



GUIDANCE MATERIAL FOR COMPONENTS, ENGINES AND APU CERTIFYING STAFF

CAAT-GM-AIR-510

Revision: 01

Date: 27 May 2022



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ABBREVIATIONS

AMM	Aircraft Maintenance Manual
AMO	Approved Maintenance Organisation
APU	Auxiliary Power Unit
CAAT	The Civil Aviation Authority of Thailand
CC/S	Component Certifying Staff
CDCCL	Critical Design Configuration Control Limitation
C/S	Certifying Staff
CMM	Component Maintenance Manual
EWIS	Electrical Wiring Interconnection System
FTS	Fuel Tank Safety
MOE	Maintenance Organisation Exposition
NAA	National Aviation Authority
OEM	Original Equipment Manufacturer
SMS	Safety Management System
TCAR	Thailand Civil Aviation Regulation

0. INTRODUCTION

0.1 Scope and Applicability

The Civil Aviation Authority of Thailand (CAAT) is the Competent Authority for maintenance organisations¹ that are involved in the maintenance of Thai registered aircraft and components intended for fitment thereto as established by TCAR Part 145.A.1 General. CAAT is therefore responsible for the final approval of these maintenance organisations and for establishing procedures detailing how TCAR Part 145 applications and approvals are managed.

This Guidance Material (GM) is applicable to TCAR Part 145 applicants and TCAR Part 145 maintenance organisations regardless of whether their principal place of business is located within Thailand or internationally. The provisions of this GM support the maintenance organisation certification requirements detailed in TCAR Part 145 and do not supersede or replace any associated regulatory requirements.

0.2 Purpose

The purpose of the GM is to provide guidance for maintenance organisations when:

- detailing the Component Certifying Staff (CC/S) authorisation procedures and qualification criteria in the MOE
- assessing each CC/S authorisation granted

0.3 Associated Instructions

CAAT has developed associated provisions (guidance, forms, and templates) that detail specific matters, which need to be considered as an integral part of this GM. This information is available on the CAAT website (www.caat.or.th).

0.4 Communication

All documents and correspondence between the maintenance organisation and CAAT should be in English. The official e-mail is air-amo@caat.or.th.

0.5 References

- Thailand Civil Aviation Regulation on Repair Station Certificate Requirements (TCAR Part 145)
- Acceptable Means of Compliance to Thailand Civil Aviation Regulation on Repair Station Certificate Requirements (AMC to TCAR Part 145)

¹The terms “Maintenance Organisations” and “Repair Stations” should be read interchangeably in this Guidance Material.

1. MAINTENANCE COMPONENT CERTIFYING STAFF (CC/S)

1.1 CC/S Definition

CC/S means staff authorised by the maintenance organisation to release engines, APUs and components under a CAAT approval.

1.2 CC/S Authorisation Procedures and Qualification Criteria

When a maintenance organisation is nominating CC/S, it must detail in its MOE the relevant CC/S authorisation procedures (initial and renewal) together with an appropriate qualification criteria depending on the complexity of the component and the assessment process.

Criteria defined by NAA regulation could apply. However, where the national criteria are less restrictive than described below, the applicant will not be eligible for a TCAR Part 145 CC/S individual authorisation.

Note: NAA means the aviation authority of the country where the maintenance organisation has its principal place of business.

1.2.1 Initial Authorisation Procedure

The maintenance organisation must detail in its MOE the established prerequisites to be eligible as TCAR Part 145 CC/S as per the minimum qualification criteria detailed in the following paragraphs from 1.3.1 to 1.3.4.

In addition, the maintenance organisation must also explain in MOE chapter 3.9 (refer also to the Guidance Material for Maintenance Organisation Expositions (MOE) (CAAT-GM-AIR-501)) the assessment procedure for granting a CC/S authorisation, which must at least specify:

- the person responsible for this process
- when the assessment must take place
- the validation of qualification records
- procedures for the initial assessment (i.e. methods, including actions to be taken when the assessment is not satisfactory)
- recording of assessment results
- the management of the C/S List and individual authorisations
- the C/S records (responsibility, content of the C/S files, etc.)

Further guidance on the assessment of the CC/S is addressed in 1.4

1.2.2 Authorisation Renewal Process

The maintenance organisation must detail in its MOE the CC/S authorisation renewal prerequisites such as, but not limited to:

- continuation training requirements (maintenance organisation procedures, new technology, Human Factors, SMS, etc.)
- maintenance experience requirements (6 months of relevant experience in the last 2-year period) and the associated records of evidence
- assessment procedure for renewing the CC/S authorisation which must at least specify:
 - the persons responsible for this process

- when the assessment must take place
- the validation of qualification records
- means and methods for the continuous control of competence
- actions to be taken when assessment is not satisfactory
- recording of assessment results
- management of the CC/S List and individual CC/S authorisations
- CC/S records (responsibility, record of experience, content of the CC/S files)

1.3 CC/S Qualification Criteria

1.3.1 Basic Requirements

1.3.1.1 Basic Educational and Training Requirements

The CC/S must be able to demonstrate they have received basic training in the appropriate field, including:

- an aeronautical school diploma or certificate
- a technical school diploma or certificate, if the intended scope of work concerns non-complex electrical components or instruments and cabin and safety equipment
- other appropriate degree as accepted by CAAT

Depending on the complexity of the intended scope of authorisation, a higher level of basic training may be considered.

1.3.1.2 Aeronautical Experience Requirements

The CC/S must be able to demonstrate at least:

- 2 years of aeronautical experience in the field of aviation maintenance including at least 12 months of practical experience in the specific component maintenance area or workshop
- 3 years in the field of aviation maintenance for complex components such as engines, APUs and landing gear including 24 months of practical experience in the specific component maintenance area or workshop

1.3.2 Technical Training Requirements

1.3.2.1 Component Training

Depending on the complexity and the technology of the component, the CC/S must be able to demonstrate they have received appropriate theoretical and practical component training from either:

- the OEM
- the OEM recognised training organisation
- an appropriately rated maintenance organisation provided:
 - the person nominated to carry out the training can demonstrate they have received training to an appropriate level for the subject component
 - the person nominated to carry out the training is appropriately authorised by the maintenance organisation and is able to demonstrate significant experience on the relevant component maintenance
 - the training syllabus has been reviewed by the Engineering Manager or the Compliance Monitoring Manager
 - the component is available for practical training purposes

For simple components, the maintenance organisation may take credit of the CC/S experience or previous training on a component from the same family and same technology.

Note: “appropriate training” means that the training level and detail is proportional to the maintenance level granted to the concerned C/S as identified in their certification authorisation.

1.3.2.2 Bench Test Training

Where there is a need to use bench testing, the CC/S must be able to demonstrate they have received appropriate training. This training for the use of specific tools required by the OEM maintenance data must be received from either:

- the OEM
- the bench test manufacturer
- an appropriately rated maintenance organisation

1.3.2.3 Specific Equipment Training

Where there is a need to use specific equipment, the CC/S must be able to demonstrate they have received the appropriate training. This training for the use of specific tools required by the OEM maintenance data must be received from either:

- the OEM
- the specific tool manufacturer
- an appropriately rated maintenance organisation

1.3.2.4 Additional Training

The CC/S must be able to demonstrate they have received, as appropriate, training on:

- Initial Human Factors Training according to TCAR Part 145, 145.A.30(e) (2 years interval for recurrent training)
- Initial SMS Training (2 years interval for recurrent training)
- MOE and internal procedures applicable to CC/S (including issuance of CAAT Form 1)

In addition, where needed, the CC/S must demonstrate they have received appropriate training on:

- Fuel Tank Safety items, CDCCL level 1, or level 2
- Electrical Wiring Interconnection System

Any additional training justified during the assessment performed by the maintenance organisation (e.g. Human Factors, aviation legislation, etc.).

1.3.3 General Requirements

Language knowledge

The CC/S must be able to demonstrate a working knowledge of the language in which the maintenance data is published and English.

Thai legislation training

The CC/S must be able to demonstrate they have received training on aviation legislation including the Air Navigation Act, TCAR Part 145 and other related regulations.

1.3.4 Maintenance experience

The maintenance organisation must ensure that CC/S can demonstrate experience on the component area or workshop relevant to the component type intended to be authorised.

For Initial authorisation:

- At least 12 months of practical experience in the specific component maintenance area or workshop is required
- For complex components such as engines, APUs and landing gear at least 24 months of practical experience in the specific component maintenance area or workshop is required

Note: At least 6 months in the past 2 years of practical experience in the specific component maintenance area or workshop is required

For renewal authorisation, at least 6 months in the past 2 years of practical experience in the specific component maintenance area or workshop is required.

1.3.5 Additional Criteria for the Renewal of Individual Authorisations

The CC/S must receive continuation training that covers technical developments including Human Factors, SMS, FTS, EWIS and aviation regulations as applicable to the approval ratings and scope of work.

The CC/S must demonstrate 6 months of experience during the 2-year period preceding the renewal of an authorisation.

1.4 Assessment

The aim of the assessment is to ensure compliance of the CC/S with TCAR Part 145, with the criteria defined in this GM and to ensure that each CC/S possesses the expected competencies associated with their job function (proposed scope of work and level of maintenance), before granting them an initial CC/S individual authorisation, or to renew or extend the scope of the issued authorisation. This assessment must also take into consideration attitude and behavior.

As a consequence, the maintenance organisation must demonstrate through a competence assessment that the CC/S:

- meets the qualification criteria addressed above
- has the relevant knowledge, skills and ability to perform the maintenance tasks related to their job function including the relevant language knowledge
- is able to determine when the component is ready for release to service and when it must not be released to service

In the case of initial authorisation or extension of the scope of an already existing authorisation, the competence assessment must:

- be specifically tailored to the component types intended to be covered by the CC/S authorisation
- include evaluation of On-the-Job performance and/or testing of knowledge by appropriately qualified personnel

In addition, it is recommended that the assessment form contains an open text field where the person responsible for the assessment records the questions raised, comments or any other information useful to

support the recommendation for the pass/fail result. A “box-ticking” exercise is not considered appropriate.

The qualification criteria addressed above are summarised in the following “Summary Table for Component Certifying Staff Qualification Criteria”.

The minimum topics to be assessed during the initial CC/S individual authorisation process and the renewal or extension of their scope of authorisation are summarised in the following table “Summary of Assessment for Component Certifying Staff”.

1.5 Management of the CC/S List and Individual Authorisations

The management of the list of C/S and the management of CC/S individual authorisations must be detailed within the MOE and approved by CAAT. The maintenance organisation is responsible for ensuring that the CC/S remains current in terms of procedures, HF, SMS and technical knowledge. This continuation training should be of sufficient duration in each 2-year period and the maintenance organisation is strongly advised to align the validity of the CC/S authorisations accordingly.

1.6 Records

The compliance monitoring system must review and archive in an exhaustive manner the relevant files resulting from the implementation of this procedure.

This means that the maintenance organisation must keep records of all evidence associated with CC/S authorisations. Certificates, experience logbooks, diplomas, continuation training evidence, and assessment evidence (including assessment results which could be in a form chosen by the maintenance organisation) must be kept.

1.7 Summary Table for CC/S Qualification Criteria

	Qualification Criteria for all CC/S categories (C1 – C22)
Basic educational and training requirements	Basic training in the appropriate field, including: <ul style="list-style-type: none"> – an aeronautical school diploma or certificate – a technical school diploma or certificate, if the intended scope of work concerns non-complex electrical components or instruments and cabin and safety equipment – other appropriate degree as accepted by CAAT
Aeronautical experience	2 years of aeronautical experience in the field of aviation maintenance including at least 12 months of practical experience in the specific component maintenance area or workshop. For complex components such as engine, APU and landing gear, 3 years of aeronautical experience is required in the field of aviation maintenance including 24 months of practical experience in the specific component maintenance area or workshop.
Component training	OEM or OEM recognised Training Organisation or appropriately rated maintenance organisation
Bench test training	OEM or bench test manufacturer or appropriately rated maintenance organisation
Tool training	OEM or the specific tool manufacturer or appropriately rated maintenance organisation
Additional training	<ul style="list-style-type: none"> – Initial Human Factors training according to TCAR Part 145, 145.A.30(e) – MOE and internal procedures applicable to CC/S (including issuance of CAAT Form 1). <p>In addition, where needed, the CC/S must demonstrate having received appropriate training on:</p> <ul style="list-style-type: none"> – Fuel Tank Safety items, CDCCL level 1 or level 2 – Electrical Wiring Interconnection System – Any additional training justified during the assessment performed by the maintenance organisation (e.g. Human Factors, SMS, aviation legislation, etc.).
Language knowledge	Working knowledge of the language in which the maintenance data is published and working knowledge of English
HF, SMS and legislation training	Human Factors, SMS and aviation legislation training
Recent maintenance experience	6 months of experience in the 2-year period preceding the intended date of issuance of the certification authorisation
Continuing training	OEM or OEM recognised Training Organisation or appropriately rated maintenance organisation
Maintenance experience	6 months of relevant experience in the last 2-year period

Note: The complexity and technology of the component must be considered. For simple components, the maintenance organisation may take credit of the CC/S experience and previous training on a component from the same family and same technology

1.8 Summary of Assessment for CC/S

Purpose of the Assessment <input type="checkbox"/> Initial <input type="checkbox"/> Extension <input type="checkbox"/> Renewal		
The competence assessment must include evaluation of On-the-Job Performance and/or testing of knowledge by appropriately qualified personnel		
I QUALIFICATION		
I.1.	Refer to the Summary table (1.7) for CC/S qualification	X
II KNOWLEDGE		
II.1.	Knowledge of Human Factors, human performance and limitations	X
II.2.	Knowledge of maintenance organisation capabilities, privileges and limitations	X
II.3.	Knowledge of Air Navigation Act, TCAR Part 145 (and any other relevant regulations)	X
II.4.	Knowledge of relevant parts of the MOE and associated procedures	X
II.5.	Knowledge of SMS and safety risks linked to the working environment	X
II.6.	Knowledge of CDCCL (when relevant)	X
II.7.	Knowledge of EWIS (when relevant)	X
II.8.	Knowledge of occurrence reporting system and understanding of the importance of reporting occurrences, incorrect maintenance data and existing or potential defects	X
III UNDERSTANDING		
III.1.	Understanding of professional integrity, behaviour, and attitude towards safety	X
III.2.	Understanding of conditions for ensuring continuing airworthiness of aircraft and components	X
III.3.	Understanding of human performance and limitations	X
III.4.	Understanding of personnel authorisations and limitations	X
III.5.	Understanding critical tasks	X
IV ABILITY		
IV.1	Ability to supervise the performance of tasks carried out by non C/S personnel (i.e. mechanics, etc.)	X
IV.2	Ability to compile and control completed work cards	X
IV.3	Ability to consider human performance and limitations	X
IV.4	Ability to determine required qualifications for task performance	X
IV.5	Ability to identify and rectify existing and potential unsafe conditions	X
IV.6	Ability to check and document proper accomplishment of maintenance tasks	X
IV.7	Ability to identify and properly plan performance of critical tasks	X
IV.8	Ability to prioritise tasks and report discrepancies	X
IV.9	Ability to process the work requested by the customer	X
IV.10	Ability to properly process removed, uninstalled and rejected parts	X
IV.11	Ability to properly record and sign for work accomplished	X
IV.12	Ability to determine the acceptability of parts to be installed prior to fitment	X
IV.13	Ability to understand work orders, work cards and refer to and use applicable maintenance data	X
IV.14	Ability to use information systems	X
IV.15	Ability to use, control and be familiar with required tooling and equipment	X

V ADEQUATE COMMUNICATION AND LITERACY SKILLS		
V.1	The CC/S must be able to demonstrate a working knowledge of the language in which the maintenance data is published. In addition, should the language of the maintenance data not be English, then English language working knowledge is required.	X
Note: <ul style="list-style-type: none"> – This list must not be considered as exhaustive. It remains the responsibility of the maintenance organisation to adjust it. – It is recommended that the assessment form contains an open text field where the person responsible for the assessment records the questions raised, comments or any other information useful to support the recommendation for the pass/fail result. 		

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