CIVIL AVIATION AUTHORITY OF FIJI

GUIDANCE MATERIAL

Aircraft Maintenance Engineer Licence – Examination Module 21 – Air Law-Oral

AMEL-EM21

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PREFACE

This Guidance Material (GM) is published by the Civil Aviation Authority of Fiji for purposes of promulgating supplementary material to that published in the Authority's Standards Documents.

This GM provides guidance to aircraft maintenance engineering personnel and CAAF staff on the acceptable means of compliance with the syllabus content in respect of written examinations for **Module 21 – Air Law-Oral.**

This GM explains certain regulatory requirements by providing interpretive and explanatory material.

Chief Executive
Civil Aviation Authority of Fiji

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Eligibility Requirements

ANR 53(2) requires an applicant for an Aircraft Maintenance Engineer Licence (AMEL) to have passed an oral examination that is acceptable to the Authority, relevant to the duties and responsibilities of an aircraft maintenance engineer in the category of licence sought.

The oral examinations acceptable to the Authority for Module 21 (Air Law-Oral) should comply with the syllabus contained in this GM. Each examination will cover all topics and may sample any of the sub-topics.

An application to sit an examination may be made directly to ASPEQ. Refer to https://caaf.aspeqexams.com/home for examination information.

The syllabus has been developed after extensive industry consultation and the objectives for each knowledge level reflect the applicant's knowledge required of, and ability to apply, current legislation and international best work practice.

Examination Overview: Module 21

Module 21 (Air Law-Oral) is an open-book oral examination which lasts approximately three hours. The pass mark is 70 %. It serves a number of important functions in the AME licensing process.

In addition to determining the applicant's knowledge of the syllabus set out in this GM, CAAF interviews the candidate before a licence is issued.

The following factors will be taken into consideration by the examiner during the oral examination in relation to issue of an aircraft maintenance engineer licence:

- Attitude, maturity, responsibility and professionalism towards the achievement of aviation safety goals;
- Understanding the functions of CAAF with regard to flight safety;
- Public safety interests associated with the grant of a licence;
- Understanding of the Fiji civil aviation maintenance environment and culture;
- Understanding and practical application, of the duties and responsibilities exercised by the licence holder;
- Understanding of the operator's responsibilities towards maintenance of their aircraft;
- Understanding of acceptable maintenance practices and conventions;
- Understanding of the aircraft and component logbooks and the associated maintenance recording system;
- Familiarity with the Fiji Civil Aviation regulatory system, and how to use the CAAF website to obtain important maintenance and operational information;
- Understanding of aviation maintenance experience and basic examination requirements relating to the grant of a licence in one or more categories;
- Understanding of important aviation interrelationships (e.g. associations between engineering and flight operations departments in an airline, relationships with maintenance sub-contractors and the roles of design, supply and manufacturing organisations in support of engineering operations);
- Authenticity of training and examinations;
- Reasoning, judgement and effective decision-making;
- Ability to perform arithmetical calculations at a level typically encountered during routine aircraft maintenance;
- Command of spoken and written English language;
- Neatness and clarity of written exercises.

General Examining Objective

The objective of this examination is to determine that the applicant has a thorough working knowledge of civil aviation regulatory requirements (Air Law), a responsible attitude and sufficient maturity needed to make correct and timely decisions relating to the proper performance, supervision and certification of aircraft maintenance.

The examination format is a practical maintenance exercise set in a realistic situation that requires the candidate to gather, analyse, and apply information and data in order to certify aircraft maintenance and airworthiness.

Knowledge Levels

LEVEL 1: A familiarisation with the principal elements of the subject.

Objectives: The applicant should be:

1. familiar with the basic elements of the subject
2. able to give simple descriptions of the whole subject, using common words and examples
3. able to use typical terms.

LEVEL 2: A general knowledge of the theoretical and practical aspects of the subject.
An ability to apply the knowledge.

Objectives: The applicant should be able to:

1. understand the theoretical fundamentals of the subject
2. give a general description of the subject using, as appropriate, typical examples
3. use mathematical formulae in conjunction with physical laws describing the subject
4. read and understand sketches, drawings and schematics describing the subject
5. apply his/her knowledge in a practical manner using detailed procedures.

LEVEL 3: A detailed knowledge of the theoretical and practical aspects of the subject.
A capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner.

Objectives: The applicant should:

1. know the theory of the subject and the interrelationships with other subjects
2. be able to give a detailed description of the subject using theoretical fundamentals and specific examples
3. understand and be able to use mathematical formulae related to the subject
4. be able to read, understand and prepare sketches, simple drawings and schematics describing the subject
5. be able to apply his/her knowledge in a practical manner using manufacturer's instructions
6. be able to interpret results and measurements from various sources and apply corrective action where appropriate.

Syllabus Layout

Topic Numbering – left hand column

Objective Description – middle column

Knowledge levels – right hand column

Note: *The knowledge levels indicate the depth of knowledge required NOT its safety importance.*

Syllabus: Module 21 – Air Law – Oral

1. AME Licensing – (ANR 62, SD-PEL)		
Specific Examining Objectives To determine that the certifying engineer: a. knows the privileges and limitations of their licence b. can interpret the licensing legislation and apply it in a practical sense to the maintenance of aircraft c. knows the process for licence and rating issue, extension and continuing validity.		
1.1	**AME licensing**	
1.1.1	Explain the information contained on a licence document and determine the privileges the holderwould have in respect of release to service certification of aircraft or aircraft components. Particular attention should be paid to the following points: a. Identification of category and rating markings on the licence b. Identifying aircraft makes and types contained in each rating group c. Identifying powerplant makes and types represented in each powerplant rating group d. Identifying the various types of avionics equipment represented by each rating group e. Interpretation of limited authorisations in respect of avionics maintenance f. Training requirements relating to the use of “special test equipment”. g. Validity of the licence h. Maintaining familiarity with aircraft, aircraft components and equipment i. Restoring validity of a licence (recent experiencerequirements) j. Experience requirements for the grant of additional categories and ratings on a licenceincluding the use of practical training records k. Examination and training course requirements for the issue of certain type ratings l. Release to service certification of major repairs and major modifications m. Identification of required tasks specified for rating issue n. Application procedures for licence, category and rating issue.	2

2. Air Operator Maintenance Responsibilities – (ANR 34, SD-AOC)		
Specific Examining Objectives. To determine that the certifying engineer: a. knows the maintenance responsibilities of an Air Operator. b. can access maintenance information relating to an operator’s aircraft. c. knows the requirements relating to the maintenance of an aircraft flown on air transport operations.		
2.1	**General Maintenance Requirements**	
2.1.1	State the factors that determine which one of the Air Operator certification rules an operator maybe certificated to.	1

2.1.2	Explain, without reference, the parts of an air operator's exposition that would provide information and direction to a maintenance firm acting as the operator's primary maintenance contractor. Factors could be addressed under the following headings: a. People (Operator's key personnel) b. Information (Operator supplied) c. Materials (Operator supplied) d. Equipment (Operator owned) e. Environment (How and where the aircraft are stored and operated).	2
2.1.3	Explain, without reference, the following in respect of the operator's maintenance programme: a. Objective of a maintenance programme b. Aircraft types and operations requiring an approved maintenance programme c. Approval of the programme d. Scope of the programme e. Contents of the programme with regards to required maintenance activities performed on the aircraft f. The engineer's responsibilities for adherence to the programme g. Referencing of the maintenance programme in maintenance records.	3

3. Maintenance Organisations – (ANR 145C, SD-ANR145C)

Specific Examining Objectives.
To determine that the certifying engineer:
a. knows their duties and responsibilities when working in an aircraft maintenance organisation
b. knows the responsibilities of a maintenance organisation regarding aircraft airworthiness
c. knows the organisational structure and interrelationships of a maintenance organisation.

3.1	**Maintenance performed under ANR 145C Approved Organisation**	
3.2.1	Explain the requirements to have aircraft maintained under ANR 145C. For example, be able to distinguish between aircraft that must be maintained in a ANR 145C organisation and those aircraft where it may be optional.	3
3.2.2	Describe the functions of an ANR 145C organisation in respect of performing aircraft, component and equipment maintenance.	2
3.2.3	Determine, from given examples, the ratings appropriate to functions that have been approved to be performed in an ANR 145C organisation.	3
3.2.4	Describe, without reference to the legislation, examples of the information contained in a ANR 145C Exposition that would be relevant to a licensed engineer's maintenance responsibilities in a ANR 145C organisation.	2
3.2.5	Identify key personnel (senior persons) in an ANR 145C organisation who have responsibility for ensuring that maintenance is properly organised and performed.	2

3.2.6	Describe the experience and qualifications an engineer should hold when applying for keypositions in an approved maintenance organisation.	1
3.3	**Certification of Maintenance in an ANR 145C Organisation**	
3.3.1	Explain the document used to authorise a person to perform, supervise and certify the release toservice of maintenance performed in an ANR 145C Organisation.	3
3.3.2	Specify who in an ANR 145C Organisation would normally be responsible for authorising engineers.	2
3.3.3	Explain the requirements for authorising a person to supervise and certify the release to service ofmaintenance in a ANR 145C organisation, with particular emphasis on the following factors: a. Qualifications b. Training c. Assessment d. AME Licence category and ratings.	3
3.3.4	Explain the personnel duty time limitations for a person to perform, supervise or release-to-service, maintenance.	3
3.4	**Internal Quality Assurance and Safety Management Systems**	
3.4.1	Outline the following criteria relating to internal quality assurance: a. The purpose of quality assurance in an organisation b. "Tools" available to perform quality assurance c. How quality and safety are assessed and improved d. How quality assurance may be applied to aircraft and component maintenance e. Senior Management involvement in the QA and SMS process f. Identification of latent (hidden) failures in an organisation g. Processes for controlling important documents, records and maintenance information h. The purpose of SMS i. Hazard identification j. Risk identification k. Risk mitigation.	1

4. Logbooks and Maintenance Records – (ANR 41, 122, 123, 124, 127, 128; SD-AOA)

Specific Examining Objectives.
To determine that the certifying engineer can:

a. compile accurate records.
b. determine servicing and inspection requirements.
c. assess airworthiness of an aircraft or aircraft component from given information.
d. perform maintenance related calculations.
e. organise and manage a simple maintenance activity such as a routine periodic inspection.

4.1	**Aircraft and Component Maintenance Logbooks**	
4.1.1	Explain the layout of the following Maintenance logbooks: a. Aircraft b. Engine c. Propeller d. Aircraft Airworthiness Directives, Aircraft Modifications and Engine and Propellerinstallations.	3
4.1.2	Extract from given logbooks and typical Air Operator's documentation, the total airframe hoursfor an aircraft, and time to and since overhaul for lifed aircraft components.	3
4.1.3	Extract from the aircraft logbook the following information: a. Leading particulars of an aircraft and aircraft components b. Details of routine inspections performed c. Out of phase maintenance requirements d. Details of rectification performed on an aircraft e. Major repairs carried out f. Overhaul lives of lifed components fitted to an aircraft g. Compass compensation data h. Weight and balance data.	3
4.1.4	Explain the use of component history cards, with particular regard to the following: a. Identifying components for which a card would typically be raised b. Component life control c. Recording of required information, including component installation and tracking details d. Actioning of cards during the performance of component maintenance and overhaul e. Retention of cards as part of historical records f. Certification of component release to service g. Computerised record keeping h. Actioning of records after component disposal at finite life i. Recording of information relating to components from crashed or damaged aircraft.	3
4.2	**Recalculation of Aircraft Empty Weight**	
4.2.1	Using given aircraft weight and balance documentation and data, calculate an empty weightchange, in either Metric or Imperial units, for any **one** of the following maintenance events: a. Addition of weight rear of datum b. Addition of weight forward of datum c. Removal of weight rear of datum d. Removal of weight forward of datum.	3
4.2.2	Construct a legally acceptable logbook entry recording a change in the empty weight of anaircraft.	3
4.3	**Certification of Major Repairs and Major Modifications**	
4.3.1	Detail who can certify release to service of an aircraft after the completion of a major modificationor major repair.	3
4.3.2	Detail the requirements for a conformity inspection after the completion of a major repair ormajor modification.	3

4.3.3	Distinguish, from given information, between a not major and major repair, and a not major and major modification.	3
4.3.4	Describe, giving examples, "acceptable technical data".	2
4.3.5	Explain, for a given situation, the process of a conformity inspection with particular regard to the following: a. Qualifications required to certify conformity b. Raising a CAAF Form AW101B or AW101C c. Approval of data d. Role of CAAF in the data approval/acceptance process e. Interaction with a design organisation f. The conformity inspection process g. Completion and submission of the CAAF Form AW101B or AW101C.	2

5. Airworthiness Directives – (SD-ANR145C; SD-AOA)

Specific Examining Objectives
To determine that the certifying engineer can:
a. manage mandatory compliance with airworthiness directives (AD)
b. extract and interpret relevant safety information from an AD schedule
c. relate AD information to specific aircraft or aircraft components.

5.1 AD Compliance Requirements

5.1.1	Explain how CAAF notifies Emergency airworthiness directives to interested parties	3
5.1.2	Explain how an engineer may determine if an aircraft or aircraft component is subject to compliance with an airworthiness directive	3
5.1.3	Determine, from given information, if an aircraft has airworthiness directives requiring compliance during a routine periodic inspection	3
5.1.4	Determine from given information, the requirement to carry out repetitive AD's during the performance of a periodic inspection	3
5.1.5	Determine the acceptable latitude that may be applied to compliance with repetitive AD's when planning the performance of a periodic inspection	3
5.1.6	Determine inspection and compliance requirements from a D schedule provided for a given aircraft.	3

6. Supply and Maintenance Processes – (SD-ANR145C)

Specific Examining Objectives
To determine that the certifying engineer:
a. knows the requirements relating to the storage and segregation of aeronautical product
b. can establish the authenticity of parts
c. can compile accurate stores records
d. can ensure that products are correctly released to service
e. can determine that maintenance processes are performed and certified by properly qualified personnel.

6.1	**Tags and Technical Directives**	
6.1.1	Describe how parts are identified "off" aircraft, and the means of designating serviceable, unserviceable and unserviceable/repairable condition	2
6.1.2	Describe the purpose of a technical directive	2
6.1.3	Describe the information likely to be supplied on a technical directive for the performance of amaintenance process by an external contractor.	2
6.2	**Storage of Aeronautical Product**	
6.2.1	Describe the control of aeronautical product in a Bond Store with particular regard to thefollowing criteria: a. Inwards and outwards goods control b. Maintenance of registers, including the recording of required information c. Special storage conditions d. Identification and processing of stores documentation e. Sourcing product from overseas suppliers f. Batching of product g. Tracking and traceability measures h. Shelf life control.	2
6.3	**Segregation of Aeronautical Product**	
6.3.1	Explain systems and procedures for the segregation of aeronautical product, with particularregard to the following: a. Reasons for segregation of product b. Control, operation and security of a quarantine store c. Tracking of quarantined items d. Identification of unserviceable or suspect items e. Release to service of components from quarantine f. Requirements for mutilation and disposal of aeronautical product.	3
6.4	**Parts Documentation**	
6.4.1	Describe the use of a CAA Form 1 in a given maintenance situation, with particular regard to thefollowing criteria: a. Occasions when a Form 1 would be used b. Information that would be entered on a Form 1 c. Certification of component release to service d. Limitations on the use of a Form 1.	2
6.5	**Special Maintenance Processes**	
6.5.1	Outline the qualification and certification requirements for maintenance personnel performingNDT processes by an ANR145C MO and a LAME	1
6.5.2	Identify the type and scope of NDT inspection permitted during aircraft or componentmaintenance without the requirement for specific NDT operator certification.	1

7. Incident Reporting – (ORIR 8, 9; SD-AOA, SD-ANR145C, SD-SMS)		
Specific Examining Objectives To determine that the certifying engineer: a. can identify incidents that are required to be reported to CAAF b. is familiar with the defect incident reporting system c. can determine the minimum equipment requirements for various types of aircraft operation.		
7.1	**Notifiable Incidents**	
7.1.1	Determine, from given information relating to the failure of a component or system, whether notification to CAAF is required, what details should be supplied and what further information may be provided.	3
7.2	**Deferment of Rectification**	
7.2.1	Evaluate, from given information concerning inoperable equipment on an aircraft, whether rectification action must take place, or the deficiency can be legally deferred.	3
7.2.2	Explain the recording requirements for rectification that has been deferred.	3
7.2.3	Explain how inoperative equipment installed in an aircraft must be identified.	3

8. Logbooks – (ANR145C; SD-ANR145C)		
Specific Examining Objectives. To determine that the certifying engineer can compile a legal logbook entry for a given maintenance activity.		
8.1	**Logbook Entry**	
8.1.1	Construct a logbook entry for the replacement of a given aircraft component with particular emphasis on the following criteria: a. Recording of aircraft hours and date b. Details of the discrepancy including operational information surrounding the incident c. Recording of pertinent details relating to the defective component d. Interpreting the information contained on a CAAF Form 1 e. Recording of appropriate data pertaining to a replacement component f. Requirement for a duplicate inspection g. Person authorised to perform the first inspection h. Selection and training of a person to perform the second inspection i. Determination of the extent or scope of a duplicate inspection j. The correct wording of a duplicate inspection k. Recording the signatures and other required information when certifying a duplicate inspection l. The correct wording of a release to service statement for the maintenance activity performed m. Signatures and information required for a release to service statement n. Accuracy and legibility of the logbook entry.	3

9. Technical Logs – (ANR 15; SD-AOA)

Specific Examining Objectives
To determine that the certifying engineer can:

a. compile a technical log at the commencement of a new validity period
b. make necessary entries on a technical log to take into account any additional maintenance requirements
c. determine from the legislation the required inspection and servicing periodicities.

9.1 Completion of a Technical Log

9.1.1	Construct, from information supplied, a Technical Log for the operator at the completion of aroutine periodic inspection. The log should contain information relating to the following: a. Log identification details b. Relevant aircraft particulars c. Operator details d. Maintenance programme details e. Determination of the next inspection due f. Hours and date of next inspection due g. Due date of next Review of Airworthiness (RA) or Maintenance Review.	3
9.1.2	Determine the entries to make in a Technical Log with respect to the following: a. Required pilot maintenance during the validity period b. Special inspections falling due during the validity period c. Latitudes (extensions) pertaining to the next required inspection that may have been granted to permit alignment with a specific maintenance activity, such as the removal ofa time expired powerplant or propeller d. Restoration of the inspection cycle following the implementation of a servicing latitude.	3