Article 101 of the AN(HK)O wherein it is prescribed that:

'In relation to any of his functions pursuant to any of the provisions of this Order the Chief Executive may, either absolutely or subject to such conditions as he thinks fit, approve a person as qualified to furnish reports to him and may accept such reports.'

2.2 In this context, a body corporate will qualify as the person specified in Article 101 of the AN(HK)O. Furthermore, for the purposes of AN(HK)O organisation approval, a body corporate is deemed to be an 'organisation'. The requirements for the grant of AN(HK)O approval to organisations are prescribed in HKAR-1 Section 1.8. The intention of these requirements is to ensure that approval is only granted to applicants who are assessed by the Director-General as being competent and properly equipped to undertake the intended delegated task.

NOTE: This assessment will normally necessitate a comprehensive initial investigation of approval applications and, following approval, periodic audit to ensure that the approved standard is maintained.

- 2.3 Each approved organisation is required by HKAR-1 Section 1.8 to issue certain prescribed certifications in relation to the items* or services it provides under the authority of the AN(HK)O organisation approval held. In some cases, the organisation makes reports to the Director-General in the form of substantiation of design submissions. In other cases, e.g. manufacturing organisations, reports are not made directly to the Director-General but each such organisation is approved to issue certifications which form the essential chain of evidence of control to the point at which the Director-General indicates his satisfaction that an aircraft or aircraft component which is intended for fitment to such an aircraft, is fit to fly e.g. by the issue of a Certificate of Airworthiness.
- 2.4 Many organisations regard AN(HK)O approval as a desirable business asset even though there is no regulatory need for AN(HK)O approval in the relevant industry sector. However, it is necessary to limit approvals to those areas of industry where there is a clear regulatory need for the Director-General to make a technical assessment of the organisational standards in order to 'discharge the Director-General's responsibilities as prescribed in paragraph 2.1'.
- 2.5 Consequently, the Director-General reserves the right to refuse new applicants and revoke certain existing approvals on the grounds that the Director-General has determined that there is no regulatory need for such approvals.

3 Background

- 3.1 For many items which can be classified either as 'consumable' or 'standard parts' (as defined in HKAR-1 Sub-section 1.4-8 and JAA Administrative & Guidance Material Section Two, Part Three Temporary Guidance Leaflet No.11 Paragraphs 5 and 8) the Director-General has long required that the Approved Organisation using such items should bear responsibility for the manner of their application. It is normal for consumable or standard parts to be identified in the technical publications for the aircraft or equipment which are provided by the responsible design authority.
- 3.2 Cabin interior furnishings are examples of items where approval of the manufacturers is not required, but standards are important and are subject to control in other ways such as compliance with Airworthiness Notices 58, 59 and 61 where flammability resistance is required to be verified by testing to specified standards.
- 3.3 The role of the Director-General is, therefore, that of regulation where it is necessary rather than performing an assessment on behalf of the prime contractor.

4 Guidelines

The Director-General has determined that there is no regulatory need for AN(HK)O approval of the following organisation types:

* "Items" are airframe parts and equipment intended to be installed in aircraft (excluding engines, propellers and radio apparatus). See HKAR-1 Sub-section 1.4-8 for details.

4.1 Organisations manufacturing consumable items, examples as follows:

- (a) Paints including primer, dopes, varnish, lacquers;
- (b) Adhesive tapes and masking materials;
- (c) De-watering compounds, solvents, cleaning and de-icing products;
- (d) Adhesives and sealants;
- (e) Consumable materials employed in welding, brazing and soldering processes (including rods, powder, fluxes etc);
- (f) Fuel, lubricants and fluids;
- (g) Chemical, sacrificial, coating and other products used in processing of parts e.g. plating anodes, etchants, and electrolytes;
- (h) Gaskets, shims and washers;
- (i) Cable ties, clips, and sleeving.

4.2 Organisations who design, manufacture, or supply the following:

- (a) Items which can be verified by inspection on receipt or other means;
- (b) Goods or services provided under subcontract controls operated by a customer organisation whose AN(HK)O approval includes the control of subcontractors;
- (c) Electronic components including circuit boards and associated hardware intended for incorporation into equipment (see Airworthiness Notice No.39);
- (d) Items for which the Director-General only requires test evidence provided by an approved test house, to an approved standard of conformance to requirements such as the cabin furnishing materials flammability requirements specified in Airworthiness Notices 58, 59 and 61;
- (e) Non-structural, non-metallic raw material other than pre-impregnated fabrics;
- (f) Ground-based equipment, or tools, for access, testing, jiggging, cleaning, de-icing, towing etc., except in the case where the performance and reliability of an airborne system depends upon the simultaneous operation of a ground-based element;
- (g) Items specifically exempted from approval by AN(HK)O Schedule 5

(paragraph 3).

4.3 Overseas Organisations

- (a) Where there is a bilateral arrangement or other appropriate arrangement in force between the local National Airworthiness Authority and the Director-General;
- (b) Providing items or services where adequate control and certification arrangements, including issue of the Authorised Release Certificate / Airworthiness Approval Tag JAA Form One, are provided by the local National Airworthiness Authority who are acceptable to the Director-General.
- (c) Except where there is a very specific regulatory need for the direct support of Hong Kong registered aircraft.

4.4 Stockist distribution organisations of items other than materials and fasteners from approved manufacturers.

5 Compliance

5.1 The Director-General will normally follow the above guidelines when dealing with approval applications and enquiries. Departure from the criteria for regulatory need will only be considered:

- (a) Where clear advantage to the Director-General in performing his regulatory task can be identified as a consequence of granting approval, e.g. efficient use of CAD resources; or
- (b) Where the Director-General determines that the use of a particular item in a specific aviation application necessitates direct CAD regulation of the source of the item. In such cases, any organisation approval granted to the source would only relate to the specific item and aviation application involved; or
- (c) Where approval is necessary to support CAD obligations under bilateral arrangements with other National Airworthiness Authorities.

6 Existing Approvals

Organisations already holding approvals which have been determined not to be necessary for regulatory purposes, will be required to relinquish their approvals. This will be done as far as possible in an even-handed manner to ensure fair and reasonable treatment.

7 Application for Approval

Enquiries regarding organisation and eligibility for approval in general, or regarding applications for specific approval should be made in writing to CAD Airworthiness

Office (See Airworthiness Notice No.29). If necessary, further information and/or application forms can then be supplied.

8

Cancellation

This Notice cancels Airworthiness Notice No. 49 Issue 1, dated 31 January 2002, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

No. 50

Issue 5

30 September 2005

DETERIORATION OF WOODEN AIRCRAFT STRUCTURES

- 1 Concern over the susceptibility of wooden aircraft structures to deterioration, and recognition that extensive dismantling and inspection may be required to ensure their continued integrity was first expressed in earlier Airworthiness Notices in the United Kingdom. The Director-General has published this Notice to alert possible owners of such aircraft to the problems they may face, especially in a tropical environment.
- 2 Examination of older type wooden aircraft has highlighted several serious structural failures, and continued vigilance is therefore essential if the integrity of wooden aircraft structures is to be maintained. Deterioration has occurred in those assemblies where normal inspection is impossible and has not come to light until the adjacent structure has been disturbed to embody repairs or modifications, or during extensive overhaul. These closer examinations have revealed failure of glued joints in the primary structure and patches of timber in a state of decay as a result of exposure to extremes of atmospheric conditions.
- 3 General conclusions which have been drawn from the results of the examinations are:-
 - (a) The external appearance of wooden aircraft may give little or no indication of the condition of the timber and glued joints beneath the surface.
 - (b) Aircraft built with glued ply and timber torsion box construction are the most vulnerable.
 - (c) Under extreme conditions, deterioration can be very rapid indeed.
 - (d) Lack of proper drainage can be a significant contributory factor, particularly when associated with (c) above.
 - (e) Many glues, especially those in use before 1950, lose strength with age and/or cycles of humidity and temperature.

4 Attention is drawn to the following:

- (a) Evidence to demonstrate that continued airworthiness has been established, means the aircraft records show that such aircraft have been dismantled, opened up and the upholstery removed to such an extent as to ensure that an adequate sample of timber and glued joints have been inspected and, if found to be defective, made good. In cases where defective timber and glued joints are found, it will be necessary to extend a sample of areas checked in order to establish confidence in the condition of the complete structure.
- (b) Wooden aircraft left continuously in the open or, conversely, stored for long periods in very dry conditions are particularly susceptible to deterioration. The type of storage provided for the aircraft must therefore be taken into consideration when assessing the amount of inspection necessary to meet the requirements of (a) above.
- (c) Prospective purchasers of aircraft registered outside Hong Kong are advised:
 - (i) To establish with the Director-General whether the aircraft type is eligible for the issue of a Hong Kong Certificate of Airworthiness and the requirements/conditions that would apply. Some aircraft not eligible for a Certificate of Airworthiness may qualify for a Permit to Fly.
 - (ii) Where such aircraft are of wooden construction, to consider carefully the condition of the structure and its history before applying for the issue of a Hong Kong Certificate of Airworthiness. The Director-General will require information as to the type of constructions and glue used.

5 **Supplementary information**

UKCAA Civil Aircraft Airworthiness Information and Procedures Leaflet 6-1, Inspection of Wooden Structures.

6 **Cancellation**

This Notice cancels Airworthiness Notice No.50 Issue 4, dated 31 January 2002, which should be destroyed.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 51
Issue 1
1 February 2023**

NO TECHNICAL OBJECTION

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft.

2 Introduction

- 2.1 From time to time, the aircraft owner, operator or maintenance service provider would like to seek alleviation or variation from airworthiness constraints contained in the aircraft's maintenance data.
- 2.2 The Type Certificate Holder (TCH) of aircraft or aeronautical product has the specific responsibilities and privileges to issue service documents or recommendations.
- 2.3 A No Technical Objection (NTO) is the generic term for advice provided by TCH who concurs the request for alleviation or variation from airworthiness constraints contained in the aircraft's maintenance data.
- 2.4 It is an incorrect assumption that an aircraft or aeronautical product can continue to operate if an NTO is solely received from the TCH, typically recommended for the following purposes:
- Operation with damage outside the limits specified in approved data;
 - Operation with systems that perform in a degraded manner;
 - The extension of a maintenance task interval;
 - Changes to approved procedures, specifications or instructions.
- 2.5 Typically the recommendation from TCH includes a statement such as "the manufacturer has no technical objection to the operator's request". As such, NTO statement does not constitute as approved data for continued operation of the aircraft, irrespective of whether they are issued by TCH or its delegate.
- 2.6 This notice clarifies the status of NTO statement where it may contain instructions for continuing airworthiness.

3 Compliance

All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirement

- 4.1 Recommendations in form of a NTO, technical disposition, memorandum, etc. alone from TCH of an aircraft or aeronautical product provides useful information but does not constitute Director-General's acceptance / approval.
- 4.2 Such a statement may be considered as a reference, when supported along with other technical information, for evaluating the airworthiness acceptance / approval of a particular maintenance alteration action or continued in-service condition, by the Director-General on a case-by-case basis.
- 4.3 It remains the operator's responsibility to include substantiating data to support local regulatory acceptance / approval application for any alteration action or continued in-service condition, in addition to TCH's recommendations.

5 Additional Information

Nil.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 52
Issue 7
31 July 2015**

MAINTENANCE CONCESSION CONTROL

Note: The title of this Notice was “Concession Control and Related Certifications”. As the control of design approvals and their deviations is already prescribed in HKAR-21, this Notice is amended to remove the control of any design related deviations and keep the control of maintenance related deviations.

1 Maintenance Concessions are written authority for an appropriately licensed aircraft maintenance engineer to accept a limited number of aircraft, systems, components or parts thereof for use on an aircraft which do not wholly comply with the relevant Hong Kong Aviation Requirements but nevertheless do meet an acceptable level of airworthiness in any particular case in the following categories:-

A Deleted.

B Items which form part of agreed CAD concession procedures approved as part of an approved maintenance schedule. This could include cases where parts and/or facilities are temporarily not available.

C Items outside category B where agreement has been reached with the Director-General for the particular item concerned.

Note: Any design related deviations/concessions shall be approved in accordance with HKAR-21 either by the Director-General or by Design Organisation Approval in accordance with their approved Design Organisation Handbook.

2 Maintenance Concession Reports shall only be issued by Persons within an Approved Organisation who hold personal Approval to furnish such reports, and subject to any conditions that may be applied.

3 Persons so authorised shall demonstrate to the Quality Manager that they have knowledge and experience commensurate with the level and scope of the authorisation sought.

4 For each concession the Quality Manager of a CAD approved organisation is responsible for ensuring that:-

4.1 Having regard to all the circumstances an acceptable level of airworthiness will be achieved and no person boarding or on board the subject aircraft will suffer hazard;

4.2 Adequate consideration has been given to the possibility of an adverse effect on airworthiness as a result of defects or malfunctions existing or likely to exist in the aircraft to which the concession is to apply;

4.3 Consultation has taken place within the Approved Organisation and with such other organisations as may be necessary to ensure that the content of the concession satisfies paragraphs 4.1 and 4.2. Any required inspections, checks or tests shall be specified in the concession.

5 Procedures for concession issue and control by an Approved Organisation shall be incorporated in the CAD approved exposition document. These procedures shall satisfy the following requirements unless otherwise agreed by the Director-General.

(i) A reference numbering system shall be in operation to provide for traceability to the affected aircraft, component, or system.

(ii) The procedure shall provide for retention and retrieval of all concessions issued by the organisation.

(iii) The procedure shall provide for identification of the person responsible for authorising the concession and provide evidence of his authority to do so.

(iv) The concession format shall include at least the following information.

(a) Name and CAD Approval reference of issuing organisation.

(b) Identification of each affected aircraft, component or system.

(c) Full details of the deviation from the approved standard.

(d) Technical justification (and approval references if applicable) to satisfy Paragraph 4 of this Notice.

(e) Details of other directly associated current concessions.

(f) Details of any inspections or tests required as part of the concession.

(g) Details of the period of validity of the concession and the inspections or tests required by item (f) above.

(h) Signature and identification of the person authorising the concession and the date of signing.

6 Persons approved to issue certificates in accordance with the Air Navigation (Hong Kong) Order 1995, Article 9 and 11, shall not issue a certificate for aircraft, systems, components or parts thereof which do not wholly comply with the relevant concession issued in accordance with this Notice.

No such persons shall issue a certificate if they have reason to believe the provisions of paragraph 4 of this Notice have not been properly considered or acted upon in a particular case.

- 7 Concessions against any inspection, modification, repair or replacement classified as Mandatory by the Director-General shall not be granted. A variation shall be applied for in this case.

8 **Cancellation**

This Notice cancels Airworthiness Notice No. 52 Issue 6, dated 31 January 2002, which should be destroyed.

Norman LO

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 53
Issue 5
31 January 2004**

VERTICAL SPEED INDICATORS ON IMPORTED AIRCRAFT

1 Introduction

- 1.1 An incident on a light aircraft imported into the UK has shown the possible danger of the presentation of false information to the pilot due to reversed indication by the vertical speed indicator during a fast rate of descent.
- 1.2 United Kingdom approved instruments and instruments complying with JAA JTSO Specification C8d or the United States TSO Specification C8d are fitted with stops to prevent such occurrence. It is not known whether other instruments, particularly those likely to be installed in imported aircraft of less than 5700 kg MTWA are similarly equipped.

2 Action

- 2.1 Before issue or renewal of the Certificate of Airworthiness of an imported aircraft, it shall be established whether the vertical speed indicator is fitted with limit stops. This may be done by test or reference to the manufacturer.
- 2.2 If stops are not fitted, either the vertical speed indicator shall be replaced by an instrument that has stops, or alternatively the placard defined in paragraph 3 shall be fitted.

3 Placard

- 3.1 The following placard shall be fitted adjacent to a vertical speed indicator not fitted with stops:-

"This indicator is not fitted with limit stops and a rate of change of altitude in excess of the maximum calibration will cause indication in the reverse sense."
- 3.2 The placard may, as a temporary measure, be type-written on white card, but shall be replaced by a more permanent placard as soon as possible.

4 Record

A record of the action taken to comply with paragraph 2 above shall be made in the aircraft log book, quoting the serial number of the instrument.

5 Cancellation

This Notice cancels Airworthiness Notice No.53 Issue 4, dated 31 January 2002, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 54
Issue 5
31 July 2023**

**AIRCRAFT, ENGINE & VARIABLE-PITCH PROPELLER LOG BOOKS
FOR AIRCRAFT NOT EXCEEDING 2730 kg MTWA**

- 1 The Air Navigation (Hong Kong) Order 1995, as amended makes it mandatory, for the subject aircraft, to maintain aircraft, engine and variable-pitch propeller records in log books and shall be of a type approved by the Director-General.
- 2 For this purpose, the Director-General publish log books which are approved for affected aircraft registered in Hong Kong. The log books are available from the Civil Aviation Department, Airworthiness Office (see AN No.29).

The Log Books are:-

CAD 398	Aircraft Log Book
CAD 399	Engine Log Book
CAD 400	Variable-pitch Propeller Log Book

and can be supplied at current CAD published prices.

NOTE 1: Notwithstanding the revocation of the Notice No.54 Issue 2, dated 1 June 1987, any log book issued, made, served or granted under that Notice, if in force at the commencement of this Notice, shall continue in force until superseded.

NOTE 2: Entries in a log book may refer to other documents (such as modification record book), which shall be clearly identified, and any other documents so referred to shall be deemed to be part of the log book.

- 3 As it is essential that these log books reflect the current state in respect of compliance with Mandatory Modifications and Inspections and Airworthiness Directives, it will be necessary to cross-refer all relevant entries from previous technical records and log books.
- 4 **Cancellation**

This Notice cancels Notice No.54, Issue 4, dated 31 January 2002 which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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MODIFICATION RECORD BOOK

1. INTRODUCTION

1.1 The Modification Record Book is a statement of the modification history of the aircraft and a record of all major repairs to which it relates.

1.2 A Modification Record Book must be kept for each aircraft of more than 2730 kg maximum authorised weight, registered in Hong Kong or other means accepted by the Director-General.

NOTE: The word 'aircraft' used in the context of this appendix, does not apply to engines and propellers where suitable modification records are maintained in appropriate log books.

1.3 Modification Record Books (CAD 395) can be purchased from the CAD.

2. CONTENTS OF THE MODIFICATION RECORD BOOK

The following shall be recorded in the Modification Record Book:-

- (a) Modifications made to those parts of the aircraft on which airworthiness depends.
- (b) Modifications made to the aircraft which affect modifications already listed in the Record Book.
- (c) Major repairs, which have significantly altered the design affecting the airworthiness of the aircraft.

3 COMMENCING AND MAINTAINING THE MODIFICATION RECORD BOOK

3.1 New Aircraft Initially Registered in Hong Kong

The applicant for issue of a Hong Kong Certificate of Airworthiness (refer to HKAR-21 Subpart H), shall obtain from the aircraft constructor information necessary to comply with the requirements of this appendix relevant to commencement for these aircraft, by stating the modification embodied, additional to the basic design, at the time of certification.

3.2 Used Aircraft

The applicant for the issue of a Hong Kong Certificate of Airworthiness (refer to HKAR-21 Subpart H) for a used aircraft shall be responsible for starting a Modification Record Book at the time of Hong Kong registration, and shall, at that time, record such of the modification history of the aircraft as is considered necessary by the Director-General.

3.3 A Modification Record Book which is valid in the exporting country, and supplied with an aircraft to be imported and registered in Hong Kong, may be acceptable in place of the Modification Record Book required by this appendix. Such a book shall be certified as accurate and up to date by the competent airworthiness authorities of the exporting country, and shall be acceptable to the Director-General in all other particulars.

3.4 The Modification Record Book must be up to date at the issue of the Certificate of Airworthiness for a new aircraft, at the renewal of the Certificate (refer to HKAR-1 Section 1.3 Sub-section 1.3-4), and at the time of sale or lease of the aircraft.

3.5 The Modification Record Book shall be kept by the owner or operator of the aircraft, and shall be made available for examination, when required by the Director-General.

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 55
Issue 2
30 September 2003**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

FUEL TANK SAFETY REVIEW

1 Introduction

In recent years the aviation industry has experienced a number of incidents or accidents involving fuel tank explosions. This experience suggests that on some aircraft types, the fuel system installation does not provide as high a level of protection against explosion as had been expected. The purpose of this Airworthiness Notice is to require a safety review based on JAR 25.1309 practices, and taking into consideration in-service experience, be used to identify the need for any modification action to correct unsafe conditions, revisions to Maintenance Requirements and improved maintenance practices required to maintain a satisfactory level of safety.

The FAA has issued a set of new rules related to fuel tank safety including SFAR 88 and amendments to 14 CFR Parts 21, 25, 91, 121, 125, and 129 that require fuel tank system design reviews, associated modification reviews and improved maintenance procedures and practices.

The JAA have requested the National Aviation Authorities to mandate that holders of Type Certificates (TC) and major modification approvals directly related to the fuel system installation undertake similar safety reviews, in accordance with JAA Interim Policy INT/POL/25/12 (available on internet via http://www.jaa.nl/certification/fuel_tank_safety/fuel_tank_frame.html under "D - Harmonised JAA-FAA Policy.pdf"). The initial JAA recommendation letter was revised and re-issued on 31 January 2003 in order to harmonise JAA and FAA policy. This amended Airworthiness Notice reflects the changes recommended by JAA including the newly harmonised elements. Where identified as necessary by this safety review the introduction of modifications and improved maintenance practices will be mandated.

The Director-General fully adopts these recommendations. Operators, TC holders, approved design organisations and modification approval holders will all need to comply with the contents of this Airworthiness Notice as appropriate.

2 Applicability

This Airworthiness Notice applies to all Hong Kong registered turbine powered large aeroplanes certificated after 1 January 1958 in the Transport or Private Categories with a maximum type certificated passenger capacity of 30 seats or more, OR a maximum payload of 3,402 kg (7,500 lbs) or more.

Note: Maximum payload equates to maximum design zero fuel weight minus operational empty weight.

3 Requirement

Holders of TC and major modification approvals directly related to the fuel system installation on applicable aircraft types are required to carry out a safety assessment in accordance with the principles of JAR 25.1309, using the guidance material provided in the Interpretative Material (IM) to JAA Interim Policy INT/POL/25/12 (available on internet via http://www.jaa.nl/certification/fuel_tank_safety/fuel_tank_frame.html under "D - Harmonised JAA-FAA Policy.pdf"). It must be shown that an ignition source within the fuel system cannot result from a single failure and is extremely improbable. For the purposes of this analysis, the whole fuel system should be assumed to be in the flammable range. In addition it should be shown that no heat transfer can lead to fuel auto-ignition within the fuel system. All systems, including the fuel system, that can release heat, in normal and failure conditions to the fuel system should be considered.

Although the assumption is that the fuel tank will always be considered to be flammable, it is recognised that not all non-compliances with JAR 25.1309 necessarily result in an unsafe condition. Harmonised criteria have been developed to determine those non-compliances which result in a potential unsafe condition that requires mandatory corrective action.

These criteria, including assessment of the fuel tank flammability, are defined in the Attachment 3 to JAA Letter 04/00/02/07/02-L291 (available on internet via http://www.jaa.nl/certification/fuel_tank_safety/fuel_tank_frame.html under "D - Harmonised JAA-FAA Policy.pdf").

Operators are required to identify and list all aircraft fuel tank system major modifications* as installed on their aircraft. It is the responsibility of the operators to satisfy themselves that the safety reviews required by this policy have been carried out for all major modifications/Supplemental Type Certificates (STC) installed on their aircraft. In cases where the approval holder(s) is(are) unable to carry out the safety review then the operator must engage the services of an appropriately approved design organisation to carry out the above safety review.

The outcome of these review exercises is expected to be the identification of modifications to address unsafe conditions, additional Airworthiness Limitations, new

* For the purpose of this Airworthiness Notice, "major modifications" includes "major repairs".

or revised service information, revised inspection standards and amendment of Maintenance Manuals including the revision of Standard Practices.

Operators are required to provide appropriate training for maintenance personnel, amend maintenance procedures and also to amend Approved Maintenance Programmes to introduce the tasks and inspections arising from this review.

Operators must ensure that all scheduled maintenance tasks, inspection standards and maintenance procedure revisions arising as a result of compliance with this Airworthiness Notice or SFAR 88 are complied with.

4 Compliance

TC holders and STC holders are required to have submitted and gained approval of their System Safety Analysis reports including identification of the unsafe conditions requiring mandatory corrective action no later than 31 December 2003. Mandatory corrective actions required to correct potential unsafe conditions identified by the safety reviews, which may include modifications, additional Airworthiness Limitations and revised maintenance activities will take place after 31 December 2003 with timescales agreed with the Director-General. Operators are required to have implemented all applicable maintenance actions identified by the above design reviews, before 31 December 2004.

Major modification approval holders are required to have submitted and gained approval of their System Safety Analysis reports including identification of the unsafe conditions requiring mandatory corrective action no later than 31 March 2004. Mandatory corrective actions required to correct potential unsafe conditions identified by the safety reviews, which may include modifications, additional Airworthiness Limitations and revised maintenance activities will take place after 31 March 2004 with timescales agreed with the Director-General. Operators are required to have implemented all applicable maintenance actions identified by the above design reviews, before 31 March 2005.

Where FAA and JAA member state is the primary certifying authority for the TC, STC or major modification, the Director-General will accept compliance findings made by the State of Design in accordance with this harmonized FAA/JAA policy without further showing.

5 Cancellation

This Notice cancels Airworthiness Notice No. 55 Issue 1, dated 31 January 2003, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 56
Issue 7
29 January 2016**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
EMERGENCY FLOOR PATH LIGHTING SYSTEM**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft required to be equipped with an Emergency Floor Path Lighting System under Article 13, Schedule 5, Scale Z(iii) of the Air Navigation (Hong Kong) Order 1995.

2 Introduction

- 2.1 This Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 which requires an Emergency Floor Path Lighting System.
- 2.2 Some of the design standards in previous issue of this Notice are contained in CS/FAR 25.812 and need not be repeated herein.
- 2.3 Relevant parts of FAA Advisory Circular (FAA AC) 25-17A, FAA AC 25.812-1A and FAA AC 25.812-2 are accepted by the Director-General as providing acceptable means of compliance with Emergency Floor Path Lighting System.

3 Compliance

All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirements

4.1 (Reserved)

NOTE: Requirements for 'Exit Identification' has been relocated to Airworthiness Notice No. AN 101J.

4.2 Floor Proximity Emergency Escape Path Marking

4.2.1 Distance between Light Sources along Cabin Aisle Floor

- 4.2.1.1 Where single point light sources (such as floor track markers, seat mounted incandescent light assemblies or light-emitting diode(s) (LEDs) light bulb) is employed, the distance between light sources shall be no greater than 40 inches.

NOTE 1: Distance between single point light sources no greater than 20 inches will permit a maximum distance between single point light sources of 40 inches under typical Minimum Equipment List (MEL) conditions.

NOTE 2: For aircraft with any inoperative single point light sources resulting distance between operative single point light sources greater than 40 inches, MEL shall not be applied for dispatching aircraft.

NOTE 3: Any inoperative diode(s) in a LEDs light bulb will render the light bulb itself to be considered as inoperative. MEL conditions shall not be permitted unless supported by test or analysis that the inoperative light bulb(s) is/are still permit sufficient illumination at 40-inch interval.

- 4.2.1.2 Where non-single point light sources (such as ‘flood lights’) is employed, the maximum distance between light sources is to be determined by test or analysis such that the cabin aisle floor is provided with illumination that is not less than 0.2 lux (0.02 foot candle) measured along a line that is within 6 inches of and parallel to the floor and is centred on the cabin aisle floor at each 40-inch interval.

NOTE 1: Only emergency lights located no more than 4 feet above the cabin floor level are regarded as ‘flood lights’ in this context.

NOTE 2: MEL conditions shall not be permitted unless supported by test or analysis with the inoperative light(s) that will permit sufficient illumination at 40-inch interval.

5 Additional Information

- 5.1 FAA Advisory Circular 25-17A “Transport Airplane Cabin Interiors Crashworthiness Handbook” dated 18 May 2009.
- 5.2 FAA Advisory Circular 25.812-1A “Floor Proximity Emergency Escape Path Marking” dated 22 May 1989.

- 5.3 FAA Advisory Circular 25.812-2 “Floor Proximity Emergency Escape Path Marking Systems incorporating photoluminescent Elements” dated 24 July 1997.

6 Cancellation

This Notice cancels Airworthiness Notice No. 56 Issue 6, dated 22 October 2012, which should be destroyed.

Norman LO
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 57
Issue 4
31 January 2002**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

TOILET FLUSH MOTOR

1 Introduction

One fatal accident and other incidents have occurred in recent years involving toilet fires, the exact cause of which could not be determined. Investigations of these incidents have not been able to rule out the possibility that fires may have been started by toilet flush motor failures which caused dangerous overheating. These findings, when considered with evidence from toilet flush motors which have failed and suffered damage due to overheating, has led the Director-General to publish the requirements of this Notice, for the retrospective modification of those aircraft fitted with electric flush motors which do not already have suitable overheat protection. The relevant Airworthiness Requirements being invoked are BCAR Section D, Chapter D6-13 paragraphs 2 and 6.6 and JAR 25X1499. Reference should also be made to AMJ 25.1309(b).

2 Requirement

2.1 For all aircraft above 5700 kg MTWA certificated in the Transport or Private Categories and which have electric toilet flush motor systems installed, compliance with paragraph 2.2 or 2.3 of this Notice, or with a CAD approved alternative providing an equivalent level of airworthiness, is required as soon as practical but not later than 1 April 1986.

2.2 Unless it can be shown that:-

- (a) any failure of the control circuit or its associated components which causes the motor to run continuously will not create an overheat condition such as to create a smoke or fire hazard, and
- (b) failures within the motor or pump which would result in such an overheat condition will cause the supply circuit protection to operate.

then compliance with paragraph 2.3 of this Notice is required.

2.3 Electric toilet flush motors must be fitted with a suitable thermal protection device to prevent them overheating such as to create a smoke or fire hazard, due

to failures of the control circuit, control circuit components, motor or pump.

3 **Additional Information**

3.1 The following should be taken into consideration when establishing compliance with this Notice:-

- (a) Failures of any automatic control systems, e.g. automatic timer systems, which may cause the motor pump to run continuously.
- (b) Short circuit failures of motor windings to each other or to the motor case.
- (c) Open circuit of one phase on multi-phase motors.
- (d) Motor or pump bearing failures.
- (e) Motor or pump seizures.
- (f) The proximity of flammable materials or fluids to the motor.
- (g) The proximity of other aircraft installations to the motor.

3.2 Owners and operators are recommended to contact the manufacturer or main agent for information regarding the implementation of the intent of this Notice and regarding the corresponding modifications which may be required.

4 **Cancellation**

This Notice cancels Airworthiness Notice No.57 Issue 3, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 58
Issue 5
30 September 2006**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
FLAME RESISTANT FURNISHING MATERIALS**

1 Introduction

- 1.1 Materials used for aircraft cabin furnishings are required to have flame resistant properties.
- 1.2 Materials used when carrying out repairs or modifications to an aircraft cabin furnishings are also required to have flame resistant properties, which are either at least equal to those of the materials used in the original design as accepted for Hong Kong certification, or in compliance with the current or Hong Kong equivalent requirements.

2 Requirements for Initial Acceptance of Materials

Wherever possible only inherently flame resistant materials shall be used. However, materials which meet the requirements by the use of a flame retardant process, applied either during or after manufacture, may also be used provided that (since all materials may at some time be dry-cleaned or washed) the material is shown to be flame resistant when tested both before and after being subjected to three representative cleaning processes.

3 Requirements for Maintenance of Flame Resistance

- 3.1 Continuance of the flame resistance properties of furnishing materials may depend upon their use in service and the methods used in their cleaning. Experience has shown that:
 - (a) The proprietary flame retardant processes often applied to furnishing materials during or after manufacture, in order to provide the necessary flame resistant properties, may be destroyed or seriously impaired where incorrect dry cleaning, laundering or proprietary finishing processes which enhance durability and minimise soiling, are used.
 - (b) The application of one flame retardant process on top of another of a different type, may have the effect of inhibiting the properties of both processes.

- (c) During service, seat covers become contaminated with perspiration which leaves a deposit of body salts, etc. These deposits may accumulate, impairing the flame resistance properties of the materials.
- (d) Disinfectants, etc., are often sprayed from aerosol containers in aircraft cabins. The accumulation of these agents may also affect the long term flame resistant properties of the furnishing materials.

3.2 Operators and maintenance organisations are reminded, therefore, that they must have adequate control over the cleaning of aircraft furnishing materials. For this, they need to have a knowledge of the material type, the recommended cleaning or proprietary finishing processing methods, the effects of time in service on the flame resistance properties, the flame retardant processes applied, if any, and the method of re-application of such a process, where this is necessary. It is not acceptable to place reliance on unsubstantiated claims concerning the continuance of flame resistant properties of a material after durability or additional flame retarded processes have been applied. Where such processes have been applied, there is a need to prove the continued acceptability of a particular material or process in service, and, therefore, further flame resistance tests must be conducted in accordance with requirements identified in paragraph 1.2 of this Notice and, where applicable, Airworthiness Notice No. 59.

4 **Cancellation**

This Notice cancels Notice No.58, Issue 4, dated 31 May 2003, which should be destroyed.

Norman LO
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 59
Issue 3
31 January 2002**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

AIRCRAFT SEATS AND BERTHS - RESISTANCE TO FIRE

1 Applicability

- 1.1 This Airworthiness Notice is applicable to all seats and berths (except seats located within the flight deck) installed in Hong Kong registered aircraft (aeroplanes and rotorcraft) over 5700 kg MTWA, certificated in the Transport Category (Passenger) of a type for which a Type Certificate was issued (whether in Hong Kong or elsewhere) on or after 1 January 1958.
- 1.2 For the purpose of this Notice the term berths is taken to include such items as:-
 - (a) berth and stretcher mattresses.
 - (b) couch cushion assemblies.
 - (c) other similar upholstery assemblies.

2 Introduction

- 2.1 Research into post-crash fire survivability has demonstrated that the overall flammability of seat upholstery materials is an important, and in many cases a dominant, factor in the rate at which a fire spreads through a cabin. Present-day seat cushions are typically constructed of flame-resistant polyurethane foam over which there is an upholstery covering. Both in the FAA fire programme and in a related UK programme at the Fire Research Station at Boreham Wood, fire tests have clearly demonstrated how, by encapsulating the seat cushion with a fire-blocking layer, the onset of ignition of the foam core can be delayed and thereby survival time within the fuselage can be extended.
- 2.2 Several small-scale test methods have been used during the various programmes to assess the fire performance of seat cushions and some have been correlated to full-scale fuselage fire tests. The FAA, however, has chosen a 2 gallon (US)/hour kerosene burner as its test standard as it is also used by the American Industry for the qualification of flexible hydraulic and fuel hoses, required to be resistant to fire. In this seat cushion test the burner is the fire source and the fire contribution of a seat cushion system (squab and back

support) is assessed in a stylised form by measuring fire spread and percentage weight loss of the seat specimen during a 2 minute period of exposure to the test flame.

- 2.3 For those aircraft defined in paragraph 1 already in service, or to be introduced into service, the Director-General intends, by this Notice, to require, in similar manner to that defined in FAR 121.312(b) (Amendment 121-184), that such aircraft shall be equipped with seats and berths (except seats located within the flight deck) which comply with this new standard. See also JAR 26.150(b).

3 **Compliance**

- 3.1 All affected seats and berths fitted to aircraft defined in paragraph 1 above, shall comply with the requirements of this Notice.
- 3.2 All aircraft seats newly manufactured and which are intended for use on aircraft defined in paragraph 1 above shall also comply with the requirements of this Notice.

4 **Requirements**

- 4.1 In addition to meeting the existing flammability requirements of UKCAA Specification No.8; BCAR Section D, Chapter D4-3, paragraph 9; BCAR Section G, Chapter G4-3, paragraph 9, JAR 25.853 or JAR29.853, as applicable, each seat cushion (squab and back support), except those fitted to seats located within the flight deck, and berths, shall meet the requirements of JAR-25, Appendix F, Part II, FAR Part 25, Appendix F, Part II (at Amendment No. 25-59) or an equivalent fire test criteria agreed with the Director-General.

5 **Additional Information**

- 5.1 The Director-General should be consulted at an early date if alternative methods are to be used.

6 **Cancellation**

This Notice cancels Notice No. 59, issue 2, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 60
Issue 6
28 June 2019**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

COCKPIT, CABIN AND TOILET FIRE PROTECTION

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft (aeroplanes and rotorcraft) over 5700 kg MTWA, certificated in the Transport Category (Passenger) for 20 or more passengers.

2 Introduction

- 2.1 The Director-General issued Airworthiness Notice No. 83 which required a re-assessment of the design, construction and location of waste receptacles in toilet compartments, and the prohibition of smoking in such compartments. This action, followed an accident in which a fire in a waste receptacle was uncontained and developed into a major in-flight, and subsequently a post-crash, fire with a high number of fatalities.
- 2.2 Following a more recent in-flight fire resulting in several fatalities, the CAD conducted a ramp inspection of aircraft toilet compartments during aircraft "turnaround" and it has been concluded that despite the modifications introduced as a result of Airworthiness Notice No. 83, "in-service" deterioration could well negate the fire containment capabilities of waste receptacles.
- 2.3 A repetitive inspection within toilet compartment has been called for to ensure the continued mechanical integrity of waste receptacles and thereby the initial fire containment. However, the Director-General now believes that fire containment alone is insufficient and that the provision of smoke/fire detection and improved fire fighting capability is necessary.
- 2.4 The purpose of this Notice is, therefore, to publish requirements for the provision of:-
- (a) portable fire extinguisher in cockpit
 - (b) smoke detection in each toilet compartment;

- (c) a minimum number of cabin-mounted Halon 1211 (bromochlorodifluoromethane BCF) fire extinguishers;
- (d) an increase in the minimum number of handheld fire extinguishers in the cabin.

2.5 This Notice is complementary to Airworthiness Notice No. 83 'Fire Precautions – Aircraft Toilets' and takes into account FAR Part 121.308 and 121.309.

3 Compliance

3.1 All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4.

4 Requirements

- 4.1 At least one portable fire extinguisher shall be conveniently located in the cockpit.
- 4.2 Each toilet compartment shall be equipped with a smoke detection system that provides a warning light and/or aural warning in the passenger cabin, so located as to be readily seen or heard by a flight attendant performing his normal duties throughout the flight, and/or a warning light in the cockpit.
- 4.3 In addition to the extinguishers provided for use in the cockpit, accessible cargo compartments and upper and lower deck galleys, there shall be at least the following number of approved handheld fire extinguishers conveniently and evenly distributed throughout the passenger compartment:-

Passenger Seating Capacity		No. of Extinguishers
Up to 60	.....	2
61 – 200	.....	3
201 – 300	.....	4
301 – 400	.....	5
401 – 500	.....	6
501 – 600	.....	7
601 or more	.....	8

Note: Any portable fire extinguisher so fitted in accordance with the certificate of airworthiness of the aircraft may count as one prescribed.

- 4.4 At least half, but not less than two, of the required handheld fire extinguishers installed in the cabin shall contain Halon 1211 or its equivalent as the extinguishing agent.

- 4.5 Portable fire extinguishers shall be of a type which, when discharged, will not cause dangerous contamination of the air within the aircraft.

Note: “dangerous contamination of the air” refers to the level of toxicity of the fire extinguishing agent. It is understood that some agents displace oxygen and this could lead to other problems but they are not necessarily toxic.

5 **Additional Information**

| Nil.

6 **Cancellation**

| This Notice cancels Airworthiness Notice No. 60 Issue 5, dated 30 April 2015, which should be destroyed.

| **Simon LI**
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 60A
Issue 3
30 December 2016**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

Fire Extinguishing Agents

1 Applicability

This Notice is applicable to Hong Kong registered aircraft issued with a Certificate of Airworthiness.

2 Introduction

- 2.1 For over forty-five years, halogenated hydrocarbon (halon) have been the main fire extinguishing agents used in civil aircraft fire suppression systems. The halon-based extinguishing agents that are used today contribute to climate change and are no longer being produced by international agreement because they are ozone-depleting chemicals. With the signing of the Montreal Protocol on Substances That Deplete the Ozone Layer, the production of halon was banned on 1 January 1994 in developed States and on 1 January 2010 for all other States.
- 2.2 At the fifteenth meeting of the parties to the Montreal Protocol in 2003, the United Nations Environment Program (UNEP) Ozone Secretariat was tasked to work with International Civil Aviation Organisation (ICAO) to develop a plan for the replacement of halon in civil aircraft. Subsequently, Resolution A36-12 – Halon Replacement was adopted by the ICAO Assembly in 2007 and called for the Council of ICAO to consider a mandate for the replacement of halon within specified timeframes for newly produced aircraft. This Notice stipulates the latest Standards and Recommended Practices of ICAO on the subject.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

- 3.1 All applicable aircraft identified in paragraph 1 of this Notice for which the individual certificate of airworthiness is first issued in Hong Kong or elsewhere on or after 31 December 2011 shall comply with the requirements in paragraph 4.1 of this Notice.
- 3.2 With effect from 31 December 2018, all applicable aircraft identified in paragraph 1 of this Notice for which the individual certificate of airworthiness is first issued in Hong Kong or elsewhere on or after 31 December 2018 shall comply with the requirements in paragraphs 4.2 and 4.3 of this Notice.

4 Requirements

4.1 Lavatory Extinguishing Systems and Agents

Any agent used in a built-in fire extinguisher for each lavatory disposal receptacle for towels, paper or waste in an aircraft shall not be of a type as listed in Annex A, Group II of the Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer, 8th Edition (2009).

4.2 Portable Fire Extinguisher and Agents

Any extinguishing agent used in a portable fire extinguisher shall not be of a type as listed in Annex A, Group II of the Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer, 8th Edition (2009).

4.3 Minimum Performance Standards (MPS) of Fire Extinguishing Agents

Lavatory and portable fire extinguisher agents shall meet the following MPS:

4.3.1 Lavatory Extinguishing Agents:

Minimum Performance Standards laid down in Appendix D to FAA Report DOT/FAA/AR-96/122 of February 1997, which includes the ability to extinguish a Class A fire and , in case of discharge, does not create an environment that exceeds the chemical agent's 'No Observable Adverse Effect Level' (NOAEL) is acceptable.

4.3.2 Portable Fire Extinguisher Agents:

Minimum Performance Standards for the agents are laid down in Appendix A to FAA Report DOT/FAA/AR-01/37 of August 2002. FAA Advisory Circular No. AC 20-42D also contains information on the acceptable criteria in selecting fire extinguishers.

Note: HFC-227ea and HFC-236fa are suitable alternatives to Halon for both lavatory extinguishing systems and portable fire extinguishers, and are acceptable by the Director-General in meeting the MPS.

5 Additional Information

- 5.1 The Director-General encourages the use of environmentally friendly materials and practices. Fire extinguishing agents should preferably not lead to the depletion of ozone layer nor contribute to global warming.
- 5.2 A possible alternative agent under development is bromotrifluoropropene (BTP). BTP is not ozone depleting substance (under Montreal Protocol) nor a greenhouse gas (under Kyoto Protocol). Investigation and research are currently undergoing to establish BTP as a drop in replacement for Halon 1211. Further testing is expected to determine whether BTP meets the MPS.

6 Cancellation

This Notice cancels Airworthiness Notice No. 60A Issue 2, dated 30 April 2015, which should be destroyed.

Simon LI

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 61
Issue 4
30 May 2006**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
IMPROVED FLAMMABILITY TEST STANDARDS FOR
CABIN INTERIOR MATERIALS

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes over 5700 kg MTWA, certificated in the Transport Category (Passenger) to carry 20 or more passengers, and of a type for which a Type Certificate was issued (whether in Hong Kong or elsewhere) on or after 1 January 1958.

2 Introduction

- 2.1 Analysis of aircraft accidents in which cabin fire has been a major factor has indicated to both the FAA and the Director-General that currently approved cabin interior materials should meet more severe flammability test standards to reduce the risk of an uncontrolled in-flight cabin fire and extend the survival time in a ground fire emergency.
- 2.2 Cabin interior material flammability, smoke and toxic emissions are some of the critical factors which affect cabin occupant survivability. Over the past twenty years there has been extensive research carried out, particularly in the USA, in an attempt to quantify the hazards and to define meaningful test methods and airworthiness standards.
- 2.3 Recent FAA research work, involving full scale fire tests, has established a significant correlation between flammability characteristics and both smoke and toxic emissions. As a result they have placed great emphasis on the introduction of fire-hardened materials into aircraft (i.e. materials with higher ignition temperatures, reduced heat release rates and lower content of the thermally unstable components). The Director-General supports this approach and has already issued the more severe flammability test standards for aircraft seat and berth cushions (Airworthiness Notice No. 59).
- 2.4 The FAA (Docket No. 24594) had amended FAR Parts 25 and 121 (Amendments 25-61 and 121-189 respectively) to require a new flammability test standard for cabin sidewalls, ceilings, stowages, partitions, galleys, etc. As a result of an extended comment period, FAA Docket No. 24594 has been further revised and now amends FAR Parts 25 and 121 at Amendments 25-66

and 121-198 respectively. Similar amendments have now been incorporated in JAR-25 at Change 13. This new test standard sets a limit for the heat release rate and smoke emission from cabin materials when exposed to a source of radiant heat. Using the modified Ohio State University (OSU) rate of heat release apparatus for Heat Release Rate, testing has been adopted by the FAA because of its good correlation with full-scale fire tests. The modified NBS smoke chamber is used for smoke emission testing.

- 2.5 The Director-General is in full agreement with the new FAA flammability and smoke emission test standards introduced by FAR Amendments 25-61 and 121-189 as amended by 25-66 and 121-198 and intends, by this Notice, to require the same standards for those aeroplanes defined in paragraph 1.
- 2.6 Under the provision of this Notice, aircraft already in service may continue without incorporating materials which comply with the new flammability and smoke emission test standards until such a time as the cabin interior is substantially renewed. In due course the Director-General may consider it necessary to propose dates by which all aircraft shall be in compliance.

3 Compliance

- 3.1 With effect from 20 August 1988, but prior to 20 August 1990, all aeroplanes defined in paragraph 1 above, which are either newly manufactured or are the subject of a substantially complete cabin interior renewal, shall comply with the requirements of paragraph 4.1 of this Notice.
- 3.2 With effect from 20 August 1990, all aeroplanes defined in paragraph 1 above, which are either newly manufactured or are the subject of a substantially complete cabin interior renewal, shall comply with the requirements of paragraph 4.2 of this Notice.

4 Requirements

- 4.1 In addition to meeting the existing flammability test standards contained in BCAR Chapter D4-3, paragraph 6.1 or JAR 25.853, cabin interior ceiling and wall panels (other than lighting lenses), partitions, and the outer surfaces of galleys, large cabinets and stowage compartments (other than underseat stowage compartments and compartments for stowing small items such as magazines and maps), shall satisfy the test standards of Part IV of Appendix F of JAR-25, except that the total heat release over the first two minutes of sample exposure shall not exceed 100 kilowatt-minutes per square metre, and the peak heat release rate shall not exceed 100 kilowatts per square metre.
- 4.2 In addition to meeting the existing flammability test standards contained in BCAR Chapter D4-3, paragraph 6.1, European CS 25.853 or JAR 25.853, cabin interior ceiling and wall panels (other than lighting lenses), partitions, and the outer surfaces of galleys, large cabinets and stowage compartments (other than underseat stowage compartments and compartments for stowing

small items such as magazines and maps), shall satisfy the test standards of Part IV and V of Appendix F of JAR-25/CS-25.

5 Additional Information

- 5.1 For the purpose of this Notice, the term 'substantially complete cabin interior renewal', has been used to cover the renewal of all sidewall panels, ceiling panels and/or overhead stowages, whether this is done at one refurbishment or progressively over a period of time as part of a planned cabin interior renewal programme.
- 5.2 The requirements of this Notice are not applicable to individual cabin interior components which are refurbished or have to be replaced due to unserviceability, e.g., individual sidewall or ceiling panels or overhead stowage doors. However, where these components are newly manufactured the Director-General strongly recommends that they should meet the appropriate requirements of this Notice.
- 5.3 The requirements of this Notice are not normally applicable to the internal structures of galleys and overhead stowages, floor panels and floor coverings, transparent or translucent components such as lenses used in interior lights, illuminated signs and window anti-scratch panels, and other small cabin items such as door and window mouldings, curtains, window shades, seat trays, arm rests and parts of the passenger service units but see ACJ 25.853. However, these requirements would be applicable to large surface panels of passenger service units.
- 5.4 If there is any uncertainty as to the applicability of this Notice the Director-General should be consulted for clarification.

6 Cancellation

This Notice cancels Airworthiness Notice No. 61, Issue 3 dated 31 January 2002, which should be destroyed.

Norman LO

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 62
Issue 4
31 January 2002**

FATIGUE LIVES

- 1 For fatigue reasons the major components (e.g. wings and centre-sections) of certain types of aircraft have lives restricted to a specific number of flying hours, flights or landings. These restrictions have, in the main, been confined to large transport type aircraft but more recently it has been found necessary to introduce similar restrictions on certain smaller types of aircraft, some of which are operated in the Private Category.
- 2 The 'lifing' of components is intended to prevent structural failure under the action of repeated air and ground loads experienced in service, the lives being based on the results of tests carried out by the manufacturers of the aircraft. If the specified fatigue life of a critical component is exceeded, the possibility arises of catastrophic structural failure. Where fatigue lives have been imposed, full details have been published by individual manufacturers in their Service Bulletins and compliance with such information is required by the Director-General. Structural Life limitations are determined for Likely Average utilisation of a type of aircraft. Any operations which depart substantially from the typical require reassessment of the structural life limitations for those specific operations and may require alteration in the Safe Fatigue Lives. Examples of operations in this category are low level flights in a maritime surveillance, or geological survey role (particularly using pressurised aircraft), or long endurance operations.
- 3 For the purpose of establishing structural life limitations a landing is defined as an occasion when the main undercarriage wheels make contact with the airfield surface and lift is significantly destroyed. A flight is associated with each landing and, therefore, the total number of flights pressurised and unpressurised is equal to the total number of landings. A pressurised flight is one in which the aircraft's pressurisation system is operated at a pressure differential of 14 kN/m² (2 lb/in²) or above.
- 4 Because of the transfer of components from one aircraft to another, it has, in some instances, been impossible to establish the remaining safe life of individual components. For this reason it is necessary to ensure that when a component in this category is installed in an aircraft, a record is kept with the aircraft documents showing, as applicable, the hours flown and number of flights or landings already sustained by the component at the time of installation. In the case of pressurised flights the applicable pressure differential may be significant. Certificates of Release to Service may not be signed until the signatory is satisfied that the required history of the component has been established.

- 5 Failure to comply with the above procedure may, due to the absence of evidence showing that the components in question have any remaining safe life, result in owners or operators being required to replace such components prematurely.

NOTE: In addition to recording operating hour of engines, auxiliary power units and propellers, the Director-General requires on most engines, auxiliary power units and propellers that a record be kept of cycles completed. Cycles are defined by the manufacturer of each engine, auxiliary power unit and propeller. (See Airworthiness Notice No.44 for engines.)

6 **Cancellation**

This Notice cancels Airworthiness Notice No.62, Issue 3, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 65
Issue 1
31 January 2006**

**CONTINUING AIRWORTHINESS AND SAFETY STANDARDS OF
PASSENGER SERVICE AND IN-FLIGHT ENTERTAINMENT SYSTEMS**

1 Introduction

- 1.1 In recent years the aviation industry has experienced a number of incidents involving In-Flight Entertainment (IFE) systems. IFE systems now regularly include integration with a variety of related equipment, including seat movement mechanisms, video systems, lighting and telecommunications. (For the purposes of this Notice all further references to IFE will also include consideration of these integrated systems and does not differentiate between "one-off" modifications on corporate aircraft and series installations on commercial aircraft).
- 1.2 The availability of innovative electronic technology makes it clear that the increasing use of new technology within passenger cabins will continue. Significantly, more complex systems and their electrical wiring installations demand higher power consumption. Most IFE systems are installed as operator optional modifications and may not be subject to original aircraft manufacturer involvement. This has resulted in Instructions for Continuing Airworthiness (ICAW), scheduled maintenance and system maintenance manuals being overlooked or given minimal consideration.
- 1.3 The United Kingdom Civil Aviation Authority has conducted a review of the above concerns, the outcome of which identified a number of issues. The Director-General adopted the review. This Notice is published to provide guidance as to the best practice approach to gaining approval of and continuing airworthiness of IFE systems and the related passenger services. In particular it identifies the need to consider and where appropriate determine maintenance practices to assure the continuing airworthiness of the systems in service.

2 Background

- 2.1 The variety and complexity of passenger in-seat services and the cabin installation can involve several disparate and separately approved modifications. The lack of specific scheduled maintenance guidance from the Supplemental Type Certificate (STC) Holder(s), for the total installation,

is considered a potential weakness of the certification process. This can lead to a lack of clarity as to where the overall responsibility for the continuing airworthiness of the interface between the aircraft and the modified systems lies.

- 2.2 The adequacy of the certification requirements and objectives is not in question, but their practical interpretation can lead to system interface design and installation problems. In particular, defined standards for equipment and wiring installation/reinstallation are often minimal. IFE systems are often installed by organisations other than the aircraft manufacturer that can lead to differences in installation between otherwise identical aircraft, thus contributing to in-service problems.
- 2.3 Experience from the investigation of occurrences has shown that the condition of the installed system can deteriorate as a result of cabin environmental conditions. The constituent parts of an IFE system installation, including wiring, located within the passenger cabin are likely to be disturbed or removed on numerous occasions throughout the operational life of an aircraft. This increases their vulnerability to occurrences if the maintenance standards and instructions are imprecise.
- 2.4 The Joint Aviation Authorities (JAA) have published JAA Administrative and Guidance Material, Section One: General Part 3: Temporary Guidance Leaflet (TGL) number 17: Passenger Service and In-Flight Entertainment (IFE) Systems. This document provides guidance for the certification of new IFE designs. The Director-General supports the use of this document. However, it has been identified that it does not provide comprehensive information regarding the development of installation instructions, standards and ICAW.
- 2.5 Applicable certification codes will typically lead the assessment of IFE to be a "non-essential" system. As such the system will only be subjected to limited system safety assessment and will not initiate the traditional maintenance task development processes. The service failures seen in practice would certainly appear to suggest that this "no additional-maintenance required" assumption is invalid. Where appropriate, maintenance tasks should be identified to ensure system integrity. This is discussed further in Appendix No. 1 to this Notice.

3 Objective

This Notice is issued to supplement JAA TGL 17 and to provide additional guidance to industry in order to ensure the following:

- (a) Initial installation standards and instructions are clear and concise and demonstrate equality with aircraft manufacturers' production standards.
- (b) Clear "overall" continued airworthiness responsibility is defined. There should be robust and co-ordinated ICAW data developed and published. Such data should cover the interface between IFE modifications and original

design to ensure repeatable in-service removal and re-installation standards are achieved during scheduled maintenance and defect rectification.

- (c) A logical method to develop IFE maintenance tasks and solutions is utilised.
- (d) IFE scheduled maintenance tasks are integrated into the Approved Maintenance Schedule (AMS). Existing tasks to be reviewed and amended and when identified via the methodology above, the new IFE related tasks included.

4 **Applicability**

4.1 **New IFE Installations**

All new IFE installations and modifications should take account of and meet the intent of this Notice together with the JAA TGL 17.

4.2 **Existing IFE Installation**

It is expected that the applicable aspects of this Notice be incorporated in the AMS within one year of publication of this Notice.

5 **Recommendation**

- 5.1 In order to address the above concerns and objectives it is recommended that project management practices be utilised to ensure appropriate compliance with certification codes, development of applicable and effective ICAW and scheduled maintenance tasks.
- 5.2 An individual should be identified to the Director-General who would fulfill the role of project manager. It is expected that the project manager holds a suitable position within an approved organisation, and, if not within the operator's organisation, this role is contractually linked to the operator.
- 5.3 A prime objective of the project should be to address the issues in paragraph 3. All stakeholders should be identified, these would include, as a minimum, the Director-General, all the design organisations involved in the total installation, the aircraft manufacturer (where appropriate), equipment manufacturers (where appropriate), the installing organisation and the operator.

5.4 **Considerations for Project Manager**

The IFE system project plan should manage, as a minimum, compliance with the following:

- (a) **Definition of the whole IFE Installation, e.g. the STC** - how many, their approval basis, compatibility with TC and other STC(s), continued airworthiness responsibilities etc.

- (b) **The installing organisation** – that they have the necessary approvals, competence, facilities, equipment etc. (with respect to the installation in question).
- (c) **Specific aircraft being modified** - effect on particular airframe e.g. documents to be amended, maintenance programme amendment. Validation of all proposed documentation changes.
- (d) **Operational considerations** – e.g. Crew operating instructions and training (including any normal, abnormal and emergency procedures), limitations of use etc.
- (e) **Stakeholders** – establish communication links and identify all the relevant parties to ensure full and complete liaison with respect to their role in the whole IFE installation.
- (f) **Timeline** – identification of specific milestones in the process, e.g. Agreed times to involve/contact Director-General, what should be presented at these times etc.
- (g) **Development of Scheduled Maintenance and Maintenance Instructions** – who will be responsible for doing this and the methodology to be utilised. (See Appendix No. 1 for guidance.)
- (h) Ensure all stakeholders understand their role in order to achieve compliance with this Notice.

5.5 Considerations for Designer

The designer for an IFE System should consider, as a minimum, the following key areas:

- (a) Establish communication links with the project manager and the relevant stakeholders.
- (b) Ensure that all installation instructions, operating conditions and equipment limitations (e.g. European Technical Standard Order (ETSO) and Declaration of Design and Performance (DDP)) are considered and recorded in the appropriate drawings/manuals etc.
- (c) It is expected that the designer will provide installation instructions (engineering drawings) that as a minimum equate to the original aircraft production standards. Statements such as "install in accordance with industry standard practices" would be unacceptable. It is considered that such statements are inadequate because the standard practices cannot alone define the location, routing or security of electrical wiring for example.

- (d) Identify any features that are believed to require new or amended scheduled maintenance tasks and participate in the scheduled maintenance task analyses. (See Appendix No. 1 for guidance.)
- (e) Ensure that all appropriate airworthiness/operational data is produced in sufficient time for the operator to incorporate into relevant manuals prior to entry into service. This should include normal, abnormal and emergency procedures.
- (f) IFE installations (equipment or wiring) may affect existing TC/STC Holder derived maintenance tasks. The designer should assess, in accordance with original scheduled AMS development processes, the effect of the modification on the existing maintenance tasks and inspections, and address accordingly.
- (g) Validated maintenance instructions to be produced so that the original installation standards are maintained after in-service activities.
- (h) Establishment of engineering liaison processes to address minor change requests required during installation, and to monitor and react to operator in-service reliability feedback.

5.6 Considerations for Installer

The installer of an IFE system should manage, as a minimum, compliance with the following:

- (a) Establish communication links with the project manager and the relevant stakeholders.
- (b) A verified internal competence and capability assessment should be carried out against the specific installation requirements. This should cover, as a minimum, any necessary unique skills, technologies, tools and training. Installer's competence/scope should be described within the HKAR-145 Maintenance Organisation Exposition (MOE).
- (c) The pre-planning function should seek to identify any shortcomings within the installation instructions prior to installation on the aircraft, and to report to the relevant stakeholders for resolution.
- (d) Provide feedback and gain approval of minor installation and instruction/drawing changes found during installation.

5.7 Considerations for Operator

The operator of an aircraft installed with an IFE system should manage, as a

minimum, compliance with the following:

- (a) Establish communication links with the project manager and the relevant stakeholders.
- (b) To update the existing Continuing Airworthiness (CAW) management processes to ensure that lines of communication with all of the IFE STC holders are established. These links are to be maintained to ensure that changes to relevant stakeholders are known during the in-service life of the IFE installation.
- (c) Prior to entry into service, operational procedures and crew training should be accepted by the Director-General.
- (d) Participate in the scheduled maintenance task analyses. Amend existing tasks and create new tasks as appropriate for addition to the AMS in collaboration with the TC/STC holder(s) and project manager. This must be approved by the Director-General prior to entry into service. (See Appendix No. 1 for guidance.)
- (e) Establish an effective IFE reliability system to feedback data to the TC/STC holder(s) to ensure that the CAW of the installation is maintained at the intended design standard. If necessary this will then produce additional changes to the ICAW.

6 Conclusion

As the expectation is that the project manager will be employed by an approved organisation, this project management will form part of the routine oversight of the approval by the Director-General, when an IFE project is undertaken. The project manager should liaise with the Airworthiness Officer assigned to the organisation approval at an early stage to apprise them of the project definition and proposed plan. This will facilitate early identification of the appropriate CAD personnel to ensure all aspects are efficiently overseen. Review of continuing compliance with the relevant aspects of this Notice will form part of routine operator and design organisation oversight by the Director-General.

Norman LO

Director-General of Civil Aviation

**GUIDANCE ON THE DEVELOPMENT OF
IFE SCHEDULED MAINTENANCE TASKS AND SOLUTIONS**

1 Introduction

As stated in paragraph 2 of Airworthiness Notice No. 65, current certification codes when applied to the installation of operator optional systems may not provide the necessary cohesion to initiate the current industry standard practice for scheduled maintenance development (e.g. application of Maintenance Steering Group-3 (MSG-3) logic, that would result in an amendment to the Maintenance Review Board Report (MRBR)). Service experience has shown that a large number of IFE related reported occurrences were smoke/fire events caused by an ignition source within the IFE system. This type of failure consequence is clearly a safety concern and needs to be addressed when identifying applicable and effective scheduled maintenance and maintenance instructions. Recognising that Passenger Services and IFE modifications will not normally trigger involvement of the relevant Maintenance Review Board, the following guidance is considered an acceptable means to develop appropriate maintenance controls for such systems.

2 Procedure

2.1 In order to apply the logic in the following flowchart there are certain precursors to understand. Design features within the modification where failure or damage may exist and could result in a degradation of system function or a safety concern are designated Maintenance Significant Items (MSI). MSIs are identified from asking the following questions:

- (a) Could the failure of this item be undetectable or not likely to be detected by the operating/cabin crew during normal duties?
- (b) Could the failure affect safety on the ground or in flight?
- (c) Could the failure or combination of failures have a significant effect on operations?
- (d) Could the failure or combination of failures have a significant economic impact?

2.2 For each MSI the function, functional failure, failure consequence and failure cause should be identified:

- (a) **Function** is the chosen design solution to prevent undesirable failure consequences e.g. insulation function, cooling function etc.
- (b) **Functional failure** is the failure of a chosen design solution to perform the intended function.
- (c) **Failure consequence** is the result of the functional failure. The most significant failure consequences are the presence of an ignition, heat or electric shock source that could lead to smoke/fire or passenger injury.
- (d) **Failure cause** is the reason for the functional failure e.g.
 - Wiring prone to damage;
 - Components susceptible to fluid spill;
 - Dust/debris contamination causing overheat;
 - Components prone to overheat;
 - Passenger traffic damage;
 - Components subject to frequent removal/replacement;
 - Poor electrical bonding;
 - Mechanical breakdown due to wear.(List not exhaustive.)

2.3 Development of Scheduled Maintenance Tasks and Solutions

Once the functions and functional failures have been identified the series of questions contained in the following flowchart should be asked to determine the applicable and effective scheduled maintenance task and/or solutions to mitigate/prevent the failure of a chosen design solution. This development should be accomplished with the collaborative effort of the TC/STC Holder(s), operator and project manager as appropriate.

2.4 Guidance on how to use the Flowchart

- Box 1** This question must be asked for each functional failure of the chosen design solution being analysed. The intent is to segregate the evident and hidden functional failures. The operating crew consists of qualified flight compartment and cabin attendant personnel who are on duty. Normal duties are those duties associated with the routine operation of the aircraft on a daily basis.
- Box 2** Failure consequences to consider are those previously described e.g. ignition, heat or electric shock.
- Box 3** The failure in question does not directly affect safety and therefore the issue is one of reliability and/or passenger convenience. The analyst should discuss this with the operator and address the failure as necessary.

Box 4 The question takes into account failure(s) in which either the single hidden/dormant failure (from Box 1) or in combination with one additional failure could cause one of the identified undesirable consequences.

Box 5 This is to propose various applicable and effective tasks and/or preventative actions, either singularly or in combination, for the analyst to identify:

(5a) Inspection – either:

- Detailed (An intensive examination of a specific item, installation or assembly to detect damage, failure or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirrors, magnifying lenses, etc. may be necessary. Surface cleaning and elaborate access procedures may be required).

Or

- General Visual (A visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to enhance visual access to all exposed surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hangar lighting, flashlight or drop-light and may require removal or opening of access panels or doors. Stands, ladders or platforms may be required to gain proximity to the area being checked.)

(5b) Functional Check

- A quantitative check to determine if one or more functions of an item performs within specified limits.

(5c) Restoration Task

- That work necessary to return the item to a specific standard. Restoration may vary from cleaning or replacement of single parts up to a complete overhaul.

(5d) Discard

- The removal from service of an item at a specified life limit.

(5e) Update Maintenance Practice/instructions

- Amend standard practices (either company or

manufacturers) or update maintenance manuals to provide additional guidance or precautions/warnings.

(5f) Training

- Update or introduce training programmes to address identified knowledge shortfalls in crew, maintenance and/or support staff.

(5g) Design/Modification

- Identification of a shortcoming within the design that requires correction and subsequent modification.

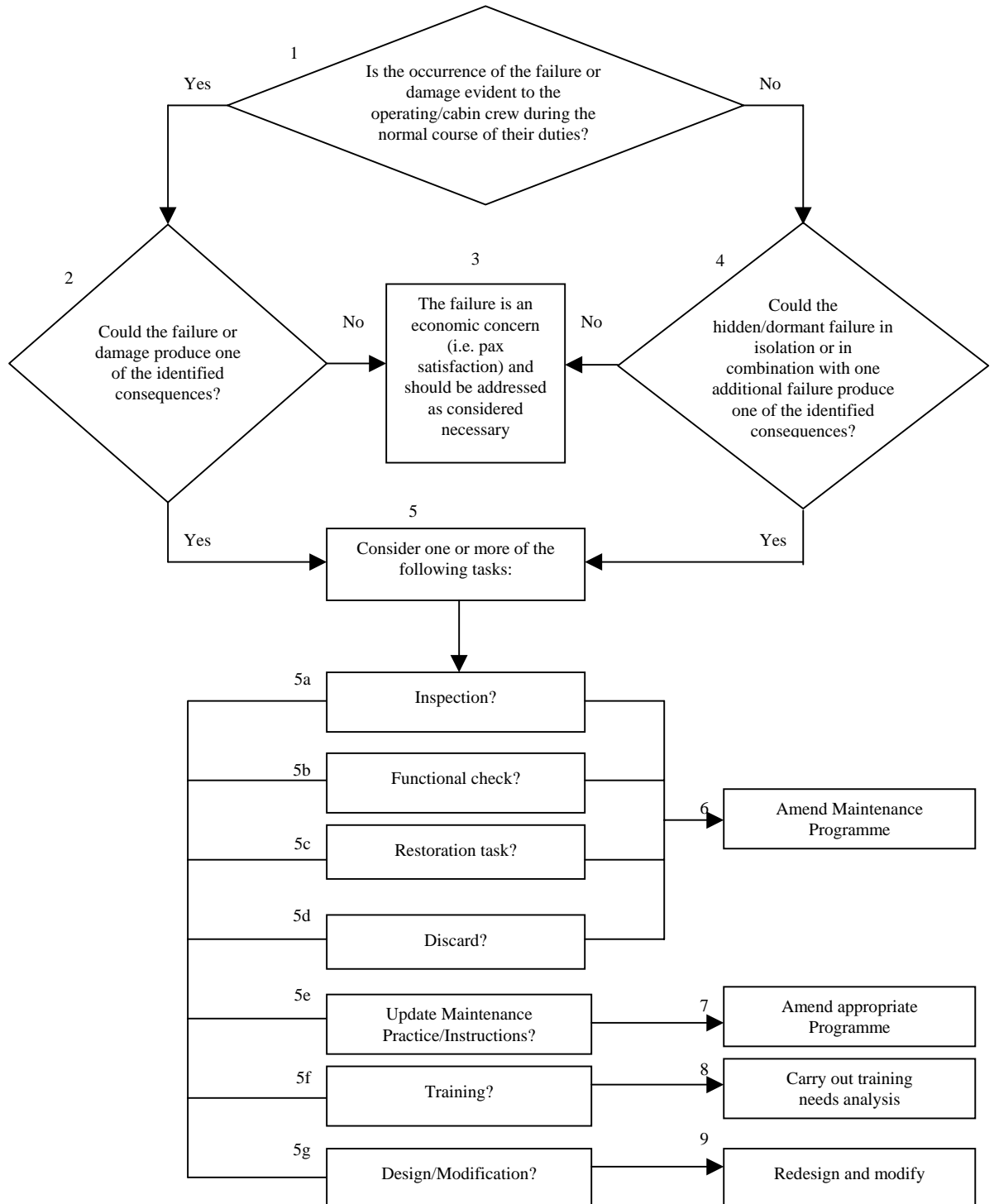
Box 6 If any (or combination of) boxes 5a, 5b, 5c, and 5d are selected the task(s) should be included in the operators approved maintenance programme. This will require approval by the Director-General.

Box 7 If 5e is considered the applicable and effective solution then the necessary documents should be amended and validated e.g. Maintenance Manual, Wiring Diagram Manual, Standard Practices Manual, Component Maintenance Manual.

Box 8 If training has been considered the applicable and effective solution, then the appropriate training should be identified and implemented via a documented training needs analysis.

Box 9 If the identified solution rests with a redesign then this must be accomplished via an approved process

IFE Scheduled Maintenance Tasks and Solutions Generation Flow Chart



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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 67
Issue 3
31 January 2002**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

PORTABLE OXYGEN EQUIPMENT PRESSURE RELIEF

1 Applicability

This Airworthiness Notice is applicable to all portable oxygen equipment carried in Hong Kong registered aeroplanes certificated in the Transport Category (Passenger) exceeding 5700 kg MTWA and to all aeroplanes manufactured after 1 July 1990 exceeding 5700 kg MTWA, in all certification Categories.

2 Introduction

- 2.1 In a recent cabin fire-related accident, there were at least two instances of portable oxygen equipment exploding and forming hazardous projectiles within the cabin as a result of direct involvement in the fire. The Director-General is concerned about any possible risk to the aeroplane occupants or rescue personnel from such hazards.
- 2.2 The explosive failure of an oxygen cylinder in a fire may be caused by high internal pressure generated by the heating of the oxygen, combined with a weakening of the cylinder material. The incorporation of an overtemperature/overpressure relief device should reduce the probability of such a dangerous explosion.
- 2.3 Although protection against rupture is required on the fixed and portable oxygen equipment in all newly designed aeroplanes in accordance with JAR 25.1453 and associated ACJ 25.1453, it was not a requirement in the 1950's and 1960's when many of the currently used portable oxygen equipment were first approved.
- 2.4 The purpose of this Notice is to publish a requirement for the provision of an overtemperature/overpressure relief device on portable oxygen equipment.

3 Compliance

All portable oxygen equipment carried in aeroplanes defined in paragraph 1 above, shall comply with the requirement of this Notice.

4 **Requirement**

Portable oxygen equipment shall be equipped with an overtemperature/overpressure relief device in accordance with the requirements of JAR 25.1453(b)(1) and associated ACJ 25.1453.

5 **Additional Information**

Compliance with this requirement would normally be achieved by the provision of a dedicated overtemperature/overpressure relief device. However, such a device may not be necessary if it can be demonstrated by appropriate fire test evidence that the failure of a part of the equipment (e.g. contents gauge) performs a similar function and satisfies the requirement of this Notice.

6 **Cancellation**

This Notice cancels Airworthiness Notice No.67, Issue 2, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 69
Issue 6
5 December 2014**

APPROVAL OF TEST HOUSES HOLDING CNAS/HKAS/UKAS ACCREDITATION

Note 1: The title of this Notice was “Approval of Test Houses Holding UKAS Accreditation”. As the accreditation standards of China National Accreditation Service for Conformity Assessment (CNAS) and Hong Kong Accreditation Service (HKAS) are considered equivalent to that of United Kingdom Accreditation Service (UKAS) by the Director-General, this Notice is amended to include CNAS and HKAS Accreditations as an alternative route for applying for a Test House Approval.

Note 2: “CNAS/HKAS/UKAS” means either the CNAS or HKAS or UKAS.

1 Introduction

The Director-General is satisfied that the accreditation standards achieved either by the CNAS, HKAS or UKAS are equivalent to those required by HKAR-1 Sub-section 1.8-6. The Director-General will, therefore, grant approval to applicants for Test House Approval to holders of CNAS/HKAS/UKAS accreditation, without a separate investigation, subject to the conditions shown in paragraph 3 below.

2 Application

- 2.1 Application for approval should be made on Form DCA 61, which may be downloaded from the CAD website, completed and returned to the CAD, enclosing a copy of the CNAS/HKAS/UKAS Accreditation Schedule.
- 2.2 The Approval, when granted, will refer to the CNAS/HKAS/UKAS accreditation and will be revoked if the corresponding accreditation ceases.
- 2.3 Organisations holding Group B4 approval (HKAR-1 Sub-section 1.8-6) in conjunction with other approvals may apply for amendment of their terms of approval to reflect the CNAS/HKAS/UKAS accreditation and take advantage of other provisions of this Notice.

3 **Conditions**

- 3.1 When an application has been received, the Director-General will communicate with the applicant to obtain a statement signed by the Chief Executive to the effect that the management of the Organisation will be conducted with due regard to the needs of airworthiness and to grant access to the Director-General to surveillance and assessment reports prepared by CNAS/HKAS/UKAS during the course of the accreditation.
- 3.2 Test reports furnished to customers in response to orders calling for CAD release must bear the statement below. No separate CAD Approved Certificate issuing per HKAR-1 Subsection 1.8-6 paragraph 3.8 will be required.
- "Issued under the authority of CAD Approval Reference AI/ / "
- 3.3 Test Houses seeking CAD approval where the desired terms of approval include non-destructive testing (NDT) must also satisfy the requirements of Airworthiness Notice No. 94.
- 3.4 A copy of the Organisation's "Control Manual", required under CNAS/HKAS/UKAS accreditation, must also be lodged with the Director-General and maintained up to date by the applicant.
- 3.5 The sub-contracting of tests to other than CAD Approved Test Houses is not acceptable for CAD release purposes.

4 **Requirements for the Maintenance of Approval**

- 4.1 The Organisation shall be maintained at the standard necessary to undertake the work for which it is approved, and the Director-General shall, at all reasonable times, have access to the Organisation for the purpose of assessing the standard in use. Normally such access will only be required in respect of paragraph 4.4 and, from time to time, in conjunction with CNAS/HKAS/UKAS reassessment or surveillance visits.
- 4.2 A proposed change of the Chief Executive shall be notified to the Director-General in writing. The Director-General may require the Organisation to supply further information in order to satisfy himself of the suitability of the official concerned insofar as it may affect CAD approval of the Organisation.
- 4.3 The Organisation shall consult the Director-General if in any difficulty about the interpretation of the requirements or associated procedures.
- 4.4 The Director-General shall have the right to witness tests in any way associated with establishing airworthiness.

4.5 The Director-General may revoke, suspend or vary the Terms of Approval if, in his opinion, the conditions required for approval are not maintained.

5 General

It is emphasised that CNAS/HKAS/UKAS accreditation is not in itself a substitute for CAD Approval but may be utilised as an alternative route for applying such approval, without separate investigation and supervision by the Director-General.

6 Cancellation

This Notice cancels Airworthiness Notice No. 69 Issue 5, dated 10 December 2012, which should be destroyed.

Norman Lo
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 70
Issue 4
30 May 2006**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

TYRE BURSTS IN FLIGHT - INFLATION MEDIA

1 Applicability

- 1.1 This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes with a Maximum Take-off Weight Authorised (MTWA) exceeding 5700 kg, with retractable landing gear.

NOTE: For American registered aeroplanes the FAA have published Airworthiness Directive, 87-08-09, which requires that not more than 5% oxygen by volume is contained in tyres inflated and mounted on braked wheels of particular aeroplane types.

2 Introduction

- 2.1 EASA CS 25.729(f), JAR 25.729(f), BCAR Chapter D4-5 paragraph 1.2 and TSS Standard 5-6 paragraph 9, require equipment to be protected from the effects of tyre burst. In addition, the Director-General requires the operational hazards due to tyre bursting in flight be minimised.
- 2.2 The majority of in-flight tyre bursts have been attributed to the tyre carcass being weakened by foreign object damage, scuffing, etc., such that a rapid release of pressure takes place. Such failures are usually experienced when the gear has been retracted for some time and the effects of brake heat transfer, internal tyre temperature and differential pressure are combined.
- 2.3 A fatal accident involving cabin decompression and fire has highlighted another mode of tyre failure in flight where a tyre may fail explosively without any significant prior degradation. A tyre inflated with air and subjected to excessive heating, possibly caused by a dragging brake, can experience a chemical reaction resulting in release of volatile gases. Such a chemical reaction in the presence of the oxygen in the contained air may result in a tyre explosion in a landing gear bay and/or in-flight fire since it appears that the protection normally afforded by conventional pressure relief devices in the wheel would be incapable of responding adequately to the rapid increases in temperature and gas pressure associated with auto-ignition.
- 2.4 Laboratory material and tyre burst testing indicates that the risk of auto-ignition can be reduced by using an inert gas for tyre inflation and servicing.

- 2.5 Other potential benefits may accrue from the use of nitrogen as it will tend to reduce wheel corrosion, tyre fatigue and the risk of fire when fusible plugs melt due to brake overheating.

3 Compliance

- 3.1 All braked wheels of retractable landing gear units on aeroplanes defined in paragraph 1 are required to have tyres inflated with nitrogen, or other suitable inert gas, and maintained such as to limit the oxygen content of the compressed gases to not greater than 5% by volume.
- 3.2 To ensure compliance with this requirement suitable inflation and servicing procedures must be adopted in consultation with the airframe constructor. At airfields where suitable inert gases are not normally available it is acceptable to use air for inflation or servicing provided that a suitable entry is made in the Technical Log and that the tyre is re-inflated or serviced in accordance with the agreed procedure at the earliest opportunity or within 25 flight hours, whichever is the sooner.

4 Additional Information

- 4.1 In addition to compliance with the requirement of paragraph 3 above, tyre and wheel assemblies should be maintained such that greases, solvents, powders and rubber dust are excluded as far as practicable from within the inflation volume.

5 Cancellation

This Notice cancels Airworthiness Notice No. 70, Issue 3, dated 31 January 2002, which should be destroyed.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 71
Issue 4
8 November 2018**

MAINTENANCE ERROR MANAGEMENT SYSTEMS

1 Introduction

1.1 Pursuant to HKAR 145.60 – Occurrence Reporting, an HKAR-145 approved maintenance organisation shall establish an internal occurrence reporting system acceptable to the Director-General to enable the collection and evaluation of such reports that have resulted or may result in an unsafe condition. The procedure shall identify adverse trends, corrective actions taken or to be taken by the organisation to address deficiencies and include evaluation of all known relevant information relating to such occurrences and a method to circulate the information as necessary. The Director-General seeks to provide an environment in which such errors may be openly investigated in order that the contributing factors and root causes of maintenance errors can be addressed using a system that would complement, not supplant, the current system for reporting maintenance errors (MOR Scheme).

1.2 The Mandatory Occurrence Reporting (MOR) Scheme exists in order that significant safety issues are brought to the notice of the Director-General. However, the MOR Scheme is not intended to collect and monitor the normal flow of day-to-day defects/incidents etc. which, in remaining an industry responsibility, forms an important part of the overall operational safety task. This Notice concerns, primarily, those events which fall below the MOR criteria but which, nevertheless, are important for an organisation to understand and control. However, the principles described in this Notice may also be applied by an organisation to their own internal investigation of incidents meeting the MOR criteria.

Note: Organisations will still be required to report MOR to the Director-General.

1.3 Maintenance errors with serious consequences such as accidents or incidents are routinely investigated by organisations, Civil Aviation Department or Air Accident Investigation Authority. Other operationally significant events (e.g. technical delays, cancellations, etc.) may not be legally required to be reported externally but are frequently investigated by organisations albeit too often only to apportion responsibility for the event, rather than to determine cause.

Below these levels are events without operational significance which may rarely be investigated (e.g. the omission of an oil filler cap which, by chance, is noticed and corrected before flight). In order to gain a better understanding of the problems and factors which contribute to errors it is necessary to investigate these and operationally significant events before they possibly contribute to or cause an incident or accident in the future.

- 1.4 It is important to examine not just *what* happened, but *why* it happened, in order to determine the root causes and problems.

2 Maintenance Error Management System

2.1 The previous issue of this Notice set out the CAD policy on Maintenance Error Management Systems (MEMS) and, prior to the requirements introduced by HKAR 145.60, encouraged maintenance organisations, in particular those maintaining large commercial air transport aircraft, to adopt MEMS concept. The JAA Maintenance Human Factors Working Group incorporated very similar guidance into their report (reproduced in UKCAA CAP 716). Both the key, and more detailed, elements are described below, in particular the importance of a 'just culture' for the successful functioning of a MEMS.

2.2 Prevailing industry best practice has shown that a MEMS should contain the following elements:

- Clearly identified aims and objectives
- Demonstrable corporate commitment with responsibilities for the MEMS clearly defined
- Corporate encouragement of uninhibited reporting and participation by individuals
- Disciplinary policies and boundaries identified and published
- An event investigation process
- The events that will trigger error investigations identified and published
- Investigators selected and trained
- MEMS education for staff, and training where necessary
- Appropriate action based on investigation findings
- Feedback of results to workforce

- Analysis of the collective data showing contributing factor trends and frequencies
- 2.3 The aim of the scheme is to identify the factors contributing to incidents, and to make the *system* resistant to similar errors. Whilst not essential to the success of a MEMS, it is recommended that for large organisations a computerised database be used for storage and analysis of MEMS data. This would enable the full potential of such a system to be utilised in managing errors.
- 2.4 For the purpose of this Notice a maintenance error is considered to have occurred when the maintenance system, including the human element, fails to perform in the manner expected in order to achieve its safety objectives. The human element includes technicians, engineers, planners, managers, store-keepers – in fact any person contributing to the maintenance process. The foregoing definition differs from that of a human error as it demands consideration of the system failings (e.g. inadequate staffing, organisational factors, tooling availability, ambiguous manuals etc.) as well as the error committed by a person.

3 The Director-General's Assurances

- 3.1 It is recognised that the success of a MEMS programme is dependent on full and free investigation without fear of action by the Director-General. Accordingly, the Director-General gives the following assurances:
- 3.1.1 The Director-General will be checking, as part of CAD approval audit process, that the organisation's internal occurrence reporting and investigation process is functioning as described in the procedures approved by the Director-General and in line with the objectives of the programme as explained in UKCAA CAP 716. The CAD audit may involve the review of dis-identified MEMS investigations such that the foregoing can be satisfied. However, the Director-General makes the following assurances:
- (a) The Director-General will, subject to sub-paragraph (b) below, not disclose the name of the person submitting the MEMS report, nor of a person to whom it relates, nor pass on a MEMS report to a third party, unless required to do so by law or unless the persons(s) concerned authorises such disclosure.
 - (b) The Director-General will take all reasonable steps possible to avoid disclosing the identity of the reporter or of those individuals involved in the occurrence, should any follow-up action arising from a MEMS report be taken.

- (c) The Director-General will not, as his policy, institute criminal proceedings in respect of unpremeditated or inadvertent breaches of the law or requirements which come to his attention only because they have been reported under the MEMS Scheme, except in cases involving dereliction of duty amounting to gross negligence or recklessness. Such an assurance is similar to that provided under the MOR Scheme.

3.2 As examples of what the Director-General might require, as evidence that an organisation has a working MEMS programme in accordance with HKAR 145.60(b), a CAD Airworthiness Officer may ask to see the following documents and evidence, and in order to satisfy himself, he may wish to speak to individual members of staff at any level within the organisation:

- (a) A copy of the organisation's safety and disciplinary policy and determine that staff are aware of this policy, and believe that it will be, and has been, applied fairly.
- (b) The procedure describing the organisation's process for reporting and investigating incidents and errors, and the types of occurrences that would normally be investigated.
- (c) Evidence that occurrences meeting the criteria detailed above, have been reported, and to assure himself that occurrences are not frequently going unreported.
- (d) Evidence that occurrences meeting the criteria detailed above, have been investigated, and to assure himself that occurrences are being, and have been, fairly investigated. It is hoped that an organisation would cooperate with a CAD Airworthiness Officer in putting him in touch with individuals who have been party to investigations, but only with the agreement of the individuals concerned.
- (e) Within a large organisation, evidence that MEMS investigators had received appropriate training.
- (f) Evidence that the organisation had acted, or was acting, upon results of MEMS investigations, based on risk assessment. This may mean that no action had been taken if a risk assessment has deemed that the

causes were unlikely, in isolation or in combination, to result in a hazardous event in the future. A CAD Airworthiness Officer would expect to see evidence of action(s) to prevent root causes, and/or to mitigate the effects of error where appropriate.

- (g) Evidence of feedback to the workforce, on both occurrences and their investigation, and remedial action taken, would also be expected.

3.3 For a small organisation, the CAD Airworthiness Officer would expect evidence as described above, but on a less structured basis.

3.4 If an organisation has no evidence to offer in the form of reported and investigated occurrences, the CAD Airworthiness Officer may wish to talk to staff to assure himself that there have been no such occurrences, as opposed to occurrences going unreported and uninvestigated. The CAD Airworthiness Officer would respect staff confidences in seeking such evidence.

4 MEMS Code of Practice

4.1 The Director-General encourages organisations to adopt the following code of practice regarding a MEMS:

4.1.1 Where an occurrence reported via MEMS indicates an unpremeditated or inadvertent lapse by an employee, as described below, the Director-General would expect the employer to act reasonably, agreeing that free and full reporting is the primary aim in order to establish *why* the event happened by studying the contributory factors that led to the incident, and that every effort should be made to avoid action that may inhibit reporting.

4.1.2 In the context of error management it is considered that an unpremeditated or inadvertent lapse should not incur any punitive action, but a breach of professionalism may do so. As a guideline, individuals should not attract punitive action unless:

- (a) the act was intended to cause deliberate harm or damage.
- (b) the person concerned does not have a constructive attitude towards complying with safe operating procedures.
- (c) the person concerned knowingly violated procedures that were readily available, workable, intelligible and correct.
- (d) the person concerned has been involved previously in similar

lapses.

- (e) the person concerned has attempted to hide their lapse or part in a mishap.
- (f) the act was the result of a substantial disregard for safety.

"Substantial disregard", for this purpose, means:

- In the case of a certification authorisation holder (e.g. licensed engineer or certifying staff) the act or failure to act was a substantial deviation from the degree of care, judgement and responsibility reasonably expected of such a person.
- In the case of a person holding no maintenance certification responsibility, the act or failure to act was a substantial deviation from the degree of care and diligence expected of a reasonable person in those circumstances.

The degree of culpability would vary depending on any mitigating circumstances that are identified as a result of the MEMS investigation. It follows that any action taken by the organisation would also be on a sliding scale varying from corrective measures such as retraining through to dismissal of the individual.

4.1.3 In the case of incidents investigated via a MEMS, irrespective of whether or not such incidents were brought to the knowledge of the Director-General, the Director-General expects an organisation to address the problems which contributed to these incidents. The organisation should, where possible, implement appropriate measures to prevent the problem from re-occurring, or alternatively monitor future occurrences, according to the degree of risk and likelihood of re-occurrence. A supporting database is useful in these circumstances in helping to assess the frequency of occurrence and any associated trends.

4.1.4 The Director-General would expect that identified safety issues would be acted upon. If the Director-General becomes aware, by whatever means, that a significant safety problem existed and was not being addressed, he reserves the right to take appropriate action.

NOTE: The statement by an organisation that an incident is undergoing, or has undergone, a MEMS investigation, without any additional information provided to explain why the incident occurred, would not normally be an adequate basis for an MOR closure.

4.1.5 Organisations are encouraged to share their MEMS results with the

Director-General and with other maintenance organisations. It is hoped that by sharing such data the Director-General and industry can jointly develop a better understanding of maintenance error causation and develop more focused human factors strategies. However, it is appreciated that some information in a MEMS may be considered sensitive to the organisation affected, and may need to be dis-identified before being shared with other organisations.

5 Further Information

5.1 More detailed guidance information is included in UKCAA CAP 716.

6 Cancellation

This Notice cancels Airworthiness Notice No.71, Issue 3, dated 30 September 2006, which should be destroyed.

Simon LI

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 72
Issue 3
28 June 2019**

CRITICAL MAINTENANCE TASKS

1 The requirements and procedures stipulated in this Airworthiness Notice have been transferred and incorporated in the HKAR 145.48 Performance of maintenance.

2 **Cancellation**

This Notice cancels Airworthiness Notice No. 72, Issue 2, dated 31 January 2002, which should be destroyed.

Simon LI
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 74
Issue 6
31 December 2015**

**AIRWORTHINESS CONCESSIONS IN RESPECT OF AIRCRAFT
WITHOUT A HONG KONG TYPE CERTIFICATE**

1 Introduction

From time to time Hong Kong operators find it necessary to apply to the Director-General for concessions to cover the non-compliance of certain aircraft with the applicable Hong Kong Additional Requirements (formerly called 'Special Conditions') for certification on the Hong Kong Register. Some typical cases include:

- (a) Aircraft being purchased and placed on the Hong Kong Register at short notice.
- (b) Aircraft being dry leased (see Note 1) on a relatively long term basis (e.g. 12 months or more), but required in service before all necessary modifications can be embodied.
- (c) Aircraft being dry leased on a short term basis (e.g. 6 months), for which the lead time on parts procurement may render compliance difficult.

NOTES: 1 By 'dry leased' is meant aircraft under operational control of a Hong Kong operator (i.e. subject to a direction under Article 93 of the Air Navigation (Hong Kong) Order 1995). All such aircraft are required to meet Hong Kong certification requirements.

2 Aircraft on 'wet lease', i.e. under the control of the lessor operator, are considered the responsibility of the State in which they are registered and by whom they are operated.

This Notice summarises the design criteria which will normally be applied by the Director-General in determining whether or not, in a particular case, a concession should be granted.

2 Applicability

2.1 Aeroplanes with a Proven and Satisfactory Record

2.1.1 Definition

Aeroplanes which, according to their class, satisfy the criteria in Appendix No. 1 are considered to have a proven and satisfactory record.

2.1.2 Policy on Concessions

The aeroplane must normally be of a kind Type Certificated in Hong Kong and in principle be in compliance with all Hong Kong airworthiness standards (including Airworthiness Notices). However, subject to the criteria set out in Appendix No. 2 to this Notice, the Director-General will give consideration to granting concessions against compliance with individual requirements. Having regard to the record of the type, he may consider granting concessions for up to 6 months and, for large aeroplanes with more than 50 million hours of satisfactory service experience, this period may be increased to 12 months.

2.2 Aeroplanes other than Well Proven Types, and Helicopters

2.2.1 Definition

Aeroplanes other than those meeting the criteria of Appendix No. 1, and helicopters.

2.2.2 Policy on Concessions

The aircraft must normally be of a kind Type Certificated in Hong Kong and in principle be in compliance with all Hong Kong airworthiness standards (including Airworthiness Notices). Requests for concessions will be expected to be clearly justified in the light of the considerations in Appendix No. 2. Where concessions are granted they will be of limited duration and will not, under normal circumstances, exceed 6 months in duration.

3 Leased Aircraft

Operations and airworthiness requirements of non-Hong Kong registered aircraft under dry leasing arrangements are prescribed in CAD 360 Part One Chapter 2 paragraph 7.1. The intent of this Airworthiness Notice is to supplement the policy and to indicate that it applies equally to aeroplanes and helicopters being added to the Hong Kong Register (Paragraph 1(a) refers).

| 4 **Cancellation**

| This Notice cancels Airworthiness Notice No.74 Issue 5, dated 30 May 2005, which should be destroyed.

Norman LO
Director-General of Civil Aviation

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AIRWORTHINESS NOTICE No. 74
APPENDIX No. 1

Issue 2
1 June 1994

Aeroplanes Considered to have a Proven and Satisfactory Record

MTWA kg	Minimum Service Experience - Hours	Average Fatal Accident Rate	Examples
Not exceeding 5700	2 million	Appreciably less than 10 per million hours	Beech 90,99 DHC-6 Embraer Bandeirante
Exceeding 5700	20 million	Not exceeding 1 per million hours	Boeing 727 Boeing 737 Boeing 747 Douglas DC-9/MD80 Douglas DC10/MD11

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**CRITERIA APPLIED BY THE DIRECTOR-GENERAL WHEN CONSIDERING
CONCESSIONS AGAINST HONG KONG CERTIFICATION REQUIREMENTS**

- 1 Applicant for concessions will be required to show that efforts have been made to anticipate the demand for additional capacity and that all practicable steps have been taken to comply with the Hong Kong certification standards.
- 2 A significant proportion of the Hong Kong fleet of one type of aircraft must not be the subject of concessions at one time. Usually, therefore, concessions will be limited to two aircraft of any given operator's fleet at any one time.
- 3 Subject to the conditions of above paragraphs 1 and 2, concessions will be considered for up to six months on any one aircraft, and this period may be extended to 12 months where service experience exceeds 50 million hours.
- 4 In considering whether a concession should be granted, account will be taken of the accident record with respect to the Additional Requirement or other requirement in question.
- 5 The operator's obligations to comply with operational requirements may constrain the scope of any Concession. Amongst other items:
 - (a) Aircraft Performance Information
 - comply with Hong Kong airworthiness standards in important respects.
 - (b) Handling, flight deck layout, instrumentation, flight management systems and warnings
 - differences within a fleet to be acceptable may require dedicated crews and relevant training.

Cancellation

This Notice Appendix cancels Airworthiness Notice No. 74 Appendix No.2 Issue 5, dated 30 May 2005, which should be destroyed.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 75
Issue 5
30 May 2004**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
MAINTENANCE REQUIREMENTS FOR VARIABLE PITCH PROPELLERS
INSTALLED ON AIRCRAFT HOLDING
A HONG KONG CERTIFICATE OF AIRWORTHINESS**

1 Introduction

- 1.1 For most propeller types the propeller manufacturer will publish their recommended overhaul periods and any necessary overhaul / inspection instructions. The operator should observe these recommendations at the periods specified by the manufacturer unless an alternative is agreed by the Director-General and stated in the Approved Maintenance Schedule. However, there are a number of propeller types for which the manufacturer has not published overhaul lives in terms of hours or calendar period. The purpose of this Airworthiness Notice is to prescribe mandatory action to ensure that these propellers are maintained in a satisfactory condition, by requiring periodic inspection.
- 1.2 Previous issues of this Notice have allowed periodic hub and blade inspections to be carried out in place of a full overhaul for low utilisation propellers. This issue 5, in its paragraph 3.3, phases out this alternative maintenance policy.

2 Applicability

- 2.1 The requirements of this Notice are applicable to variable pitch propellers, variable pitch propellers which have been locked and to ground adjustable propellers. For modular propellers the calendar periods referred to in this Notice shall apply to propeller hubs and blades individually.

3 Compliance

- 3.1 Any overriding mandatory requirements in respect of particular propellers issued either by the Airworthiness Authority of the State of Design of a propeller, or by the Director-General will take precedence over this Notice. For the purposes of compliance with an Airworthiness Directive which specifies requirements as a function of overhaul, the bare blade inspection required by paragraph 4.2.2 shall be deemed as an overhaul.

3.2 Propellers with no manufacturer recommended calendar overhaul limitation

3.2.1 For propellers where no calendar overhaul interval is recommended by the Manufacturer paragraphs 3.2.1 (a) and 3.2.1 (b) must be complied with:-

- (a) At 3 years since new or overhaul or the inspection defined in paragraph 4.2.2 of this Notice, complete the hub/blade inspection specified in paragraph 4.2.1.
- (b) At 6 years since new or overhaul or the inspection defined in paragraph 4.2.2 of this Notice, overhaul the propeller in accordance with the manufacturer's instructions.

3.2.2 On reaching the manufacturer's recommended flight hour TBO period the propeller must be overhauled.

3.2.3 For propellers with composite blades, in the absence of any manufacturer's overhaul periods in terms of calendar time, the composite blades should be subject to overhaul at a period not exceeding 6 years in accordance with the manufacturer's instructions. The 3 year inspection of paragraph 4.2.1 need not be carried out.

3.3 Propellers with a manufacturer recommended calendar overhaul limitation

3.3.1 Propellers which are currently maintained in accordance with paragraphs 4.2.1 (3 year inspection) and 4.2.2 (6 year bare blade inspection) of this Notice, may remain in service until the next scheduled inspection, in accordance with this Notice, at which point the following will apply:-

- (a) At 3 years since inspection defined in paragraph 4.2.2 of this Notice, the propeller must either be overhauled in accordance with the manufacturer's instructions, or inspected in accordance with paragraph 4.2.1 of this Notice.
- (b) On reaching 6 years since inspection defined in paragraph 4.2.2 of this Notice, the propeller must be overhauled in accordance with the manufacturer's instructions. After this time the propeller shall continue to be overhauled in accordance with the manufacturer's instructions at the manufacturer's recommended period unless varied by the Approved Maintenance Schedule.

- 3.4 The periods of operation or elapsed calendar time prescribed in Appendix No. 1 to this Notice shall be calculated from the date of the initial installation of the propeller on an aircraft following manufacture or complete overhaul of the propeller and may be preceded by a period of storage of up to 2 years which has been carried out in accordance with the manufacturer's recommendations. Periods of storage in excess of 2 years or subsequent to the initial installation shall be counted as if the propeller were installed. Where the specific manufacturer has provided information on this topic within their instructions then this should be followed.
- 3.5 The applicability and compliance requirements of this Notice are summarised in Appendix No. 1 to this Notice, Tables 1 and 2.

4 **Propeller Inspections**

- 4.1 The inspection of propellers required by Tables 1 or 2 shall be undertaken by an organisation approved by the Director-General for the purpose.
- 4.2 The inspections and re-work shall be carried out in accordance with the manufacturer's instructions and as a minimum shall include:-

4.2.1 Hub/blade inspection:-

- (a) Dismantling of the propeller sufficiently to gain access to the blade root bearing assemblies.
- (b) Thorough cleaning of the blade root assemblies in accordance with the manufacturer's instructions.
- (c) Examination for pitting, fretting, corrosion, cracking and other damage of the hub, bearings, blade roots, and housing, together with replacement of any disturbed seals. All of the blade surfaces shall be examined for damage, delamination (where applicable), and the presence of corrosion, removing the paint finish as necessary. In cases where de-icer boots or overshoes are installed on the blades, a detailed examination for corrosion around their edges shall be carried out, and, if any evidence is found, the boots/overshoes shall be removed to permit a full inspection of the masked areas. Any corrosion shall be removed and the blades re-protected. In cases where de-icer boots/overshoes are removed, replacement parts shall be installed using the facilities prescribed and under conditions and procedures specified, in the relevant manufacturer's Overhaul Manual.

- (d) Non Destructive Inspection (NDI) of the hub and blade roots shall be carried out in accordance with the manufacturer's instructions except where it can be verified that NDI of the hub and blade roots has been carried out in accordance with the manufacturer's instructions within the last 4 years.
- (e) Checking the track of the propeller after refitting, then functioning throughout its operational range by means of an engine run to verify correct performance, and to establish that any vibration is within acceptance limits, in accordance with the manufacturer's instructions.

4.2.2 Bare blade inspection:-

In addition to the hub/blade inspection prescribed in paragraph 4.2.1:-

- (a) Removal of all de-icing boots or overshoes and fairings.
- (b) Removal of all paint and erosion protection.
- (c) Removal of all blade root bushings and plugs.
- (d) Inspection of the complete blade surface for the presence of corrosion. Any corrosion shall be removed and the blades re-protected and prepared for the re-installation of the blade fittings.
- (e) All NDI required for overhaul of the propeller shall be carried out in accordance with the manufacturer's instructions.
- (f) Full dimensional inspection of all blades.

5 **Record of Accomplishment**

- 5.1 A comprehensive record of the inspection and work done in accordance with paragraph 4 of this Notice shall be retained and an entry, making a reference to this record, shall be inserted in the Propeller Log Book.

6 **Cancellation**

This Notice cancels Airworthiness Notice No.75, Issue 4, dated 31 January 2002, which should be destroyed.

Norman LO

Director-General of Civil Aviation

30 May 2004

AN-75 P.4

AIRWORTHINESS NOTICE NO. 75
APPENDIX No. 1

Issue 5
30 May 2004

Propellers shall be maintained in accordance with (a) of the appropriate following Table, unless no calendar overhaul period is published by the propeller manufacturer. In this case they shall be maintained in accordance with (b):-

Table 1 Propellers fitted to Commercial Air Transport, Public Transport, Aerial Work and Private Category Aircraft; MTWA of 5700 kg or above

(a)	Overhaul period	Whichever occurs first of operating hours or calendar period as published by the propeller manufacturer unless varied by the Approved Maintenance Schedule.
(b)	Overhaul period	Operating hours as published by the propeller manufacturer or on condition where no calendar life has been published subject to (i) and (ii) below.
	(i) Hub/blade inspection period	Inspect at 3 years since new or overhaul or inspection (ii) below; repeat at 1 year intervals
	(ii) Bare blade inspection period	Not to exceed 6 years since new, overhaul or last bare blade inspection.

Table 2 Propellers fitted to Commercial Air Transport, Public Transport, Aerial Work and Private Category Aircraft; MTWA below 5700 kg

(a)	Overhaul period	Whichever occurs first of operating hours or calendar period as published by the propeller manufacturer unless varied by the Approved Maintenance Schedule.
(b)	Overhaul period	Operating hours as published by the propeller manufacturer or on condition where no calendar life has been published subject to (i) and (ii) below.
	(i) Hub/blade inspection period	Inspect at 3 years since new or overhaul or inspection (ii) below (but may be phased to next annual check or Certificate of Airworthiness Renewal provided period does not exceed 4 years).
	(ii) Bare blade inspection period	Not to exceed 6 years since new, overhaul or last bare blade inspection.

NOTE: Hub/blade inspections and bare blade inspections are to be in accordance with the procedures of paragraph 4 of Airworthiness Notice No. 75.

Cancellation

This Notice Appendix cancels Notice No. 75 Appendix No.1 Issue 4 dated 31 January 2002 which should be destroyed.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 76
Issue 3
30 September 2006**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
ELECTRICAL POWER SUPPLIES FOR AIRCRAFT RADIO SYSTEMS**

1 Introduction

- 1.1 Previous Issues of this Notice drew attention to the dangers of operation of aircraft in which the entire radio installation was supplied via a single electrical feeder circuit, and stated that Certificates of Airworthiness would not be issued or renewed in respect of aircraft certificated in the Transport Category with such systems.
- 1.2 Issue 2 of this Notice extended the applicability of the Notice to include all aircraft in any Category. Interpretative material has been added to give guidance on the extent of the assessment to be made.

2 Requirement

The electrical feeder arrangements shall be such that:

- (a) Where more than one radio system is installed, no likely single failure (e.g. a fuse or a relay) will result in the loss of all radio systems.
- NOTE: It is strongly recommended that such a failure should only result in the loss of one radio system.
- (b) Where duplicate radio systems, or radio systems which can duplicate a function, are installed, no likely single failure (e.g. a fuse or a relay) will result in the loss of both systems.

3 Interpretation

- 3.1 In examining electrical feeder arrangements to establish compliance with paragraph 2, the examination for likely single failures should include:
- (a) the mechanical and electrical aspects of the supply circuit, including the return path of the electrical supply;
- (b) the location within the electrical circuit of fuses, circuit breakers and

power switching relays, their physical location in the aircraft and the manner in which they are interconnected; and

- (c) panels for integrated control of radio systems, audio integration systems, and dimmer control equipment for electronic displays.

4 **Implementation**

- 4.1 Single and multi-engined aircraft in any Certificate of Airworthiness Category shall comply with the requirements of paragraph 2.
- 4.2 The Director-General will consider applications for a waiver to this Notice in respect of multi-engined aircraft that is certificated in a Category other than Transport Category, when he can be satisfied that the aircraft is fitted with such limited radio equipment, or is restricted to operations under such limited conditions, that the loss of the electrical supply to all radio equipment would not significantly affect the safety of the aircraft during its permitted normal operation.

5 **Cancellation**

This Notice cancels Airworthiness Notice No.76 Issue 2, dated 1 November 1996, which should be destroyed.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 77
Issue 4
31 January 2007**

COUNTER/POINTER ALTIMETERS

- 1 The United Kingdom Altimeter Committee in 1965 concluded the best altitude presentation was provided by the counter/pointer type instrument. The Director-General is satisfied that subsequent experience has supported this conclusion.
- 2 In the case of turbo-jet-engined aircraft, in which hazardous misreading of altimeters is more likely to occur, it is desirable to eliminate reliance on the less satisfactory types of presentation. Therefore, subject to the proviso of paragraph 3, all turbo-jet-engined aircraft of over 5700 kg MTWA shall, have as a minimum two approved counter pointer type instruments.

NOTE: Temporary Guidance Leaflet No. 28 of JAA Administrative & Guidance Material, Section Four identifies the unacceptable basic layouts.

- 3 Presentations developed for Electronic Flight Instrument System (EFIS) altimeters (e.g. tapes, bars, etc) are acceptable equivalent to counter drum-pointer displays, provided that they do not replicate the unacceptable layouts described in paragraph 2.
- 4 The Director-General may, under certain circumstances, accept as a minimum one of the following:
 - (a) One approved counter/pointer type instrument visible to both crew members, in addition to their normally positioned altimeters, or
 - (b) one approved counter/pointer type instrument in the Captain's normal altimeter position, in addition to the existing altimeters at other crew stations.

5 Cancellation

This Notice cancels Airworthiness Notice No.77 Issue 3, dated 31 January 2002, which should be destroyed.

Norman LO
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 78
Issue 1
31 January 2007**

SAFETY MANAGEMENT SYSTEMS

1 Introduction

1.1 The International Civil Aviation Organisation (ICAO) has introduced an amendment 30 to Annex 6 to the Convention on International Civil Aviation which recommends the States' Safety Programme to include air operators and maintenance organisations to implement Safety Management Systems (SMS) with effect from 23 November 2006.

1.2 This Airworthiness Notice is focused on maintenance organisations. As part of the Safety Programme, the Director-General requires maintenance organisations to implement a safety management system acceptable to the Director-General that, as a minimum,

- (a) identifies safety hazards;
- (b) ensures that remedial action necessary to maintain an acceptable level of safety is implemented;
- (c) provides for continuous monitoring and regular assessment of the safety level achieved; and
- (d) aims to make continuous improvement to the overall level of safety.

Note: For those HKAR-145 approved maintenance organisations which are also Hong Kong AOC operators, they should refer to the CAD FON 02/2006 for the relevant requirements to the operators.

1.3 From 1 January 2009, this recommendation will become an Annex 6 Standard. The Director-General has adopted a corresponding two-phased SMS implementation plan as defined in paragraph 2 of this Airworthiness Notice.

1.4 The main reason for introducing SMS to the aviation world is to improve its existing level of aviation safety through a systematic process of hazard identification and risk management. Apart from this, an SMS should also enable maintenance organisations to achieve the following benefits:

- (a) reduction in incidents and accidents;
- (b) minimise direct and indirect costs resulting from incidents and accidents;
- (c) improved working environment resulting in better productivity and morale;
- (d) facilitates integration of safety related processes and functions within organisation;
- (e) gain safety recognition by customers and travelling public;
- (f) reduction in insurance rate;
- (g) attracts minimum external and regulatory audits;
- (h) record of due diligence in event of legal or regulatory safety enquiries;
- (i) exceed regulatory requirements with simultaneous bottom line and productivity gains; and
- (j) create a positive, reliable and generative organisational culture.

2 **SMS Standard and Applicability**

2.1 With effect from 23 November 2006, all HKAR-145 approved maintenance organisations are encouraged to initiate or implement an SMS as referred in the ICAO Doc 9859. As a minimum, it should include the following:

- (a) a safety policy on which the system is based;
- (b) a process for setting goals for the improvement of safety and their related performance indicators;
- (c) a process for internal reporting and analysing of hazards, incidents and accidents;
- (d) a process for managing risks associated with hazards, incidents and accidents;
- (e) a process for ensuring that personnel are trained and competent to perform their duties, including their role within the safety management system;
- (f) a process to document all SMS elements, procedures and records including their relevant integration thereof;

- (g) a process for conducting periodic reviews or audits of the SMS; and clearly defined lines of safety accountability throughout the organisation, including a direct responsibility for safety on the part of the Accountable Manager.

2.2 With effect from 1 January 2009, the above SMS standard will become an HKAR-145 requirement. HKAR-145 amendments will be processed closer to the requirement date.

3 Planning and Establishing an SMS

3.1 SMS Components and Elements

The key components and the underlying elements of an SMS are:

3.1.1 Safety policy and objectives:

- (a) Management commitment and responsibility;
- (b) Safety accountabilities of managers;
- (c) Appointment of key safety personnel;
- (d) SMS implementation plan;
- (e) Documentation.

3.1.2 Safety hazard identification and risk management:

- (a) Hazard identification processes;
- (b) Risk assessment and mitigation processes;
- (c) Internal safety investigations.

3.1.3 Safety assurance:

- (a) Safety performance monitoring and measurement;
- (b) Audits and surveys;
- (c) The management of change;
- (d) Continuous improvement of the safety system.

3.1.4 Safety promotion:

- (a) Training and education;
- (b) Safety communication.

3.1.5 Emergency response planning:

- (a) Development of an emergency response plan.

- 4 The Director-General is in the process of producing further guidance material which will assist maintenance organisations to implement an SMS. The recommended source for further details and guidance on SMS is the ICAO Safety Management Manual (Doc 9859). Useful information may also be obtained from the UKCAA Publication, CAP 712 Safety Management Systems for Commercial Air Transport Operations.

Note: Guidance on safety management systems is contained in the ICAO Safety Management Manual (Doc 9859). A copy of this manual can be downloaded from CAD website www.cad.gov.hk or directly from the ICAO website www.icao.int/anb/safetymanagement/Documents.html.

Norman LO
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 80
Issue 4
31 January 2002**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

**CLASS C AND D CARGO OR BAGGAGE COMPARTMENT
- FIRE CONTAINMENT CAPABILITY**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes exceeding 5700 kg MTWA for which a Type Certificate in the Transport Category (Passenger or Cargo) was first issued (whether in Hong Kong or elsewhere) on or after 1 January 1958 and fitted with class C or D cargo or baggage compartments exceeding 200 cubic feet in volume.

2 Introduction

2.1 The Airworthiness Standards contained in JAR-25 and BCAR Chapter D4-3, include requirements for cargo or baggage compartments which are sub-divided into five classes, namely, A, B, C, D and E. The classification of compartments is based primarily on the ease of access and the capability of the compartment to contain a fire. Class B, C, D and E cargo and baggage compartments are required to have liners in order to protect the structural integrity of the aeroplane from the effects of fire. Class B and E cargo or baggage compartments are not the subject of this Notice.

2.2 As a consequence of an in-flight fire on a public transport aeroplane, the FAA has conducted a series of tests at their Technical Centre to investigate the capability of three non-metallic liner materials: glass fibre reinforced resin, kevlar and nomex (in monolithic form) to resist flame penetration under conditions representative of actual cargo or baggage compartment fires. These tests were conducted in simulated Class C and D compartments with bulk-loaded baggage typical of that found in service.

2.3 As a result of these full-scale fire tests, the FAA determined that fire could rapidly burn through monolithic nomex or kevlar while the glass fibre reinforced resin panels proved to be satisfactory. The FAA, therefore, concluded that improved standards were warranted, since the kevlar and nomex liners had not fully met the current fire penetration requirements of FAR 25.855, i.e. the 45° Bunsen burner test.

- 2.4 The FAA (Docket No. 24185) amended FAR Part 25 to require this new fire test standard on all newly designed aeroplanes for which an application for a type certificate is made after the 16 June 1986. The UK has also adopted such standards through equivalent amendments to JAR-25 introduced at Change 12.
- 2.5 The improved standard of fire containment testing of cargo or baggage hold liners is contained in Part III of Appendix F to JAR-25, and consists of a 5 minute resistance to fire test on a representative specimen of the cargo liner panels and attachments, using a 2 gallon(US)/hour Kerosene burner (identical to that as used to show compliance with Airworthiness Notice No. 59) as the test standard.
- 2.6 For those aeroplanes defined in paragraph 1 already in service, or to be introduced into service, the Director-General intends, by this Notice to require, for those aeroplanes which are not fitted with glass fibre reinforced resin or aluminium alloy liners, that such aeroplanes shall be equipped with cargo or baggage compartment liners which comply with JAR 26.155(a) and (b).
- 2.7 The FAA has issued FAR Amendment 121-202 which prescribes requirements similar to the contents of this Notice No. 80.
- 2.8 Although testing has shown that aluminium alloy panels in thicknesses typical of the then current installations are not capable of fully meeting the fire containment standards of Change 12 to JAR-25 the Director-General considers their capability to be acceptable for aeroplanes certificated prior to 1 July 1989.

3 Compliance

- 3.1 All Class C and D cargo or baggage compartments exceeding 200 cubic feet in volume of aeroplanes defined in paragraph 1 above, shall comply with the requirements of this Notice.

4 Requirements

- 4.1 In addition to meeting the existing flammability requirements of JAR 25.853, JAR-25 Appendix F, Part I or Part III, or BCAR D4-3, paragraph 6.1, as applicable, the following shall apply.
- 4.1.1 Class C and D cargo or baggage compartment side wall or ceiling liner panels shall be constructed of glass fibre reinforced resin, or materials which satisfy the requirements of JAR-25.855(c), or an equivalent fire test criteria agreed with the Director-General.
- 4.1.2 For currently certificated aeroplanes which are fitted with aluminium alloy side walls and ceiling liner panels, these panels will continue to be acceptable (see paragraph 2.8).
- 4.1.3 All newly designed aeroplanes for which an application for a Type

Certificate is made after the 16 June 1986 shall comply with the requirements of JAR-25, Change 12 or subsequent changes/amendments as applicable.

- 4.1.4 For compliance with this Notice the term 'liner' includes any design feature, such as a joint or fastener, which would affect the capability of the liner to safely contain a fire.

5 Additional Information

The current requirements of JAR-25 Appendix F, Part I, paragraph (a)(2)(iii) include floor panels for Class C and D cargo or baggage compartments.

6 Cancellation

This Notice cancels Airworthiness Notice No.80 Issue 3, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 81
Issue 5
30 May 2006**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

**EMERGENCY POWER SUPPLY FOR
ELECTRICALLY OPERATED GYROSCOPIC BANK AND
PITCH INDICATORS (ARTIFICIAL HORIZONS)**

1 Introduction

- 1.1 Studies of those aircraft accidents and incidents in recent years which have involved total loss, or interruption, of generated electrical supplies on public transport aircraft, indicate that a major factor in the ability of the crew to maintain safe flight is the continuation of presentation to the pilot of reliable aircraft attitude information. Two fatal accidents since 1968 have been attributed to failure of power supplies resulting in the loss of horizon information for flight in 'blind' conditions. Incidents have also occurred which could have been catastrophic if the crew had been totally dependent on horizon instrument, rather than visual, information.
- 1.2 All public transport aircraft operated on the Hong Kong Register the safety of which depends on electrical services, are equipped with some form of standby or emergency electrical power supply. On many aircraft these emergency supplies are provided by batteries of sufficient capacity to maintain essential services for a flight time sufficient to reach an airfield and make a landing. However, on a number of aircraft types the adequacy and duration of these supplies is critically dependent on crew response time in recognizing the emergency, and in completing particular drills to isolate the battery supply to prevent it being discharged into loads on the main electrical system. It is considered that the ability of the crew to cope with a major interruption of electrical supplies would be improved if they had knowledge that continuity of horizon information was not totally dependent on their prompt and correct execution of emergency drills.
- 1.3 The purpose of this Notice is to require the retrospective modification of certain classes of aircraft to ensure that continuity of horizon information is maintained.
- 1.4 Aircraft types fitted with air driven gyroscopic bank and pitch indicators are exempt from the requirements of this Notice.

2 Requirement

2.1 Compliance with paragraphs 2.2 and 2.3 of this Notice, or with a CAD approved alternative providing an equivalent level of safety, is required as soon as practical but not later than 1 January 1974, for:

- (a) aircraft certificated in the Transport Category for the carriage of more than 19 persons over the age of three years; and
- (b) aircraft the maximum total weight authorized of which exceeds 15,000 kg.

2.1.1 Where it can be shown that an aircraft detailed in 2.1(a) or (b) will be permanently removed from service prior to the 1 January 1975, the Director-General may, on application, waive the requirements of this Notice where he is satisfied that compliance would not be justified in the circumstances of the particular case.

2.1.2 Compliance will also be required for newly constructed aircraft the maximum total weight authorized of which exceeds 5700 kg, for which a Hong Kong Certificate of Airworthiness in the Transport Category is first issued on or after 1 January 1974.

2.2 Where it cannot be shown that in the event of a total failure of the main electrical generating system, an adequate supply will be available automatically to a suitable bank and pitch indicator for a minimum period of 30 minutes, assuming that no special crew action is taken for 10 minutes, then a separate emergency supply, independent of the aircraft electrical generating system, which will automatically supply such an instrument, and its associated lighting, for a minimum period of 30 minutes, shall be provided.

2.2.1 Where the emergency supply is provided by a separate battery it is permissible for this battery to be (trickle) charged from the main electrical generating system, provided that the installation is such that the battery cannot discharge back into the main system.

2.3 The instrument supplied in accordance with 2.2 shall be:

- (a) the third instrument (standby horizon) where this is provided, or failing such provision,
- (b) the bank and pitch indicator fitted to the Captain's flight instrument panel.

2.3.1 Where the third instrument is fitted it shall:

- (a) operate independently of any other attitude indicating system;
- (b) be so located on the instrument panel that it will be visible to, and usable by, both pilots from their normal positions;
- (c) be compatible in presentation with the main attitude indicating system;
- (d) be fitted with a failure warning device. Alternatively a means of indicating that the power supply to the instrument is operating correctly shall be provided.

2.3.2 Where the instrument on the Captain's flight instrument panel is utilized:

- (a) the circuitry to the instrument shall be modified, as necessary, so that transfer to the emergency source of supply is automatically effected in the event of failure of the main supply;
- (b) the requirements of paragraph 2.3.1(d) shall be met.

3 **Additional Information**

3.1 Representations have been made to the Director-General that under conditions of widespread adverse weather, or heavy traffic density at airports, a period of 30 minutes may be a less than desirable time for flight to a suitable airfield and landing, and clearly this period by itself is inadequate for long range aircraft.

3.1.1 The basis of Hong Kong certification of all long range, and of certain short/medium range, aircraft types is that after a period of interruption of electrical supplies it will be possible for the crew to re-establish sufficient normal, or emergency, generated power to support all necessary essential services, including the instrument covered by this Notice, for the remainder of the flight. The prescribed period of 30 minutes is considered to be adequate to allow for appropriate crew action for this class of aircraft.

3.1.2 For those shorter range aircraft that are totally dependent on battery power to support all essential services to the completion of the flight, a period of 30 minutes assuming a crew delay time of 10 minutes, is the mandatory minimum endurance of the emergency supply for the horizon instrument prescribed in this Notice. It is, however, strongly recommended that in circumstances where the crew do take prompt and correct actions in response to warning indications of the interruption of all generated electrical power, the aircraft installation

should include adequate battery capacity to provide a 60 minute supply for both the subject instrument and the other services essential to complete the flight and make a landing.

- 3.2 A number of aircraft types already comply with the requirements of this Notice, or incorporate other special features which have been considered and accepted by the Director-General as providing an equivalent level of safety.

4 **Cancellation**

This Notice cancels Airworthiness Notice No.81, Issue 4, dated 31 January 2002, which should be destroyed.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 82
Issue 5
28 June 2019**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

**ELECTRICAL GENERATION SYSTEMS – AIRCRAFT NOT EXCEEDING 5700 kg
MAXIMUM TOTAL WEIGHT AUTHORISED (MTWA)**

1 Introduction

- 1.1 Investigations into accidents and incidents involving total loss of generated electrical power to aircraft, the MTWA of which does not exceed 5700 kg, have shown certain inadequacies in the standard of failure warnings and indications provided. Experience has shown that the loss of generated electrical power can remain undetected for a significant period of time, resulting in the serious depletion of the available battery capacity and reduced duration of supplies to essential services under these conditions.
- 1.2 The purpose of this Notice is to publish requirements for the retrospective modification of certain aircraft to ensure that a clear and unmistakable warning of loss of generated electrical power is given, and to preserve or provide sufficient electrical energy to operate essential services for an adequate period of time in the event of such a loss occurring.

2 Requirement

- 2.1 For all multi-engined aircraft, the MTWA of which does not exceed 5700 kg, compliance with paragraphs 2.2, 2.3, 2.4 and 2.5 of this Notice, or with a CAD approved alternative providing an equivalent level of airworthiness, is required.
 - 2.1.1 Where it can be shown that an aircraft is fitted with such limited electrical and radio equipment, or is certificated to operate under such limited conditions (e.g. VMC day only) that the loss of generated electrical power would not significantly prejudice safe flight, the Director-General will, on application, waive the requirements of this Notice where he is satisfied that compliance would not be justified in the circumstances of a particular case.

- 2.2 Clear visual warning shall be provided, within the pilot's normal line of sight, to give indication of, either:
- (a) reduction of the generating system voltage to a level where the battery commences to support any part of the main electrical load of the aircraft, or
 - (b) loss of the output of each engine driven generator at the main distribution point or busbars.
- 2.3 The battery capacity shall be such that, in the event of a complete loss of generated electrical power, adequate power will be available for a period of not less than 30 minutes following the failure, to support those services essential to the continued safe flight and landing of the aircraft, (see paragraph 3.1). This includes an assumed period of not less than 10 minutes from operation of the warning specified in paragraph 2.2, for completion of the appropriate drills. This delay period may be reduced to not less than five minutes if the warning system is provided with "attention getting" characteristics (e.g. a flashing light). For the purpose of calculations it shall be assumed that the electrical load conditions at the time of failure warning are those appropriate to normal cruising flight at night (see paragraph 3).
- 2.4 Where all gyroscopic attitude reference instruments, i.e. bank and pitch indicator(s) and turn and slip indicator(s), are dependent on electrical power for their operation, at least one of these instruments shall continue to operate without crew action for the prescribed 30 minute period.

NOTES: (1) For certain aircraft types a turn and slip indicator may not be acceptable as the sole remaining attitude reference instrument.

(2) Certain aircraft are equipped with both electrically operated and air driven attitude reference instruments. In such cases the air driven instrument(s) will be accepted as providing the emergency attitude information provided that the requirements of paragraph 2.4.1 are met.

2.4.1 The instrument(s) with which the requirements of paragraph 2.4 will be met shall be clearly designated, and:

- (a) shall be so located on the instrument panel that it will be visible to, and usable by, the pilot from his normal position;
- (b) shall be provided with means of indicating that the power supply to the instrument is operating correctly.

2.5 Precise drills covering crew action in the event of electrical generation system failures and malfunctions shall be included in the appropriate aircraft manual(s), together with a statement of the battery endurance under specified load conditions.

3 **Additional Information**

3.1 When ascertaining that the installed aircraft battery capacity is adequate for compliance with paragraph 2.3, the following loads should be taken into account:

- (a) Attitude information (where applicable in accordance with paragraph 2.4).
- (b) Essential Radio Communication.

NOTE: For the purpose of calculations it will normally be accepted that intermittent use of a single VHF communication equipment satisfies this requirement. Utilisation on the basis of a total of 15 minutes reception plus 3 minutes transmission in the 30 minute period would be an acceptable interpretation.

- (c) Essential cockpit lighting.
- (d) Pitot Head Heater (applicable only to those aircraft certificated for flight in icing conditions).
- (e) Any other services essential for the continued safe flight and landing of the particular aircraft.
- (f) Those services that cannot readily be shed when carrying out the drills required under paragraph 2.5.

3.1.1 In order to ensure that the essential services, taken into account in accordance with paragraph 3.1, will function adequately for the prescribed period, the calculation of the duration of battery supply should normally be based on the following assumptions:

- (a) Only 75% of the 'name plate' rating of the battery is available (this is to take into consideration loss of capacity with age, and a realistic state of charge).
- (b) The voltage/time discharge characteristic of the battery, appropriate to the load of the listed services, is not extended beyond a battery terminal voltage of 21.5 volts on a 24 volt system, pro rata for 12 volt systems, (this is to ensure that the voltage available throughout the prescribed period is adequate for the satisfactory operation of the services).

NOTE: Only where compliance with the requirements of this Notice cannot be shown within the criteria of paragraphs 3.1 and 3.1.1, will consideration have to be given to the fitment of additional, or larger capacity, batteries to particular aircraft.

3.2 Applications for the approval of modifications necessary to ensure compliance with the requirements of this Notice should be made in the manner specified in HKAR-21.

4 **Cancellation**

This Notice cancels Airworthiness Notice No. 82 Issue 4, dated 30 May 2006, which should be destroyed.

Simon LI
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 83
Issue 11
30 July 2021**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

NO SMOKING PLACARD – AIRCRAFT TOILETS

1 Applicability

This Notice is applicable to Hong Kong registered aeroplane over 5,700 kg MTWA:

- 1.1 issued with a Certificate of Airworthiness in Transport Category (Passenger);
or
- 1.2 with the first Certificate of Airworthiness issued (whether in Hong Kong or elsewhere) on or after 1 August 2011 in Transport Category (Cargo) equipped for carriage of occupants other than crewmembers.

2 Introduction

- 2.1 The Air Navigation (Hong Kong) Order 1995 (CAP. 448C) (AN(HK)O) Article 50 requires the exhibition of notices indicating when smoking is prohibited.
- 2.2 The Aviation Security Ordinance (CAP. 494) Section 12B states that smoking in the aircraft or in any compartment of the aircraft when smoking is prohibited commits an offence. It also specifies the penalty in case of conviction.
- 2.3 Smoking shall not be permitted in toilet compartment. The purpose of this Notice is to publish the requirements in respect of the exhibition of the ‘No Smoking’ bilingual placard in toilet compartment.

3 Compliance

All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice as applicable.

- 3.1 Aircraft with ‘No Smoking’ placards that cannot be illuminated shall comply with the requirements specified in paragraph 4.1 of this Notice.

3.2 Aircraft with both 'No Smoking' placards that cannot be illuminated and 'No Smoking' signs that can be illuminated shall comply with the requirements specified in paragraph 4.1 of this Notice.

3.3 Aircraft with 'No Smoking' signs that can be illuminated shall comply with the requirements specified in paragraph 4.1 or paragraph 4.2 of this Notice.

Note: Only one type of the 'No Smoking' Bilingual Placards (Type A or Type B as specified in paragraphs 4.1 and 4.2 respectively) may be installed on the same individual aircraft. Mixed types are prohibited.

3.4 With a Type Certificate issued in Hong Kong on or after 1 August 2011, aircraft shall comply with the requirements specified in paragraph 4.1 of this Notice, notwithstanding sub-paragraph 3.3.

4 Requirements

4.1 'No Smoking' Bilingual Placards (Type A)

'No Smoking' bilingual placards are required both inside and outside toilet compartments. The 'No Smoking' bilingual placards shall be displayed so as to be prominent for those about to enter and those within toilet compartments. The English wordings of the 'No Smoking' placards shall read:

"It is an offence under Hong Kong law to smoke in the toilet of the aircraft. It is also an offence to smoke in any other area of the aircraft when the 'No Smoking' notices are displayed in the aircraft or when the 'No Smoking' signs are illuminated. Offenders are liable on conviction, to a fine not exceeding HK\$50,000 and to imprisonment for a term not exceeding 2 years."

and the Chinese wordings of the placards shall read:

“根據香港法例，任何時間不得在飛機的洗手間內吸煙。若飛機上顯示「不准吸煙」告示時，或當「不准吸煙」燈號亮着時，均不准在飛機內任何地方吸煙。如有違反即屬違法，一經定罪，可處最高罰款額港幣伍萬元及最長監禁期兩年。”

or:

“根据香港法例，任何时间不得在飞机的洗手间内吸烟。若飞机上显示「不准吸烟」告示时，或当「不准吸烟」灯号亮着时，均不准在飞机内任何地方吸烟。如有违反即属违法，一经定罪，可处最高罚款额港币伍万元及最长监禁期两年。”

Note: Use of Chinese traditional font or Chinese simplified font should be consistent with other bilingual placards installed on the same individual aircraft.

4.2 ‘No Smoking’ Bilingual Placards (Type B)

'No Smoking' bilingual placards are required both inside and outside toilet compartments. The 'No Smoking' bilingual placards shall be displayed so as to be prominent for those about to enter and those within toilet compartments. The English wordings of the 'No Smoking' placards shall read:

"It is an offence under Hong Kong law to smoke in the toilet of the aircraft. It is also an offence to smoke in any other area of the aircraft when the 'No Smoking' signs are illuminated. Offenders are liable on conviction, to a fine not exceeding HK\$50,000 and to imprisonment for a term not exceeding 2 years."

and the Chinese wordings of the placards shall read:

“根據香港法例，在飛機內的洗手間吸煙，或當「不准吸煙」燈號亮着時在飛機內的任何其他地方吸煙，即屬犯罪。一經定罪，可處最高罰款額港幣 50,000 元及最長監禁期 2 年。”

or

“根据香港法例，在飞机内的洗手间吸烟，或当「不准吸烟」灯号亮着时在飞机内的任何其他地方吸烟，即属犯罪。一经定罪，可处最高罚款额港币 50,000 元及最长监禁期 2 年。”

Note: Use of Chinese traditional font or Chinese simplified font should be consistent with other bilingual placards installed on the same individual aircraft.

4.3 Alternative Chinese Phrases

Notwithstanding paragraphs 4.1 and 4.2, the Chinese phrases “亮著” and “亮着” are equivalent in Chinese traditional font.

Note: Use of these Chinese phrases shall be consistent with other bilingual placards installed on the same individual aircraft.

5 Cancellation

This Notice cancels Airworthiness Notice No. 83 Issue 10, dated 30 September 2019, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 84
Issue 5
15 February 2009**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

**AIRBORNE ILS (LOCALISER) VOR AND
VHF COMMUNICATION RECEIVERS -
IMPROVED FM BROADCAST
INTERFERENCE IMMUNITY STANDARDS**

1. Introduction

- 1.1 The previous issue of this notice took account of actions to ensure aircraft fitted with navigation and communication receivers to meet improved FM broadcast immunity standards established by ICAO. Operators were advised that aircraft with equipment that did not meet the improved immunity standards might be subject to operational restrictions where an interference risk had been identified.
- 1.2 This notice is re-issued to take account of EASA standards and guidelines, to clarify the situation concerning the carriage of non-compliant equipment.

2 Equipment Standards

- 2.1 To counteract the expected interference problem, ICAO, in association with the aeronautical industry, developed and agreed improved performance standards for ILS localiser, VOR and VHF communication receivers (now incorporated in ICAO Annex 10, Volume I, Radio Navigation Aids, Chapter 3, paragraphs 3.1.4, 3.3.8, and Volume III, Part II Voice Communication Systems, Chapter 2, paragraph 2.3.3).
- 2.2 Acceptable Minimum Operational Performance Specifications, consistent with ICAO Annex 10, are shown in the following table:

EQUIPMENT	JAA	EUROCAE	RTCA
ILS Navigation	JTSO-2C36f	ED-46B	DO-195
VOR Navigation	JTSO-2C40c	ED-22B	DO-196
VHF Communication	JTSO-2C38e	ED-23B	DO-186

- 2.3 ICAO Annex 10 recommends that equipment meeting the improved immunity

performance standards should be placed into operation at the earliest possible date.

3 Requirements

3.1 Requirements for ILS localiser and VOR receivers effective from 1 January 2001:

- (a) ILS localiser and VOR receivers, required to be carried by Hong Kong registered aircraft for the purposes of operations under Instrument Flight Rules (IFR) in accordance with applicable airworthiness and operational regulations, must be of a type approved as complying with the improved FM broadcast immunity standard.
- (b) Hong Kong registered aircraft of 5700 kg MTWA or less may continue to have non-immune ILS localiser and VOR receivers remain installed, (i.e. those carried in addition to the minimum number required by applicable airworthiness and operational regulations to meet IFR), they must be identified to the flight crew and their use restricted to Visual Flight Rule (VFR) operations.
- (c) For aircraft of 5700 kg MTWA or less, an acceptable means of compliance is to placard and restrict non-immune receivers to operations permitted under the Restricted Approval Category LA Class 3 (see paragraph 3.3), irrespective of the approval category for that equipment.

3.2 Requirements for VHF communication receivers effective from 1 January 2002:

- (a) VHF communication receivers, required to be carried by Hong Kong registered aircraft over 5700 kg MTWA for the purposes of operations under IFR in accordance with applicable airworthiness and operational regulations, must be of a type approved as complying with the improved FM broadcast immunity standard.
- (b) Where non-immune VHF communication receivers remain installed in Hong Kong registered aircraft over 5700 kg MTWA, (i.e. those carried in addition to the minimum number required by applicable airworthiness and operational regulations to meet IFR), they must be identified so as to alert flight crew to the potential risk of interference.
- (c) Hong Kong registered aircraft of 5700 kg MTWA or less may continue

to be operated under IFR with non-immune VHF communication receivers provided that the receivers are identified so as to alert flight crews to the potential risk of interference.

NOTE: The Director-General will continue to monitor reports of interference and, if necessary in the light of experience, reconsider this relaxation from the ICAO standard for VHF communication receivers carried by aircraft of 5700 kg MTWA or less.

- 3.3 Operating limitation must continue to be observed for ILS localiser, VOR and VHF communication receivers carried in aircraft of 5700 kg MTWA or less, and approved in the Restricted Category Light Aircraft (LA) Class 3 (see UKCAA BCAR Section R, Chapter R3-3,4 and Appendix to Chapter R3-1, 1.1.4, or CAP 208 Volume 2 – Foreword, paragraph 3.2).

NOTE: Such equipment may not be used to comply with a requirement for the mandatory carriage of radio equipment.

4. Further Information

Aircraft operators are advised to contact their equipment suppliers to obtain information on the availability of modification kits or replacement equipment meeting the improved FM immunity standards. This information is not available from the Director-General.

Norman LO
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 85
Issue 2
31 July 2009**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
HF COMMUNICATION SYSTEM**

1 Applicability

This Airworthiness Notice is applicable to Hong Kong registered aircraft issued with a Certificate of Airworthiness.

2 General

- 2.1 International Civil Aviation Organization (ICAO) has published Standards in Annex 10 Volume III Part II paragraph 2.4.1.4 the requirements of classes of emission and carrier suppression to Single Sideband (SSB) HF communication system.
- 2.2 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to Chicago Convention, adopts the Standards in accordance with the Convention.

3 Introduction

- 3.1 The International Telecommunication Union (ITU) uses an internationally agreed system for classifying radio frequency signals. Each type of radio emission is classified according to its bandwidth, method of modulation, nature of the modulating signal, and type of information transmitted on the carrier signal. It is based on characteristics of the signal, not on the transmitter used.
- 3.2 The class of emission is a set of characteristics classified and symbolised according to their basic characteristics. The basic characteristics are:
- First symbol – type of modulation of the main carrier;
 - Second symbol – nature of signal(s) modulating the main carrier;
 - Third symbol – type of information to be transmitted.

- 3.3 For example, class of emission designator J3E is interpreted as J - 'Single-sideband, suppressed carrier', 3 - 'A single channel containing analogue information', E - 'Telephony (including sound broadcasting)'. Detail of emission designator is available from ITU website www.itu.net.

4 Requirements

Requirements of classes of emission and carrier suppression for HF communication system with effective from 16 February 2009 are as follows:

- (a) No new Double Side Band (DSB) equipment shall be installed. For the installed HF system equipped with DSB, the DSB function shall be deactivated or not being used by the flight crew.
- (b) The system shall utilise the suppressed carrier class of emission J3E (also J7B and J9B as applicable). A3J, the old designator of J3E, is also acceptable.

NOTE: For stations directly involved in coordinated search and rescue operations using the frequencies 3023 kHz and 5680 kHz, the class of emission J3E should be used. However, since maritime mobile and land mobile services may be involved, A3E and H3E classes of emission may be used.

5 Cancellation

This Notice cancels Airworthiness Notice No. 85, Issue 1, dated 15 February 2009, which should be destroyed.

Norman LO
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 86
Issue 1
15 February 2009**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

Aircraft Equipment

1 Applicability

This Airworthiness Notice is applicable to Hong Kong registered aircraft issued with a Certificate of Airworthiness for purposes other than public transport on or after 31 January 2009.

2 Introduction

- 2.1 International Civil Aviation Organization (ICAO) has published Standards in Annex 6 that require appropriate instruments and equipment to be installed in certain aircraft as defined in the Standards.
- 2.2 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, which gives effect to Chicago Convention, adopts the Standards in accordance with the Convention.
- 2.3 The aircraft equipment required in this Airworthiness Notice shall be complied with in addition to that required in the Air Navigation (Hong Kong) Order (AN(HK)O) 1995 for the same circumstances of flight.
- 2.4 Where the requirements are duplicated in this Notice and AN(HK)O 1995, compliance with this Notice meets the respective AN(HK)O 1995 requirements.

3 Compliance for applicable aeroplanes

- 3.1 All aeroplanes flying for the purpose other than public transport and when flying under Instrument Flight Rules outside controlled airspace, shall be equipped according to the Scale E and Scale F of Schedule 5 of AN(HK)O 1995.

- 3.2 All aeroplanes flying for the purpose other than public transport and operated in accordance with Instrument Flight Rules or at night shall be equipped according to the Scale A of Schedule 6 of AN(HK)O 1995.

4 Compliance for applicable helicopters

- 4.1 All helicopters flying for the purpose other than public transport and operated in accordance with Instrument Flight Rules or at night shall be equipped according to the Scale A of Schedule 6 of AN(HK)O 1995.
- 4.2 All helicopters flying for the purpose other than public transport and operated on flights over water at a distance from land corresponding to more than 10 minutes at normal cruise speed shall be equipped according to the Scale A of Schedule 6 of AN(HK)O 1995.
- 4.3 All helicopters flying for the purpose other than public transport and operated on flights over designated land area determined by the state over which the helicopter flying shall be equipped according to the Scale A of Schedule 6 of AN(HK)O 1995.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 87
Issue 1
15 February 2009**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

TIME-PIECE AND RATE OF CLIMB AND DESCENT INDICATOR

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered helicopters when operating in accordance with Visual Flight Rules (VFR) at night.

2 Introduction

This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 for the requirements of installation of a time-piece and a rate of climb and descent indicator for Hong Kong registered helicopters.

3 Compliance

With effect from 16 February 2009, all applicable helicopters identified in paragraph 1 of this Notice shall comply with the requirement in paragraph 4 of this Notice.

4 Requirement

4.1 All helicopters when operating in accordance with VFR at night shall be equipped with an accurate time-piece indicating the time in hours, minutes and seconds, and a rate of climb and descent indicator.

Note: The above-mentioned requirements may be met by combinations of instruments or by electronic displays.

5 Additional Information

Nil.

Norman LO
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 88
Issue 5
8 November 2018**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
ELECTRICAL GENERATION SYSTEMS – BUS-BAR LOW VOLTAGE WARNING
SINGLE-ENGINED AIRCRAFT
WITH A HONG KONG CERTIFICATE OF AIRWORTHINESS**

1 Introduction

- 1.1 When Airworthiness Notice No. 82 was introduced in June 1987, it was considered inappropriate to impose the whole or part of those requirements on single-engined aircraft. Since that time, systems which were once fitted only in the more complicated twin-engined general aviation aircraft, have now been developed and fitted to single-engined aircraft. Thus, greater reliance is being placed on the integrity of the electrical power supplies for such aircraft.
- 1.2 As a result of the above, Issue 1 of this Notice was published. This Notice required certain single-engined aircraft to be equipped with low voltage warning devices to give indication to the pilot of when the aircraft's battery commences to support all or part of the electrical load of the aircraft.
- 1.3 Since that time, a number of incidents and accidents have continued to occur on single-engined aircraft equipped with electrically operated systems. Investigations have shown that a general misunderstanding exists as to the categories of single-engined aircraft (depending upon the level of equipment installed) that have to be equipped with low voltage warning devices.
- 1.4 The purpose of this Notice is to extend and clarify the need for a clear and unmistakable warning of the loss of generated electrical power (to the main bus-bar) as detailed in paragraph 2.1.1. This will be by the introduction, where necessary, of retrospective modifications.

2 Requirements

- 2.1 For all single-engined aircraft with a Hong Kong Certificate of Airworthiness equipped with an engine driven electrical generating system, compliance with paragraphs 2.2 and 2.3, or with a CAD approved alternative, providing an equivalent level of airworthiness is required.

2.1.1 Where an aircraft is equipped to operate under day VMC conditions only and the loss of generated electrical power could not prejudice continued safe flight and landing, the Director-General on application will waive the requirement of this Notice, where he is satisfied that compliance would not be justified in the circumstances of a particular case.

2.2 A clear and unmistakable visual warning shall be provided, within the pilot's normal scan of vision, to give indication of the reduction of the voltage at the aircraft bus-bar to a level where the battery commences to support all or part of the electrical load of the aircraft.

2.3 Guidance shall be given in the appropriate aircraft manual(s) on any actions to be taken by the pilot should the warning operate. (See also paragraph 3.2.)

3 Additional Information

3.1 For aircraft with a system warning of low voltage, the recommended voltage levels for operating the warning required under paragraph 2.2 of this Notice are 25 volts to 25.5 volts for a nominal 24 volt dc system and 12.5 volts to 13 volts for a nominal 12 volt dc system.

3.2 The battery duration should be sufficient to make a safe landing and should be not less than 30 minutes, subject to the prompt completion of any drills. This duration need only be a reasonable estimate and not necessarily calculated by a detailed electrical load analysis. However, when making this estimate, only 75% of the battery nameplate capacity should be considered as available because of loss of battery efficiency during service.

3.3 Owners and operators are recommended to contact the aircraft manufacturer or main agent for information regarding suitable means of compliance with this Notice.

3.4 Owners and operators may, on application, submit proposals for their own means of compliance and should refer to the guidelines laid down in UKCAA CAP 562, Civil Aircraft Airworthiness Information and Procedures (CAAIP) Leaflet 24-50.

4 Cancellation

This Notice cancels Airworthiness Notice No.88 Issue 4, dated 30 May 2006, which should be destroyed.

Simon LI
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 95
Issue 5
31 January 2002**

**USE OF HIGH INTENSITY ULTRA-VIOLET LAMPS IN
FLUORESCENT PENETRANT AND MAGNETIC PARTICLE INSPECTIONS**

1 Introduction

- 1.1 The Director-General has been advised that the condition of some high intensity 125 watt ultra-violet self filtered lamps used for fluorescent penetrant and magnetic particle inspections may be unreliable due to the emission of excessive amounts of white light which could compromise reliability of the process to find small defects.
- 1.2 As soon as practicable following the receipt of this Notice all high intensity 125 watt ultra-violet self filtered lamps are required to be tested for excessive white light emission before use and any lamp failing this test is to be rejected.
- 1.3 These ultra-violet lamps must also be periodically tested for excessive white light emission and any lamp failing this test shall be rejected.
- 1.4 A mercury vapour lamp incorporating a woods glass filter which will obviate this problem is available through normal suppliers of ultra-violet lamps.

2 A Suitable Test Method to Determine the Acceptability of High Intensity 125 watt Ultra-violet Lamps for Fluorescent Penetrant and Magnetic Particle Inspection with respect to White Light Emission

- 2.1 The test involves quantitative analysis using a white light meter calibrated to a National Standard.
- 2.2 It is mandatory to perform this test prior to using any such lamp for inspection purposes. This test must also be applied to lamps periodically throughout their service life.
- 2.3 Lamps which show evidence of having been painted shall not be used for inspection purposes.
- 2.4 The test must be performed in a darkened area with ambient background light levels not greater than 2 foot candles.

- 2.5 The test must be performed at a minimum ultra-violet intensity of $1200\mu\text{W}/\text{cm}^2$ ($1.2\text{mW}/\text{cm}^2$).

3 Equipment

- 3.1 One of the following white light meters calibrated to a National Standard.

- (a) Ardrex DLM 1000.
- (b) Minolta T1.
- (c) Spectronics DSE 100X. (Ely Chemical Co.)
- (d) Ardrex BC1955 – to BS667/4489
- (e) Levy Hill Mk. V – to BS667/4489
- (f) Levy Hill Mk. VI – to BS667/4489
- (g) Elyscan 2 (Ely Chemical Co.)

- 3.2 Ultra-violet Radiometer calibrated to a National Standard.

4 Test Procedure

NOTE: It is necessary that the reflector is new or highly polished to ensure that the maximum white light reading is obtained for each lamp.

- 4.1 Using the white light meter in the test position measure the ambient light level and record.
- 4.2 Switch on the lamp to be tested ensuring it is in a suitable reflector and allow a sufficient 'warm-up' period (minimum 20 minutes).
- 4.3 Set up the lamp housing in order that the meter head is perpendicular to the lamp, and adjust the distance away from the tip of the self filtered lamp to give an ultra-violet intensity of $1200\mu\text{W}/\text{cm}^2$ maximum using the ultra-violet Radiometer. If this is not practical (due to fixed lamps, etc) then position the ultra-violet Radiometer to obtain the most intense ultra-violet output at a convenient distance and record the value in $\mu\text{W}/\text{cm}^2$.
- 4.4 Position the white light meter to the most intense white light area as indicated, retaining the distance set in paragraph 4.3. Record the value.
- 4.5 Subtract the ambient white light measurement obtained in paragraph 4.1, from the white light measurement obtained from the lamp in paragraph 4.4. Record the value.

5 Acceptance Standard

5.1 At an ultra-violet intensity of $1200\mu\text{W}/\text{cm}^2$, the maximum acceptable white light intensity limit varies depending on the meter used. Values for approved meters are given below:-

(a)	Ardrox DLM 1000	8 foot candles
(b)	Minolta T1	0.3 foot candles
(c)	Spectronics DSE 100X (Ely Chemical Co.)	2 foot candles
(d)	Ardrox BC1955	0.9 foot candles
(e)	Levy Hill Mk. V	0.9 foot candles
(f)	Levy Hill Mk. VI	0.9 foot candles
(g)	Elyscan 2 (Ely Chemical Co.)	0.9 foot candles

5.2 At any other ultra-violet intensity then the maximum acceptable white light intensity limit must be calculated from the formula:-

$$\text{White light intensity shall be less than} = \frac{Y \times Z}{1200} \text{ foot candles}$$

Where Y = maximum ultra-violet light recorded in $\mu\text{W}/\text{cm}^2$.

Z = acceptance limit for white light at a measured ultra-violet intensity of $1200\mu\text{W}/\text{cm}^2$ for the specific meter used from reference table in paragraph 5.1.

5.3 Any lamp having a white light output greater than the limit shall not be used for inspection purposes.

6 Identification

6.1 All lamps tested and accepted shall be identified in accordance with a local procedure.

NOTES: (1) One foot candle = 10.76 lux.

(2) White light photometers are calibrated to a National Standard using Tungsten Filament lamps. The spectral output of an ultra-violet lamp is significantly different to that of a Tungsten Filament, and therefore the calibration is not valid. The major source of discrepancy in this case, will be due to emission of

shorter wavelength light.

7 **Cancellation**

This Notice cancels Airworthiness Notice No.95, Issue 4, dated 30 June 1999, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

Notice printed on pink paper

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 96
Issue 2
31 January 2002**

DISPOSITION OF SCRAP AIRCRAFT PARTS & MATERIALS

1 Purpose

The purpose of this Airworthiness Notice is to provide information and guidance to persons involved in the maintenance, sale, or disposal of aircraft parts. It provides information and guidance to prevent scrap aircraft parts and materials from being sold or acquired as serviceable parts and materials.

2 Introduction

It is common practice for owners of aircraft parts to dispose of scrap parts and materials by selling, discarding, or transferring such items. In some instances, these items have reappeared for sale in the active parts inventories of the aviation community. Misrepresentation of the status of parts and material and the practice of making such items appear serviceable could result in the use of non-conforming parts and materials.

3 Types of Parts and Materials that may be Misrepresented

Persons disposing of scrap aircraft parts and materials should consider the possibility of such parts and materials being misrepresented and sold as serviceable at a later date. Caution should be exercised to ensure that the following types of parts and materials are disposed of in a controlled manner that does not allow them to be returned to service:

- 3.1 Parts with non-repairable defects, whether visible or not to the naked eye.
- 3.2 Parts that are not within the specifications set forth by the approved design, and cannot be brought into conformance with applicable specifications.
- 3.3 Parts and materials for which further processing or rework cannot make them eligible for certification under a recognised released system.
- 3.4 Parts subjected to unacceptable modification or rework that is irreversible.
- 3.5 Life-limited parts that have reached or exceeded their life limits, or have missing or incomplete records.

- 3.6 Parts that cannot be returned to an airworthy condition due to exposure to extreme forces or heat. (See Airworthiness Notice No.97)
- 3.7 Principal Structural Elements (PSE) removed from a high-cycle aircraft for which conformity cannot be accomplished by complying with the mandatory requirements applicable to ageing aircraft.

4 **Methods to Prevent Misrepresentation of Scrap Parts and Materials**

- 4.1 Persons disposing of scrap aircraft parts and materials should, when appropriate, mutilate those parts and materials prior to release. Mutilation should be accomplished in such a manner that the parts become unusable for their original intended use, nor should they be able to be reworked or camouflaged to provide the appearance of being serviceable, such as by re-plating, shortening and re-threading long bolts, welding, straightening, machining, cleaning, polishing, or repainting.

- 4.1.1 Mutilation may be accomplished by one or a combination of the following procedures, but is not limited to:-

- (a) Grinding;
- (b) Burning;
- (c) Removal of a major lug or other integral feature;
- (d) Permanent distortion of parts;
- (e) Cutting a hole with cutting torch or saw;
- (f) Melting;
- (g) Sawing into many small pieces.

- 4.1.2 The following procedures are examples of mutilation that are often less successful because they may not be consistently effective:-

- (a) Stamping (such as a stamped 'R' on a part);
- (b) Spraying with paint;
- (c) Hammer marks;
- (d) Identification by tag or markings;
- (e) Drilling small holes;
- (f) Sawing in two pieces. Persons who rework scrap parts and materials may be skilled technicians and attempt to restore parts cut in two pieces in such a manner that the mutilation proves difficult to detect.

- 4.2 Persons disposing of scrap aircraft parts and materials for legitimate non-flight uses, such as training and education aids, research and development, or for non-aviation applications. In such instances, mutilation is not appropriate and the following methods should be used to prevent misrepresentation:-

- 4.2.1 *Permanently* marking or stamping the parts, subparts, and material as

'NOT SERVICEABLE'. (Ink stamping is not an acceptable method);

4.2.2 Removing original part number identification;

4.2.3 Removing data plate identification;

4.2.4 Maintaining a tracking or accountability system, by serial number or other individualised data, to record transferred scrap aircraft parts and materials; and

4.2.5 Including written instructions concerning disposition and disposal of such parts and materials in any agreement or contract transferring such parts and materials.

NOTE: Scrap or expired life-limited parts and materials should not be passed on to any person or organisation who may end up placing the parts and materials back in actual use, due to the criticality of parts and material failure and the potential safety threat.

4.3 Organisations handling scrap or expired life-limited aircraft parts and materials should establish a quarantine store area in which to segregate such items from active serviceable inventories and to prevent unauthorised access. Caution should be exercised to ensure that these parts and materials receive the disposition specified in this Notice.

4.4 Manufacturers producing approved aircraft parts should consider maintaining records of serial numbers for 'retired' life-limited or other critical parts. In such cases, the owner who mutilates applicable parts is encouraged to provide the original manufacturer with the data plate and/or serial number and final disposition of the part.

5 Method to Identify Misrepresented Parts

All purchasers of aircraft parts and materials should ensure that misrepresented scrap parts and materials are not received into active inventory. The following are examples of conditions to be alert for when receiving parts:-

5.1 Parts showing signs of rework which were purchased as 'new'.

5.2 Used parts showing signs of unapproved or inappropriate repair.

5.3 Parts with poor workmanship or signs of rework in the area of the part data plate, number or serial number inscription.

5.4 Used parts lacking verifiable documentation of history and approval.

5.5 Parts with prices 'too good to be true'.

- 5.6 Questionable part numbers, fraudulent or suspicious Technical Standard Order or FAA – Parts Manufacturer Approval markings and/or re-identification, stamp-overs or vibro-etching on the data plate.
- 5.7 Parts delivered with photocopied or missing CAD Form One or other acceptable maintenance release documentation.
- 5.8 Parts with a finish that is inconsistent with industry standards (e.g., discoloration, inconsistencies, resurfacing).
- 5.9 Parts purchased as new but with release documentation reflecting a status other than new.
- 5.10 Parts with poor documentation exhibiting incomplete or inconsistent part identity information.
- 5.11 Intact 'scrap' unsalvageable parts offered in bulk weight for prices higher than for mutilated parts with identical weight and content.

NOTE: Suspected Unapproved Parts Notification can be found on FAA Internet address: <http://www.faa.gov/avr/sups.htm> and Special Airworthiness Information Bulletins can be found on FAA Internet address: <http://av-info.faa.gov>.

An approved organisation or LAME who receives suspect parts should report to the Director-General as detailed in Airworthiness Notice No.19.

6 Cancellation

This Notice cancels Airworthiness Notice No.96 Issue 1, dated 1 November 1996, which should be destroyed.

Albert K. Y. LAM
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 97
Issue 6
7 February 2020**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
RETURN TO SERVICE OF AIRCRAFT ITEMS* RECOVERED FROM
AIRCRAFT INVOLVED IN ACCIDENTS/INCIDENTS
AND UNSERVICEABLE AIRCRAFT

1 Introduction

- 1.1 This Notice reviews the factors involved in establishing the acceptability of aircraft items recovered from aircraft involved in accidents/incidents and unserviceable aircraft. It states the conditions to be met before such items may be returned to service.
- 1.2 The Director-General has been alerted that some aircraft items (including highly stressed rotating parts) have been released to service after having been recovered from aircraft involved in accidents/incidents and unserviceable aircraft even though the accident circumstances may have caused damage or changed characteristics from those of the type design. Since such items may not manifest any visual evidence of damage, distortion or changed characteristics, a serious airworthiness hazard could result from their use without special precautions being taken as detailed in this Notice.

NOTE: The subject of this Notice was first promulgated to industry by a UKCAA Letter to Operators Number 461 (revised to LTO 461/A on 18 December 1981), following informal consultation with industry and with aviation insurers.

2 Establishing Origin of Recovered Items from Aircraft Involved in Accidents/Incidents

- 2.1 When an aircraft has been involved in an accident/incident, the title to the salvage may pass from the insured owner to other persons (e.g. aircraft insurers) and this salvage may be offered for sale either complete or as separate aircraft items in an "as is - where is" condition. While some items may be totally unaffected by the accident/incident which caused the aircraft to

* For the purpose of this Notice the term 'items' includes all components, parts, engines and accessories.

be declared as salvage, it is essential to obtain clear evidence that this is the case. If such evidence cannot be obtained, the item may not be returned to service.

- 2.2 All such items must therefore be subject to competent assessment and inspection in the light of adequate knowledge of the circumstances of the accident/incident, subsequent storage and transport conditions, and with evidence of previous operational history obtained from valid airworthiness records, before overhaul and re-installation can be considered.
- 2.3 In particular, if a crash load is sufficient to take any part above its proof strength, residual strains may remain which could reduce the effective strength of the item or otherwise impair its functioning. Loads higher than this may of course crack the item, with an even more dangerous potential. Further, a reduction in strength may be caused by virtue of the change of a material's characteristics following overheat from a fire. It is therefore of the utmost importance to establish that the item is neither cracked, distorted or overheated. The degree of distortion may be difficult to assess if the precise original dimensions are not known, in which case there is no option but to reject the item. Any suggestion of overheating would be cause for a laboratory investigation into significant change of material properties.
- 2.4 The standard procedures appropriate to items removed for overhaul following normal service life may not therefore be sufficient for items from salvaged aircraft. If the information in the Manufacturer's Manual, or other technical publications, is insufficient to deal with the considerations detailed above then the manufacturer must be consulted for guidance. If the manufacturer provides the additional information, and the item can be shown to meet this, then it may be returned to service.
- 2.5 Where a difficulty exists in classifying the airworthiness significance of an aircraft item recovered after an accident/incident, the question should be referred to the CAD Airworthiness Office for advice. The Director-General will require full details of the circumstances of the accident/incident before a response is made to the enquiry.

3 Information Obtained from Aviation Insurers

Aviation insurers and other persons who obtain title to salvage parts may supply to salvage purchasers the details of the accident/incident leading to the aircraft, or aircraft item, being declared as salvage. It is also common practice for aviation insurers to pass over the airworthiness records to the salvage purchaser. Whilst such information and records are an essential part of the assessment, where return to service is being considered, they are not a guarantee that the item is acceptable for re-installation.

4 **Parts Removed from Unserviceable Aircraft**

- 4.1 Aircraft withdrawn from services are often used as a source of spare parts, a process sometimes described as “parting out”. These parts, although serviceable at the time the aircraft was placed in storage, may have been affected adversely by storage conditions, including especially environmental factors, or by the length of storage.
- 4.2 It is important that the part removal process be planned and controlled in a manner as close as possible to that adopted for routine maintenance tasks on in-service aircraft. The following points in particular should be considered:
 - 4.2.1 the means by which the part is removed should be in accordance with the normal maintenance data (e.g. maintenance manual), using the tools specified;
 - 4.2.2 adequate access equipment should be provided;
 - 4.2.3 if conducted in the open, disassembly should cease during inclement weather;
 - 4.2.4 all work should be carried out by appropriately qualified maintenance personnel;
 - 4.2.5 all open connections should be blanked; and
 - 4.2.6 a protected and enclosed quarantine storage area for the parts being removed should be provided in the immediate vicinity of the work area.
- 4.3 The eventual return to service of each removed part shall be performed by the Air Operator’s Certificate (AOC) holder in accordance with a procedure approved by the Director-General. The AOC holder shall identify the circumstances which would warrant the use of this procedure and notify CAD within 10 days of the use of it. An assessment on the removed part shall be conducted by the AOC in conjunction with a suitably approved HKAR-145 organisation. Subject to the results of assessment, the extent of the necessary work may be ranged from a simple visual inspection to a complete overhaul before the part is returned to service. Generally, the assessment on the removed parts shall include:
 - 4.3.1 the Aircraft Maintenance Schedule (AMS) tasks with Failure Effect Categories (FEC) 5 or 8, mandatory requirements such as Airworthiness Directive (AD), Airworthiness Limitations Section (ALS) Parts 1 to 6;

4.3.2 the procedures of Aircraft Maintenance Manual (AMM) Chapter 10;
and

4.3.3 the relevant maintenance and periodic checks, if applicable.

5 **Supplementary Information**

Attention is drawn to Airworthiness Notice No. 19 which also deals with the safeguards necessary for users obtaining aircraft parts in the open market, particularly in relation to the release documentation and evidence of previous history.

6 **Cancellation**

This Notice cancels Airworthiness Notice No.97 Issue 5, dated 15 February 2009, which should be destroyed.

Simon LI
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101
Issue 1
30 September 2008**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
EQUIPMENT APPROVAL**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft to be equipped with aircraft equipment and aircraft radio equipment.

2 Introduction

- 2.1 For the purpose of this Notice, equipment means aircraft equipment and aircraft radio equipment as specified in articles 13 and 14 of the Air Navigation (Hong Kong) Order 1995 (AN(HK)O 1995) as amended.
- 2.2 Articles 13 and 14 of AN(HK)O 1995 as amended require that certain equipment shall be of a type approved by the Chief Executive.
- 2.3 Paragraphs 3 and 4 of Appendix No. 1 to Sub-section 1.2-2 of HKAR-1 specify the airworthiness specifications such as ETSO, TSO, JTSO and UKCAA Specifications that are adopted by the Director-General.
- 2.4 This Airworthiness Notice is intended to supplement the above requirements and provide acceptable means of compliance.

3 Compliance

3.1 Aircraft Type Certificated in Hong Kong before 30 September 2008

With effect from 1 January 2009, all applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in sub-paragraphs 4.1, 4.3 and 4.4 of this Notice.

3.2 Aircraft Type Certificated in Hong Kong on or after 30 September 2008

With effect from 1 January 2009, all applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in sub-paragraphs 4.2, 4.3 and 4.4 of this Notice.

4 Requirement

4.1 Airworthiness Specification Set I

Equipment shall meet one of the following airworthiness specifications:

- 4.1.1 CAD HTSO
- 4.1.2 EASA ETSO
- 4.1.3 JAA JTSO
- 4.1.4 FAA TSO
- 4.1.5 UK CAA Specifications
- 4.1.6 Other means approved by the Director-General

4.2 Airworthiness Specification Set II

Equipment shall meet one of the following airworthiness specifications:

- 4.2.1 CAD HTSO
- 4.2.2 EASA ETSO
- 4.2.3 JAA JTSO
- 4.2.4 FAA TSO
- 4.2.5 Other means approved by the Director-General

4.3 Associated Airworthiness Notices

In addition to this Notice, equipment shall comply with the applicable associated Airworthiness Notices 101 Series such as AN 101A, 101B, 101C, and etc.

4.4 Installation Requirements

Installation of equipment is not covered under the airworthiness specifications. Installation of equipment shall be approved in accordance with the requirements of HKAR-1 or HKAR-21.

5 Additional Information

5.1 EASA Certification Standards ETSO

EASA CS-ETSO is available at:

http://easa.europa.eu/home/rg_certspecs.html

5.2 FAA TSO

FAA TSO is available at:

<http://www.faa.gov/aircraft/air%5Fcert/design%5Fapprovals/tso/>

5.3 JAR-TSO

JAR-TSO is available at:

<http://www.jaat.eu/publications/publications.html>

5.4 UKCAA Specifications

UKCAA Specifications are available at:

<http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=list&type=sercat&id=23>

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101A
Issue 7
7 February 2020**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
PERSONNEL RESTRAINT SYSTEM**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft required to be equipped with safety belts under Article 13, Schedule 5, Scale B of the Air Navigation (Hong Kong) Order 1995.

2 Introduction

- 2.1 This Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 which requires a safety belt, a safety belt with one diagonal shoulder strap or a safety harness to be equipped for every seat; and a child restraint device for every child under the age of 2 years on board.
- 2.2 For the purpose of this Notice, following definitions apply:
 - 2.2.1 “Approved by the Director-General” means a design approval issued/validated/accepted under HKAR-21 or accepted in accordance with technical arrangements with other civil aviation authorities.
 - 2.2.2 “Child Restraint Device (CRD)” means a device which interfaces with the aircraft seat and is designed to accommodate and restrain, or to enhance the restraint of, an infant or small child. Supplementary Loop Belt (SLB) and Child Restraint Seat (CRS) are examples of CRD.
 - 2.2.3 “Child Restraint Seat (CRS)” means a car type seat which is fastened to a passenger seat.
 - 2.2.4 “Forward Facing Seat (FFS)” means a seat which makes no more than an 18-degree angle with the vertical plane containing the aircraft centreline.
 - 2.2.5 “Inflatable Restraint Seat (IRS)” means a seat which is equipped with an inflatable airbag system which may be mounted in safety belt, bulkhead or monument.
 - 2.2.6 “Side Facing Seat (SFS)” means a seat which makes more than an 18-degree angle with the vertical plane containing the aircraft centreline.

2.2.7 “Supplementary Loop Belt (SLB)” means a webbing based infant restraint device consisting of two loops of webbing designed to interface with an aircraft seat. SLB is also commonly known as an ‘infant loop belt’ or ‘belly belt’.

3 Compliance

- 3.1 All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in sub-paragraphs 4.1 to 4.6 of this Notice.
- 3.2 All applicable aircraft identified in paragraph 1 of this Notice and equipped with IRS, shall comply with the requirements in sub-paragraph 4.7 of this Notice.
- 3.3 All applicable aircraft identified in paragraph 1 of this Notice and equipped with SFS, shall comply with the requirements in sub-paragraph 4.8 of this Notice.
- 3.4 With effect from 1 May 2020, all applicable aircraft identified in paragraph 1 of this Notice, equipped with passenger seat with one diagonal shoulder strap, and for which the first Certificate of Airworthiness is issued in Hong Kong after 1 May 2020, shall comply with the requirements in sub-paragraph 4.9 of this Notice.
- 3.5 With effect from 1 February 2021, all applicable aircraft identified in paragraph 1 of this Notice and equipped with passenger seat with one diagonal shoulder strap, shall comply with the requirements in sub-paragraph 4.9 of this Notice.

4 Requirement

4.1 Safety Belt, One Diagonal Shoulder Strap and Safety Harness

Safety belt, one diagonal shoulder strap and safety harness shall meet the standard of EASA ETSO, FAA TSO or JAA JTSO as specified in the associated seat approval, or be approved for installation in an aircraft.

4.2 Extension Belt and Supplementary Loop Belt

Extension belt and supplementary loop belt shall be in the same or equivalent standard as the seat safety belt in sub-paragraph 4.1.

4.3 Reserved

4.4 Angles of Release for Conventional Lever Operated Release Mechanism

For aircraft fitted with safety belts where a conventional lever operated release mechanism is used, there shall be a free movement of the lever and the belt shall remain fastened until the lever attains an angle between 80 degrees and 95 degrees to its position at rest. The lever shall be spring loaded to the position it normally assumes when the belt is fastened.

4.5 Position of Buckle

The position of safety belt buckle shall be located as follows:

- 4.5.1 For passenger aisle seat, the buckle shall be installed away from the aisle.
- 4.5.2 For passenger window seat, the buckle shall be installed away from the window.
- 4.5.3 For passenger middle seat, the buckle shall be installed on the left hand side of the passenger.
- 4.5.4 Notwithstanding paragraphs 4.5.1 to 4.5.3, for single passenger seat, the buckle shall be installed on the left hand side of the passenger.

Note: Paragraph 4.5 does not apply to:

- (i) aircraft with Maximum Approved Passenger Seating Configuration (MAPSC) less than 20;*
- (ii) safety belts equipped with inflatable restraints;*
- (iii) seats that make more than an 18-degree angle with the vertical plane containing the aircraft centreline; or*
- (iv) seats with design features that would prevent the buckle to reach beyond and outside the armrest of the seat.*

4.6 CRD Standards

Use of acceptable CRD in passenger seat that is a FFS and not a IRS does not require approval of the Director-General. The CRD may be supplied by the operator or passenger. CRD meeting any one of the following standards is acceptable to the Director-General:

- a) European Union Aviation Safety Agency (EASA) ETSO-C100b
- b) Federal Aviation Administration (FAA) TSO-C100, TSO-C100a, TSO-C100b, or TSO-C100c
- c) European Safety Standard requirements of ECE Regulation 44
- d) United States Federal Motor Vehicle Safety Standard FMVSS 213
- e) Australia / New Zealand Standard (AS/NZS) 1754
- f) Kidsflysafe Inc. CARE™ harness, manufactured by Amsafe, certificated by the FAA to Federal Aviation Regulations (FAR) 21.305(d)

- g) SLB certificated to requirements in sub-paragraph 4.2 of this Notice
- h) CRD accepted or approved by the Director-General

4.7 Inflatable Restraint Seat (IRS)

The following requirements are applicable to a passenger seat equipped with an inflatable airbag system which may be mounted in safety belt, bulkhead or monument:

- 4.7.1 IRS shall not be occupied by a child under the age of 12 years unless the occupancy is approved by the Director-General.
- 4.7.2 The use of CRD in IRS shall be approved by the Director-General.
- 4.7.3 The use of an extension belt in IRS shall be approved by the Director-General.
- 4.7.4 Limitations and usage shall be specified in the aircraft flight manual or operator's operational procedures and made known to the cabin crew and passengers.

4.8 Side Facing Seat (SFS)

The following requirements are applicable to a passenger seat which makes more than an 18-degree angle with the vertical plane containing the aircraft centreline:

- 4.8.1 SFS shall not be occupied by a child under the age of 12 years unless the occupancy is approved by the Director-General.
- 4.8.2 The use of CRD in SFS shall be approved by the Director-General.
- 4.8.3 Limitations and usage shall be specified in the aircraft flight manual or operator's operational procedures and made known to the cabin crew and passengers.

4.9 Seat with One Diagonal Shoulder Strap

The following requirements are applicable to a passenger seat equipped with one diagonal shoulder strap:

- 4.9.1 The seat shall not be occupied by a child under the age of 12 years unless the occupancy is approved by the Director-General.

- 4.9.2 The use of CRD on the seat shall be approved by the Director-General.
- 4.9.3 The use of an extension belt on the seat shall be approved by the Director-General.
- 4.9.4 Limitations and usage shall be specified in the aircraft flight manual or operator's operational procedures and made known to the cabin crew and passengers.

5 Additional Information

Nil.

6 Cancellation

This Notice cancels Airworthiness Notice No. 101A Issue 6, dated 28 June 2019, which should be destroyed.

Simon LI
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101B
Issue 1
30 September 2008**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

LIFE JACKET

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft required to be equipped with lifejackets under Article 13, Schedule 5, Scale H of the Air Navigation (Hong Kong) Order 1995 as amended.

2 Introduction

This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 as amended which requires a lifejacket be equipped with a whistle and waterproof torch.

3 Compliance

With effect from 1 January 2009, all applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirement

4.1 Whistle

In addition to requirements specified in AN 101, life jackets other than constructed and carried solely for use by children less than three years of age must be equipped with a whistle.

4.2 Whistle Specifications

The whistle shall be one-piece type and attached to the lifejacket by a cord of sufficient length of facilitate to use. In the event of the whistle being immersed, it shall be capable of being effectively operated within 5 seconds of

its removal from the water.

5 Additional Information

Nil.

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Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101C
Issue 4
1 February 2023**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
PUBLIC ADDRESS SYSTEMS**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft required to be equipped with public address systems under Article 13, Schedule 5, Scale Y(iv)(a) of the Air Navigation (Hong Kong) Order 1995.

2 Introduction

- 2.1** This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 which requires a public address system.
- 2.2** During the Type Certification Validation, the Director-General accepts EASA / FAA certification basis plus additional technical conditions imposed by the Director-General to comply with the relevant Hong Kong aviation requirements.
- 2.3** The means of compliance accepted by EASA and FAA on the regulation JAR / CS / 14 CFR 25.1423(c) under the type certification basis are accepted by the Director-General in principle.
- 2.4** Should an aircraft undergoes major modification to the cabin furnishings or layout resulting in acoustical changes, the Director-General will determine the acceptance of the proposed means of compliance on a case-by-case basis.

3 Compliance

All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirement

- 4.1** Compliance with JAR / CS / 14 CFR 25.1423(c) is required to demonstrate that the public address system is intelligible in all passenger seats, lavatories, flight attendant seats and workstations.
- 4.2** For aircraft configuration already certified by the Type Certificate Holder, the means of compliance are accepted by the Director-General in principle.
- 4.3** For aircraft that undergo major modification to the cabin furnishings or layout resulting in acoustical changes,
 - 4.3.1** Rapid Speech Transmission Index (RASTI) is one of the methods for speech intelligibility analysis. For the required performance levels, refer to UK CAA Specification No. 15, which specifies the RASTI values should be achieved under various flight conditions. Details of the test equipment and procedures which shall be used to derive RASTI values are also given in the Reference Documents of the specification.
 - 4.3.2** The Director-General will determine the acceptable means of compliance on a case-by-case basis.

5 Additional Information

Nil.

6 Cancellation

This Notice cancels Airworthiness Notice No. 101C Issue 3, dated 31 July 2015, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101D
Issue 12
30 July 2021**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
FLIGHT RECORDERS**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft required to be equipped with flight recorders.

2 Introduction

This Airworthiness Notice is intended to specify requirements and supplement the Air Navigation (Hong Kong) Order 1995 ('the Order') which requires Flight Recorders to be equipped for operation.

3 Compliance

All aircraft identified in paragraph 1 of this Notice shall comply with the requirements specified in the following paragraphs as applicable:

- 3.1 Where Scale S(i), S(ii) or S(iii) of Schedule 5 of the Order is required, the aeroplane shall comply with the requirements in paragraph 4.6 of this Notice.
- 3.2 Where Scale S(iv), S(v) or S(vi) of Schedule 5 of the Order is required, the aeroplane shall comply with the requirements in paragraph 4.7 or 4.8 of this Notice.
- 3.3 All aeroplanes for which the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) after 1 January 2005, of a maximum total weight authorised (MTWA) of over 5700 kg shall comply with the requirements in paragraph 4.8 of this Notice.
- 3.4 Where Scale SS(i), SS(ii) or SS(iii) of Schedule 5 of the Order is required, the helicopter shall comply with the requirements in paragraph 4.9 of this Notice.
- 3.5 All aircraft identified in paragraph 1 and installed with Flight Recorders shall comply with the requirements in paragraphs 4.1, 4.5 and 4.13 of this Notice.
- 3.6 All aeroplanes certificated in Transport Category (Passenger) or Transport Category (Cargo) shall comply with the requirements in paragraph 4.2 of this Notice.

- 3.7 All aeroplanes certificated in Aerial Work, Private or Special Categories shall comply with the requirements in paragraph 4.3 of this Notice.
- 3.8 All helicopters certificated in Transport Category or Private Category shall comply with the requirements in paragraph 4.4 of this Notice.
- 3.9 Additional Cockpit Voice Recorder (CVR) and Cockpit Audio Recording Systems (CARS) Compliance
- 3.9.1 A CVR, installed in aeroplanes of a MTWA of over 5700 kg for which the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 January 2014, shall comply with the requirements in paragraphs 4.11.2 and 4.11.4 of this Notice.
- 3.9.2 A CVR, installed in helicopters for which the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 January 2014, shall comply with the requirements in paragraphs 4.11.2 and 4.11.4 of this Notice.
- 3.9.3 All aeroplanes and helicopters required to be equipped with a CVR shall comply with the requirement in paragraph 4.11.1 of this Notice.
- 3.9.4 All aeroplanes certificated in Transport Category of a MTWA of over 27000 kg for which the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 January 2018 shall comply with the requirement in paragraph 4.11.3 of this Notice.
- 3.9.5 All aeroplanes of a MTWA of over 5700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1987 shall be equipped with a CVR.
- 3.9.6 All aeroplanes of a MTWA of over 27000 kg for which the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 January 2022 shall comply with the requirement in paragraph 4.11.5 of this Notice.

4 Requirements

- 4.1 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. For non-deployable flight recorder containers, they shall be painted in distinctive orange and carry reflective material to facilitate their location.

4.2 Requirements for aeroplanes certificated in Transport Category

4.2.1 All turbine-engined aeroplanes of a MTWA of 5700 kg or less for which the application for type certification is submitted to a Contracting State or the individual certificate of airworthiness is first issued on or after 1 January 2016 shall be equipped with:

- (a) an Flight Data Recorder (FDR) which shall record at least the first 16 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I; or
- (b) a Class C Airborne Image Recorder (AIR) or Airborne Image Recording System (AIRS) which shall record at least the flight path and speed parameters displayed to the pilot(s) as defined in 2.2.3 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I; or
- (c) an Aircraft Data Recording System (ADRS) which shall record at least the first 7 parameters listed in Table A8-3 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.

Note 1: “Contracting State” is defined as any State (including the People's Republic of China and Hong Kong, being a part thereof) which is a party to the Convention on International Civil Aviation which, on 7 December 1944, was opened for signature at the International Civil Aviation Conference held at Chicago. This definition applies to the whole of this Airworthiness Notice.

Note 2: “The date of application for type certification submitted to a Contracting State” refers to the date of application of the original “Type Certificate” for the aircraft type, not the date of certification of particular aircraft variants or derivative models. This definition applies to the whole of this Airworthiness Notice.

Note 3: For aeroplanes for which the application for type certification is submitted to a Contracting State before 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112, ED-56A, ED-55 Minimum Operational Performance Specifications (MOPS).

Note 4: For aeroplanes for which the application for type certification is submitted to a Contracting State on or after 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112A Minimum Operational Performance Specification (MOPS).

Note 5: Specifications applicable to lightweight flight recorders may be found in EUROCAE ED-155 Minimum Operational Performance Specification (MOPS).

Note 6: AIR or AIRS classification is defined in paragraph 6.2 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I. A Class B AIR could be a means for recording data link communications applications messages to and from the aeroplanes where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR.

Note 7: An FDR shall be capable of recording, as appropriate to the aeroplane, at least the first 16 parameters in Table A8-1 – Flight Recorders of ICAO Annex 6 Part I.

Note 8: Refer to Table L-5 in Attachment L in Appendix 8 of ICAO Annex 6 Part I for examples of data link communication recording requirements.

Note 9: The “aircraft modifications” refer to modifications to install the data link communications equipment on the aircraft (e.g. structural, wiring).

- 4.2.2 All aeroplanes of a MTWA of over 27000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with an FDR which shall record at least the first 32 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 4.2.3 All aeroplanes of a MTWA of over 5700 kg, up to and including 27000 kg, for which the individual certificate of airworthiness is first issued on or after 1 January 1989, shall be equipped with an FDR which shall record at least the first 16 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 4.2.4 All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued before 1 January 1989, with a MTWA of over 5700 kg, except those in paragraph 4.2.5, shall be equipped with an FDR which shall record at least the first 5 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 4.2.5 All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued on or after 1 January 1987 but before 1 January 1989, with a MTWA of over 27000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 shall be equipped with an FDR which shall record at least the first 16 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 4.2.6 All aeroplanes of a MTWA of over 5700 kg for which the individual certificate of airworthiness is first issued after 1 January 2005 shall be equipped with an FDR which shall record at least the first 78 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 4.2.7 All aeroplanes of a MTWA of over 5700 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2023 shall be equipped with an FDR capable of recording at least the 82 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 4.2.8 All turbine-engined aeroplanes of a MTWA of over 2250 kg, up to and including 5700 kg, for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and required to be operated by more than one pilot shall be equipped with either a CVR or a CARS.
- 4.2.9 All aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which use any of the data link communications applications referred to in paragraph 5.1.2 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I and are required to carry a CVR, shall record the data link communications messages on a crash-protected flight recorder.
- 4.2.10 All aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to use any of the data link communications

applications referred to in paragraph 5.1.2 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I, shall record the data link communications messages on a crash-protected flight recorder unless the installed data link communications equipment is compliant with a type certificate issued or aircraft modification first approved prior to 1 January 2016.

- 4.2.11 With regard to flight crew-machine interface recordings, all aeroplanes of a maximum take-off mass of over 27000 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2023 shall be equipped with a crash-protected flight recorder which shall record the information displayed to the flight crew from electronic displays, as well as the operation of switches and selectors by the flight crew as defined in Appendix 8 – Flight Recorders of ICAO Annex 6 Part I, shall meet the requirements in paragraph 4.10 of this Notice.
- 4.2.12 All aeroplanes of a MTWA of over 5700 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and which are required to be equipped with both CVR and FDR, shall be equipped with two combination recorders (FDR/CVR).
- 4.2.13 All aeroplanes of a MTWA of over 15000 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2016, and which are required to be equipped with both CVR and FDR, shall be equipped with two combination recorders (FDR/CVR). One recorder shall be located as close to the cockpit as practicable and the other recorder located as far aft as practicable.
- 4.2.14 Non-deployable crash-protected flight recorder containers shall be securely attached with an automatically activated underwater locating device operating at a frequency of 37.5 kHz. This device shall operate for a minimum of 90 days.
- 4.2.15 All FDRs shall retain the information recorded during at least the last 25 hours of their operation with the exception of those installed on aeroplanes referenced in paragraph 6.1.4 for which the FDR shall retain the information recorded during at least the last 30 minutes of its operation, and in addition sufficient information from the preceding take-off for calibration purposes.
- 4.2.16 All aeroplanes that are required to be equipped with CARS, and for which the individual certificate of airworthiness is first issued on or after 1 January 2025, shall be equipped with a CARS which shall retain the information recorded during at least the last two hours of their operation.
- 4.3 Requirements for aeroplanes certificated in Aerial Work, Private or Special Categories
 - 4.3.1 All turbine-engined aeroplanes of a MWTWA of over 5700 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and required to be operated by more than one pilot shall be equipped with a CVR.

4.3.2 All aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which use any of the data link communications applications referred to in paragraph 5.1.2 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II and are required to carry a CVR, shall record the data link communications messages on a crash-protected flight recorder.

4.3.3 All aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to install and use any of the data link communications applications referred to in paragraph 5.1.2 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II, shall record the data link communications messages on a crash-protected flight recorder unless the installed data link communications equipment is compliant with a type certificate issued or aircraft modification first approved prior to 1 January 2016.

Note 1: Refer to Table 3.C-4 in Attachment 3.D of ICAO Annex 6 Part II for examples of data link communication recording requirements.

Note 2: A Class B AIR could be a means for recording data link communications applications messages to and from the aeroplanes where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR

Note 3: The “aircraft modifications” refer to modifications to install the data link communications equipment on the aircraft (e.g. structural, wiring).

4.3.4 Non-deployable crash-protected flight recorder containers shall be securely attached with an automatically activated underwater locating device operating at a frequency of 37.5 kHz. This device shall operate for a minimum of 90 days.

4.3.5 All aeroplanes of a MTWA of over 5700 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2023 shall be equipped with an FDR capable of recording at least the 82 parameters listed in Table A2.3-1 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II.

4.3.6 All aeroplanes of a MTWA of over 5700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2005 shall be equipped with an FDR which shall record at least 78 parameters listed in Table A2.3-1 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II.

4.3.7 All aeroplanes of a MTWA of over 27000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with an FDR which shall record at least the first 32 parameters listed in Table A2.3-1 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II.

4.3.8 All aeroplanes of a MTWA of over 27000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2022 shall be equipped with a CVR capable of retaining the information recorded during at least the last 25 hours of its operation.

- 4.3.9 All aeroplanes that are required to be equipped with CARS, and for which the individual certificate of airworthiness is first issued on or after 1 January 2025, shall be equipped with a CARS which shall retain the information recorded during at least the last two hours of their operation.

4.4 Requirements for helicopters certificated in Transport or Private Category

- 4.4.1 All turbine-engined helicopters of a MTWA of over 2250 kg, up to and including 3175 kg for which the application for type certification was submitted to a Contracting State on or after 1 January 2018 shall be equipped with:
- (a) an FDR which shall record at least the first 48 parameters listed in Table A4-1 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III; or
 - (b) a Class C AIR or AIRS which shall record at least the flight path and speed parameters displayed to the pilot(s) as defined in Table A4-3 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III; or
 - (c) an ADRS which shall record the first 7 parameters listed in Table A4-3 of Appendix 4 - Flight Recorders of ICAO Annex 6 Part III.
- 4.4.2 All helicopters of a MTWA of over 3175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2016 shall be equipped with an FDR which shall record at least the first 48 parameters listed in Table A4-1 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III.
- 4.4.3 All helicopters of a MTWA of over 7000 kg, or having a passenger seating configuration of more than nineteen, for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with an FDR which shall record at least the first 30 parameters listed in Table A4-1 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III.
- 4.4.4 All helicopters of a MTWA of over 7000 kg shall be equipped with a CVR. For helicopters not equipped with an FDR, at least main rotor speed shall be recorded on the CVR.
- 4.4.5 All helicopters for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which use any of the data link communications applications referred to in paragraph 5.1.2 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III and are required to carry a CVR, shall record the data link communications messages on a crash-protected flight recorder.
- 4.4.6 All helicopters for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in paragraph 5.1.2 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III, shall record the data link communications messages on a crash-protected flight recorder unless the installed data link communications equipment is compliant with a type design or aircraft modification first approved prior to 1 January 2016.

Note 1: Refer to Table H-4 in Attachment H of ICAO Annex 6 Part III for examples of data link communication recording requirements.

Note 2: A Class B AIR could be a means for recording data link communications applications messages to and from the helicopters where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR.

Note 3: The “aircraft modifications” refer to modifications to install the data link communications equipment on the aircraft (e.g. structural, wiring).

4.4.7 All helicopters of a MTWA of over 3175 kg for which the application for type certificate is submitted to a Contracting State on or after 1 January 2023 shall be equipped with an FDR capable of recording at least the first 53 parameters listed in Table A4-1 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III.

4.4.8 Non-deployable flight recorder containers shall be securely attached with an automatically activated underwater locating device operating at a frequency of 37.5 kHz. This device shall operate for a minimum of 90 days.

4.4.9 All applicable helicopters with FDRs shall retain the information recorded during at least the last ten 10 hours of their operation.

Note 1: For helicopters for which the application for type certification is submitted to a Contracting State before 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112, ED-56A, ED-55 Minimum Operational Performance Specifications (MOPS).

Note 2: For helicopters for which the application for type certification is submitted to a Contracting State on or after 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112A Minimum Operational Performance Specification (MOPS).

Note 3: The classes and operations of Airborne Image Recorder (AIR) and Airborne Image Recording System (AIRS) are defined in ICAO Annex 6 Part III Appendix 4-Flight Recorders paragraph 4.

Note 4: Specifications applicable to lightweight flight recorders may be found in EUROCAE ED-155, Minimum Operational Performance Specification (MOPS), or equivalent documents.

Note 5: AIR or AIRS classification is defined in paragraph 4.1 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III.

4.5 Recording Technology

4.5.1 FDRs or ADRS shall not use engraving metal foil, frequency modulation (FM), photographic film or magnetic tape.

4.5.2 CVRs and CARS shall not use magnetic tape or wire.

4.5.3 The documentation requirement concerning FDR and ADRS parameters provided by operators to accident investigation authorities shall be in electronic format and take account of industry specifications such as ARINC 647A.

4.5.4 Documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator. The documentation needs to be sufficient to ensure that accident investigation authorities have the necessary information to read out the data in engineering units.

4.6 UKCAA Specification 10

Applicable aeroplane shall be equipped with FDR meeting the requirements of “Flight Data Recorder Systems”, UKCAA Specification 10, Issue 1, dated 1 May 1974. Additional compliance with TSO is optional.

4.7 UKCAA Specification 10A

Applicable aeroplane shall be equipped with FDR meeting the requirements of “Flight Data Recorder for Aeroplane Accidents Investigation”, UKCAA Specification 10A, Issue 1, dated 1 June 1990. This Specification shall be used in conjunction with, EUROCAE Minimum Operational Performance Specification (MOPS), ED-55. Additional compliance with TSO is optional.

4.8 Type IA FDR Requirements

4.8.1 Applicable aeroplane shall be equipped with a Type IA FDR with a recording duration of at least 25 hours.

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

4.8.3 The parameters that satisfy the requirements for a Type IA FDR are listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I. The number of parameters to be recorded shall depend on aeroplane complexity. The parameters without an asterisk (*) are mandatory parameters which shall be recorded regardless of aeroplane complexity. 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. However, other parameters may be substituted with due regard to the aeroplane type and the characteristics of the recording equipment.

4.9 UKCAA Specification 18

Applicable helicopter shall be equipped with FDR meeting the requirements of “Flight Data Recorder for Helicopter Accidents Investigation”, UKCAA Specification 18, Issue 1, dated 1 June 1990. This Specification shall be used in conjunction with, EUROCAE Minimum Operational Performance Specification (MOPS), ED-55. Additional compliance with TSO is optional.

4.10 Duration and Correlation

4.10.1 The minimum flight crew-machine interface recording duration shall be at least for the last 2 hours.

4.10.2 Flight crew-machine interface recordings shall be able to be correlated to the recorded cockpit audio.

4.11 CVR and CARS Requirements

4.11.1 All CVRs shall retain the information recorded during at least the last 2 hours of its operation. Paragraph 3.9.3 of this Notice refers.

4.11.2 The CVR shall start to record prior to the aircraft moving under its own power and record continuously until the termination of the flight when the aircraft is no longer capable of moving under its own power. A means shall be provided to stop the recorder automatically as soon as possible at the completion of the flight but no later than 10 minutes after all the engines have stopped operating when the aircraft is on the ground. Paragraphs 3.9.1 and 3.9.2 of this Notice refer.

4.11.3 An alternate power source which shall automatically engage and provide 10 minutes, plus or minus one minute, of operation whenever aeroplane power to the recorder ceases, either by normal shutdown or by any other loss of power. The alternate power source shall power the CVR and its associated cockpit area microphone components. The CVR shall be located as close as practicable to the alternate power source. Paragraph 3.9.4 of this Notice refers.

Note 1: "Alternate" means separate from the power source that normally provides power to the CVR. The use of aeroplane batteries or other power sources is acceptable provided that the requirements above are met and electrical power to essential and critical loads is not compromised.

Note 2: When the CVR function is combined with other recording functions within the same unit, powering the other functions is allowed.

4.11.4 All four channels of the CVR input audio are separately recorded for the whole recording duration. Paragraphs 3.9.1 and 3.9.2 of this Notice refer.

4.11.5 CVR shall retain the information recorded during at least the last 25 hours of its operation. Paragraph 3.9.6 of this Notice refers.

4.12 Data Link Communications Requirements

If data link communications applications are equipped, then

4.12.1 The minimum recording duration shall be equal to the duration of the CVR; and

4.12.2 Data link recording shall be able to be correlated to the recorded cockpit audio.

4.13 Automatic Deployable Flight Recorder (ADFR) Requirements

4.13.1 If automatic deployable flight recorder is installed, then its container shall be painted with distinctive orange colour. Its surface visible from outside the aircraft may be of another colour. However, once the automatic deployable flight recorder is deployed, it shall be seen as orange colour. It shall carry reflective material to facilitate their location and has an integrated automatically activated Emergency Locator Transmitter.

4.13.2 The following requirements shall apply to an ADFR:

- (a) deployment shall take place when the aeroplane structure has been significantly deformed;
- (b) deployment shall take place when an aeroplane sinks in water;
- (c) ADFR shall not be capable of manual deployment;
- (d) the ADFR shall be able to float on water;
- (e) the ADFR deployment shall not compromise the safe continuation of the flight;
- (f) the ADFR deployment shall not significantly reduce the chance of survival of the recorder and of successful transmission by its ELT;
- (g) the ADFR deployment shall not release more than one piece;
- (h) an alert shall be made to the flight crew when the ADFR is no longer captive to the aircraft;
- (i) the flight crew shall have no means to disable ADFR deployment when the aircraft is airborne;
- (j) the ADFR shall contain an integrated ELT, which shall activate automatically during the deployment sequence. Such ELT may be of a type that is activated in-flight and provides information from which a position can be determined; and
- (k) the integrated ELT of an ADFR shall satisfy the same requirements as an ELT required to be installed on an aeroplane. The integrated ELT shall at least have the same performance as the fixed ELT to maximise detection of the transmitted signal.

Note: If an integrated ELT of a type that is activated in flight is used within an ADFR it could be a means to comply with requirements in ICAO Annex 6 Part I paragraph 6.18 (Location of an aeroplane in distress).

4.14 Detailed Requirements of Flight Recorders

4.14.1 ICAO Annex 6 Part I Appendix 8 (Sections 1 to 6) shall be complied with.

4.14.2 ICAO Annex 6 Part II Appendix 2.3 (Sections 1 to 5) shall be complied with.

4.14.3 ICAO Annex 6 Part III Appendix 4 (Sections 1 to 5) shall be complied with.

Note 1: Airworthiness Notice No. AN 36F prescribes the inspection of flight recorder as stipulated in ICAO Annex 6 Part I Appendix 8 (Section 7), Part II Appendix 2.3 (Section 6) and Part III Appendix 4 (Section 6).

Note 2: Crash-protected flight recorders comprise one or more of the following: a flight data recorder (FDR); a cockpit voice recorder (CVR); an airborne image recorder (AIR); a data link recorder (DLR). Image and data link information may be recorded on either the CVR or the FDR.

Note 3: Lightweight flight recorders comprise one or more of the following: an aircraft data recording system (ADRS); a cockpit audio recording system (CARS); an airborne image recording system (AIRS); a data link recording system (DLRS). Image and data link information may be recorded on either the CARS or the ADRS.

5 Flight Recorder Data Recovery Requirements

All aeroplanes of a MTWA of over 27000 kg and authorised to carry more than nineteen passengers for which the application for type certification is submitted to the Contracting State on or after 1 January 2021, shall be equipped with a means approved by the Director-General, to recover flight recorder data and make it available in a timely manner.

6 Recommendations

6.1 ICAO Annex 6 Part I – Flight Recorders

6.1.1 All aeroplanes of a MTWA over 5700 kg, required to be equipped with an FDR and a CVR, may alternatively be equipped with two combination recorders (FDR/CVR).

6.1.2 All multi-engined turbine-powered aeroplanes of a MTWA of 5700 kg or less, required to be equipped with an FDR and/or a CVR, may alternatively be equipped with one combination recorder (FDR/CVR).

6.1.3 All turbine-engined aeroplanes of a MTWA of 5700 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 2016 and required to be operated by more than one pilot should be equipped with either a CVR or a CARS.

6.1.4 All multi-engined turbine-engined aeroplanes of a MTWA of 5700 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 1990 should be equipped with an FDR which should record at least the first 16 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.

- 6.1.5 All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued on or after 1 January 1987 but before 1 January 1989, with a MTWA of over 5700 kg, except those in 4.2.12 of this Notice, should be equipped with an FDR which should record at least the first 9 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 6.1.6 All aeroplanes of a MTWA of over 5700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023 shall be equipped with an FDR capable of recording at least the 82 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 6.1.7 All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued before 1 January 1987, with a MTWA of over 5700 kg up to and including 27000 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.
- 6.1.8 With regard to flight crew-machine interface recordings, all aeroplanes of a maximum take-off mass of over 5700 kg, up to and including 27000 kg, for which the application for type certification is submitted to a Contracting State on or after 1 January 2023 should be equipped with a crash-protected flight recorder which should record the information displayed to the flight crew from electronic displays, as well as the operation of switches and selectors by the flight crew, as defined in Appendix 8 – Flight Recorders of ICAO Annex 6 Part I.
- 6.1.9 All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued before 1 January 1987, with a MTWA of over 27000 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 the first 5 parameters listed in Table A8-1 of Appendix 8 – Flight Recorders of ICAO Annex 6 Part I, such additional parameters as are necessary to meet the objectives of determining:
- (a) the attitude of the aeroplane in achieving its flight path; and
 - (b) the basic forces acting upon the aeroplane resulting in the achieved flight path and the origin of such basic forces.
- 6.1.10 All aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in 5.1.2 of Appendix 8 – Flight

Recorders of ICAO Annex 6 Part I, should record the data link communications messages on a crash-protected flight recorder.

6.2 ICAO Part II – Flight Recorders

- 6.2.1 All aeroplanes of a MTWA over 5700 kg, required to be equipped with an FDR and a CVR, may alternatively be equipped with two combination recorders (FDR/CVR).
- 6.2.2 All turbine-engined aeroplanes with a seating configuration of more than five passenger seats and a MTWA of 5700 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 2016 should be equipped with:
 - (a) an FDR which should record at least the first 16 parameters in Table A2.3-1 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II; or
 - (b) a Class C AIR or AIRS which should record at least the flight path and speed parameters displayed to the pilot(s), as defined in 2.2.2 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II.; or
 - (c) an ADRS which should record at least the first 7 parameters listed in Table A2.3-3 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II.
- 6.2.3 All aeroplanes of a MTWA of over 5700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023 should be equipped with an FDR capable of recording at least the 82 parameters listed in Table A2.3-1 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II.
- 6.2.4 All aeroplanes of a MTWA of over 5700 kg, up to and including 27000 kg, for which the individual certificate of airworthiness is first issued on or after 1 January 1989, should be equipped with an FDR which should record at least the first 16 parameters listed in Table A2.3-1 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II.
- 6.2.5 All turbine-engined aeroplanes with a seating configuration of more than five passenger seats and a MTWA of 5700 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 2016 and required to be operated by more than one pilot should be equipped with either a CVR or a CARS.
- 6.2.6 All aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a

CVR and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in 5.1.2 of Appendix 2.3 – Flight Recorders of ICAO Annex 6 Part II should record the data link communications messages on a crash-protected flight recorder.

6.3 ICAO Part III – Flight Recorders

- 6.3.1 All helicopters of a MTWA of 3175 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 2018 should be equipped with:
- (a) an FDR which should record at least the first 48 parameters listed in Table A4-1 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III; or
 - (b) a Class C AIR or AIRS which should record at least the flight path and speed parameters displayed to the pilot(s), as defined in Table A4-3 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III; or
 - (c) an ADRS which should record the first 7 parameters listed in Table A4-3 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III.
- 6.3.2 All helicopters of a MTWA of over 3175 kg, up to and including 7000 kg, for which the individual certificate of airworthiness is first issued on or after 1 January 1989, should be equipped with an FDR which should record at least the first 15 parameters listed in Table A4-1 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III.
- 6.3.3 All helicopters of a MTWA of over 3175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023 shall be equipped with an FDR capable of recording at least the first 53 parameters listed in Table A4-1 of Appendix 4 – Flight Recorders of ICAO Annex 6 Part III.
- 6.3.4 All helicopters of a MTWA of over 3175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1987 should be equipped with a CVR. For helicopters not equipped with an FDR, at least main rotor speed should be recorded on the CVR.
- 6.3.5 All helicopters for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in 5.1.2 of Appendix 4 – Flight Recorders in ICAO Annex 6 Part III should record the data link communications messages on a crash-protected flight recorder.

7 Cancellation

This Notice cancels Airworthiness Notice No. 101D Issue11, dated 31 December 2020, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101E
Issue 3
8 November 2018**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

FIRST-AID KITS AND MEDICAL SUPPLIES

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft that required to be equipped with first-aid kits or medical supplies under Article 13 and Schedule 5, Scale A (iii) of the Air Navigation (Hong Kong) Order 1995.

2 Introduction

This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 which requires first-aid kits or medical supplies to be equipped.

3 Compliance

All applicable aircraft identified in the paragraph 1 of this Notice:

- 3.1 With a Certificate of Airworthiness issued in Hong Kong before 19 November 2009, shall comply with the requirements in paragraph 4.1 or 4.2 of this Notice, and, with effect from 19 November 2009, shall also comply with the requirements in paragraph 4.3 of this Notice;
- 3.2 With a Certificate of Airworthiness issued in Hong Kong on and after 19 November 2009, shall comply with the requirements in paragraphs 4.2 thru 4.4 of this Notice; and
- 3.3 With effect from 19 November 2011, shall comply with the requirements in paragraphs 4.2 thru 4.4 of this Notice.

4 Requirements

4.1 First-aid kits and medical supplies

Unless otherwise accepted by the Director-General, the first-aid kits and medical supplies required to be carried in accordance with AN(HK)O Schedule 5 Scale A (iii) shall include first aid equipment of good quality, sufficient in quantity, having regard to the number of persons on board the aircraft, and including the following:

- Roller bandages, triangular bandages, adhesive plaster, absorbent gauze, cotton wool (or wound dressings in place of the absorbent gauze and cotton wool), burn dressings, safety pins;
- Haemostatic bandages or tourniquets, scissors;
- Antiseptic, analgesic and stimulant drugs;
- Splints, in case of aeroplanes the maximum total weight authorised of which exceeds 5700kg; and
- A handbook on first aid.

4.2 First-aid kits to be carried

4.2.1 For aeroplanes on commercial air transport operations, one or more first-aid kits shall be carried on board. The number of first-aid kits to be carried shall be appropriate to the Maximum Approved Passenger Seating Configuration (MAPSC):

<u>MAPSC</u>	<u>Number of First-aid kits required</u>
0 – 100	1
101 – 200	2
201 – 300	3
301 – 400	4
401 – 500	5
More than 500	6

4.2.2 First-aid kits should be distributed as evenly as practicable throughout the passenger cabins. They should be readily accessible to cabin crew members.

4.2.3 For aeroplanes on general aviation operation, one or more accessible first-aid kits as appropriate to the MAPSC shall be carried on board.

4.2.4 For helicopters, an accessible first-aid kit shall be carried on board.

4.2.5 The following provides guidance on minimum contents of first-aid kits:

- List of contents
- Antiseptic swabs (10/pack)
- Bandage: adhesive strips
- Bandage: gauze 7.5 cm x 4.5 cm
- Bandage: triangular; safety pins
- Dressing: burn 10 cm x 10 cm
- Dressing: compress, sterile 7.5cm x 12 cm
- Dressing: gauze, sterile 10.4 cm x 10.4 cm
- Tape: adhesive 2.5 cm (roll)
- Steri-strips (or equivalent adhesive strip)
- Hand cleanser or cleansing towelettes
- Pad with shield, or tape, for eye
- *Scissors: 10 cm
- Tape: Adhesive, surgical 1.2 cm x 4.6 m
- Tweezers: splinter
- Disposable gloves (multiple pairs)
- Thermometers (non-mercury)
- Mouth to mouth resuscitation mask with one-way valve
- First-aid manual (current edition)
- Incident record form

Note: The item marked with an asterisk may be kept separately in an appropriate secured location or in a compartment not accessible during flight when no cabin crew is required to be carried.

4.3 Universal precaution kits to be carried

4.3.1 For aeroplanes and helicopters on commercial air transport operations that required to carry cabin crew as part of the operating crew, one universal precaution kit (two for aeroplanes of MAPSC more than 250), shall be carried on board, for the use of cabin crew members in managing incidents of ill health associated with a case of suspected communicable disease, or in the case of illness involving contact with body fluids.

4.3.2 The universal precaution kit should be readily accessible to cabin crew members. If more than one kit are carried, they should be distributed as evenly as practicable throughout the passenger cabins.

4.3.3 The following provides guidance on minimum contents of universal precaution kits:

- Dry powder that can convert small liquid spill into a sterile granulated gel
- Germicidal disinfectant for surface cleaning
- Skin wipes
- Face / eye mask (separate or combined)
- Gloves (disposable)
- Protective apron
- Large absorbent towel
- Pick-up scoop with scraper
- Bio-hazard disposal waste bag
- Instructions

4.4 Medical Kit to be carried

4.4.1 For aeroplanes of MAPSC more than 100, on commercial air transport operations and a sector length of more than two hours, a medical kit shall be carried, for the use of medical doctors or other qualified persons in treating in-flight medical emergencies.

4.4.2 The medical kit, when carried, shall be stored in an appropriate secure location.

4.4.3 The following provides guidance on minimum contents of a medical kit:

(a) Equipment

- List of contents
- Stethoscope
- Sphygmomanometer (electronic preferred)
- Airways, oropharyngeal (3 sizes)
- Syringe (appropriate range of sizes)
- Needles (appropriate range of sizes)
- Intravenous catheters (appropriate range of sizes)
- Antiseptic wipes
- Gloves (disposable)
- Needle disposal box
- Urinary catheter
- System for delivering intravenous fluids
- Venous tourniquet
- Sponge gauze
- Tape – adhesive
- Surgical mask

- Emergency tracheal catheter (or large gauge intravenous cannula)
- Umbilical cord clamp
- Thermometers (non mercury)
- Basic life support cards
- Bag-valve mask
- Flashlight and batteries

(b) Medication

- Epinephrine 1:1000
- Antihistamine – injectable
- Dextrose 50% (or equivalent) – injectable: 50ml
- Nitroglycerin tablets, or spray
- Major analgesic
- Sedative anticonvulsant – injectable
- Antiemetic – injectable
- Bronchial dilator – inhaler
- Atropine – injectable
- Adrenocortical steroid - injectable
- Diuretic – injectable
- Medication for postpartum bleeding
- Sodium chloride 0.9% (minimum 250 ml)
- Acetyl salicylic acid (aspirin) for oral use
- Oral beta blocker
- If a cardiac monitor is available (with or without an automated external defibrillator), carries Epinephrine 1:10000 (can be a dilution of epinephrine 1:1000)

Note: The United Nations Conference for Adoption of a Single Convention on Narcotic Drugs in March 1961 adopted such a Convention, Article 32 of which contains special provisions concerning the carriage of drugs in medical kits of aircraft engaged in international flight.

5 Additional Information

The equipment, handbooks and instructions referred in the paragraph 4 shall not be required to be of a type approved by the Director-General. Instead, the contents of the required first-aid, universal precaution and medical kits shall be acceptable to Director-General.

6 Cancellation

This Notice cancels Airworthiness Notice No. 101E, Issue 2, dated 31 July 2009, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101F
Issue 1
15 February 2009**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

HELICOPTERS CABIN CREW SEATS

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered helicopters required to carry cabin crew under Article 18 of the Air Navigation (Hong Kong) Order 1995 as amended.

2 Introduction

This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 as amended for the requirements of installation of the cabin crew seats on helicopters.

3 Compliance

With effect from 16 February 2009, all applicable helicopters identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirement

- 4.1 All helicopters shall be equipped with a forward or rearward facing (within 15 degrees of the longitudinal axis of the helicopter) seat, fitted with a safety harness for the use of each cabin crew member.
- 4.2 Cabin crew seats shall be located near floor level and other emergency exits for emergency evacuation.

5 Additional Information

Nil.

Norman LO
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101G
Issue 2
8 November 2018**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

SAFETY HARNESS

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes and helicopters required to be equipped with a safety harness for every pilot's seat and for any seat situated alongside a pilot's seat under Article 13 Schedule 5 Scale B of the Air Navigation (Hong Kong) Order 1995 (hereinafter referred as "the Order").

2 Introduction

- 2.1 This Notice is intended to supplement the Order which requires every pilot's seat and any seat situated alongside a pilot's seat, a safety belt with one diagonal shoulder strap or a safety harness.
- 2.2 International Civil Aviation Organisation (ICAO) has published Standards and Recommended Practices in Annex 6 that requires installation of safety harness for each flight crew seat.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to the Chicago Convention, adopts the Standards and when appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

All applicable aeroplanes and helicopters identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirements

- 4.1 Unless otherwise specified in the Order, each flight crew seat shall be equipped with a safety harness.

Note: Safety harness includes shoulder straps and a safety belt which may be used independently.

- 4.2 For commercial air transport operations and international general aviation operations*, the safety harness for each pilot seat shall incorporate a device which will automatically restrain the occupant's torso in the event of rapid deceleration.

Note: *For international general aviation operations with:

- a) Aeroplanes with a maximum certificated take-off mass exceeding 5,700 kg; or
- b) Aeroplanes equipped with one or more turbojet engines.

5 Additional Information

Nil.

6 Recommendation

- 6.1 For commercial air transport operations and international general aviation operations [See Note of 4.2 above], the safety harness for each pilot seat should incorporate a device to prevent a suddenly incapacitated pilot from interfering with the flight controls.

Note 1: This sub-paragraph is applicable to helicopters only when dual controls are fitted.

Note 2: For helicopters, depending on the design, the lock on an inertia reel device may suffice for this purpose.

7 Cancellation

This Notice cancels Airworthiness Notice No. 101G, Issue 1, dated 15 February 2009, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101H
Issue 2
8 November 2018**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS)**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered turbine-engined aeroplanes required to be equipped with radio equipment under Article 14, Schedule 6 Scale J of the Air Navigation (Hong Kong) Order 1995.

2 Introduction

- 2.1 This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 which requires Airborne Collision Avoidance System (ACAS).
- 2.2 Airworthiness Notice No. 24 Issue 6, which was published on 31 July 2011 contains the compliance information for ACAS and Mode S Transponder. This Airworthiness Notice for ACAS and Airworthiness Notice No. 101I for Mode S Transponder replace Airworthiness Notice No. 24 Issue 6. The compliance and requirements of this Airworthiness Notice are same as previous Airworthiness Notice No. 24.
- 2.3 ICAO Annex 10 Volume IV Chapter 4 defines the term of ACAS which is internationally equivalent to Traffic Alert and Collision Avoidance System (TCAS). TCAS provides a collision avoidance capacity which operates independently of ground based Air Traffic Control. The system provides aural and visual advisories to the flight crew to take action of potential and predicted collision threats.
- 2.4 FAA and EASA have released a new Technical Standard Order (TSO) TSO-C119c and ETSO-C119c respectively in corresponding to new standard of TCAS II Version 7.1.

3 Compliance

- 3.1 All applicable aeroplanes identified in paragraph 1 of this Notice for which the individual Certificate of Airworthiness is first issued in Hong Kong or elsewhere before 1 January 2014 shall comply with the requirements specified in paragraphs 4.1 or 4.2 of this Notice.
- 3.2 All applicable aeroplanes identified in paragraph 1 of this Notice for which the first Certificate of Airworthiness issued in Hong Kong or elsewhere on or after 1 January 2014 shall comply with the requirements specified in paragraph 4.2 of this Notice.
- 3.3 With effect from 1 January 2017 all applicable aeroplanes identified in paragraph 1 of this Notice shall comply with the requirements specified in paragraphs 4.2 of this Notice.

4 Requirements

- 4.1 All applicable aeroplanes shall be equipped with TCAS II Version 7.0.
- 4.2 All applicable aeroplanes shall be equipped with TCAS II Version 7.1 meeting the standards of EASA ETSO-C119c or FAA TSO-C119c or latest changes.

5 Additional Information

Nil.

6 Recommendations

- 6.1 ICAO Annex 6 Part I Chapter 6 recommends all commercial air transport aeroplanes should be equipped with TCAS II Version 7.1.
- 6.2 ICAO Annex 6 Part II Chapter 3 recommends all turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 15,000 kg, or authorised to carry more than 30 passengers, for which the individual airworthiness certificate is first issued after 24 November 2005, should be equipped with TCAS II Version 7.1.

7 Cancellation

This Notice cancels Airworthiness Notice No. 101H Issue 1, dated 30 January 2014, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101I
Issue 1
30 January 2014**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

**SECONDARY SURVEILLANCE RADAR (SSR)
ATC MODE S TRANSPONDER**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes equipped with Airborne Collision Avoidances System (ACAS) under Article 14, Schedule 6 Scale J of the Air Navigation (Hong Kong) Order 1995.

2 Introduction

- 2.1 This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995 which requires Airborne Collision Avoidances System (ACAS) on aircraft system based on Secondary Surveillance Radar Transponder signals.
- 2.2 Airworthiness Notice No. 24 issue 6, which was published on 31 July 2011 contains the compliance information for ACAS and Mode S Transponder. This Airworthiness Notice for Mode S Transponder and Airworthiness Notice No. 101H for ACAS replace Airworthiness Notice No. 24 issue 6. The compliance and requirements of this Airworthiness Notice is same as previous Airworthiness Notice No. 24
- 2.3 Secondary Surveillance Radar (SSR) interrogation signal to assist air traffic controllers in traffic separation. The SSR interrogate all aircraft within their range, Mode S (Mode Select) establishes selective and addressed interrogations with aircraft within its coverage. Such selective interrogation improves the quality and integrity of the detection, identification and altitude reporting. Traffic Alert and Collision Avoidance System (TCAS) known as ACAS installed on turbine-engined aeroplane requires the altitude information supplied by Mode S transponder signals that provides aircraft information to the flight crew of potential and predicted collision threats. The TCAS II aircraft must be equipped with Mode S transponder, which provides air to air communications for coordinating the resolution maneuvers between TCAS II

equipped aircraft.

- 2.4 Mode S transponder provides an airborne/on-the-ground status and data source of pressure-altitude in 7.62 m (25 ft) increments that improve the effectiveness of the TCAS and air traffic services.

3 Compliance

All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements specified in paragraph 4 of this Notice.

4 Requirement

- 4.1 All TCAS II aeroplanes shall be equipped with Mode S transponder. The Mode S transponder shall be equipped with a data source that provides pressure-altitude information with a resolution of 7.62 m (25 ft), or better.
- 4.2 Mode S transponder shall be provided with the airborne/on-the-ground status if the aircraft is equipped with an automatic means of detecting such status.

5 Additional Information

ICAO Annex 6 – Operation of aircraft Part I and Part II.

6 Cancellation

This Notice together with Airworthiness Notice No. 101H cancel Airworthiness Notice No. 24 Issue 6, dated 31 July 2011, which should be destroyed.

Norman LO
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101J
Issue 1
29 January 2016**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

EXIT IDENTIFICATION

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft required to be equipped with exit markings under Article 46 of the Air Navigation (Hong Kong) Order 1995 (hereinafter referred to as “the Order”).

2 Introduction

- 2.1 This Notice is intended to supplement the Order which requires that an exit shall be marked.
- 2.2 The requirements for “Exit Identification” were previously prescribed in Airworthiness Notice No. 56, Issue 6. Such requirements are now relocated to this Notice.

3 Compliance

All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirement

- 4.1 Exits which are not designated emergency exits shall not be identified by the emergency floor path lighting system.
- 4.2 The exit shall be positively identifiable to enable a passenger to proceed to it without hesitation in conditions where the exit is either open or closed. All exits likely to be available for use in an emergency shall have exit identifiers.

4.3 Exit identifiers shall be located between 18 inches and 4 feet above the cabin floor level. If it is impracticable to locate exit identifiers between 18 inches and 4 feet above the cabin floor level, exit identifiers shall not be obscured by any loose articles likely to be present in an emergency evacuation by one of the following means:

4.3.1 a placard meeting the bilingual placard requirements under Airworthiness Notice No. 7 shall be installed in the area immediately adjacent to the exit identifier; or

4.3.2 the aircraft flight manual or the cabin crew operating manual (sometimes referred as “flight attendant manual”) shall contain such instructions as cabin crew duties before take-off and before landing.

Note: The option under sub-paragraph 4.3.2 is only applicable to aircraft required to carry cabin crew by article 18(7)(a) of the Order or by its aircraft flight manual.

4.4 Where exit identifiers are mounted on cabin sidewalls, they shall be visible from the aisle with the seat next to the identifier occupied and with curtains, if installed, in stowed position. This takes account of a passenger seated next to an exit being incapacitated (a passenger slumped forward or sideways shall also be considered).

4.5 Overwing exits shall be given additional aisle cues to draw attention to their locations.

4.6 Additional aisle cues shall be provided such that they do not lead occupants into galley or other dead end zones. These aisle cues shall be of a design different from that required by sub-paragraph 4.5 of this Notice.

5 Additional Information

Nil.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101K
Issue 1
31 July 2014**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
HELICOPTER LANDING LIGHTS**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered helicopters.

2 Introduction

- 2.1 This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995, Article 13, Schedule 5 paragraph 4(13) and Scale G(v) for the requirements of installation of landing light(s) on helicopters.
- 2.2 ICAO has published Standards in Part III of Annex 6 that require all helicopters when operating in accordance with VFR at night shall be equipped with landing light(s) as defined in the Standards.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

With effect from 31 January 2015, all applicable helicopters identified in paragraph 1 of this Notice shall comply with the requirements specified in paragraph 4 of this Notice.

4 Requirement

All helicopters when flying at night under Visual Flight Rules shall be equipped with two landing lights of which at least one is trainable in the vertical plane.

5 Additional Information

ICAO Annex 6 Part III (International Operations - Helicopters) Section II (International Commercial Air Transport) Chapter 4 and Section III (International General Aviation) Chapter 4.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101L
Issue 2
8 November 2018**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
WEATHER RADAR SYSTEM**

1 Applicability

This Airworthiness Notice is applicable to Hong Kong registered aircraft issued with a Certificate of Airworthiness.

2 Introduction

- 2.1 The introduction of weather radar system will enhance safety by providing the pilot with weather conditions ahead of the helicopter.
- 2.2 International Civil Aviation Organisation (ICAO) has published Recommended Practices in Part III of Annex 6 that requires weather radar system to be installed in certain helicopter as defined in the Recommended Practices.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

- 3.1 All helicopters when carrying passengers operating at night or under instrument meteorological conditions, for which the individual Certificate of Airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 June 2016, shall comply with the requirements in sub-paragraph 4.1 of this Notice.

4 Requirement

- 4.1 Helicopter shall be equipped with weather radar or other significant-weather detection equipment.

Note: The weather radar or other significant-weather detection equipment shall be operative whenever such helicopter is being operated in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable, may be expected to exist along the route. No MEL relief for this equipment is allowed under these weather conditions.

5 Additional Information

Nil.

6 Recommendations

ICAO Annex 6 Part I Chapter 6 and Part III Section II Chapter 4 recommend that pressurised aeroplanes and helicopters when carrying passengers should be equipped with operative weather radar whenever such aeroplanes and helicopters are being operated in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather radar, may be expected to exist along the route either at night or under instrument meteorological conditions.

7 Cancellation

This Notice cancels Notice No.101L Issue 1, dated 31 July 2014, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101M
Issue 2
8 November 2018**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

FORWARD-LOOKING WIND SHEAR WARNING SYSTEM

1 Applicability

This Airworthiness Notice is applicable to Hong Kong registered turbo-jet aeroplanes of more than 45,454 kg Maximum Take-off Weight Authorised (MTWA) or with Maximum Approved Passenger Seating Configuration (MAPSC) of more than 19 passengers issued with a Certificate of Airworthiness.

2 Introduction

- 2.1 The introduction of forward-looking wind shear warning system will enhance safety by providing the pilot with a timely aural and visual warning of wind shear ahead of the aircraft.
- 2.2 International Civil Aviation Organisation (ICAO) has published Recommended Practices in Part I of Annex 6 that requires forward-looking wind shear warning system to be installed in certain aeroplanes as defined in the Recommended Practices.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

- 3.1 With effective from 1 January 2016, all applicable aeroplanes identified in paragraph 1 of this Notice for which the first Certificate of Airworthiness issued in Hong Kong on or after 1 January 2016, shall comply with the requirements in sub-paragraph 4.1 or 4.2 of this Notice.

- 3.2 With effective from 1 January 2017, all applicable aeroplanes identified in paragraph 1 of this Notice, shall comply with the requirements in sub-paragraph 4.1 or 4.2 of this Notice.

4 Requirements

- 4.1 Aeroplanes shall equip with a forward-looking wind shear warning system which shall be capable of providing the pilot with a timely aural and visual warning of wind shear ahead of the aircraft, and the information required to permit the pilot to safely commence and continue a missed approach or go-around or to execute an escape manoeuvre if necessary. The system shall also provide an indication to the pilot when the limits specified for the certification of automatic landing equipment are being approached, when such equipment is in use.
- 4.2 Aeroplanes shall equip a forward-looking wind shear warning system meeting the standards of RTCA DO-220.

5 Additional Information

Nil.

6 Recommendation

ICAO Annex 6 Part I Chapter 6 recommends all turbo-jet aeroplanes of more than 5,700 kg MTWA or with MAPSC of more than 9 passengers should be equipped with a forward-looking wind shear warning system.

7 Cancellation

This Notice cancels Notice No.101M Issue 1, dated 5 December 2014, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101P
Issue 1
29 January 2016**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
UNDERWATER LOCATING DEVICE**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes of MTWA of over 27,000 kg on long-range over-water flights and issued with a Certificate of Airworthiness in Transport Category.

2 Introduction

2.1 International Civil Aviation Organisation (ICAO) has published Standards of paragraph 6.5.3 of Chapter 6 of Annex 6 Part I that require an underwater locating device to be installed in certain aircraft as defined in the Standards.

2.2 For the purpose of this Airworthiness Notice, long-range over-water flight means a flight over a route on which the aeroplane may be over water and at more than a distance corresponding to:

(a) 120 minutes at cruising speed or 740 km (400 NM), whichever is the lesser, away from land suitable for making an emergency landing in the case of aircraft operated in accordance with:

(i) ***En route – one engine inoperative.*** The aeroplane shall be able, in the event of the critical engine becoming inoperative at any point along the route or planned diversions therefrom, to continue the flight to an aerodrome at which the Standards of paragraph 2.3 of this Notice can be met without flying below the minimum flight altitude at any point, or;

(ii) ***En route – two engines inoperative.*** In the case of aeroplanes having three or more engines, on any part of a route where the location of en-route alternate aerodrome and the total duration of the flight are such that the probability of a second engine becoming inoperative must be allowed for if the general level of safety implied by the Standards of Chapter 5 of ICAO Annex 6

Part I is to be maintained, the aeroplane shall be able, in the event of any two engines becoming inoperative, to continue the flight to an en-route alternate aerodrome and land; and

- (b) 30 minutes or 185 km (100 NM), whichever is the lesser, for all other aeroplanes.

- 2.3 ***Landing.*** The aeroplane shall, at the aerodrome of intended landing and at any alternate aerodrome, after clearing all obstacles in the approach path by a safe margin, be able to land, with assurance that it can come to a stop or, for a seaplane, to a satisfactorily low speed, within the landing distance available. Allowance shall be made for expected variations in the approach and landing techniques, if such allowance has not been made in the scheduling of performance data.

3 **Compliance**

With effect from 1 January 2018, all applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 **Requirements**

- 4.1 All aircraft shall have a securely attached underwater locating device operating at a frequency of 8.8 kHz.
- 4.2 The automatically activated underwater locating device shall operate for a minimum of 30 days and shall not be installed in wings or empennage.
- 4.3 The performance requirements of underwater locating device shall meet the standards of FAA TSO-C200 or EASA ETSO-C200, or with later changes.

5 **Additional Information**

Reserved.

Norman LO
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101Q
Issue 3
8 November 2018**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

HELICOPTER LIFERAFT INSTALLATION

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered helicopters with individual Certificate of Airworthiness first issued (whether in Hong Kong or elsewhere) on or after 1 January 1991.

2 Introduction

2.1 This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995, Article 13 Schedule 5, paragraphs 4(13)(a)(iv) and 4(13)(b)(v) and also Scale K(i) for the requirements of installation of liferaft(s) on helicopters.

2.2 ICAO has published Standards in Annex 6 Part III Section II (International Commercial Air Transport) paragraph 4.5 that when flying over water

2.2.1 all helicopters operating in performance Class 1 or 2 in accordance with the provisions of paragraph 4.5.1 of Annex 6 Part III Section II; and

2.2.2 all helicopters operating in performance Class 3 when operating beyond the distance specified in paragraph 4.5.2.2 of Annex 6 Part III Section II,

shall be equipped with liferaft.

2.3 ICAO has published Standards in Annex 6 Part III Section III (International General Aviation) paragraph 4.3 that helicopters operating over water in accordance with the provisions of 4.3.1 shall be equipped with, when not precluded by consideration related to the type of helicopter used, liferaft in sufficient numbers to carry all persons on board.

- 2.4 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

- 3.1 All applicable helicopters identified in paragraph 1 and operating in performance Class 1, 2 or 3 and on commercial air transport flights which are intended to fly over water at a distance from land corresponding to more than 10 minutes at normal cruise speed shall comply with the requirements specified in paragraph 4 of this Notice.
- 3.2 All applicable helicopters identified in paragraph 1 and operating in performance Class 1 or 2 and on general aviation flights which are intended to fly over water at a distance from land corresponding to more than 10 minutes at normal cruise speed shall comply with the requirements specified in paragraph 4 of this Notice.
- 3.3 All applicable helicopters identified in paragraph 1 and operating in performance Class 3 and on general aviation flights which are intended to fly over water at a distance beyond autorotational or safe forced landing distance from land shall comply with the requirements specified in paragraph 4 of this Notice.

4 Requirement

Helicopters shall be equipped with:

- (a) liferaft(s) in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency, provided with such life-saving equipment including means of sustaining life as is appropriate to the flight to be undertaken; and
- (b) when two liferafts are fitted, each shall be able to carry all occupants in the overload state.

Note: The liferaft overload state should have a design safety margin of 1.5 times the maximum capacity.

5 Additional Information

Nil.

6 Recommendations

6.1 ICAO has published Recommended Practices in Annex 6 Part III, Section II paragraphs 4.5.2.6 and 4.5.2.7 and Section III paragraphs 4.3.2.4 and 4.3.2.5, which define the requirements of liferaft deployment.

6.1.1 All applicable helicopters as identified in paragraph 1 and operating on commercial air transport operations, at least 50% of the liferafts carried in accordance with the provisions of paragraph 4.5.2 of Annex 6 Part III Section II should be deployable by remote control. Liferafts which are not deployable by remote control and which have a mass of more than 40 kg should be equipped with some means of mechanically assisted deployment.

6.1.2 All applicable helicopters as identified in paragraph 1 and on general aviation operations, at least 50% of the liferafts carried in accordance with the provisions of paragraph 4.3.2 of Annex 6 Part III Section III should be deployable by remote control. Liferafts which are not deployable by remote control and which have a mass of more than 40 kg should be equipped with some means of mechanically assisted deployment.

7 Cancellation

This Notice cancels Airworthiness Notice No. 101Q Issue 2, dated 28 February 2017, which should be destroyed.

Simon LI

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101R
Issue 1
8 November 2018**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

SURVIVAL SUIT

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered helicopters required to carry survival suits under Article 13 Schedule 5 Scale I of the Air Navigation (Hong Kong) Order 1995 (hereinafter referred as “the Order”).

2 Introduction

- 2.1 Article 13(3) of the Order stipulated that in any particular case the Chief Executive may direct that an aircraft registered in Hong Kong shall carry such additional or special equipment or supplies as he may specify for the purpose of facilitating the navigation of the aircraft, the carrying out of search and rescue operations, or the survival of the persons carried in the aircraft.
- 2.2 International Civil Aviation Organisation (ICAO) has published Standards and Recommended Practices in Part III of Annex 6 with regard to wearing of integrated survival suit.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

All applicable helicopters identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirements

- 4.1 Pursuant to Schedule 5 Scale I of the Order, when flying for the purpose of public transport, a helicopter classified in its certificate of airworthiness as being of performance group A2 which is intended to fly beyond 10 minutes flying time from land, or which actually flies beyond 10 minutes flying time from land on a flight which is either in support of or in connection with the offshore exploitation, or exploration of mineral resources (including gas) when the weather report or forecasts available to the pilot in command of the aircraft indicate that the sea temperature will be less than plus 10°C during the flight or when any part of the flight is at night shall be equipped with a survival suit for each member of the crew.
- 4.2 Pursuant to Article 33A of the Order, each member of the crew of an aircraft registered in Hong Kong shall wear a survival suit if such a suit is required by Article 13 of this Order to be carried.

5 Additional Information

Nil.

6 Recommendation

ICAO Annex 6 Part III Section II Chapter 4 recommends that for helicopters on offshore operations, a survival suit should be worn by all occupants when the sea temperature is less than 10°C or when the estimated rescue time exceeds the calculated survival time. When the elevation and strength of the sun results in a high temperature hazard on the flight deck, consideration should be given to alleviating the flight crew from this recommendation.

Note: When establishing rescue time, the sea state and the ambient light conditions should be taken into consideration.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101S
Issue 1
8 November 2018**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

OXYGEN DISPENSING UNITS AND SUPPLY

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes issued with a Certificate of Airworthiness in Transport Category and operated under the terms of an Air Operator's Certificate for international commercial air transport operations where the operating atmospheric pressure is less than 376 hectopascals.

2 Introduction

- 2.1 International Civil Aviation Organisation (ICAO) has published Standards and Recommended Practices in Annex 6 Part I Chapter 6 Paragraphs 6.7.5 and 6.7.6 respectively for the requirement on oxygen dispensing units for an aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa.
- 2.2 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.
- 2.3 The oxygen supply and duration requirements are defined in Schedule 5, Scale L1 and/or L2 of the Air Navigation (Hong Kong) Order 1995.

3 Compliance

All applicable aeroplane identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirement

- 4.1 A flight to be operated with a pressurised aeroplane shall not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurisation, for any period that the atmospheric pressure in any compartment occupied by them would be less than 700 hPa. In addition, when an aeroplane is operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa and cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, there shall be no less than a 10-minute supply for the occupants of the passenger compartment.

Note: The oxygen supply and duration are defined in Schedule 5, Scale L1 and/or L2 of the Air Navigation (Hong Kong) Order 1995 for pressurised aeroplane.

- 4.2 An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa, cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa and for which the individual certificate of airworthiness was first issued on or after 9 November 1998, shall be provided with automatically deployable oxygen equipment to satisfy the requirements of paragraph 4.1. The total number of oxygen dispensing units shall exceed the number of passenger and cabin crew seats by at least 10 per cent.

Note: Approximate altitude in the Standard Atmosphere corresponding to the value of absolute pressure used in this text is as follows:

<u>Absolute pressure</u>	<u>Metres</u>	<u>Feet</u>
700 hPa	3000	10000
620 hPa	4000	13000
376 hPa	7600	25000

5 Additional Information

Nil.

6 Recommendation

ICAO Annex 6 Part I Chapter 6 recommends that an aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, and for which the individual certificate of airworthiness was first issued before 9 November 1998, should be provided with automatically deployable oxygen equipment to satisfy the requirements of paragraph 4.1. The total number of oxygen dispensing units should exceed the number of passenger and cabin crew seats by at least 10 per cent.

Simon LI

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101T
Issue 1
8 November 2018**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

LIFEJACKET FOR SINGLE-ENGINED AEROPLANE FLYING OVER WATER

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered single-engined aeroplanes when flying for the purposes other than public transport and over water beyond gliding distance from land.

2 Introduction

- 2.1 Hong Kong registered single-engined aeroplanes when flying for the purposes other than public transport and over water beyond gliding distance from land are required to carry lifejackets equipped with a whistle and waterproof torch under Article 13, Schedule 5, Scale H of the Air Navigation (Hong Kong) Order 1995.
- 2.2 International Civil Aviation Organisation (ICAO) has published a Recommendation in Annex 6 Part II Chapter 2 Paragraph 2.4.4.2 for the requirements on life jacket or individual floatation device on all single-engined landplanes.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

All applicable aeroplanes identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirement

All Hong Kong registered single-engined aeroplanes are required to carry lifejackets equipped with a whistle and waterproof torch under Article 13, Schedule 5, Scale H of the Air Navigation (Hong Kong) Order 1995.

5 Additional Information

Nil.

6 Recommendation

ICAO Annex 6 Part II Chapter 2 recommends all single-engined landplanes when taking off or landing at an aerodrome where, in the opinion of the pilot-in-command, the take-off or approach path is so disposed over water that in the event of a mishap there would be a likelihood of a ditching should carry one life jacket or equivalent individual floatation device for each person on board, stowed in a position easily accessible from the seat or berth of the person for whose use it is provided.

Note: "Landplanes" includes amphibians operated as landplanes.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101U
Issue 2
31 July 2022**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
AUTOMATIC DEPENDENT SURVEILLANCE BROADCAST (ADS-B) OUT**

1. Applicability

This Airworthiness Notice is applicable to Hong Kong registered aircraft issued with a Certificate of Airworthiness.

2. Introduction

- 2.1 Automatic Dependent Surveillance Broadcast (ADS-B) is a surveillance system that uses Global Navigation Satellite System (GNSS), aircraft avionics, and ground infrastructures to accurately and quickly transmit flight information between aircraft and Air Traffic Services or between aircraft and aircraft.
- 2.2 ADS-B is a technology that enables the automatic broadcast of aircraft identity, present position, altitude, and other parameters. These transmissions are made at half-second intervals on a line-of-sight radio datalink. The position and altitude are derived from a GNSS receiver and pressure altitude encoder respectively carried onboard the aircraft.
- 2.3 ADS-B is now being introduced around the world. Numerous trials have proven the potential and benefit of ADS-B. ADS-B can be used to support the application of 5 NM separation minimum by ATC for enroute and terminal operations as good as radar. ADS-B could also support 3 NM approach separation as per ICAO Circular 326 ‘Assessment of ADS-B and Multilateration Surveillance to Support Air Traffic Services and Guidelines for Implementation’.

- 2.4 The ICAO Asia-Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) has decided to use the 1090 MHz (Mode S) Extended Squitter datalink for automated aircraft reports in the Asia-Pacific Region. ICAO has also issued a number of technical and operational standards to support its introduction.

NOTE: 1. Details of the implementations of ADS-B services in Hong Kong Flight Information Region (FIR) can be obtained from the Aeronautical Information Publication published by the Hong Kong Civil Aviation Department.

2. The content of this AN was originally under AN 102F which was further amended and relocated under AN 101 series to align with the intent of this notice.

3. Compliance

- 3.1 All applicable aircraft identified in paragraph 1 of this Notice with MTWA exceeding 5,700 kg or having a maximum cruising true airspeed capability greater than 250 knots and,

3.1.1 the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 8 June 2018 shall be installed with ADS-B equipages complying with the requirements in paragraph 4.3 of this Notice,

3.1.2 the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) before 8 June 2018 shall be installed with ADS-B equipages complying with the requirements in paragraph 4.1, 4.2 or 4.3 of this Notice with effect from 31 January 2023.

- 3.2 All applicable aircraft identified in paragraph 1 of this Notice with MTWA not exceeding 5,700 kg and having a maximum cruising true airspeed capability not greater than 250 knots and,

3.2.1 the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 8 June 2018 shall be installed with ADS-B equipages complying with the requirements in paragraph 4.1, 4.2 or 4.3 of this Notice,

3.2.2 the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) before 8 June 2018 shall be installed with ADS-B equipages complying with the requirements in paragraph 4.1, 4.2 or 4.3 of this Notice with effect from 31 January 2023.

4. Requirements

- 4.1 ADS-B equipages comply with 'RTCA DO-260 Minimum Operational Performance Standards', which is equivalent to ES Version 0 as specified in ICAO Annex 10, Volume IV, Chapter 3, Paragraph 3.1.2.8.6 and Chapter 2 of ICAO Doc 9871.
- 4.2 ADS-B equipages comply with 'RTCA DO-260A Minimum Operational Performance Standards', which is equivalent to ES Version 1 as specified in ICAO Annex 10, Volume IV, Chapter 3, Paragraph 3.1.2.8.6 and Chapter 3 of ICAO Doc 9871.
- 4.3 ADS-B equipages comply with 'RTCA DO-260B Minimum Operational Performance Standards', which is equivalent to ES Version 2 as specified in Chapter 4 of ICAO Doc 9871.

5 Additional Information

GNSS Receiver

As Selective Availability (SA) aware and Fault Detection and Exclusion (FDE) functionalities will improve accuracy and integrity to the position source of ADS-B, the forward fitment of these functionalities to new aircraft is highly recommended.

6 Cancellation

This Notice cancels Airworthiness Notice No. 101U Issue 1, dated 18 March 2022, which should be destroyed.

Captain Victor LIU

Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 101V
Issue 1
30 September 2022**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
TURBINE AEROPLANE - RUNWAY OVERRUN AWARENESS AND ALERTING
SYSTEM**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered turbine-engine aeroplanes of a maximum certificated take-off mass in excess of 5,700 kg issued with a Certificate of Airworthiness in Transport Category for which the individual certificate of airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 January 2026 and flown for international commercial air transport operations.

2 Introduction

The introduction of Runway Overrun Awareness and Alerting System (ROAAS) provides crew awareness of an impending runway overrun during the approach and landing phases of flight operations.

3 Compliance

All applicable aeroplanes shall comply with the requirement in paragraph 4 of this Notice.

4 Requirements

All applicable aeroplanes shall be equipped with a ROAAS.

Note: Guidance material for ROAAS design is contained in EUROCAE ED-250, Minimum Operation Performance Specification (MOPS) for ROAAS, or equivalent documents.

5 Additional Information

Nil.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 102
Issue 3
4 March 2022**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

**AIRWORTHINESS REQUIREMENTS
OF SPECIFIC APPROVALS**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong operators applying for specific approvals, such as, PBN, RVSM, EFB, and etc.

2 Introduction

The purpose of this Notice is to provide information on airworthiness requirements in support of specific approvals.

3 Compliance

All operators identified in paragraph 1 of this Notice shall comply with the relevant requirements stated in paragraph 4.

4 Requirement

4.1 Equipment Airworthiness Specification

Equipment shall meet one of the following airworthiness specifications:

- 4.1.1 CAD Hong Kong Technical Standard Order (HTSO)
- 4.1.2 EASA Technical Standard Order (ETSO)
- 4.1.3 JAA Technical Standard Order (JTSO)
- 4.1.4 FAA Technical Standard Order (TSO)
- 4.1.5 Other means approved by the Director-General

4.2 Airworthiness Requirements of Specific Approvals

The airworthiness requirements of the specific approvals are specified in the relevant document below:

Item	Specific Approval	Airworthiness Requirements Document
(a)	Reduced Vertical Separation Minima (RVSM)	ICAO Doc 9574
(b)	Low Visibility Operations (LVO)	CAD 359
(c)	Electronic Flight Bag (EFB)	CAD 562
(d)	Extended Diversion Time Operations (EDTO)	CAD 513
(e)	Performance Based Navigations (PBN)	ICAO Doc 9613
(f)	Performance-Based Communication and Surveillance (PBCS)	ICAO Doc 9869

4.3 Installation Requirements

Installation of equipment shall be approved in accordance with the requirements of HKAR-21.

4.4 Operational Requirements

Compliance with the airworthiness requirements in this Notice does not constitute a specific approval. Operators shall apply for specific approvals in accordance with the operational requirements of CAD.

5 Additional Information

(Reserved item)

6 Cancellation

This Notice Cancels Airworthiness Notice No. 102 Issue 2, dated 30 October 2020, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

4 March 2022

AN-102 P.2

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 103
Issue 1
31 July 2011**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

FUEL TANK FLAMMABILITY REDUCTION

1. Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes, fitted with Centre Wing Fuel Tank having a fleet average flammability exposure level exceeding 7%, of which the individual Certificate of Airworthiness was first issued (whether in Hong Kong or elsewhere) on or after 1 February 2012.

2. Introduction

- 2.1. This notice provides information pertaining to the introduction of Flammability Reduction Means for preventing the development of flammable air / fuel vapour mixtures within specific fuel tanks for new production aeroplanes.
- 2.2. The National Transportation Safety Board (NTSB) investigation of the Boeing 747-131 accident on 17 July 1996 (Trans World Airlines Flight 800) determined that the probable cause of the accident was an explosion of the centre wing fuel tank, resulting from ignition of the flammable air / fuel vapour mixture in the tank. The NTSB recommendations issued after the Boeing 747 accident were to eliminate the flammability exposure of the air / fuel vapour mixture and to make improvements to the safety of specific fuel tank designs by reducing the probability of creating an ignition source within the fuel tank.
- 2.3. Regulators and industry have done extensive work over the past years in order to establish by which means fuel tank explosions could be prevented
 - The traditional certification approach of controlling ignition sources within the fuel system has been reinforced; the relevant requirements of Part 25 were made more stringent and design reviews were conducted.

- Regarding the flammability exposure of the air / fuel vapour mixture, requirements applicable to new designs were published in CS 25 and FAR 25 respectively.

2.4. The flammability exposure of current large transport aeroplanes fuel tanks were assessed for showing compliance with FAR 26.33. Aeroplanes models fitted with high flammability Centre Wing Tank were identified.

2.5. Both aeroplane manufacturers have developed or are in the process of developing, Flammability Reduction System (FRS) using nitrogen enriched air produced by air separation module filtering engine bleed air. Both manufacturers have started or will soon be starting the introduction in production of these systems on some of the affected aeroplane types.

3. **Compliance**

With effect from 1 February 2012, all applicable aeroplane identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice. The fleet average flammability exposure is determined in accordance with appendix N of CS 25 and appendix N of FAR 25.

Note: At the date of issuance of this Notice, the following models were identified as having a fleet average flammability exposure above 7%:

Airbus A318, A319, A320, A321, A330 and A340
Boeing 737, 747, 767 and 777

4. **Requirements**

4.1. Aeroplanes shall be fitted with an approved FRS for Centre Wing Fuel Tank.

4.2. The FRS, when installed becomes part of the aeroplane minimum configuration. It must therefore remain installed and can only be dispatched inoperative in accordance with the provisions of the approved Minimum Equipment List (MEL).

5. **Addition Information**

5.1. Refer to CFR Final Rule, Docket No. FAA-2005-22997 for relevant FAA requirements.

5.2. Refer to EASA Safety Information Bulletin, SIB No. 2010-10 for relevant EASA requirements.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 104
Issue 3
7 February 2020**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

CARRIAGE OF SUPERNUMERARIES IN CARGO AEROPLANE

1 Applicability

This Notice is applicable to Hong Kong registered aeroplane with the first Certificate of Airworthiness issued (whether in Hong Kong or elsewhere) on or after 1 August 2011 in Transport Category (Cargo) equipped for carriage of occupants other than crewmembers.

2 Introduction

2.1 Class E cargo compartments are usually remote from the flight deck and encompass the entire interior of the aeroplane. The means of controlling fires that might occur in the cargo compartment is to ensure that there are means to shut off the ventilating airflow to, or within, the compartment, and starve the fire of oxygen. Advisory material provides guidance that includes depressurising the aeroplane and maintaining an altitude that will not support combustion. For this reason, only crewmembers are permitted on board such aeroplanes.

2.2 Recent aircraft designs introduce “supernumerary compartment” in aeroplanes with Class E cargo compartment configurations. The supernumerary compartments are designed to carry a certain category of persons which are termed “supernumeraries”. Supernumeraries are instructed persons and are briefed for the duty on board they are responsible for. The approved aeroplane flight manual contains the definition and the conditions under which the supernumeraries may be carried, and provide specific instruction for pre-flight briefing.

Note: “Supernumeraries” are sometimes referred as “couriers”; and “supernumerary compartments” are sometimes referred as “courier compartments”.

2.2 The certification requirements for aeroplanes address occupants as being either “crew” or “passengers”. Due to differences in training, physical capabilities, and other factors (such as familiarity with the aeroplane), the means required to

address emergency evacuation and emergency equipment for passengers and crewmembers differ.

- 2.3 Because supernumeraries are not crewmembers, it is the Director-General position that the overall level of safety offered to the occupants of the supernumerary compartment should be equivalent to the level of safety offered to passengers on a normal passenger aircraft.
- 2.4 However, supernumeraries do hold a special status because of their training and other factors. The Director-General, therefore, allows the carriage of supernumeraries on cargo aeroplanes without compliance with all design standards for passengers, provided that certain other conditions are met. Variations have traditionally been granted from certain passenger safety requirements such as CS/FAR 25.785(j), 25.807(d), 25.807(g)(1), 25.807(i)(1), 25.810(a)(1), 25.812(e), 25.813(b), 25.857(e) and 25.1447(c)(1).

3 Compliance

All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements in paragraph 4 of this Notice.

4 Requirement

4.1 Design Standards for Supernumeraries

In addition to design standards for cargo aeroplane, design standards for passengers are also applicable to supernumeraries. The design standards include:

4.1.1 Basic Design

The type certification basis as recorded in the applicable Type Certification Data Sheet.

Note: Exemptions to the type certification basis issued by the State of Design may be acceptable to, but are subject to validation by, the Director-General.

4.1.2 Air Navigation (Hong Kong) Order 1995

4.1.2.1 Article 13 “Equipment of Aircraft”

- a. For the purpose of this Article, the “Description of Aircraft” specified in the first column of the Table set forth in paragraph 4 of Schedule 5 of AN(HK)O 1995 shall also include aeroplane issued with a Certificate of Airworthiness in Transport Category (Passenger).

- b. For the purpose of this Article, the “Circumstances of Flight” specified in the second column of the said Table shall also include ‘for the purpose of the public transport of passengers’.

Note: Requirements for flight crew compartment door specified in Scale Q of Schedule 5 need not be complied with.

4.1.2.2 Article 46 “Exits and Breaking-In Markings”

For the purpose of this Article, requirements for passengers are also applicable to supernumeraries.

4.1.2.3 Article 50 “Exhibition of Notices indicating Prohibition of Smoking”

For the purpose of this Article, requirements for passenger seats are also applicable to supernumerary seats.

4.1.3 Airworthiness Notices

Airworthiness Notices, which are applicable to Hong Kong registered aeroplanes issued with a Certificate of Airworthiness in Transport Category (Passenger), are also applicable to aeroplanes identified in paragraph 1 of this Notice except otherwise noted in the individual Airworthiness Notice.

4.2 In-Flight Access to Class E Cargo Compartment

Reserved.

5 Additional Information

Nil.

6 Cancellation

This Notice cancels Airworthiness Notice No. 104 Issue 2, dated 30 January 2014, which should be destroyed.

Simon LI
Director-General of Civil Aviation

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 105
Issue 2
8 November 2018**

THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION

VIBRATION HEALTH MONITORING SYSTEM FOR HELICOPTER

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered helicopters with Maximum Total Weight Authorised in excess of 3,175 kg or with a Maximum Approved Passenger Seating Configuration of more than nine for which the Certificate of Airworthiness is first issued (whether in Hong Kong or elsewhere) on or after 1 January 2018.

2 Introduction

- 2.1 Helicopter rotor and transmission systems are susceptible to potentially hazardous and catastrophic failure effects, due to the very nature of their design of single Load Path. For many years, the benefit of the installation of Vibration Health Monitoring System (VHMS) as a compensating provision has been realised.
- 2.2 International Civil Aviation Organisation (ICAO) has published Recommended Practices in Part III of Annex 6 that requires VHMS to be installed in certain helicopters.
- 2.3 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

- 3.1 With effect from 1 January 2018, all applicable helicopters identified in paragraph 1 shall comply with the requirements of paragraph 4 of this Notice.

4 Requirements

4.1 Helicopter shall be equipped with a VHMS.

4.2 The VHMS shall meet the standards of EASA Certification Specification CS 29.1465 and associated AMC, or be approved by the Director-General.

5 Additional information

Nil.

6 Recommendation

ICAO Annex 6 Part III Section II Chapter 4 recommends a helicopter with Maximum Total Weight Authorised in excess of 3,175 kg or with a Maximum Approved Passenger Seating Configuration of more than nine should be equipped with a VHMS.

7 Cancellation

This Notice cancels Notice No.105 Issue 1, dated 30 December 2016, which should be destroyed.

Simon LI

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 106
Issue 2
31 July 2014**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
AIRCRAFT REGISTRATION PLATE LOCATION**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft required to be equipped with nationality and registration marks under Article 5 of the Air Navigation (Hong Kong) Order 1995.

2 Introduction

- 2.1 This Airworthiness Notice is intended to supplement the Air Navigation (Hong Kong) Order 1995, which requires the aircraft registration plate to be borne by aircraft registered in Hong Kong.
- 2.2 ICAO Annex 7 specifies the requirements for the content, materials of the aircraft identification plate and its location on the aircraft.

3 Compliance

- 3.1 All applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirements specified in paragraph 4 of this Notice.

4 Requirement

- 4.1 All applicable aircraft shall carry an aircraft registration plate inscribed with its nationality and registration marks, together with the name and address of the registered owner of the aircraft on a fireproof metal plate.
- 4.2 The aircraft registration plate shall be secured to the aircraft in a prominent position near the main entrance, or
- 4.3 In the case of a remotely piloted aircraft, secured in a prominent position near the main entrance or compartment or affixed conspicuously to the exterior of the aircraft if there is no main entrance or compartment.

5 Additional Information

ICAO Annex 7 – Aircraft Nationality and Registration Marks.

6 Cancellation

This Notice cancels Airworthiness Notice No. 106 Issue 1, dated 30 April 2014, which should be destroyed.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 107
Issue 1
30 April 2015**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
FACILITATION OF THE TRANSPORT OF PERSONS WITH DISABILITIES -
ACCESS TO AIR SERVICES**

1 Applicability

This Notice is applicable to all Hong Kong registered aircraft issued with a Certificate of Airworthiness in Transport Category (Passenger) with Maximum Approved Passenger Seating Configuration (MAPSC) of 60 or more.

2 Introduction

- 2.1 This Notice provides information pertaining to the Recommended Practice published in Chapter 8 of ICAO Annex 9 that Contracting States shall take the necessary steps to ensure persons with disabilities have equivalent access to air services.
- 2.2 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, which gives effect to the Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

With effect from 1 January 2016, all applicable aircraft identified in paragraph 1 of this Notice,

- (i) with the Type Certificate (excluding amendment of Type Certificate) first issued by the primary certification authority after 1 September 2014;
- (ii) with major cabin refurbishment incorporated after 1 January 2021; or
- (iii) with Certificate of Airworthiness first issued in Hong Kong after 1 January 2021,

shall comply with the requirements specified in paragraph 4 of this Notice.

4 Requirements

- 4.1 Where aircraft type, size, and configuration permit, to minimum uniform standards of accessibility with respect to equipment on board aircraft which would include movable armrests, on-board wheelchairs, accessible washrooms and suitable lighting and signs.
- 4.2 An on-board wheelchair shall be installed in aircraft to facilitate the movement of non-ambulant passengers within the cabin and particularly to the toilet.
- 4.3 Twin aisle aircraft shall have at least one spacious toilet facility enabling independent use by Persons with Reduced Mobility (PRM) requiring the use of the on-board wheelchair for mobility, while single aisle aircraft shall provide at least one toilet accessible to passengers using an on-board wheelchair.

5 Additional Information

- 5.1 Refer to ICAO Annex 9 - Facilitation, Chapter 8 Section III (Access to air services) for relevant requirements.
- 5.2 Refer to United States Department of Transport (DOT) Title 14 Code of Federal Regulations (CFR), Part 382 (Nondiscrimination on the Basis of Disability in Air Travel) for relevant FAA requirements.

Norman LO

Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 109
Issue 6
30 September 2022**

**THIS NOTICE GIVES DETAILS OF A MANDATORY ACTION
LOCATION OF AN AEROPLANE IN DISTRESS**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aeroplanes of a maximum certificated take-off mass of over 27,000 kg issued with a Certificate of Airworthiness in Transport Category and flown by operators under the terms of an Air Operator's Certificate for international commercial air transport operations.

2 Introduction

- 2.1 Following the disappearance of Malaysia Airlines flight MH370, the International Civil Aviation Organisation (ICAO) has published Standards in Part I of Annex 6 that requires the operator to establish an automatic aircraft tracking capability to track aeroplanes throughout its area of operations on emergency aircraft operational conditions.
- 2.2 The Chief Executive of Hong Kong Special Administrative Region, in exercise of the powers conferred on him by Section 2A of the Civil Aviation Ordinance, as amended which gives effect to Chicago Convention, adopts the Standards and where appropriate, Recommended Practices in accordance with the Convention.

3 Compliance

With effect from 1 January 2025, all applicable aeroplanes identified in paragraph 1 of this Notice with the individual certificate of airworthiness first issued on or after 1 January 2024, shall comply with the requirements in paragraph 4 of this Notice.

4 Requirements

All applicable aeroplanes shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress, in accordance with ICAO Annex 6 Part I Appendix 9.

5 Additional Information

Nil.

6 Recommendations

ICAO Annex 6 Part 1 Chapter 6 recommends that all 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 2023, should autonomously transmit information from which a position can be determined at least once every minute, when in distress, in accordance with ICAO Annex 6 Part I Appendix 9.

7 Cancellation

This Notice cancels Airworthiness Notice No. 109 Issue 5, dated 18 November 2021, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 110
Issue 3
1 February 2023**

PERMIT TO FLY FOR FERRY PURPOSE

1 Applicability

- 1.1 This Airworthiness Notice is applicable to all Hong Kong registered aircraft issued with a Certificate of Airworthiness (C of A) in any Category.

2 Introduction

- 2.1 This Airworthiness Notice provides guidance to owners/operators (referred as “operators” hereafter) when applying for Permit to Fly for ferry purposes.
- 2.2 It is the operator’s responsibility to complete the inspection and maintenance, being classified as mandatory by the Director-General or required by a maintenance schedule approved by the Director-General, as required for maintaining the certificate of airworthiness to be in force (referred as “required maintenance” hereafter).
- 2.3 Under unforeseeable circumstance, when the aircraft is at such a place that it is not reasonably practicable for accomplishing the required maintenance, a Permit to Fly may be issued for the aircraft to be ferried to a place where the required maintenance are to be carried out.

3 Application for Permit to Fly for Ferry Purpose

- 3.1 A Permit to Fly for ferry purpose shall only be issued once when the Director-General is satisfied that the aircraft is safe and fit for the intended flight.
- 3.2 Application for Permit to Fly shall be made on Form DCA 570 with the supporting documents and substantiations together with the appropriate fee required to the Director-General.

3.3 For aircraft which are under “long term parking” or “storage”, the Aircraft Airworthiness Assurance Checklist in Appendix No. 1 to Airworthiness Notice No. 111A shall be completed and submitted.

3.4 For flights beginning or ending outside Hong Kong, an application for Exemption under Article 7(1)(a)(i) of AN(HK)O shall also be submitted.

NOTE: Operator shall obtain the necessary overfly authorisations from the respective authorities of each of those States prior to undertaking the flight.

4 Issue of Permit to Fly

4.1 A Permit to Fly shall only be issued when the Director-General is satisfied that the aircraft is safe and fit for the intended flight, on the basis of his own investigation on a case by case basis.

4.2 The Permit to Fly will specify the conditions under which the aircraft may be flown and any relevant airworthiness, operation or maintenance requirements that are to be met. The number of occupants on board the aircraft for the flight may be restricted.

4.3 Permit to Fly will be issued for a period, a number of flight cycle and/or permitted routes as appropriate.

5 Maintenance

5.1 During the period of validity of the Permit to Fly, the aircraft shall be maintained as safe and fit for the intended flight as it is carrying a valid certificate of airworthiness.

6 Cancellation

This Notice cancels Airworthiness Notice No. 110 Issue 2, dated 31 July 2022, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

EVIDENCE TO SUBSTANTIATE APPLICATIONS

1 Introduction

Evidence is required to substantiate Applications under paragraph 3.1(d) of AN 110 for the Issue and Reissue of Permits to Fly in respect of aircraft, the design of which, has previously been accepted by a recognised National Airworthiness Authority.

2 The following requirements apply:-

- 2.1 The Applicant shall submit evidence to demonstrate that the aircraft type has a safety record in service acceptable to the Director-General for its intended use.
- 2.2 The aircraft shall be shown by a competent person to conform to the type to which the established safety record is related.
- 2.3 Used aircraft should have been maintained and overhauled, and relevant records should be complete including those relating to life components.
- 2.4 The Applicant shall demonstrate to the satisfaction of the Director-General their competence to conduct or arrange for the necessary flight testing of the aircraft as required by the Director-General.
- 2.5 The Applicant shall be able to demonstrate their competence and resources to maintain the aircraft in accordance with paragraph 2.3, or in the case of new aircraft in a manner acceptable to the Director-General, and to ensure that any modifications necessary to maintain the standard of airworthiness are determined and incorporated.
- 2.6 The applicant shall be competent to observe any limitations that the Director-General may determine having regard to the safety of third parties and occupants during intended operations of the aircraft.
- 2.7 The aircraft shall be equipped to a standard acceptable to the Director-General for the intended purpose.

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**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 111
Issue 3
31 October 2023**

**PUBLIC HEALTH RISK MITIGATION MEASURES IN RESPONSE TO PUBLIC HEALTH
EMERGENCY OF INTERNATIONAL CONCERN
(COMMUNICABLE DISEASES)**

1. Applicability

This Airworthiness Notice is applicable to all Hong Kong-registered aircraft issued with a Certificate of Airworthiness.

2. Introduction

- 2.1. This notice was initially established in response to the out break of the COVID-19 pandemic for mitigating public health risk of communicable diseases transmission in the aviation industry.
- 2.2. On 5 May 2023, the World Health Organization (WHO) announced that COVID-19 no longer constituted a Public Health Emergency International Concern (PHEIC).
- 2.3. Notwithstanding this, ICAO pointed out that the global risk assessment still remained high due to remaining uncertainties regarding the potential evolution of COVID-19 virus. In this connection, ICAO urged Member States and aviation industry stakeholders to sustain the momentum to strengthen the aviation industry's resilience to future public health emergencies.
- 2.4. This notice is therefore revised to cope with the challenges of any potential future public health emergencies.

3. Compliance

Upon declaration of a PHEIC by the WHO, operators of aircraft identified in paragraph 1 shall immediately consider, based on a risk base approach, to comply with the requirements in paragraph 4 of this Notice in a timely manner.

4. Requirements

- (a) The operator should enhance the cleaning schedule and establish a disinfection schedule based on the aircraft manufacturer guidance to ensure that flight deck, cabin and cargo compartment are cleaned and disinfected at an appropriate frequency to accommodate safe operations for the crew, passengers and ground staff.
- (b) The operator should adopt disinfection methods in consultation with the aircraft manufacturer and based on an appropriate safety risk assessment. They should also take into account any advice from the WHO.
- (c) The operator should establish a procedure to minimise the risk of spillage of disinfectant, especially on equipment related to the safe operation of the aircraft.
- (d) Some of the disinfectants are flammable. The operator should establish a procedure to prevent potential sources of ignition and pay particular attention to hidden ignition sources such as electronic boxes mounted in the cargo compartment.
- (e) The operator should consider whether increased cleaning and disinfection may affect compliance with any applicable disinfection requirements established in accordance with ICAO Annex 9. Additional information may be obtained from appropriate authorities and the WHO as appropriate.
- (f) Given the increased likelihood that switch positions may be inadvertently changed during the cleaning or disinfection process, the operator should reinforce procedures to verify that all flight deck switches and controls are in the correct position prior to operation of the aircraft.
- (g) Some equipment on the flight deck may have additional disinfection needs based on usage (e.g. oxygen masks). The operator should establish special procedures for such equipment in accordance with the aircraft manufacturer guidance.
- (h) Disinfection during maintenance
 - (i) The operator should be mindful of regular maintenance to both air systems and water systems to ensure that they continue to protect the passengers and crew from viruses. The operator should refer to the aircraft manufacturer for specific maintenance actions and intervals.
 - (ii) The operator should include access panels and other maintenance areas in the disinfection procedures to ensure a safe working environment for the maintenance personnel.
 - (iii) The operator should establish operating procedures to minimise the number of maintenance personnel who need to be in contact with high-touch surfaces such as access panels, door handles, switches, etc.
 - (iv) The operator should establish maintenance procedures to be applied after disinfection in order to check the flight deck, cabin and cargo compartment for the correct positioning of control handles, circuit breakers and control panel switches and knobs

and for the complete closure of access panels and doors.

- (i) Air System Operations – Ground Operations (before chocks-off and after chocks-in)
 - (i) The operator should avoid operations without the air conditioning packs or external pre-conditioned air (PCA) source. External air sources are not processed through a high-efficiency particulate air (HEPA) filter. Use of the auxiliary power unit (APU) should be permitted at the gate to enable the aircraft's air conditioning system to be operated, if equivalent filtration from PCA is not available.
 - (ii) If the aircraft has an air recirculation system, but does not have HEPA filters installed, the operator should make reference to documents published by the aircraft manufacturer or consult them about the recirculation system setting.
 - (iii) The operator should operate the fresh air and recirculation systems to exchange the volume of cabin air before boarding. If possible, the aircraft doors should be left open for as long as possible to allow the aircraft to ventilate.
- (j) Air System Operations – Minimum Equipment List (MEL) Dispatch
 - (i) Fully operational air conditioning packs and recirculation fans provide the best overall cabin ventilation performance. The operator should minimise dispatch with packs inoperative and, for aircraft equipped with HEPA filter, minimise dispatch with recirculation fans inoperative.
 - (ii) Some aircraft have better airflow performance with all outflow valves operational. The operator should consult the aircraft manufacturer about the ventilation performance of the aircraft with outflow valves inoperative and the limitations associated with the dispatch in such situation.
- (k) Air System Operations – Filter Maintenance
 - (i) The operator should follow the normal maintenance procedures as specified by the aircraft manufacturer. Take note of special protection and handling of filters when changing them.
 - (ii) The operator should consult the aircraft manufacturer if additional sanitisation procedures and/or personal health protection are needed to avoid microbiological contamination in the filter replacement area.
- (l) Cleaning after infection
 - (i) For suspected cases, ensure affected seats and adjacent rows cleaning is immediately performed with appropriate disinfectant.
 - (ii) For confirmed cases, ensure aircraft cabin deep cleaning is immediately performed with appropriate disinfectant. If no disinfectant available, affected seats and adjacent

rows shall be isolated. Any contaminated material should be disposed into biohazard bags.

- (iii) Ensure cabin airflow (APU) during passenger offload, ventilate for five minutes with door(s) open. Remove bleed air / ventilation, allow cabin air to settle, commence with cleaning.
- (iv) Dispose of or quarantine items that cannot be cleaned, such as blankets, pillows, emergency briefing cards, etc.
- (m) Safety of flight must not be compromised. If these procedures conflict with the safety of any flight, encourage personnel to discontinue them, and report the flight and the situation to management.

5. Additional Information

Nil.

6. Recommendations

Nil.

7. Cancellation

This Notice cancels Airworthiness Notice No. 111, Issue 2, dated 31 December 2020, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

**CIVIL AVIATION DEPARTMENT
HONG KONG, CHINA**

Airworthiness Notice

**No. 111A
Issue 4
1 February 2023**

**RE-ESTABLISHMENT OF AIRCRAFT OPERATIONS AFTER
LONG TERM PARKING OR STORAGE**

1 Applicability

This Airworthiness Notice is applicable to all Hong Kong registered aircraft issued with a Certificate of Airworthiness (C of A) in any Category which are under “long term parking” or “storage” as defined in the aircraft manufacturer instructions or in the general rules of the aircraft maintenance schedule.

Note: “long term parking” means an aircraft is parked for a specific period of time and is maintained in a condition that enables quick resumption of operations. “Storage” means an aircraft is preserved in a way that it is unlikely to return into service in the short-term. Different aircraft manufacturers may use various terminologies.

2 Introduction

- 2.1 This Airworthiness Notice provides guidance to owners/operators (referred as “operators” hereafter) to establish their procedures, if not yet have done so, for the re-establishment of aircraft operations after long term parking or storage. The aircraft Airworthiness Assurance Checklist in Appendix No. 1 to this Airworthiness Notice is developed to provide a step-by-step approach for operators to cross check with their procedures as to ensure the airworthiness of their aircraft and to manage the associated safety risks while facing operational challenges and restrictions during aircraft long term parking or storage.
- 2.2 This Airworthiness Notice also stipulates a mandatory requirement that operators shall complete and return the aircraft Airworthiness Assurance Checklist in Appendix No. 1 within the time frame as specified in paragraph 4 for preparing their aircraft returning to operation.
- 2.3 This Airworthiness Notice is established with reference to IATA “Guidance for Managing Aircraft Airworthiness for Operations During and Post Pandemic” Edition 2, the FAA “Safety Alert for Operators (SAFO) 21003” dated 21 July 2021, EASA “Return to service of aircraft after storage: Guidelines in relation to the COVID-19 pandemic” Issue No. 03 and “CAD Safety Information Bulletin – Airworthiness (SIB) No. 2022-01” Revision 1.

3 Compliance

Operators of all applicable aircraft identified in paragraph 1 of this Notice shall comply with the requirement in paragraph 4 of this Notice.

4 Requirements

Operators shall complete and submit to CAD for acceptance the aircraft Airworthiness Assurance Checklist as shown in Appendix No. 1 to this Airworthiness Notice for each aircraft type, regardless where they are stored or parked, within one month from the date of this Airworthiness Notice, or after parking or storage of the aircraft, whichever occurs later.

5 Additional Information

5.1. Operators should follow manufacturer instructions for aircraft long term parking or storage. In the absence of such manufacturer instructions, the guidance in this paragraph should be considered.

5.2. Procedures for long term parking or storage

The operator should establish adequate procedures to oversee and manage the long term parking or storage of its aircraft. Division of responsibility should be clearly defined. In addition to the manufacturer instructions and recommendations, due consideration should be given to the following administrative practices.

5.3. Preparation for putting an aircraft into long term parking or storage condition

(a) The likely effects of the prevailing environmental conditions should be assessed. The length of parking or storage period should be determined. Frequency and depth of periodic inspections as well as finding review should be specified. Specific parking or storage requirements and conditions as detailed in the relevant manufacturers' maintenance manual should be taken into account before the parking or storage commences.

(b) The maintenance requirements for the aircraft during parking or storage should be commensurate with the status of the C of A. In order to keep the C of A in force, the corresponding approved maintenance schedule requirements and any mandatory requirements should be complied with in accordance with a manufacturer-defined or regulator-approved timeline.

5.4. Routine maintenance considerations

(a) Structural survey for corrosion should be carried out. Detailed records should be maintained in accordance with the maintenance record keeping requirements.

(b) Windscreens and transparencies should be protected by specific protective coatings. Manufacturers' recommendations should be applied to ensure no crazing is apparent following

long term parking or storage.

- (c) Perishable components such as rubber hoses, seals and packings should be specifically handled and protected and in some cases replaced following long periods of inactivity.
- (d) Landing gear system, including wheels, tires, brakes, steering function, undercarriage oleo and landing gear doors should be sufficiently serviced. Tires should be regularly rotated. Operators may replace the tires prior to operation resumption.
- (e) Electrical/electronic equipment and components should be maintained by electrically grounding the aircraft; switching off control switches and de-activating circuit breakers; checking batteries full-charge status before de-energizing the aircraft and physically disconnecting the aircraft batteries between aircraft power-up cycles for maintenance; considering if batteries should be removed; keeping avionics LRUs inactive; capping of all disconnected electrical connectors; and periodically servicing IDGs and VFGs.
- (f) Flight control system should be maintained by keeping all surfaces clean, free of corrosion with all structural drain holes unobstructed; lubricating and applying temporary protective coating; positioning of controls and flight control surfaces to neutral/stowed; and periodically checking operation of all flight control surface on their complete range of travel.
- (g) Aircraft interior condition should be maintained by removing trash/debris; cleaning of exposed surfaces; inspecting seats and carpets for moisture and mildew or other spoiling effects; keeping cabin average humidity at a suitable level in accordance with aircraft manufacturer recommendation; closing all doors and hatches; and removing slide/raft assemblies and passenger life vests.
- (h) Fuel system and fuel tank should be maintained by ensuring for the entire parking period a minimum fuel quantity in each tank is kept as per aircraft manufacturer instruction; performing periodic water drainage of all fuel tanks; performing initial and periodic fuel sampling analysis for microbiological contamination of each fuel tank; and ensuring biocidal treatment of fuel tanks based on microbiological contamination monitoring.
- (i) Propellers should be maintained on a regular basis throughout the parking or storage period including regular operation of the pitch change mechanism. Attention should be paid to the possibility of increased acidity of the oil in the pitch change mechanism, which may lead to corrosion of internal oil ways and pistons and degradation of seals.
- (j) Engines and Auxiliary Power Unit (APU) should be preserved by covering inlet and exhaust; periodically rotating engine shafts; preventing engine inlet lip skin corrosion; periodically starting the engines and APU; performing engine and APU fuel system conservation; and deactivating/removing engines and APU fire bottles.

- (k) Oxygen systems specifically passenger and crew oxygen bottles should be stored in accordance with the manufacturer requirements for long term parking or storage.
- (l) Environmental control system dedicated external air inlets and exhausts should be adequately protected.
- (m) Hydraulic reservoirs' fluid levels should be checked; hydraulic system should be checked for leakage; hydraulic actuator rods exposed to ambient environment should be cleaned and lubricated.
- (n) Aircraft probes and sensors should be protected with appropriate covers and plugs. The systems' preservation actions should facilitate removal of all covers and plugs, detailed inspection of all probes and sensors drain holes, inspection and contamination removal of all pitot-static lines, probes and sensors, and completion of probes and sensors system functional and leak checks.
- (o) Aircraft should be secured by storing in a physically controlled space or appropriate mechanisms are in place to ensure the aircraft is not tampered with; ensuring only authorised personnel could access the aircraft; and any aircraft related action/event is accurately recorded/documented.

5.5. Reactivation of aircraft from long term parking or storage

- (a) The operators should conduct a robust safety risk assessment to identify potential hazards and determine mitigating strategies. Examples of hazards and mitigating strategies related to parked/stored aircraft returning to service can be found in the EASA guidance material quoted in paragraph 2.3 of this AN.
- (b) Consideration should be given to aircraft cycles, hours and operating history; all possible risks/hazards/mitigation measures which the airline captured in its safety risk assessment; review and scrutiny of all maintenance work due; configuration of hardware and software; and component cannibalisation practices.
- (c) Aircraft records with a complete and accurate reflection of the aircraft state including all its systems, equipment and components as well as the related maintenance work should be readily accessible.
- (d) Aircraft parking and cyber security should be considered since they have an intrinsic link to the aircraft airworthiness at de-preservation following its extended parking or storage.

- (e) The operator should be aware of any aircraft manufacturer or CAD requirements for completing a non-revenue flight following a prolonged parking or storage period and before revenue flight. If such a flight is required, the intended flight profile should be clearly established to satisfy the requirements.
- (f) The use of OEM granted “limited” extensions for some due tasks threshold/periodicity must be accurately accounted for. The “cascading effect” of using such extensions will be reflected in additional and/or out of phase maintenance tasks which would have to be planned for, tracked and supported for an extensive period beyond the time of aircraft return to operations.
- (g) In the context of the pandemic crisis there is a major emphasis on and shift in aircraft cleaning and disinfection practices to address the bio-safety requirements and expectations from commercial air transport activities. Such added elements may have an impact on and should be considered by the aircraft maintenance program at least in areas like biohazards in execution of maintenance, ingress prevention to avionics and electrical units, cabin interiors maintenance and corrosion control.
- (h) Specific approvals such as EDTO, LVO and RVSM should be valid. Re-qualification of each aircraft may be required.
- (i) Exterior mandatory break in, emergency exit and registration markings should not be bleached or blistered due to prolonged exposure to the sun.
- (j) All blanks, masks and protective covers should be removed. Attention should be paid to secondary intakes; angle of attack vanes; static ports; pitot probes; and external control surface locks.
- (k) Air data system pressure lines should be detail inspected after flushing the system to ensure no latent debris exists. Debris may not be flushed out of pressure lines due to size of the debris or the configuration of the pressure line. In this connection, when the pressure line is connected with quick-disconnects, the space inside the pressure line should also be inspected with the quick disconnects disengaged. The inspection results should be properly recorded with photo taken. Independent inspection should be performed after pressure line disconnection.
- (l) Lavatory fire extinguishing bottles should be inspected for any sign of discharge. If the gas pressure falls outside the acceptable range, such bottle should be replaced with a serviceable one.
- (m) Mandatory requirements such as airworthiness directives and airworthiness notices published by CAD, the authorities of the state of manufacture and the state of registry must be complied with.
- (n) It is extremely probable that the aircraft has been on a fixed heading for the parking or storage

period. Therefore, aircraft manufacturer could be consulted for the necessity of compass swing and subsequent issue of compass correction chart.

- (o) If the C of A expired during the parking or storage period, it can be reinstated in accordance with one of the following means:
 - (i) C of A has expired for twelve months or less – if the aircraft has been maintained in accordance with the corresponding AMS and mandatory requirements, the C of A can be renewed with no extra condition imposed.
 - (ii) Cases other than that in 5.5.(o)(i) – the operator should apply for issue of C of A.
- (p) If an aircraft with a C of A that has ceased to be in force but requires to be positioned to a place for the reactivation process, the operator should apply to CAD for flying the aircraft with a permit to fly for ferry purpose.

6 Recommendations

Nil.

7 Cancellation

This Notice cancels Airworthiness Notice No. 111A, Issue 3, dated 18 November 2021, which should be destroyed.

Captain Victor LIU
Director-General of Civil Aviation

Airworthiness Notice No. 111A
Appendix No. 1

Issue 2
31 December 2020

Re-establishment of Aircraft Operations after Long Term Parking or Storage
Aircraft Airworthiness Assurance Checklist

Airline/Operator/ Owner:		AOC No. (if applicable):	
Aircraft Type:			

Please complete the table below and return to awo@cad.gov.hk				
No.	Items	Procedure in place?		
		Yes	No	NA
1	Parking or storage maintenance requirements of the aircraft, engines and components have been carried out in accordance with approved maintenance data including fuel storage and tank treatments.			
2	Proper parking or storage environment and secure condition. For example:			
	• Hangarage.			
	• Aircraft security.			
	• External parking or storage requirements to preclude ingress of moisture, dust, insects, etc.			
3	Parking or storage environmental and security conditions for aircraft parked or stored at remote bases.			
	• Hangarage.			
	• Aircraft security.			
	• External parking or storage requirements to preclude ingress of moisture, dust, insects, etc.			
4	Smooth coordination between flight operations and your maintenance service providers for de-parking or de-storage of aircraft and engines.			
5	Sufficient time is remained for the intended utilisation prior to the expiry of the Certificate of Maintenance Review (CMR).			

6	No maintenance task is overdue during the CMR validity period unless otherwise approved by CAD.			
7	Sufficient life of life-limited components is remained for the intended utilisation.			
8	All software, firmware, navigation and terrain databases are up to date.			
9	Mandatory maintenance tasks are commenced during the parking or storage period as scheduled.			
10	Maintenance in progress, especially independent inspection, during the parking or storage period is correctly completed and certified.			
11	All return-to-service requirements and tests such as engine performance checks and proving flights are completed in accordance with manufacturer requirements.			
12	Any changes to the system of maintenance or engine life development program due to reduced operating hours are managed.			
13	Current pilot operation handbook, aircraft flight manual or operations procedure manual including any supplements are on board.			
14	Current necessary certificates are on board.			
15	Current MEL, if applicable, is on board.			
16	Potential extension of MEL/CDL requirements in remote area flying operations is managed.			
17	Potential shortage of spare parts due to possible travel restrictions is managed.			
18	Reliability of "aircraft-on-ground" service levels in remote areas from your maintenance service providers is managed.			
19	Possibility of incompliance with any current CAD approvals, authorisations, variations and permissions is managed.			

Information of the person who complete this form:

Name:		Position:	
Signature:		Date:	