

Airworthiness Management Information

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1. Introduction

- a) All references to
 - The “Air Navigation (Isle of Man) Order” or ANO are applicable to the current issue as published and available on our website.

- b) An aircraft is considered to be Airworthy, when it,
 - Continues to comply with its Type Design,
Complying to the type design is considered achieved when the aircraft configuration and the components installed are in accordance with the drawings, specifications, and other data that are part of the TC, and also includes conforming to additional factors such as STC and IOMAR approved modifications embodied on the aircraft.

 - The aircraft must be in a condition for safe operation.
Nil apparent defects, unless considered acceptable for continued service under the appropriate release of an IOMAR Approved MEL or individual permission.

2. Maintenance Certification

All persons identified within the ANO as to who can issue a certificate of Release to Service (CRS) must only use the statement identified below,

“ Certifies that the work specified, except as otherwise specified, was carried out in accordance with the Air Navigation (Isle of Man) Order 2015 and in respect to that work, the aircraft/aircraft component is considered ready for release to service”.

The following information identifies differing scope of AMEL holders and those persons authorised under an Aircraft Maintenance Organisation of an EASA Part 145 standard, or IOMAR AMO approval holder.

A. Base Maintenance & Line Maintenance

AMO of the standard holding an EASA PART 145 / Part M Sub Part F, with a Company authorised individual.

The Air Navigation (Isle of Man) Order 2015 identifies AMOs that hold an EASA Part 145 or Part M Sub Part F maintenance organisation approval as an acceptable standard to issue an IOM CRS.

Therefore the Isle of Man Aircraft Registry identifies a generic “Class Validation” status to enable all EASA Part 145 approved maintenance organisations, working within the scope of a valid approval, to certify maintenance on Isle of Man registered aircraft. Pilots or other individual authorised by an approved maintenance organisation QA department, may exercise the privileges of their authorisation.

A CRS issued by a person internally authorised by a company of the standard accepted will be issued in accordance with the Air Navigation (Isle of Man) Order 2015 statement above and **not** under the EASA approval to the Basic regulation; the EASA company approval number is required for tracking only and indicates the AMO is an approved EASA organisation standard.

However, as the aircraft will be certified in accordance with IOM legislation, the IOMAR may enhance or limit the scope, as detailed within the approved exposition on a case by case basis.

Using the company authorisation number on the form, and following the company MOE procedures, but must include as a minimum, signature, name, date and the individuals issued company Authorisation number.

IOMAR AMO Approval,

the organisation will issue the CRS and annotate the document with their IOMAR company issued approval number, and individuals will annotate, the method of individual identification as is applicable.

B. Line Maintenance and defect rectification only

IOMAR Validated Engineer or Authorised Individual

The certifier must sign, print their name, date and append their current validation or authorisation number (as applicable) to each certificate.

3. Validations (Engineers / Mechanics / Technicians)

The IOMAR-ANO Identifies **who** may issue a certificate of release to service, this includes the holder of an AMEL rendered **valid** under the ANO.

The department may, subject to any conditions as it thinks fit, issue a certificate of validation of: an aircraft maintenance engineers licence granted in accordance with the laws and procedures of a contracting state.

The AMEL validation process by the IOMAR, falls in to 2 methods of licence status.

- Type Rated (eg, EASA / CASA Part 66)
- Non Type Rated (eg FAA A&P / TCCA "M")

The following tables identify the requirements to be satisfied and relevant documents required to reach a validation issue.

Please note examples of the prevalent errors historically made when submitting an application that delay the issue, and cause unnecessary administration for all parties.

- Incomplete Form 7 application
- Not sending the documents indicated as attached
- Licence not signed
- Insufficient ATA range (or only listing a group, eg 100hrs, 400hrs, this needs to identify the content, not just the frequency as all manufactures ICA recommendations are different).
- Insufficient example of inspections, functions, component replacement
- Type rated licence that does not include the aircraft type required

The applicant (Engineer) **MUST** ensure all the documents required indicated on the form 7 are submitted. Note, only the documents requested should be submitted, do NOT send any other documents (EG, EWIS, HF, Ground Run, Taxy etc. these are not relevant to a validation application or decision to issue).

An incomplete form 7 or incorrect documents will result in a rejected application, & notification emailed to the applicant.

No documents will be retained from incomplete applications, and subsequent submissions must include all documents in the application.

Please note that Isle of Man Government IT Policy does not allow us to download any document from internet storage locations, for example "Dropbox" or the "Cloud Storage" etc. therefore all single emails including the total of documents must be of a size of less than 15Mb.

IOMAR requirements to issue a validation & AMCs that Demonstrate this	Type Rated	Non Type Rated
Technical Aircraft Generic Knowledge (ICAO Annex 1 Licence)	Example - EASA / CASA PART 66	Example - FAA A&P / Transport Canada "M"
Type Rated Evidence	Type Rating included	Aircraft Type Course (Demonstration by Differences Courses will need to have originating Aircraft Type certificates included with submission)
Type Practical Experience	<p>Type rating added within the last 6 months - acceptable.</p> <p>Type rating added more than 6 months ago, practical work demonstration of varied ATA chapter range, ATA 21 onwards, no further back than 2 years with a minimum of 3 ATA CH examples being carried out within 6 months of application. Must be presented in ATA chapter order, NOT date order.</p> <p>NOTE: Examples of trouble shooting are a definite advantage but must be specific in detail identifying stages from initial assessment to resolution of the defect.</p>	<p>Varied ATA chapter range , ATA 21 onwards, no further back than 2 years with a minimum of 3 ATA CH examples being carried out within 6 months of application. Must be presented in ATA chapter order, NOT date order.</p> <p>OR</p> <p>Part 147 course cert stating practical, issued within the last 6 months.</p> <p>NOTE: Examples of trouble shooting are a definite advantage but must be specific in detail identifying stages from initial assessment to resolution of the defect.</p>

4. Airworthiness Directives

For the purposes of the Air Navigation (Isle of Man) Order, the statement,

'made mandatory by the Department',

includes Airworthiness Directives (ADs), for the Aircraft, Engine, Propeller or Component.

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- A. An Airworthiness Directive (AD) is a document issued by the State of Type Certification that, the applicable TCDS for the aircraft, engine, propeller (or State of Manufacture, in the case of equipment) conforms to.
- B. As identified above, the IOMAR mandates the issued AD, that includes actions to be performed on an aircraft, its engines or equipment to restore an acceptable level of safety, when evidence shows that the level of safety of the aircraft, its engines or equipment may be compromised.
- C. An AD contains at least the following information;
- (a) the date the AD comes into force
 - (b) the compliance time for the required actions
 - (c) the identification of aircraft, engine or equipment affected by the AD
 - (d) the identification of the unsafe condition
 - (e) a description of the required actions
- D. The Department may vary the requirements of AD's published by the State of Type Certification, and issue its own IOMAR AD, defined as an Additional Airworthiness Directives (AAD). In this case the AAD will take precedence over the original AD.
- E. With the exception of AADs, and Emergency ADs (EADs), the Isle of Man Aircraft Registry will not usually notify operators of the issue of Airworthiness Directives.
- F. Aircraft operators, usually tasked to the NATR, therefore must have access to the relevant AD's to assess when published, for applicability to their specific aircraft & can be complied to as required.
- G. The operator or their nominated representatives are strongly advised to register with the respective State issuing the AD, for automated notification of AD publication.
- H. An aircraft shall not be flown unless each applicable Airworthiness Directive; compliance can be demonstrated by
- (a)** the specific AD compliance criteria,
- or
- (b)** Alternative Method of Compliance (AMOC).

AMOC - Where identified that an issued AD, is applicable to the specific IOMAR aircraft, a possibility can exist of an alternative method of compliance, with the following considerations.

An alternate method of compliance is accepted by The Department if,

- a service bulletin previously accomplished provides full AD compliance. (The Operator must be able to demonstrate full compliance of the AD, by comparison to the SB where necessary. (On occasion an SB certification does not enable a full compliance for an AD, for example the SB may not identify an AFM or MEL change but the mandated AD would make such an additional change, in this case the SB only provides partial compliance.
- The NAA that issued the AD and subsequently accepts a proposed alternative method, either generically or specifically for the aircraft serial number and provides documentation accordingly identifying acceptance of the alternative.

I. Which ADs ?

Aircraft registered in The Isle of Man, are only accepted when conforming to one of the accepted State of Certification standards, FAA, EASA (member states) or TCCA.

The aircraft conformity TCDS is declared by the Operator at initial application, and MUST be to one of the specifications above, and the aircraft is expected to be compliant during the Certificate of Airworthiness initial survey.

The TC status, and associated TCDS requirements will be retained for the whole of the period that the aircraft remains registered with the Isle of Man Aircraft Registry.

The State of Certification (TCDS) from the 3 possible States identified above therefore identifies the applicable mandated Airworthiness Directives (ADs) to be followed.

Examples only – context is applicable to all aircraft:

- 1) Gulfstream Aerospace Corporation - GVI – Exporting State of Registry is a member state of EASA, the aircraft would therefore be expected to be compliant at that time to an EASA TCDS - EASA.IM.A.169, and would be surveyed by an appointed IOMAR Airworthiness Surveyor, sampling the Aircraft EASA published ADs.
- 2) Gulfstream Aerospace Corporation - GVI - Exporting State of Registry is FAA, the aircraft would therefore be expected to be compliant at that time to an FAA TCDS - T00015AT, and would be surveyed by an appointed IOMAR Airworthiness Surveyor, sampling the Aircraft FAA published ADs.
- 3) Gulfstream Aerospace Corporation - GVI - Exporting State of Registry is TCCA, the aircraft would therefore be expected to be compliant at that time to an TCCA TCDS – A-226, and would be surveyed by an appointed IOMAR Airworthiness Surveyor, sampling the Aircraft TCCA published ADs.
- 4) Gulfstream Aerospace Corporation - GVI - Exporting State of Registry is not directly from one of the G03 above. This will require additional work to confirm the NAA standard (Most usually the original SoD) the aircraft would therefore be expected to be compliant at that time to the relevant TCDS and associated NAA issued ADs. Further clarity can be reached with RST at the initial contact period.

For Engines / Propellers,

The Type Certificate standard of the Engine and Propeller (if applicable) of aircraft joining the IOMAR will be determined from the Aircraft's TCDS. Where the TCDS number of the Engine/Propeller is not stated on the Aircraft TCDS, the default will be the State of Design of the Engine/Propeller, if multiple TCDS numbers are stated, the engine specific log book documents must be reviewed to ascertain the TCDS information.

- 5) Gulfstream Aerospace Corporation - GVI –the aircraft TCDS – EASA.IM.A.169, clearly states Engines – BR700-725A1-12 (EASA Engine Type Certificate No E.108, therefore AD compliance would be for those issued by EASA and would be surveyed by an appointed IOMAR Airworthiness Surveyor, sampling the Aircraft EASA published ADs.

- 6) Gulfstream Aerospace Corporation - GVI –the aircraft TCDS - FAA TCDS - T00015AT, clearly states Engines – BR700-725A1-12 (Engine Type Certificate No E.00057EN), therefore AD compliance would be for those issued by FAA and would be surveyed by an appointed IOMAR Airworthiness Surveyor, sampling the Aircraft FAA published ADs.
- 7) Gulfstream Aerospace Corporation - GVI –the aircraft TCDS – TCCA-TCDS – A-226, clearly states the specific TCDS to be against the FAA aircraft TCDS , so Engines – BR700-725A1-12 (Engine Type Certificate No E.00057EN), therefore AD compliance would be for those issued by FAA and would be surveyed by an appointed IOMAR Airworthiness Surveyor, sampling the Aircraft FAA published ADs.

It can be seen from the above that the NATR must make a review of the Aircraft TCDS and have access to a list of the equipment fitted to the aircraft to enable them to determine which ADs are applicable.

Records - Aircraft, engine and propeller log books required by Article 29 should be updated to record Airworthiness Directive compliance, including the means of compliance where options exist. Entries relating to any phased termination permitted by Directives should be clearly recorded to ensure adequate control. Entries should additionally be made for generally applicable Directives non-applicable to particular aircraft, engine, propellers, equipment, including the reason for non-applicability.

J. Isle of Man Additional Airworthiness Directives (AAD)

None issued at this time.

5. Aircraft Maintenance Programme – CVR-FDR See (RP11) 3.4.4

Cockpit Voice Recorder (CVR) - Flight Data Recorder (FDR) calibration and readout (if installed on the aircraft)

It is the aircraft owner's responsibility to ensure that applicable maintenance recommendations and requirements specified by the TC/STC holder to ensure the continued serviceability of the CVR/FDR system are followed.

However, Safety Investigation Authorities (SIA) have identified that on occasion CVR & FDR data being analysed has not recorded as expected & fails to provide enough clarity or is totally unusable to serve the needs during an investigation.

Unserviceability's, due to a malfunction of the dedicated equipment, may remain hidden for a certain amount of time, (dormant failure) as it may be impossible to determine the full system functionality on board the aircraft, examples such as CVR microphone pickups and associated parts, may actually be unable to provide sufficient audio input quality to make the actual recordings robust, FDR input systems may have defective channel inputs such as broken wires, defective targets etc.

SIAs recommend that States of Register (SoR) should consider enhancing AMPs to encompass specific tests and checks to ensure not only the serviceability of the CVR unit itself (usually by a BITE function), but also to include the performance of the audio pickup equipment that feeds audio data to the unit for recording.

The IOMAR therefore has accepted this recommendation (as have other SoRs) to include a national maintenance requirement for all operators, to carry out a system analysis of the actual CVR Audio

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quality of data being recorded, and for FDR to ensure a full channel serviceability test is carried out on a repetitive 12 Calendar months from the date of last testing.

The operator will need to arrange for a recording(s) from the CVR and FDR to be evaluated for acceptable performance at the time frames identified in RP11 for inclusion in the SIFCA under IOMAR Requirements.

CVR

The following information is therefore provided as guidance for the IOMAR specific AMP task where appropriate.

To assess the serviceability of the CVR system the following checks and functional tests are provided:

For each audio channel ensure that the quality of recording has not deteriorated below an optimal audible level.

a. Confirm the proper recording on each voice channel of all the required audio inputs, details (i) to (viii).

- i. all voice communications transmitted from or received by the aircraft communications equipment.
- ii. all conversation on the flight deck.
- iii. voice communications of flight crew-members on the flight deck, using the aircraft's interphone system.
- iv. voice or audio signals identifying navigation aids introduced into the aircraft audio system.
- v. audio signals from alerting or warning devices on the flight deck, both fully integrated with the aircraft audio system and non-integrated
- vi. general flight deck sounds, monitor the cockpit area microphone (CAM) to ensure that it satisfactorily picks up all cockpit sounds
- vii. voice communications of flight crew-members using the passenger address system.
- viii. ensure that the 'Hot Mic' or 'live boom microphone' facility is operational for each boom microphone station that the aircraft is equipped with.

FDR

The FDR readout from a representative flight must be evaluated annually to ensure that the FDR system is functioning correctly. This will require access to the Data Frame Layout Document (DFL) for the FDR system and Conversion Data (to enable translation of FDR data to engineering units).

The DFL and Conversion Data should be supplied to the appropriate readout facility to enable them to confirm the correct operation of the system.

(Note: It is possible that a removal of the CVR or FDR unit for Bench Check will be required to assess the system, please note the aircraft should not operate without discussing the options with the IOMAR.)

6. Permit to Fly (PtF)

An Isle of Man registered aircraft can only operate under the following methods;

- 1.) A valid Certificate of Airworthiness (The Air Navigation (Isle of Man) Order 2015, Part 3 Article 17 refers to the validity of Certificate of Airworthiness).

OR

- 2.) An IOMAR issued Permit to Fly (The Air Navigation (Isle of Man) Order 2015, Part 3 Article 18 refers to issue of a national Permit to Fly).; Isle of Man Form 42 provides further guidance.

A PtF is a National Standard Document and any flight under a PtF must also be operated with the express permission of the NAA for the airspace that the flight(s) will occur.

A. General information.

1.1 Article 17 (Validity of Certificates of Airworthiness) of the ANO describes that a Certificate of Airworthiness issued in respect of an aircraft registered in the Isle of Man shall cease to be in force if;

- a) the aircraft or a part of it or such of its equipment as is necessary for its airworthiness has been overhauled, repaired, replaced, modified or maintained;
- (b) maintenance or an inspection of the aircraft or of equipment necessary for its airworthiness is required by a maintenance programme approved by the Department for the aircraft under article 22;
- (c) maintenance of the aircraft or of equipment necessary for its airworthiness has been made mandatory by a directive issued by the Department;
- (d) an inspection for the purpose of ascertaining whether the aircraft remains airworthy has been made mandatory by a directive issued by the Department; or
- (e) any modification of the aircraft or of any equipment is necessary for its airworthiness has been made mandatory by a directive issued by the Department for the purpose of ensuring that the aircraft remains airworthy.

1.2 It is therefore the responsibility of the operator of an aircraft registered in the Isle of Man to determine the need to submit an application for the issue of a PtF for an aircraft falling into paragraphs (b) and (c) of Article 17 of the ANO enabling that aircraft to fly to a location where maintenance/rectification work may be carried out thereby restoring the validity of the aircraft's Certificate of Airworthiness.

1.3 Article 18 (Issue, validity etc., of National Permits to Fly) of the ANO prescribes the conditions under which a National Permit to Fly may be issued and set limitations that may be applied by the Aircraft Registry.

1.4 The Aircraft Registry can apply additional limitations to a PtF certificate and these will be discussed with the NATR when applicable.

B. Procedure

1.1 Prior to submitting any application for a PtF, the NATR of the aircraft should contact the Isle of Man Aircraft Registry to discuss the circumstances which have invalidated their CoA, and discuss a course of action.

1.2 Should it be determined that a PtF will be required the NATR should follow the guidance provided by the IOMAR and submit the application Form 42-*Application for a Permit to Fly* to the Isle of Man Aircraft Registry, accompanied by any supporting data requested at the time of the initial contact.

1.3 Following the receipt and a review of the Form 42, resulting in an acceptable application, the Aircraft Registry will issue a PtF. It is the Operators responsibility to ensure permission has been obtained from the NAA where the flight is to take place prior to any dispatch.

1.4 A PtF will be issued for a maximum time frame of 14 days, and this should be considered when making the application.

1.5 The Aircraft Registry reserves the right to survey the aircraft prior to the issue of a PtF.

C. Maintenance Test flight, Modification Proving flight or Permit to Fly

1.1 It is **not** possible for an EASA/National Aviation Authority or any other organisation to issue a permit to fly or equivalent, on an Isle of Man registered aircraft. If there is an open maintenance entry which invalidates the CoA, and a check/positioning flight is required to complete a maintenance task/modification or as a result of damage, then an IOMAR issued Permit to Fly will be required.

7. Light aircraft owner / operator pilot maintenance

Article 25 (1) of the Air Navigation (Isle of Man) Order 2015 states that

“A certificate of release to service is not required to be in force for a private aircraft to which article 24 applies that has a maximum total mass authorised of not more than 2730kg if it flies in the circumstances specified in paragraph (2).”

Paragraph 2:

(2) Those circumstances are—

(a) the only repairs or replacements for which a certificate of release to service is not in force are of such a description as may be prescribed;

(b) such repairs or replacements have been carried out personally by the holder of a pilot’s licence granted or rendered valid under this Order who is the owner or operator of the aircraft;

(c) the person carrying out the repairs or replacements, keeps in the aircraft log book, for the aircraft under article 29, a record that identifies the repairs or replacements and signs and dates the entries;

and

(d) any equipment or parts used in carrying out the repairs or replacements are of a type approved by the Department, either generally or in relation to a class of aircraft or the particular aircraft.

Article 167 (Interpretation) describes “replacement”

“Replacement” in respect of a part of an aircraft or its equipment—

(a) includes the removal and replacement of the part whether or not by the same part, and whether or not any work is done on it; but

(b) does not include the removal and replacement of a part that is designed to be removable solely for the purpose of enabling another part to be inspected, repaired, removed or replaced or cargo to be loaded;

The IOMAR expects that anybody carrying out such pilot maintenance does so only if they are confident that they have the necessary knowledge, skill, tools and facilities to complete the task to a satisfactory standard.

Safety and airworthiness is the prime concern and abuse of these privileges may lead to their limitation.

If you encounter any technical difficulty or you have trouble in understanding the requirements of pilot maintenance then please seek advice from the IOMAR, or an individual validated Engineer. Ref to Paragraph 2 (a)

In respect of Article 25 (2) (a) the only repairs or replacements permitted by the owner operator of a private aircraft are as follows;

- (1) Replacement of defective safety wiring or split pins excluding those in engine, transmission, flight control and rotor systems.
- (2) Making simple fabric patches not requiring rib stitching or the removal of structural parts or control surfaces.
- (3) Repairing decorative upholstery and decorative furnishings of the cabin or cockpit
- (4) Making small simple repairs to fairings, non-structural cover plates, cowlings and small patches and reinforcements not changing the contour so as to interfere with proper air flow.
- (5) Replacing side windows where that work does not interfere with the structure or any operating system such as controls, electrical equipment, etc.
- (6) Replacement of safety belts or safety harness.
- (7) Replacing seats or seat parts with replacement parts approved for the aircraft, not involving disassembly of any primary structure or operating system.
- (8) Replacing bulbs, reflectors, and lenses of position and landing lights.
- (9) Replacing wheels and skis where no weight and balance computation is involved.
- (10) Replacing any cowling not requiring removal of the propeller or disconnection of flight controls.
- (11) Replacing or cleaning spark plugs and setting of spark plug clearance.
- (12) Replacing any hose connection except hydraulic connections.
- (13) Replacing prefabricated fuel lines.
- (14) Replacing self-contained, front instrument panel-mounted navigation and communication devices that employ tray-mounted connectors that connect the unit when the unit is installed into the instrument panel, (excluding automatic flight control systems, transponders, and microwave frequency distance measuring equipment (DME)). The approved unit must be designed to be readily and repeatedly removed and replaced, not require specialist test equipment and pertinent instructions must be provided. Prior to the unit's intended use, an operational check must be performed.
- (15) Replacement of wings and tail surfaces and controls, the attachment of which are designed for assembly immediately before each flight and dismantled after each flight.

- (16) Replacement of main rotor blades that are designed for removal where specialist tools are not required.
- (17) Replacement of batteries. (Including maintenance of lead acid batteries)
- (18) Lubrication of aircraft.
- (19) Changing of engine oil. (To include Removal, replacement, cleaning of oil filter).