

CIVIL AVIATION NOTICES

CAN 3-35

Approval Requirements for Modifications and Repairs

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Approval Requirements for Modifications and Repairs

35.1 General

This Civil Aviation Notice contains standards, practices and procedures acceptable to PACA.

35.2 Purpose

This CAN is issued to provide additional PACA requirements pertaining to:

- Approval requirement of Major and Minor modifications
- Approval requirement of Major and Minor repairs
- Classification of Major and Minor with respect to modifications and repairs

35.3 Applicability

This CAN applies to Omani Air Operators, Omani Approved Organization (AMO and CAMO) and applicants intending to hold Omani approvals.

35.4 Cancellation

Not Applicable.

35.5 Effective Date

This CAN is effective from 30 October 2019.

35.6 Definition

Major modification. Means a modification that could potentially affect the safety of an aircraft or its occupants where, as a result of its embodiment, one or more of the following incidents may occur:

- (1) structural collapse:
- (2) loss of control:
- (3) failure of motive power:
- (4) unintentional operation of, or inability to operate, any systems or equipment essential to the safety or operational function of the aircraft:
- (5) incapacitating injury to any occupant:
- (6) unacceptable unserviceability or maintainability.

Major repair. Means a repair that could potentially affect the safety of an aircraft or its occupants where, as a result of its embodiment, one or more of the following incidents may occur:

- (1) structural collapse:
- (2) loss of control:
- (3) failure of motive power:

- (4) unintentional operation of, or inability to operate, any systems or equipment essential to the safety or operational function of the aircraft:
- (5) incapacitating injury to any occupant:
- (6) unacceptable unserviceability or maintainability:

35.7 Acceptable Data for Major and Minor Modifications/ Repairs.

35.7.1 PACA approve the applicant request using PACA form AWR 039 based on the use of data in support of a design change or repair on a product or article, regardless of major or minor classification. The data shall be approved by the Part 21 of the State responsible for the type design and accepted by PACA Sultanate of Oman.

35.7.2 The following are examples of acceptable data:

For modifications (design changes)

- (a) Data for a design change I (i.e. Service Bulletin, Modification Instruction, etc.) approved by a holder of a:
 - i. EASA or FAA type certificate; or
 - ii. EASA or FAA Supplemental Type Certificate.

For repairs

- (b) Data for a repair approved by:
 - i. A holder of an FAA type certificate;
 - ii. A holder of an FAA Supplemental Type Certificate;
 - iii. A holder of an FAA Technical Standard Order Authorisation;
 - iv. A holder of an FAA Organisation Designation Authorisation; and
 - v. An FAA Designated Engineering Representative.

For all major repairs, the FAA approved design data must be supported with applicable FAA approval forms such as the FAA 8110-3, 8100-9, or Form 337 (block 3).

- (c) Data for a repair approved by:
 - a. A holder of an EASA type certificate;
 - b. A holder of an EASA Supplemental Type Certificate;
 - c. A holder of an EASA European Technical Standard Order Authorisation (ETSO);

For all major repairs, the EASA approved design data must be supported with applicable EASA approval forms.

- (d) Data for a minor repair that is:
- a. Approved by the Original Equipment Manufacturer (OEM) holding a design organisation approval issued by EASA for repair on an article that was included as part of the EASA type certification, or
 - b. Approved by the Original Equipment Manufacturer (OEM) holding a design organisation approval issued by FAA for repair on an article that was included as part of the FAA type certification.

Note: PACA accepts modifications or repairs that have been approved by the state responsible for the type design besides FAA or EASA.

35.8 Approval Requirement for Major and Minor Modifications or Repairs

PACA approve the modifications or repairs applicant request provided that the data have been approved by the State responsible for the type design and PACA form 039 properly filled.

Classification of major or minor modification/repair

For the purpose of approving a minor design change and repair within its scope of approval, a holder of a PART-21 Design Organisation Approval is to establish procedures and processes to determine whether the change and repair is major or minor. Further guidance can be found in **Appendix A** and **Appendix B** of this CAN.



Mubarak Saleh AL-Ghelani

Acting Director General for Civil Aviation Regulation

APPENDIX A

CRITERIA FOR THE CLASSIFICATION OF MAJOR AND MINOR MODIFICATIONS

The following criteria can be used to determine whether a modification is major or minor. For each issue, it must be determined whether or not the proposed change will appreciably affect the aircraft. The questions require a 'yes' or 'no' responses. An affirmative answer to any individual question indicates that the changes should be classified as major.

Organisations are encouraged to develop their own internal checklist to determine the major and minor classifications in view of its scope of approval. When there is a doubt to the classification of change, PACA should be consulted for clarification via their PACA' point of contact.

Criteria for the classification of major and minor modifications			
Instruction: Insert a tick () if the criteria is Yes or No. If the criteria is not applicable, fill in "NA".			
No	Criteria	Yes	No
1	General		
	a) Is the change being accomplished as an alternative means of compliance with an airworthiness directive or equivalent?		
	b) Does the change affect type approval status?		
2	Mass and balance		
	a) Does the change involve a revision in the approved mass limitations or centre of gravity range limits?		
	b) Does the change require the installation of ballast or use of other methods to maintain the centre of gravity within the approved limits?		
3	Performance and flight characteristics		
	Does the change involve alterations to the configuration of the aircraft which may:		
	a) increase drag;		
	b) alter the thrust or power;		
	c) affect stability or controllability;		
	d) induce flutter or vibration; or		
	e) alter the stalling characteristics to an extent which necessitates analysis or test?		
4	Structural strength		
	a) Does the change involve a principal component of the aircraft structure such as a frame, stringer, rib, spar or stressed skin?		
	b) Does the change involve a structural element which is addressed as part of a damage tolerance or fatigue/failsafe evaluation?		
	c) Is a pressure vessel penetration or change involved?		
	d) Does the change involve the installation of an item of mass necessitating structural re-evaluation?		
	e) Does the change involve the installation or alteration of a containment or restraint system intended for the stowage of items of significant mass?		
	f) Does the change involve modifications to the load-bearing structure of seats, harnesses or their means of attachment or any other occupant restraint equipment?		
	g) Does the change involve the substitution of materials?		
5	Engine operation		
	a) Does the change significantly affect the engine or propeller or their accessories?		
6	Other qualities affecting airworthiness		

	a) Does the change involve equipment for which there is no performance standard which has been approved or accepted by the airworthiness authority?		
	b) Does the change affect the probability of failure conditions that could impair or preclude continued safe flight or landing?		
	c) Does the change affect the pilot's visibility or impair the pilot's capability to control the aircraft?		
	d) Does the change involve alterations to the interior arrangement or cabin materials?		
	e) Does the change involve systems for cabin pressurization or the provision of breathing oxygen?		
	f) Does the change involve flight controls or autopilot functions of the aircraft?		
	g) Does the change involve critical- or essential components of the electrical system such as generators, alternators, inverters, batteries, distribution buses, or bus protection and control devices?		
	h) Does the change affect instruments or indicators or their subsystems that provide navigation information?		
	i) Does the change affect instruments, indicators or their subsystems that provide essential or critical information concerning the aircraft status?		
	j) Does the change affect a regulated placard?		
	k) Does the change affect any approved information contained in the flight manual or relevant document?		
	l) Does the change alters the airworthiness limitations or the operating limitations?		
	m) Does the change requires an adjustment of the type-certification basis (such as special condition, equivalent safety finding, earlier certification specification, etc)?		
	n) Is the demonstration of compliance using methods that have not been previously accepted as appropriate for the nature of the change to the product or for similar changes to other product designed?		
	o) Do the change introduces or affects functions where the failure effect is classified catastrophic or hazardous?		
7	Other qualities affecting environmental characteristics		
	a) Does the change alter the aircraft noise or emission characteristics?		
8	Non-standard practices		
	a) Does the change involve practices or techniques which are novel or unproven in the proposed application?		
9	Software criticality		
	a) Does the change have a significant impact on flight operation?		

Note: Criteria stated above should vary according to the scope of approval. The considerations should not be limited to those stated above but it must cover the areas as defined in the major modification's definition.

APPENDIX B

CRITERIA FOR THE CLASSIFICATION OF MAJOR AND MINOR REPAIRS

The following criteria can be used to determine whether a repair is major or minor. For the repair proposed, considerations must also be taken whether or not the repair will appreciably affect the other systems. The questions require a "yes" or "no" responses. An affirmative answer to any individual question indicates that the repair should be classified as major.

Organisations are encouraged to develop their own internal checklist to determine the major and minor classifications in view of its scope of approval. When there is a doubt to the classification of change, PACA should be consulted for clarification via their PACA' point of contact.

Criteria for the classification of major and minor modifications			
Instruction: Insert a tick () if the criteria is Yes or No. If the criteria is not applicable, fill in "NA".			
No	Criteria	Yes	No
1	General		
	a) Does the repair requires a re-assessment and re evaluation of the original certification substantiation data to ensure that the aircraft still complies with all the relevant requirements?		
2	Mass and balance		
	a) Does the change involve a revision in the approved mass limitations or centre of gravity range limits?		
3	Performance and flight characteristics		
	a) Will the repair affect the configuration of the aircraft in terms of stall characteristics, handling qualities, vibrations, aircraft performance and drag?		
4	Structural strength		
	a) Does the repair requires a re-work of the principal component of the aircraft structure (i.e. frame, stinger, rib, spar or stress skin) that necessitates a re-evaluation of the damage tolerance and fatigue analysis and/or testing or it needs methods, techniques or practices that are unusual?		
	b) Does the repair affect a life limited or critical part?		
	c) Does the repair requires a re-work of the load-bearing structure of seats, harness or their means of attachment or any other occupant restraint equipment?		
	d) Will the repair change the load path and/or load sharing?		
5	Other qualities affecting airworthiness or environmental characteristics		
	a) Does the repair have an impact on the operation of the aircraft or other associated systems, including the effect on system redundancy?		
	b) Does the repair significantly affect the engine or propeller or their accessories?		
	c) Does the repair requires a re-work or re-routing of the critical or essential components of the electrical system?		
	d) Does the repair has a change to noise and emissions of the aircraft?		
	e) Does the repair change the fire protection or resistance?		

Note: Criteria stated above should vary according to the scope of approval. The considerations should not be limited to those stated above but it must cover the areas as defined in the major repair's definition.