สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

AIRWORTHINESS MANUAL

CAAT-AIR-AWM

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Approved By

KAJONPAT MAKLIN

MANAGER OF AIRWORTHINESS AND ENGINEERING DEPARTMENT

PART 0. ADMINISTRATION

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2-547	2	16/Jan/2020
2-548	2	16/Jan/2020
2-549	2	16/Jan/2020
2-550	2	16/Jan/2020
2-551	2	16/Jan/2020
2-552	2	16/Jan/2020
2-553	2	16/Jan/2020
2-554	2	16/Jan/2020

Page	Rev	Date

3. Record of Revision

The valid pages of this Manual are listed in the List of Effective Pages distributed with every revision.

The table below describes the dates and reason for the different revisions of the current issue of this manual.

Rev	Date	Rev by	Reason
0	01/DEC/18	Chatchai Puntragul	Update the new templaye and revised the detail for technical procedure
1	30/APR/19	Chatchai Puntragul	Added definition, Revised the detail for technical procedure and related checklist.
2	16/JAN/20	Anucha Jannoy	1. Revise List of Effective Page (LEP) 2. Revise and add information at Chapter 9, 24 and 35
3	23/APR/2020	Anucha Jannoy	1. Revise List of Effective Page (LEP) 2. Revise and add detail at Chapter 8

4. AMENDMENT TRANSMITTAL PAGE

To: All holders of Name of the Manual

Subject: Manual Transmission

The table below lists pages to insert and remove from the previous version of the manual.

When doing so, users should ensure not to throw away pages that have not been replaced.

Using the List of Effective Pages can help determine the correct content of the manual.

Pages to be inserted	Pages to be removed

Pages to be inserted	Pages to be removed

I attest that the Hard copy in my possession has been updated according to the instructions above

Name:	Hard Copy N°:	Signature:

This page shall be returned signed to Quality Assurance Department.

Manager of AIR

5. DISTRIBUTION LIST

N°	Holder	Type
01	Airworthiness and Aircraft Engineering Department	Hard Copy (Master Copy)
02	Manager of QAD	Electronic copy at E-Document System

Table 1 Distribution List

6. DEFINITIONS & ACRONYMS

6.1 Definitions

Term	Definition
Air Operator Certificate	A certificate issued under AOCR of the Civil Aviation Authority of Thailand (CAAT) authorizing an air operator to carry out commercial air transport operations
Lease	Any agreement by a person (the lessor) to provide an aircraft to another person (the lessee) who will use the aircraft for compensation or hire purposes. A lease is not an agreement for the sale of an aircraft or a contract of conditional sale
Lessor	The party furnishing the aircraft under a lease
Lessee	The party using the aircraft under the provisions of a lease
Dry lease	A lease arrangement whereby a lessor provides an aircraft without crew to lessee, operated under the AOC of the lessee
Wet lease	A lease arrangement whereby a lessor provides an aircraft with crew to the lessee, operated under the AOC of the lessor
Damp lease	A lease arrangement whereby a lessor provides an aircraft with partial crew to the lessee, operated under the AOC of the lessor
Charter	Any arrangement in which an individual, operator or organization, having passengers or cargo
Operational control	means the exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of safety of the aircraft and the regularity and efficiency of the flight
Operational control	means the exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of safety of the aircraft and the regularity and efficiency of the flight
Maintenance	means tasks required to ensure the continued airworthiness of an aircraft or aircraft component including any one or combination of overhaul, repair, inspection, replacement, modification and defect rectification.

Term	Definition
General Maintenance Manual (GMM)	A document that describes an air operator's procedures necessary to ensure that all scheduled and unscheduled maintenance is performed on the operator's aircraft on time and in a controlled and satisfactory manner
Operator	Means the holder of an Air Operator Certificate (also called "air operator")
State of Operator	Means the State in which the Operator's principal place of business is located, or if there is no such place, the Operator's permanent residence
State of Registry	means the State on whose register the aircraft is entered
Aerial work	An aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.
Aerodrome.	A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
Aeroplane	A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.
Aircraft.	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.
Aircraft operating manual.	A manual, acceptable to the State of the Operator, containing normal, abnormal and emergency procedures, checklists, limitations, performance information, details of the aircraft systems and other material relevant to the operation of the aircraft. *Note.- The aircraft operating manual is part of the operations manual.*
Aircraft tracking.	A process, established by the operator, that maintains and updates, at standardized intervals, a ground-based record of the four dimensional

Term	Definition
	position of individual aircraft in flight.
Air traffic service (ATS).	A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service).
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.
Anticipated operating conditions.	Those conditions which are known from experience or which can be reasonably envisaged to occur during the operational life of the aircraft taking into account the operations for which the aircraft is made eligible, the conditions so considered being relative to the meteorological state of the atmosphere, to the configuration of terrain, to the functioning of the aircraft, to the efficiency of personnel and to all the factors affecting safety in flight. Anticipated operating conditions do not include: a) those extremes which can be effectively avoided by means of operating procedures; and b) those extremes which occur so infrequently that to require the Standards to be met in such extremes would give a higher level of airworthiness than experience has shown to be necessary and practical.
Appropriate airworthiness requirements.	The comprehensive and detailed airworthiness codes established, adopted or accepted by CAAT for the class of aircraft, engine or propeller under consideration.
Area navigation (RNAV).	A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these. *Note. - Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-*

Term	Definition
	based navigation.
Approved.	Accepted by CAAT as suitable for a particular purpose.
Cabin crew member.	A crew member who performs, in the interest of safety of passengers, duties assigned by the operator or the pilot-in-command of the aircraft, but who shall not act as a flight crew member.
Category A.	With respect to helicopters, means a multi-engine 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.	With respect to helicopters, means a single-engine or multi-engine 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.
COMAT.	Operator material carried on an operator's aircraft for the operator's own purposes.
Combined vision system (CVS).	A system to display images from a combination of an enhanced vision system (EVS) and a synthetic vision system (SVS).
Commercial air transport operation.	An aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.
Configuration (as applied to the aeroplane)	A particular combination of the positions of the moveable elements, such as wing flaps and landing gear, etc. , that affect the aerodynamic characteristics of the aeroplane.

Term	Definition
Configuration deviation list (CDL).	A list established by the organization responsible for the type design with the approval of the State of Design which identifies any external parts of an aircraft type which may be missing at the commencement of a flight, and which contains, where necessary, any information on associated operating limitations and performance correction.
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.
Continuous descent final approach (CDFA).	A technique, consistent with stabilized approach procedures, for flying the final approach segment of a non-precision instrument approach procedure as a continuous descent, without level-off, from an altitude/ height at or above the final approach fix altitude/ height to a point approximately 15 m (50 ft) above the landing runway threshold or the point where the flare manoeuvre should begin for the type of aircraft flown.
Corporate aviation operation.	The non-commercial operation or use of aircraft by a company for the carriage of passengers or goods as an aid to the conduct of company business, flown by a professional pilot(s) employed to fly the aircraft.
Crew member.	A person assigned by an operator to duty on an aircraft during a flight duty period.
Critical engine(s).	Any engine whose failure 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 engine. In this case, the expression "the critical engine" means one of those critical engines.*
Cruising level.	A level maintained during a significant portion of a flight.

Term	Definition
Dangerous goods.	Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions. *Note.- Dangerous goods are classified in Annex 18, Chapter 3.*
Decision altitude (DA) or ***decision height (DH).***	A specified altitude or height in a 3D instrument approach operation at which a missed approach must be initiated if the required visual reference to continue the approach has not been established. *Note 1.- Decision altitude (DA) is referenced to mean sea level and decision height (DH) is referenced to the threshold elevation.* *Note 2.- The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In Category III operations with a decision height the required visual reference is that specified for the particular procedure and operation.* *Note 3.- For convenience where both expressions are used they may be written in the form "decision altitude/height" and abbreviated "DA/H".*
Design landing mass.	The maximum mass of the aircraft at which, for structural design purposes, it is assumed that it will be planned to land.
Design take-off mass.	The maximum mass at which the aircraft, for structural design purposes, is assumed to be planned to be at the start of the take-off run.
Design taxiing mass.	The maximum mass of the aircraft at which structural provision is made for load liable to occur during use of the aircraft on the ground prior to the start of take-off.
Discrete source damage.	Structural damage of the aeroplane that is likely to result from: impact with a bird, uncontained fan blade failure, uncontained engine failure,

Term	Definition
	uncontained high-energy rotating machinery failure or similar causes.
Dry runway.	A runway is considered dry if its surface is free of visible moisture and not contaminated within the area intended to be used.
EDTO critical fuel.	The fuel quantity necessary to fly to an en-route alternate aerodrome considering, at the most critical point on the route, the most limiting system failure. *Note.- Attachment C contains guidance on EDTO critical fuel scenarios.*
EDTO significant system.	An aeroplane system whose failure or degradation could adversely affect the safety particular to an EDTO flight, or whose continued functioning is specifically important to the safe flight and landing of an aeroplane during an EDTO diversion.
Electronic flight bag (EFB).	An electronic information system, comprised of equipment and applications for flight crew, which allows for the storing, updating, displaying and processing of EFB functions to support flight operations or duties.
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.

Term	Definition
	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.
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/rotors (if applicable).
Enhanced vision system (EVS).	A system to display electronic real-time images of the external scene achieved through the use of image sensors. *Note.- EVS does not include night vision imaging systems (NVIS).*
En-route phase.	That part of the flight from the end of the take-off and initial climb phase to the commencement of the approach and landing phase. *Note.- Where adequate obstacle clearance cannot be guaranteed visually, flights must be planned to ensure that obstacles can be cleared by an appropriate margin. In the event of failure of the critical engine, operators may need to adopt alternative procedures.*
Extended diversion time operations (EDTO).	Any operation by an aeroplane with two or more turbine engines where the diversion time to an en-route alternate aerodrome is greater than the threshold time established by the State of the Operator.
Extended flight over water.	***Factor of safety.*** A design factor used to provide for the possibility of loads greater than those assumed, and for uncertainties in design and fabrication.
Final approach and take-off area (FATO).	A defined area over which the final phase of the approach maneuver to hover or landing is completed and from which the take-off maneuver is commenced. Where the FATO is to be used by performance Class 1 helicopters, the defined area includes the rejected take-off area available. ***Final approach segment (FAS).*** That segment of an instrument approach procedure in which alignment and descent for landing are

Term	Definition
	accomplished.
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.*
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.*
Flight crew member.	A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.
Flight data analysis.	A process of analysing recorded flight data in order to improve the safety of flight operations.
Flight manual.	A manual, associated with the certificate of airworthiness, containing limitations within which the aircraft is to be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.
Flight operations officer/flight dispatcher.	A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably qualified in accordance with Annex 1, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight.
Flight recorder	Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation. *Automatic deployable flight recorder (ADFR).* A combination flight recorder installed on the aircraft which is capable of automatically deploying from the aircraft.
Flight safety	A set of interrelated documentation established by the operator,

Term	Definition
documents system.	compiling and organizing information necessary for flight and ground operations, and comprising, as a minimum, the operations manual and the operator's maintenance control manual.
Flight time - aeroplanes.	The total time from the moment an aeroplane first moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight. *Note.- Flight time as here defined is synonymous with the term "block to block" time or "chock to chock" time in general usage which is measured from the time an aeroplane first moves for the purpose of taking off until it finally stops at the end of the flight.*
General aviation operation.	An aircraft operation other than a commercial air transport operation or an aerial work operation.
Ground handling.	Services necessary for an aircraft's arrival at, and departure from, an airport, other than air traffic services.
Head-up display (HUD)	A display system that presents flight information into the pilot's forward external field of view.
Helicopter.	A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes. *Note.- Some States use the term "rotorcraft" as an alternative to "helicopter".*
Helideck.	A heliport located on a floating or fixed offshore structure.
Heliport.	An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters. *Note 1.- Throughout this Part, when the term "heliport" is used, it is intended that the term also applies to aerodromes primarily meant for the use of aeroplanes.* *Note 2.- Helicopters may be operated to and from areas other than heliports.*

Term	Definition
Hostile environment.	An environment in which: a) a safe forced landing cannot be accomplished because the surface and surrounding environment are inadequate; or b) the helicopter occupants cannot be adequately protected from the elements; or c) search and rescue response/capability is not provided consistent with anticipated exposure; or d) there is an unacceptable risk of endangering persons or property on the ground. ***Human factors principles.*** Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.
Human performance.	Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.
Industry codes of practice.	Guidance material developed by an industry body, for a particular sector of the aviation industry to comply with the requirements of the International Civil Aviation Organization's Standards and Recommended Practices, other aviation safety requirements and the best practices deemed appropriate. *Note.- Some States accept and reference industry codes of practice in the development of regulations to meet the requirements of Annex 6, Part II, and make available, for the industry codes of practice, their sources and how they may be obtained.*
Integrated survival suit.	A survival suit which meets the combined requirements of the survival suit and life jacket.
Landing surface.	That part of the surface of an aerodrome which the aerodrome authority has declared available for the normal ground or water run of aircraft landing in a particular direction.

Term	Definition
Large aeroplane.	An aeroplane of a maximum certificated take-off mass of over 5 700 kg.
Limit loads.	The maximum loads assumed to occur in the anticipated operating conditions.
Load factor.	The ratio of a specified load to the weight of the aircraft, the former being expressed in terms of aerodynamic forces, inertia forces, or ground reactions.
Maintenance.†	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.
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 organization's procedures manual.	A document endorsed by the head of the maintenance organization which details the maintenance organization's structure and management responsibilities, scope of work, description of facilities, maintenance procedures and quality assurance or inspection systems.
Maintenance programme.	A document which describes the specific scheduled maintenance tasks and their frequency of completion and related procedures, such as a reliability programme, necessary for the safe operation of those aircraft to which it applies.
Maintenance records.††	Records that set out the details of the maintenance carried out on an aircraft, engine, propeller or associated part. accordance with the approved data and the procedures described in the maintenance organization's procedures manual or under an equivalent system.

Term	Definition
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.
Master minimum equipment list (MMEL).	A list established for a particular aircraft type by the organization responsible for the type design with the approval of the State of Design containing items, one or more of which is permitted to be unserviceable at the commencement of a flight. The MMEL may be associated with special operating conditions, limitations or procedures.
Maximum diversion time.	Maximum allowable range, expressed in time, from a point on a route to an en-route alternate aerodrome.
Maximum mass.	Maximum certificated take-off mass.
Minimum descent altitude (MDA) or ***minimum descent height (MDH).***	A specified altitude or height in a 2D instrument approach operation or circling approach operation below which descent must not be made without the required visual reference. *Note 1.- Minimum descent altitude (MDA) is referenced to mean sea level and minimum descent height (MDH) is referenced to the aerodrome elevation or to the threshold elevation if that is more than 2 m (7 ft) below the aerodrome elevation. A minimum descent height for a circling approach is referenced to the aerodrome elevation.* *Note 2.- The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In the case of a circling approach the required visual reference is the runway environment.* *Note 3.- For convenience when both expressions are used they may be written in the form "minimum descent altitude/height" and abbreviated*

Term	Definition
	"MDA/H".
Maintenance release.†	A document which contains a certification confirming that the maintenance work to which it relates has been completed in a satisfactory manner, either in
Minimum equipment list (MEL).	A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an operator in conformity with, or more restrictive than, the MMEL established for the aircraft type.
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. Further guidance on aircraft maintenance, modification and repair is contained in the* Airworthiness Manual *(Doc 9760).*
Navigation specification.	A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications: *Required navigation performance (RNP) specification.* A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH. *Area navigation (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. *Note 1.- The* Performance-based Navigation (PBN) Manual *(Doc 9613), Volume II, contains detailed guidance on navigation specifications.* *Note 2.- The term RNP, previously defined as "a statement of the navigation performance necessary for operation within a defined airspace", has been removed from this Annex as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this Annex is now*

Term	Definition
	solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.
Night.	The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise, as may be prescribed by the appropriate authority. *Note.- Civil twilight ends in the evening when the centre of the sun's disc is 6 degrees below the horizon and begins in the morning when the centre of the sun's disc is 6 degrees below the horizon.*
Non-compliance form (NCF)	The audit report which contains the audit findings assigned during the audit.
Non-congested hostile environment.	A hostile environment outside a congested area.
Non-hostile environment.	An environment in which: a) a safe forced landing can be accomplished because the surface and surrounding environment are adequate; b) the helicopter occupants can be adequately protected from the elements; c) search and rescue response/capability is provided consistent with anticipated exposure; and d) the assessed risk of endangering persons or property on the ground is acceptable. *Note.- Those parts of a congested area satisfying the above requirements are considered non-hostile.*
Offshore operations.	Operations which routinely have a substantial proportion of the flight conducted over sea areas to or from offshore locations. Such operations include, but are not limited to, support of offshore oil, gas and mineral

Term	Definition
	exploitation and sea-pilot transfer.
Operating base.	The location from which operational control is exercised. *Note.- An operating base is normally the location where personnel involved in the operation of the aeroplane work and the records associated with the operation are located. An operating base has a degree of permanency beyond that of a regular point of call.*
Operational control.	The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight.
Operations in performance Class 1 (Helicopter).	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.
Operations in performance Class 2 (Helicopter).	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.
Operations in performance Class 3 (Helicopter).	Operations with performance such that, in the event of an engine failure at any time during the flight, a forced landing will be required.
Operations manual.	A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.
Operations specifications.	The authorizations, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations

Term	Definition
	manual.
Operator.	The person, organization or enterprise engaged in or offering to engage in an aircraft operation.
Operator's maintenance control manual.	A document which describes the operator's procedures necessary to ensure that all scheduled and unscheduled maintenance is performed on the operator's aircraft on time and in a controlled and satisfactory manner.
Organization responsible for the type design.	The organization that holds the type certificate, or equivalent document, for an aircraft, engine or propeller type, issued by a State of Design.
Orphan aircraft type.	An aircraft which has its Type Certificate revoked by the State of Design, and no longer has a designated State of Design in accordance with Annex 8. These aircraft do not meet the Standards of Annex 8.
Performance-based communication (PBC).	Communication based on performance specifications applied to the provision of air traffic services. *Note.- An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.*
Performance-based navigation (PBN).	Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace. *Note.- Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.*
Performance-	Surveillance based on performance specifications applied to the provision

Term	Definition
based surveillance (PBS).	of air traffic services. *Note.- An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.*
Performance Class 1 helicopter.	A helicopter with performance such that, in case of engine failure, it is able to land on the rejected take-off area or safely continue the flight to an appropriate landing area.
Performance Class 2 helicopter	A helicopter with performance such that, in case of engine 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 engine failure at any point in the flight profile, a forced landing must be performed.
Pilot-in-command.	The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.
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.
Pressure-altitude.	An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the standard atmosphere.
Psychoactive substances.	Alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.

Term	Definition
Rendering (a Certificate of Airworthiness) valid.	The action taken by a Contracting State, as an alternative to issuing its own Certificate of Airworthiness, in accepting a Certificate of Airworthiness issued by any other Contracting State as the equivalent of its own Certificate of Airworthiness.
Repair.†	The restoration of an aeronautical product to an airworthy condition as defined by the appropriate airworthiness requirements.
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.
Required communication performance (RCP) specification.	A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.
Required surveillance performance (RSP) specification.	A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.
Runway visual range (RVR).	The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.
Safe forced landing.	Unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.
Safety management system (SMS)	A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.
Satisfactory evidence.	A set of documents or activities that CAAT accepts as sufficient to show compliance with an airworthiness requirement.

<table>
<tr><th>Term</th><th>Definition</th></tr>
<tr><td>Small aeroplane.</td><td>An aeroplane of a maximum certificated take-off mass of 5 700 kg or less.</td></tr>
<tr><td>Standard atmosphere.</td><td>An atmosphere defined as follows:
a) the air is a perfect dry gas;
b) the physical constants are:
— Sea level mean molar mass:
M_0 = 28.964 420 x 10^{-3} kg mol^{-1}
— Sea level atmospheric pressure:
P_0 = 1 013.250 hPa
— Sea level temperature:
t_0 = 15°C
T_0 = 288.15 K
— Sea level atmospheric density:
ρ_0 = 1.225 0 kg m^{-3}
— Temperature of the ice point:
T_i = 273.15 K
— Universal gas constant:
R* = 8.314 32 $JK^{-1}mol^{-1}$
c) the temperature gradients are:
<table>
<tr><td colspan="2">Geopotential altitude (km)</td><td>Temperature gradient (Kelvin per standard geopotential kilometre)</td></tr>
<tr><td>From</td><td>To</td><td></td></tr>
<tr><td>–5.0</td><td>11.0</td><td>–6.5</td></tr>
<tr><td>11.0</td><td>20.0</td><td>0.0</td></tr>
<tr><td>20.0</td><td>32.0</td><td>+1.0</td></tr>
</table>
</td></tr>
</table>

Term	Definition
	32.0 | 47.0 | +2.8 47.0 | 51.0 | 0.0 51.0 | 71.0 | –2.8 71.0 | 80.0 | –2.0 *Note 1.- The standard geopotential metre has the value 9.806 65 $m^2 s^{-2}$.* *Note 2.- See Doc 7488 for the relationship between the variables and for tables giving the corresponding values of temperature, pressure, density and geopotential.* *Note 3.- Doc 7488 also gives the specific weight, dynamic viscosity, kinematic viscosity and speed of sound at various altitudes*
State of Design.	The State having jurisdiction over the organization responsible for the type design.
State of Manufacture.	The State having jurisdiction over the organization responsible for the final assembly of the aircraft, engine or propeller.
State of the Operator.	The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.
State of Registry.	The State on whose register the aircraft is entered. *Note.- In the case of the registration of aircraft 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

Term	Definition
	Regulation of International Air Transport *(Doc 9587).*
Synthetic vision system (SVS).	A system to display data-derived synthetic images of the external scene from the perspective of the flight deck.
Target level of safety (TLS).	A generic term representing the level of risk which is considered acceptable in particular circumstances.
Threshold time.	The range, expressed in time, established by the State of the Operator, to an en-route alternate aerodrome, whereby any time beyond requires an EDTO approval from the State of the Operator.
Total vertical error (TVE).	The vertical geometric difference between the actual pressure altitude flown by an aircraft and its assigned pressure altitude (flight level).
Take-off surface.	That part of the surface of an aerodrome which the aerodrome authority has declared available for the normal ground or water run of aircraft taking off in a particular direction.
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.*
Type design.	The set of data and information necessary to define an aircraft, engine or propeller type for the purpose of airworthiness determination.
Ultimate load.	The limit load multiplied by the appropriate factor of safety.

6.2 Abbreviations and Acronyms

Abbreviation or Acronym	Meaning
AIR	Airworthiness and Aircraft Engineering Department
AIR SITE	https://sites.google.com/caat.or.th/air/air
AME	Aircraft Maintenance Engineers
AOC	Air Operator Cetificate
APU	Auxiliary Power Unit
ATO	Approved Training Organizations
C of A	Certficate of Airworthiness
C of R	Certificate of Registration
CAAT	The Civil Aviation Authority of Thailand
CDCCL	Critical Design Configuration Control Limitations
EASA	European Aviation Safety Agency
ETOPS	Extended-range Twin-engine Operation Performance Standards
FAR	Federal Aviation Regulations
GA	General Aviation
ICAO	International Civil Aviation Organization
IPC	Illustrated parts catalog
NCF	Non-compliance form
NDT	Nondestructive Testing
RNP	Required Navigation Performance
RVSM	Reduced Vertical Separation Minimum
SRM	Structure Repair Manual

Abbreviation or Acronym	Meaning
STC	Supplemental Type Certificate
TC	Type Certificate
TCDS	Type Certificate Data Sheet

PART 1. ORGANIZATION OF AIR DEPARTMENT

1. OBJECTIVE

This chapter describes the Organization and the duties and responsibilities of the divisions of Airworthiness and Aircraft Engineering Department of CAAT also called AIR department

2. ORGANIZATION OF AIRWORTHINESS AND ENGINEERING DEPARTMENT (AIR DEPARTMENT)

The AIR Department is composed of 6 divisions as follows:

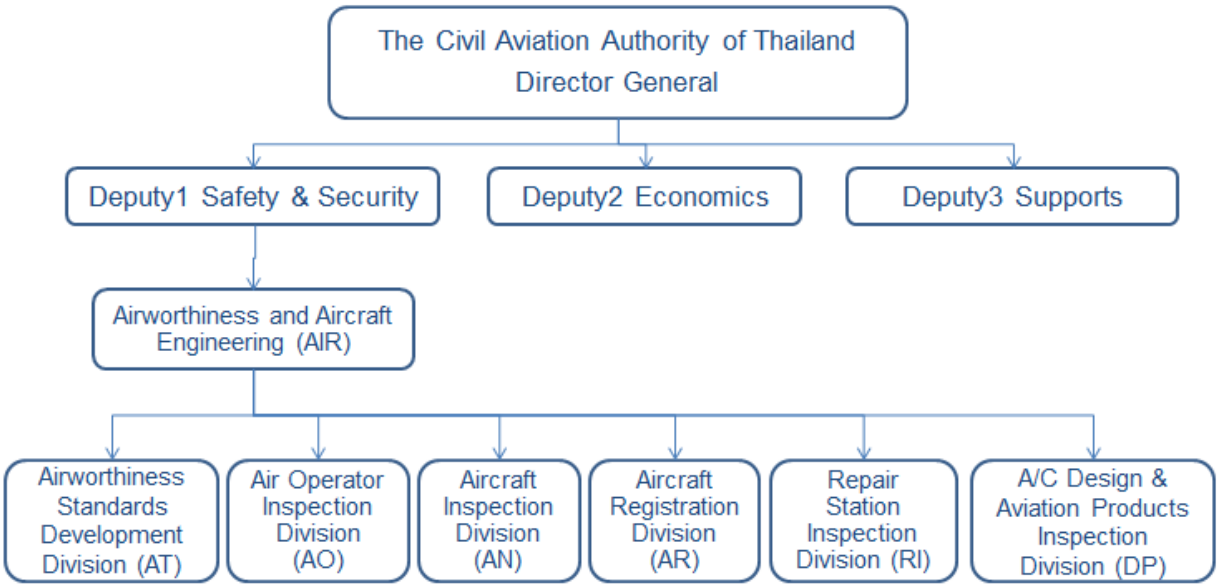


Figure I: AIR Chart.

To perform the tasks described in the following chapter, the divisions rely on inspectors and administrative staff.

The inspectors are divided in three categories as described in the authorization handbook:

- Airworthiness Inspector –AIR-AWI
- Aircraft Engineering Inspector –AIR-EGI
- Repair Station Inspector –AIR-RES

The provisions for the training of these inspectors are described in the training manual; while the provisions for their authorization are described in the Authorization handbook.

3. MISSIONS OF AIR DEPARTMENT DIVISIONS

The following table provides a recap of the main duties and responsibilities.

Division	Acronyms	Responsibility
Airworthiness and A/C development	AT	Develop regulations, Guidance materials & Procedures for Airworthiness)compliant with ICAO standards.
AOC Inspection	AO	Certification & Oversight of AOC AIR Parts = Airworthiness management & Line maintenance(C of A for CAT A/C AIR ramp inspections
Aircraft Inspection	AN	C of A, Export C of A and Special Flight Permit for General aviation (GA) aircrafts Oversight of General Aviation aircrafts; Special operations RVSM, RNP, for GA.
Aircraft Registration	AR	Register and Deregister aircrafts on Thai register. Coordinate with the aircrafts states of design to obtain the maintaining the Information for Continuing airworthiness of such aircraft. Used aircraft age acceptance before registration.
Repair Stations	RI	Certification & Oversight of the Repair Stations (Base maintenance including NDT, Welding and other specialized work, Line maintenance; Component maintenance).
A/C design and Aviation products	DP	Type Certification. Approval of modifications & repairs; Noise certificates issuance.

3.1. Airworthiness and Aircraft Development division)AT:(

3.1.1 Missions of the AT division:

The missions of the Airworthiness and Aircraft Development division (AT) are listed below.

3.1.1.1. Develop regulations, Guidance materials for Airworthiness)compliant with ICAO standards (in the following domains:

- Initial Airworthiness of aeronautical products; (Currently, not developed, this is an objective for the future)
- Design and Production of aeronautical parts. (Currently, Not developed, this is an objective for the future)
- Aircraft Maintenance Engineers (AME) licensing;
- Continuing Airworthiness management of aeronautical products;
- Maintenance of aeronautical products;

3.1.1.2. Develop procedures for CAAT Airworthiness & A/ C Engineering department

3.2. Air Operator Inspection division)AO):

3.2.1 Missions of the AO division:

The missions of the Air Operator Inspection division (AO) are listed below.

3.2.1.1. Certification & Oversight of the Airworthiness Management functions of an Operator including aspects related to Special Authorizations.

3.2.1.2. Certification & Oversight of line maintenance authorized under the AOC, including specialized tasks.

3.2.1.3. Certificate of Airworthiness issuance and renewal for Commercial aircraft:

- Acceptance of new aircraft (Production reports and aircraft inspections)
- Acceptance of used aircraft (Documentation & aircraft inspections)

3.2.1.4. Airplane equipment review for CAT operations;

3.2.1.5. Ramp Inspections performance) Only Parts related to Airworthiness.(

3.2.1.6. Management of exemptions requests from operators.

3.2.1.7. Training of the new recruits of the division.

These mission's concerns operations and airworthiness of the following aircrafts:

- Fixed wings;
- Rotary wings;
- Balloons.

3.3. Aircraft Inspection division (AN):

3.3.1 Missions of the Aircraft Inspection division:

The missions of the Aircraft Inspection division (AN) are listed below.

3.3.1.1. Issue of C of A, Export C of A and Special Flight Permit for aircraft not involved in Commercial Air Transport (General aviation; GA);

3.3.1.2. Oversight of GA aircraft;

3.3.1.3. Tasks related to the issue of letter for special operations (RVSM, RNP, ...) including aircraft equipment review (Avionics, & Emergency equipment)

3.3.1.4. Acceptance of new aircraft (inspections of production reports and aircraft)

3.3.1.5. Collaborate or support the operation of the relevant department or delegate

3.4. Aircraft Registration Division)AR)

3.4.1 Missions of the AR division:

The missions of the Aircraft registration division (AR) are listed below.

3.4.1.1. Maintain the Thai Aircraft register up to date.

3.4.1.2. Manage aircraft registration and the issuance of the corresponding certificate of registration.

3.4.1.3. Withdrawal of aircraft registration

3.4.1.4. Coordinate with the aircraft state of design to obtain information on continuing airworthiness of such aircraft.

3.5. Repair Station Inspection division (RI)

3.5.1 Missions of the RI division

The missions of the Repair Station Inspection division (RI) are listed below.

3.5.1.1. Certification of the Repair Stations:

- Management of the certification process;
- Documentation review;
- Auditing for Inspection and demonstration of:
  - Base maintenance
  - Specialized work (NDT, Welding....)
  - Line maintenance;
  - Component maintenance.

3.5.1.2. Oversight of the Repair Stations.

- Auditing planning;
- Documentation revisions review;
- Auditing;

- Finding management.

3.5.1.3. Granting of special authorizations.

3.6. A/C design and Aviation Products Inspection (DP):

3.6.1 Missions of the DP division:

The missions of the A/C design and Aviation Products Inspection division (DP) are listed below.

3.6.1.1. Type Certification acceptance using TCDS from State of design for airplanes

3.6.1.2. STCs Approval based on the approval from a recognized authority;

3.6.1.3. Modification approval;

3.6.1.4. Repair)out of SRM scope (approval

3.6.1.5. Noise certificates issuance

3.6.1.6. Certification and Oversight of Aircraft parts manufacturers in Thailand.

PART 2. TECHNICAL PROCEDURES

1. CHAPTER 1 RESERVED

2. CHAPTER 2 GUIDANCE FOR ISSUANCE AND RENEWAL OF CERTIFICATE OF AIRWORTHINESS

2.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 8 Airworthiness of Aircraft	Form: AIR-CA-101 (Application form for Standard Certificate of Airworthiness (C of A))
Article 16, Articles 34 to 41 of the Air Navigation Act B.E. 2497;	Form: AIR-CA-102 (Application form for Special Certificate of Airworthiness)
Ministerial Regulations relating to determining regulations and procedures in applying and extending the Certificate of Airworthiness B.E 2555;	Form: AIR-CA-103 (Application for Special C of A For Paramotor, Paraplane, Paraglider)
Ministerial Regulations relating to the administrative fee and high rate for service fees of the airport B.E. 2554;	Form: AIR/AW-001, AIR/AW-002, AIR/AW-003, AIR/AW-004 and AIR/AW-005 (Form for the Standard C of A and Special C of A Type I,II,III and IV)
Civil Aviation Board Requirement No. 86;	Form: AIR-CA-001 (C of A Package Checklist)
Notification of the Department of Civil Aviation relating the form for Certificate of Airworthiness, standard type and special type B.E. 2556**;**	Form: AIR-CA-002 (C of A Issue/Renew Inspection Check List more than 5,700 Kgs)
Notification of the Department of Air Transport relating to Airworthiness Directives (2 July B.E 2550);	Form: AIR-CA-003 (C of A Issue/Renew Inspection Check List less than 5,700 Kgs)

ICAO Annex 6 Part I Chapter 8, Part II Chapter 8, Part III Chapter 6;	Form: AIR-CA-004 (C of A Issue/Renew Inspection Check List Balloon)
Announcement from **Department of Civil Aviation relating to** Requirements of Flight-Testing B.E. 2551**;**	Form: AIR-CA-005 (C of A Issue/Renew Inspection Check List Helicopter)
E-service : https://eservice.caat.or.th CAAT web site to apply/renew for Certificate	Form: AIR-CA-006 (C of A Issue/Renew Inspection Check List Experimental and Ultralight)
Annoucement of Department of Civil avialtion "Operation of comercial Air Transport"	Aircraft Inspection Equipment AID Checklist (CAAT-AWE-INSP-001(AID)

2.2. OBJECTIVE.

The obligation on contracting states of ICAO to issue C of A, is specified in Part II, Section 3 of ICAO Annex 8 Airworthiness of Aircraft. A C of A maybe issued to an individual aircraft on the basis of evidence that the aircraft complies with the applicable airworthiness requirement, and that the aircraft has been satisfactory constructed and maintained.

In no case may any aircraft be operated unless there is an appropriate airworthiness certificate issued to and valid for that aircraft. This Chapter provides policy and guidance material for basic requirements for issuance of standard airworthiness certificates for aircraft manufactured under Type Certificated only. CAAT has full responsibility for finding that each aircraft, at the time an airworthiness certificate is issued, conforms to the type design and is in a condition for safe operation. Therefore, sufficient time should be reserved for CAAT inspections to be conducted on each and every aircraft to be certificated by CAAT.

Satisfactory completion of this process culminates in issue of a C of A for the individual aircraft. A C of A may be issued to an individual aircraft on the basis of evidence that the aircraft complies with the applicable airworthiness requirement, and that the aircraft has been satisfactory constructed and maintained.

2.3. PRE-REQUISITE TO QUALITY FOR C OF A ISSUE.

2.3.1 Aircraft must be registered on the Thailand civil aircraft register.

2.3.2 Applicant/Customer/Maintenance Organization details must be provided.

2.3.3 Aircraft must be of a type certificate acceptable to the CAAT.

2.4. THAILAND AIRWORTHINESS CODE

2.4.1 Thailand accepts aircraft and/or aeronautical parts certificated under the following codes of airworthiness:

2.4.1.1. EASA/FAR.

2.4.1.2. Airworthiness codes from other Contracting States may be evaluated on case- by-case basis.

2.4.2 Documents relating to the code of airworthiness (i.e. Type Certificate Data Sheet, Technical Manual, etc.) must be written in the English Language.

2.5. AIRCRAFT TYPE CERTIFICATION COMPLIANCE REQUIREMENT

Aircraft first of type on Thailand register, certification process:

2.5.1 CAAT may accept an aircraft type certificate or equivalent document issued by a contracting state of design in respect of an aircraft or component provided that: The type certificate or equivalent document was issued on or based on an airworthiness code recognized by CAAT.

2.5.1.1. The design, materials, construction, equipment, evaluation against a recognized airworthiness code has been carried out by CAAT and has been found to:

2.5.1.2. Meet the required standards of the recognized airworthiness code; or

2.5.1.3. Have complied with any recommendations required by CAAT.

2.5.1.4. Installed modifications are approved to an airworthiness code acceptable to Thailand and documentation to support such approval is satisfied.

2.5.1.5. There are no restrictive operational limitations applicable to the aircraft, which may prevent the C of A issue.

2.5.1.6. Assessment of suitability of any special conditions specified.

2.5.1.7. Assessment of acceptability of any waivers or variations.

2.5.2 The 'recognized airworthiness code' Means standards relating to the design, materials, construction, equipment, performance and maintenance planning of aircraft or aircraft components issued by the state of design that are acceptable to CAAT.

2.5.3 To enable effective aircraft safety oversight CAAT requires:

2.5.3.1. Aircraft technical documents and literature (e.g. flight manual, maintenance manuals etc.) published in English;

2.5.3.2. Timely provision to CAAT and the operator the current amendments of all relevant aircraft technical and operation literature;

2.5.3.3. The aircraft equipment, instruments indication markings and placards to be in English or Thai with Arabic numerals; and

2.5.3.4. The aircraft type design to incorporate the minimum recommended emergency features (e.g. emergency windows), and emergency equipment with clear operating instructions in English.

2.5.4 An aircraft that does not satisfy the Type Certificate requirements is classified non-compliant and therefore cannot be issued with a Thailand Certificate of Airworthiness.

2.6. certificate of airworthiness issuance.

2.6.1 The owner of an aircraft registered in Thailand or representative of the owner may apply to CAAT for issue of a certificate of airworthiness for that aircraft, the application for a certificate of airworthiness shall be made on E-service* which are Form: AIR-CA-101, AIR-CA-102 or AIR-CA-103 as applicable on each Intension and along with fee payment for Inspection fee. Incase of First issuance of C of A, Form: AIR-CA-101 shall be submmited with Aeroplane Instrument and Equipment data form (Form CAAT-PEL-020)

2.6.2 An aircraft of a Type certification basis already approved and entered on the register of CAAT.

2.6.3 In addition to the application form, the applicant is required to submit to CAAT two (2) sets of the following documents for the pre-issue evaluation in case the type being imported in to the country for the first time:

2.6.3.1. Maintenance Planning document;

2.6.3.2. Master Minimum Equipment List (MMEL)

2.6.3.3. Flight Manual/Pilot Operating Handbook;

2.6.3.4. Valid Export C of A from the State of Export;

NOTE: Where an export C of A is required, it should not be more than 60 days from the date of issue when received by CAAT. Some regulatory Authorities do not issue an export C of A; in such cases CAAT may accept as an alternative:

2.6.3.5. A valid domestic Certificate of Airworthiness issued within the last 60 days; or

2.6.3.6. A valid Certificate of Airworthiness together with a written statement signed by the regulatory Authority of the exporting State within the last 60 days confirming that the aircraft is in accordance with the TDCS and is in an airworthy condition.

2.6.3.7. Derogations or waivers to requirements issued by the exporting countries must be agreed with CAAT in advance.

**E-service means the CAAT web site to apply/renew for Certificate*

2.6.3.8. The proposed aircraft maintenance programme to cover the Airframe, Engine, APU, Propellers, as applicable. The programme must include tasks for operational approvals requirements.

2.6.3.9. Maintenance Manual of Aircraft, Engine, etc.,

2.6.3.10. Wiring Manual

2.6.3.11. Wiring diagram covering all electrical and radio installations

2.6.3.12. Operations manual;

2.6.3.13. Weight and Balance Manual;

2.6.3.14. Parts catalogue (IPC).

2.6.3.15. Overhaul Manual including that of Engine (If any)

2.6.3.16. Structural Repair Manual (if any);

2.6.3.17. Component Overhaul/Maintenance Manual (if any);

2.6.3.18. NDT Manual (if any);

2.7. the other document that maybe required:

The following document must be submitted to CAAT for evaluation unless not required.

2.7.1 Aircraft Status Summary

2.7.2 This should show operational times (cycles/hours) of aircraft, engines, propellers and APU, together with time remaining to the next check or overhaul.

2.7.3 A copy of Type Certificate and or Type Certificate Data Sheet (TCDS)

2.7.4 The aircraft should be assessed to establish that it is in compliance with the appropriate type certification requirements, typically as specified in the applicable Type Certificate Data Sheet. This will include the technical characteristics and certification basis.

2.7.5 The aircraft Airworthiness Directives status report.

2.7.6 The aircraft records should be reviewed to establish compliance and certification of all applicable Airworthiness Directives. An Airworthiness Directives compliance statement should be prepared for the aircraft, engines (including APU if fitted), propellers and equipment. Compliance should be shown with all applicable ADs issued by the State of Design for the airframe, engines, propellers and equipment as applicable.

2.7.7 An aircraft maintenance programme bridging check as necessary.

2.7.8 Where a used aircraft is being placed on a maintenance schedule or programme, an alignment (bridging) maintenance check may be required. The content of the alignment check, including consideration of previous maintenance standards, previous maintenance programme and any escalations, must be agreed with the CAAT. All known defects must have been corrected or, when applicable carried forward in a controlled manner.

2.7.9 Manufactures service bulletins and subsequent new issue/revisions;

2.7.10 Noise Certificate

2.7.11 In the case of aircraft issued with noise certificates from the previous State of registry or State of manufacturer, a copy of such certificate has to be submitted to CAAT for acceptance.

2.7.12 Record of the aircraft equipment and systems installations.

2.7.13 Log-Books for the aircraft, engines, APU, propellers and the technical-log as are applicable for the relevant aircraft.

2.7.14 Airworthiness Life Limitations components status report.

The aircraft and records should be reviewed to ensure the exporting State requirements, CAAT, State of design, and the Type Certificate Holders recommended life limits have been incorporated into the maintenance programme/schedule. Evidence that the existing life limits have not been exceeded must be established. This also includes the engines, propellers and appliances

2.7.15 Aircraft previous six (6) months maintenance review report.

2.7.16 Current Weight and Balance report. (Within 1 Year.) The following items must be valid:

2.7.16.1. Weighing record (record of the weighing and the calculations involved)

2.7.16.2. Weight and Centre of Gravity Report Within 1 Year. (enables the totally loaded weight and the C of G to be calculated).

2.7.16.3. Weight and Balance report/manual required for aircraft above 5700 kg. (Record of loading data essential to enable the particular aircraft to be correctly loaded.)

2.7.17 Copy of Latest major scheduled maintenance certificate release to service, and inspection summary.

All maintenance must have been carried out and certified in the applicable aircraft records and a Certificate of Release to service issued. This may include scheduled inspections, Corrosion Prevention and Control Programme, Supplementary Structural Inspection Document tasks and Critical Design Configuration Control Limitations (CDCCL).

2.7.18 Copy of the current certificate of release to service if different from (7.12) above.

2.7.19 Copy of the current aircraft Radio Station license.

2.7.20 Copy of the current stand-by compass swing report.

2.7.21 A test flight report (as may be required).

2.7.22 Material Flammability Certificate.

2.7.23 Certification basis for special operations (ETOPS, RVSM, etc.) if the aircraft is certified for such operations.

2.7.24 Buckle and Dent Report.

2.7.25 Aircraft Electrical Load Analysis Report.

2.7.26 Major Repair History.

2.7.27 Incident and Accident Statement (i.e. signed declaration of previous incidents/accidents involving aircraft, engines, propellers and APU)

Note: The major components (e.g. engines, propellers, APU's, landing gears) status report should indicate the time to the next shop visit or overhaul, hours and cycles since new, the time between overhaul, as applicable.

The CAAT shall carry out an in-depth document evaluation to verify that they are authentic, relate to the aircraft, and are valid as applicable.

2.8. c of a flight test requirement

2.8.1 The flight tests must be carried out by a qualified pilots and crew approved for the purpose.

2.8.2 This must be covered by certificate of fitness for flight issued by properly rated Engineer.

2.8.3 Except where CAAT requires additional crew to be carried for a particular flight test, the number of persons conducting the test should be confined to the crew specified in the Flight manual.

2.8.4 Performance of the airworthiness Check flight must where applicable include a radio test to the correct schedule. Upon completion of the flight test and if satisfied, the pilot must sign the check flight schedule.

2.8.5 Requirements and Conditions before conduct Flight testing will based on Announcement of Department of Civil Aviation relating to Requirements of Flight-Testing B.E. 2551.

2.9. aircraft inspection for c of a issue

2.9.1 After successful documents evaluation, it is required that the operator facilitate by making arrangements for the CAAT inspectors to carry out the aircraft inspection for C of A issuance.

2.9.2 The aircraft should be located and available, at a time and place acceptable to the Authority, for such checks and inspections required by CAAT;

2.9.3 Such checks and inspections will include physical components installation verification, emergency equipment (location, validity, ease of access and legibility of operating instructions), compliance with the Markings and Placards requirements and the general aircraft condition.

2.9.4 It will also be required to present for inspection the aircraft Flight Manual, Minimum Equipment List, the aircraft technical records and the Log-Books as applicable.

2.9.5 It is required to present at this inspection all the aircraft current and past technical records to verify its operational and maintenance life history.

2.9.6 The intention of the inspection is to establish the condition and conformity of the particular aircraft and will sample various structures/ systems and installations together with the associated technical records. When deciding what aspects (areas/zones/systems) to survey on a second-hand/imported aircraft, the previous operating history will be a prime consideration.

2.9.7 After completion of Aircraft inspection, CAAT Airworthiness Inspectors will complete C of A Inspection Checklist (AIR-CA-001, AIR-CA-002, AIR-CA-003, AIR-CA-004 AIR-CA-005 or AIR-CA-006) as applicable.

Note: It is required to rectify all outstanding defects, comply with all due mandatory inspections, modifications and replacement requirements at the C of A issue.

2.9.8 Incase of First issuance of C of A (Comercial Air Transport only), Aircraft Equipment Inspection AID Checklist / Doc Requirements of Operation of Aircraft Checklist (CAAT/AWE-INSP-001(AID)) shall be verified and completed by CAAT Airworthiness Inspectors.

2.10. other general requirement at the issue of a c of a

2.10.1 Revision of Manuals – The applicant is required to make the necessary arrangements with aircraft and engine manufacturers to send amendments and revisions that may be issued from time to time to CAAT to update the manuals and service information submitted.

2.10.2 Training Requirements – For a new aircraft type on the Thailand Aircraft Civil Register, the operator shall be required to provide training to CAAT inspectors on the type

2.10.2.1. The number of inspectors to be trained will depend on the size and complexity of the aircraft. This will include inspectors from Airworthiness (mechanical and avionics) and Flight Operations.

2.10.2.2. For a series type of an aircraft, a refresher or difference course may be required to keep abreast to the technological advancement or differences.

2.11. renewal of certificate of airworthiness

2.11.1 Guidance and procedures for the renewal of C of A.

2.11.1.1. An application for renewal of a Certificate of Airworthiness should be completed on Form: AIR-CA-101, AIR-CA-102 or AIR-CA-103 (as applicable) and be submitted to the CAAT on E-service at least 60 days prior to the expiry of the certificate.

2.11.1.2. The application for renewal should be made by the registered owner, representative or an agent who has an Authorization letter from the registered owner.

2.11.1.3. It is required that the renewal application form is submitted with proof of payment for Inspection fee of the prescribed C of A renewal fee.

2.11.2 C of A Renewal application and documents evaluation.

2.11.2.1. In addition to the C of A renewal application form, the applicant is required to submit the following documents for evaluation:

2.11.2.2. The aircraft Airworthiness Directives (AD) status report.

i. A statement of compliance with CAAT requirements and manufactures service bulletins.

ii. Aircraft previous six (6) months maintenance review report.

iii. Life components status report.

iv. Current Weight and Balance report within 1 Year.

v. Copy of latest major scheduled maintenance certificate release to service.

vi. Copy of the current certificate of release to service (if different from (11.2.1.7) above

vii. Record of the aircraft equipment and systems installations.

viii. Copy of the current aircraft Radio Station license.

ix. Copy of the current stand-by compass swing report.

x. A C of A renewal test flight report (as may be required).

xi. Aircraft Status Report

xii. Any other documents as CAAT may require.

xiii. CAAT will carry out an in-depth document evaluation to verify that they are authentic, relevant, genuine and valid.

Note: The major components (e.g. engines, propellers, APU's, landing gears) status report should indicate the time to the next shop visit or overhaul, hours and cycles since new, the time between overhaul, as applicable

2.12. c of a renewal aircraft inspection

2.12.1 After a satisfactory document evaluation, the applicant shall be advised to facilitate the CAAT inspectors to access the aircraft at a time and place acceptable to the CAAT, for such checks and inspections required by the CAAT;

2.12.2 Such checks and inspections shall include physical components installation verification, emergency equipment (location, validity, ease of access and legibility of operating instructions), compliance with the Markings and Placards requirements and the general aircraft condition.

2.12.3 It shall also be required to present for inspection the aircraft Flight Manual, Minimum Equipment List, the aircraft technical records and the Log-Books as applicable and any other such documents as may be required for a particular type of operation.

Note1: It is required to rectify all outstanding defects, comply with all due mandatory inspection, modification and replacement requirements at the C of A renewal.

Note2: Installation equipment shall be applied to CAAT Announcement Subject Operation of Aircraft for Transport airplane as follow below: (i.e.) and other announcement for General Aviation.

2.12.4 Registration and Marking of aircraft. (Civil Aviation Board Number 6) Section 32. A certificate of registration of an Aircraft shall become ineffective when:

2.12.4.1. There is a change in ownership of the Aircraft if the owner is a registrant, or a change in the possessory right in such Aircraft in case that the person having the possessory right is a registrant;

2.12.4.2. The Aircraft registrant lacks the qualifications pursuant to Section 31;

2.12.4.3. It appears that the ownership or possessory right of the Aircraft registrant is not as shown in the registration as having such right in the particulars of the application;

2.12.4.4. The Aircraft is so damaged that it is unfit for further use;

2.12.4.5. The Certificate of Airworthiness of the Aircraft has expired for more than six months;

2.12.4.6. The Aircraft has been missing for more than three months.

In the events of (12.4.1) to (12.4.5), the Aircraft registrant shall return the certificate of registration to the Competent Official without delay.

2.13. c of a renewal or validation flight test requiremets.

2.13.1 The development of approved aircraft maintenance programs requires the identification of all maintenance activities (i.e. replacements, adjustments, function and performance checks) where the manufacturer and or CAAT will require a test flight to verify that the aircraft's flight characteristics and functioning in flight has not significantly deteriorated from the normal design performance for the type.

2.13.2 In the absence of the provisions of 2.12 (a) above, CAAT shall require a flight test to be carried out to determine conformity with the airworthiness requirements at the C of A renewal application.

2.13.3 Except where CAAT requires additional crew to be carried for a particular flight test, the number of persons conducting the test should be confined to the crew specified in the Flight manual, which forms part of the Certificate of Airworthiness.

2.13.4 Requirements and Conditions before conduct Flight testing will based on Announcement of Department of Civil Aviation relating to Requirements of Flight-Testing B.E. 2551

2.14. renewal of c of a

When the CAAT is satisfied that all the applicable regulatory requirements have been complied with, the Certificate of Airworthiness will be renewed.

2.15. period of validity of a certificate of airworthiness.

2.15.1 A certificate of airworthiness validity is normally thirty-six months. (36) However, a shorter period may be specified by CAAT.

2.15.2 A certificate of airworthiness shall have a period of validity as follow;

2.15.2.1. A standard Certificate of Airworthiness shall have a period of validity of three years each; (Civil Aviation Law, Section 41/68).

2.15.2.2. A standard Certificate of Airworthiness shall become invalid when any of the following event occurs; (Civil Aviation Law, Section 41/70)

i. The certificate of registration of such Aircraft becomes ineffective under Section 32 (Change Ownership, Aircraft Lost 3 months, Lack of owner qualification).

ii. The Type Certificate for Aircraft or Type Certificate for Major Aircraft Appliance is revoked under Section 41/10, paragraph one.

iii. An alteration to the Aircraft violates Section 41/78 (Major Mod without approval).

iv. The Director General orders revocation of the Certificate of Airworthiness under Section 41/87.

v. The Aircraft is so damaged or deteriorated that it is in a dangerous condition, which the Personnel cannot fix

2.15.2.3. A Certificate of Airworthiness shall become temporarily ineffective, when there appear any of the following events; (Civil Aviation Law, Section 41/85)

i. A Certificate of Airworthiness shall become temporarily ineffective, when there appear any of the following events; (Civil Aviation Law, Section 41/85).

ii. The Aircraft has not undergone Maintenance under the rules, procedures and specified periods of time for Maintenance

3. CHAPTER 3 GUIDANCE FOR SPECIAL FLIGHT PERMIT

3.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Article 16, Article 34-41, Article 41/14, Articles 41/62 (2), Article 41/68 and Article 41/90 of the Air Navigation Act B.E. 2497	TDCA/AW-APP-002 APPLICATION FORM FOR SPECIAL FLIGHT PERMIT
The Ministerial Regulations: the rules and procedures in application and extension of Certificates of Airworthiness B.E. 2555.	TDCA/AW-CERT-010 SPECIAL FLIGHT PERMIT AIRCRAFT OPERATING LIMITATIONS LETTER
Ministerial Regulations determining other purpose of aircraft usage for type two Special Certificate of Airworthiness B.E 2555.	
The Civil Aviation Board Directive No. 43 relating to special light aircraft	
The Civil Aviation Board Directive No. 70 relating to special light aircraft type; parachutes, para-planes, and hang-gliders	
ICAO Annex 6 Part I Chapter 8, Part II Chapter 8, Part III Chapter 6, and Annex 8	

3.2. OBJECTIVE

This manual provides guidance for the inspector as following:

3.2.1 This manual has been developing for use of CAAT Airworthiness and Aircraft Engineering department staff and industry authorized persons.

3.2.2 This manual outlines the processes for CAAT and provider to use in determining if a Special Flight permitted will be issued, and what conditions apply when granting a Special Flight permitted.

3.2.3 This manual is designed to make the process of approving a Special Flight permitted transparent and to promote uniformity in the decision-making process.

3.2.4 This manual cannot pre-empt the delegate's decision, but can provide guidance on how a decision is made.

3.2.5 This manual outlines the legal and administrative process required by CAAT to meet the legal obligations of the delegate or provider.

3.3. POLICY CONCERNING USE OF MANAUL.

3.3.1 This manual constitutes the minimum requirement, which must be considered before granting a Special Flight Permit.

3.3.2 It is CAAT policy that this manual is to be the principle reference when exercising powers and as such, must be used by Airworthiness Inspector in the exercise of these powers.

3.4. General

CAAT may issue a Special Flight Permit for an aircraft that is capable of safe flight but is unable to meet applicable airworthiness requirements. Normally, this applies to an aircraft that has been issued with a Certificate of Airworthiness but does not conform to the conditions of the Certificate. The occasions that may warrant issuance of a Special Flight Permit are:

3.4.1 Relocating the aircraft to a base where maintenance is to be performed; or to a point of storage;

3.4.2 Testing after repairs, alterations, or maintenance have been performed;

3.4.3 Delivering the aircraft;

3.4.4 Evacuating the aircraft from an area of impending danger, or in cases of force majeure; and,

3.4.5 Operating the aircraft at a weight in excess of the aircraft's maximum certified take-off weight for flight beyond normal range where adequate landing facilities or appropriate fuel is not available.

3.4.6 In cases where the application is for a flight or flights from a location where the maintenance or repairs can be carried out, make enquiries as to the reasons for not carrying out this work at the location. If there is a problem with the local maintenance facilities, make enquiries to determine if some inspections and temporary repairs can be performed prior to the intended flight.

3.4.7 Flight testing for issue or renewal of certificates of airworthiness.

3.5. application procedure.

3.5.1 An application in the form (TDCA/AW-APP-002) for a Special Flight Permit should be submitted to the CAAT at least ten (10) working days before the date of the intended flight.

3.5.1.1. Make, model, serial number, and registration marks of the aircraft;

3.5.1.2. Purpose of the flight;

3.5.1.3. Proposed itinerary;

3.5.1.4. Crew required to operate the aircraft (Note: Provide full names of all crew members, and include copies of their licenses where applicable);

3.5.1.5. etails of non-compliance with applicable airworthiness requirements;

3.5.1.6. Any restriction the applicant considers necessary for safe operation of the aircraft;

3.5.1.7. Any other information considered necessary by the CAAT for the purpose of prescribing operating limitations;

3.5.1.8. Full names of other persons other than crew, and their role in the aircraft, where possible;

3.5.1.9. Names and address of the Registered owner;

3.5.1.10. A properly executed maintenance endorsement in the aircraft permanent record by a person or organization authorized in accordance with the Civil Aviation (Airworthiness) Regulations, stating that the subject aircraft has been inspected and found to be safe for the intended flight.

3.5.2 Since a Special Flight Permit is issued to cover operation of an aircraft which may not meet airworthiness standards, the CAAT will require the applicant to make appropriate inspections or tests, for the purpose of determining and prescribing appropriate operating limitations.

3.6. issuance of special flight permit.

3.6.1 Upon being satisfied that the application meets the requirements, and that the aircraft is appropriately equipped and safe to fly, the CAAT will issue a Special Flight Permit specifying operating limitations and validity period.

3.6.2 A Special Flight Permit is NOT renewable. When it expires, a new application should be submitted for another permit to be issued.

3.7. validity

3.7.1 A Special Flight Permit shall be valid for fourteen (14) days unless a shorter period is specified by the CAAT.

3.7.2 For ferry flights (i.e. flights for the purpose of delivering the aircraft, or relocating it to a point of maintenance or storage), the permit will be valid for one (1) flight only, expiring immediately upon arrival at the destination.

3.8. operating limitation.

3.8.1 As form TDCA/AW-CERT-010, when issuing a Special Flight Permit, appropriate limitations should be prescribed to minimize hazard to persons or property. The following limitations are considered to be essential in all Special Flight Permits:

3.8.1.1. Provide the third-Party liability insurance in accordance with CAAT requirements;

3.8.1.2. The special flight permit (or certified true copy) should be onboard the aircraft at all time when operating under the terms of the permit;

3.8.1.3. Special Flight permit is for non-commercial flight only.

3.8.1.4. Except in the case of take-off and landing, this aircraft shall not be operated over a congested area of a town, settlement or city or over an open-air assembly of persons.

3.8.1.5. The Special Flight permit is restricted to essential crew only;

3.8.1.6. All required safety and emergency equipment shall be fitted and serviceable;

3.8.1.7. The aircraft shall be operated only by airman holding appropriate rating;

3.8.1.8. The special flight permit is not valid for use in foreign airspace unless validated by foreign civil aviation authorities whose airspace will be overflown;

3.8.1.9. All flight should be conducted within the performance operating limitations prescribed in the applicable Aircraft Flight Manual and Aircraft Maintenance Manual;

3.8.1.10. The aircraft registration marking assigned by CAAT to the aircraft must be displayed on the aircraft according to the applicable requirements;

3.8.1.11.

3.8.1.12. The special flight permit is not valid unless the aircraft is inspected to the extent necessary to determine that it is safe for the intended purpose with respect to the safety of flight, such inspection must be accomplished by an appropriately licensed mechanic or certificated repair station and the inspection must be recorded in the aircraft log book;

3.8.1.13. All flight test shall be conducted in control airspace during day VMC condition only unless the operator get the exemption permit from CAAT;

3.8.1.14. This special flight permit shall be valid for one flight or consecutive flight from_____ to _____;

3.8.1.15. This special flight permit valid from _____ to _____and will expires upon arrival at destination;

3.8.2 Because of the different kinds of operations involved, there may be differences in the detailed limitations, however, above limitations are considered to be essential in all Special Flight Permits.

3.8.3 All flights should be conducted in accordance with the applicable general operating rules of the States in or over which the operations are conducted.

3.9. Permits for foreign registered aircraft.

3.9.1 The Authority may issue a Permit for a foreign aircraft if;

3.9.1.1. The State of Registry has issued a Permit for the aircraft and has listed applicable limitations.

3.9.1.2. The aircraft logbook contains a statement that the aircraft has been inspected and is in a safe condition for the intended flight.

3.9.1.3. The person intending to operate the flight acknowledges and adheres to all listed limitations.

3.9.2 The CAAT may issue a Special Flight Permit validation for a foreign registered aircraft that may not meet applicable airworthiness requirements, but is capable of safe flight to allow the aircraft to cross Thailand airspace. The application for validation must be made in writing and attaching a copy of the Special Flight Permit issued by the State of Registry.

3.9.3 A Permit issued to a foreign aircraft is NOT renewable. When it expires, a new application should be submitted for another permit to be issued.

4. CHAPTER 4 EXPORT CERTIFICATE OF AIRWORTHINESS

4.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Section 16, Sections 34 – 41 of the Air Navigation Act B.E.2497;	TDCA-AW-APP-001 APPLICATION FOR EXPORT C OF A
Regulations of the Ministry of Transport Re: Criteria and Procedures in Application and Renewal of Certificates of Airworthiness B.E.2555;	Form: AIR-CA-002 (Issue/Renew/Export C of A Inspection Check List more than 5,700 Kgs)
Regulations of the Ministry of Transport Re: Application for Export Certificate of Airworthiness B.E.2555;	Form: AIR-CA-003 (Issue/Renew/Export C of A Inspection Check List less than 5,700 Kgs)
Rules of Civil Aviation Board No. 86 (Notification of the Department of Civil Aviation Re: Air Navigation by Aircrafts of Air Operator B.E.2553)	Form: AIR-CA-004 (Issue/Renew/Export C of A Inspection Check List Balloon)
Notification of the Department of Civil Aviation Re: Types of Export Certificates of Airworthiness B.E. 2557	Form: AIR-CA-005 (Issue/Renew/Export C of A Inspection Check List Helicopter)
Ministerial Regulation Re: Maximum Fees and Rates for Airport Services B.E.2555	(TDCA-AW-INSP-008) EXPORT AIRCRAFT MAINTENANCE REVIEW CHECKLIST
ICAO: Annex 6, Part I Chapter 8, Part II Chapter 8, Part III Chapter 6, and Annex 8	(TDCA-AW-CERT-009) EXPORT C OF A

	CERTIFICATE
ICAO: Doc 9760 AN/967 Airworthiness Manual, Chapter 5, Item 5.3	

4.2. OBJECTIVE

4.2.1 Any person who wishes to export an aircraft or any other aeronautical product is required. An export airworthiness approval serves as confirmation of a recent satisfactory review of the airworthiness status of the aircraft or aeronautical product being exported. It only indicates that the product complies with original Type Certificate Data Sheet issued by the State that issued the Type Certificate. Thus, export airworthiness approvals only facilitate transfer of products between States, but do not confer the right of flight.

4.2.2 For a complete aircraft, the export airworthiness approval shall be in the form of an Export Certificate of Airworthiness (Export C of A). This certificate serves to facilitate transfer of an aircraft from Thailand civil aircraft register to the register of another State as required.

4.2.3 In the case of aeronautical products other than a complete aircraft, the export airworthiness approval may be issued in the form of Airworthiness Approval Tags.

4.2.4 Where a person exports a new aeronautical product, the application shall be made to the State of Manufacture.

4.3. CLASSES OF AERONAUTICAL PRODUCT FOR EXPORT

4.3.1 For the purpose of export airworthiness approval, aeronautical products are classifying as follows:

4.3.1.1. Class I product – a complete aircraft, aircraft engine or propeller which has a Type Certificate, Type Certificate Data Sheet or an equivalent document issued for it;

4.3.1.2. Class II product – a major component of a Class I product such as wing, fuselage, empennage surface the failure of which would jeopardize the safety of a Class I product; Or

4.3.1.3. Class III product – any part or component, which is not a Class I or Class II product or standard part.

4.3.2 Class III product – any part or component, which is not a Class I or Class II product or standard part.

4.4. Export certificate of airworthiness: export a complete aircraft.

As previously mentioned, an Export C of A only indicates that the aircraft complies with original Type Certificate Data Sheet (TCDS) issued by the State that issued the Type Certificate, but does not confer the right of flight. To fly, an aircraft having an Export C of A will require a valid Certificate of Airworthiness issued by the CAAT or some equivalent document mutually acceptable to the CAAT and civil aviation authorities of importing States and accepted by any State over which the aircraft will fly on its delivery flight.

4.4.1 Application Procedure

4.4.1.1. An application for an Export C of A should be and submitted to the CAAT Airworthiness and Aircraft Engineering Department at least fourteen) 14 (days before the intended date of export of the aircraft out of Thailand

4.4.1.2. The application should be accompanied by the following form TDCA/AW-APP-001.

i. Statement of compliance with the full intents of the approved maintenance program or schedule;

ii. Statement of compliance with the mandatory airworthiness directives and service bulletins currently applicable to the aircraft and its equipment;

iii. Description of, and statement of compliance with, the applicable special requirements of the importing State;

iv. Details of deviations from the original design (including modifications/alterations);

v. A weight and balance report with a loading schedule, where applicable, for each aircraft in within 1 year.

vi. Certified copy of current Certificate of Airworthiness;

vii. Where applicable, written statement(s) from the CAAT of the importing State indicating acceptance of non-compliance of aeronautical product with any special requirements and conditions.

4.4.1.3. The Authority will only issue an Export C of A if

i. The aircraft has been inspected in accordance with the performance rules of the applicable regulations and found airworthy by persons authorized by the Authority to make such determination within the last fourteen (14) days;

ii. The maintenance determined by the Authority as a prerequisite for issue of the Export C of A has been carried out and certified by a person acceptable to the Authority in accordance with the applicable regulations;

iii. The result of test flight, and such other tests as the Authority may determine, are complied with;

iv. Historical records establish the production, modification and maintenance standard of the aircraft;

v. There are no outstanding charges owed to the Authority in respect of the aircraft.

4.5. conformity inspection.

4.5.1 The aircraft and its records should be made available for inspection at a location acceptable to the CAAT.

4.5.2 The aircraft should be positioned as required by the Authority for inspection. The inspection will follow closely the procedures for issue of a Certificate of Airworthiness. *(The Inspection form CAAT-AWE-INSP-001 for aircraft MTOW over 5,700 Kg., CAAT-AWE-INSP-001/1 for aircraft MTOW less than 5,700Kg will be used for inspection.)* The depth to which this procedure will be applied will depend to a large extent on how recent the CAAT Airworthiness Inspectorate was involved with the aircraft.

4.5.3 The inspection focuses on the primary components being the airframe, engines, and other items as required/determined.

4.5.4 Additional modifications/alterations, which deviated from the original design, would have to be indicated as additional equipment.

4.5.5 All logbooks and maintenance documents will have to be submitted to the CAAT for inspection.

4.6. issuance of export certificate of airworthiness.

The Authority will issue an Export C of A when all the above requirements are met. (TDCA/AW-CERT-009)

4.7. validity

4.7.1 The Export Certificate of Airworthiness shall be valid for the period of time as shall be indicated on the certificate.

4.7.2 The Export Certificate of Airworthiness is NOT renewable and ceases to be valid upon arrival at the State of import.

4.8. export approval of a product other than a complete aircraft.

4.8.1 Class I Products: Export C of A.

4.8.1.1. (Reserved)

4.8.2 Class II and Class IIII Products: Airworthiness Approval Tags.

4.8.2.1. (Reserved)

5. CHAPTER 5 AIRCRAFT REGISTRATION

5.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL
ICAO Annex 7, Aircraft Nationality and Registration Marks
Air Navigation Act, B.E. 2497
Civil Aviation Board Regulation No.95
Ministerial Regulations relating to the administrative fee and high rate for service fee of airport B.E. 2554
CAAT announcement relating to the administrative fee B.E. 2561
Requirement of The Civil Aviation Authority of Thailand No. 11
The Civil Aviation Authority of Thailand Reservation Announcement
Civil Aviation of Thailand Emergency Decree B.E. 2558

No.	Form Number	Subject
1.	AIR/AR-001	Application for Reservation of Registration mark and Checklist
2.	AIR/AR-001/G	Guidelines for Completing Form AIR/AR-001
3.	AIR/AR-002	Confirmation of Reservation of Registration mark
4.	AIR/AR-003	Package Checklist - Reservation of Registration mark

5.	AIR/AR-101	Application for Certificate of Registration
6.	AIR/AR-101/G	Guidelines for Completing Form AIR/AR-101
7.	AIR/AR-102	Package Checklist - Certificate of Registration Checklist
8.	AIR/AR-103	Certificate of Registration
9.	AIR/AR-104	First Type of Aircraft Entry Notification form
10.	AIR/AR-105	Certificate of Registration audit checklist
11.	AIR/AR-201	Application for Re-Issued and Replacement Certificate of Registration
12.	AIR/AR-201/G	Guidelines for Completing Form AIR/AR-201
13.	AIR/AR-202	- Reserved -
14.	AIR/AR-203	Package Checklist - Replacement Certificate or Reissued Certificate
15.	AIR/AR-301	Application for Aircraft De-Registration
16.	AIR/AR-301/G	Guidelines for Completing Form AIR/AR-301
17.	AIR/AR-302	Confirmation of De-Registration (Fax form)
18.	AIR/AR-303	Package Checklist - De-Registration of Aircraft

5.2. Objective

5.3. The document is intended for using as the guidelines for Certificate of Registration Issuance to an aircraft. In order to explicate more details from Civil Aviation of Thailand Emergency Decree B.E. 2558 Chapter 3 Section 30

5.4. Requirement for Register an aircraft under Thai's registration

According to Air Navigation Act B.E. 2497, Chapter 3 (Section 30-31)

5.4.1 Section 30

Subject to Section 31, a person who may apply for Aircraft registration under the provisions of this Act shall be the owner of the Aircraft applied for registration or the person who, if not the owner, has the possessory right in the Aircraft applied for registration and has obtained permission for registration from the Minister. The application for registration and the Aircraft registration shall be in accordance with those prescribed in the Ministerial Regulations.

5.4.2 Section 31

A person, natural or juristic, who applies for Aircraft registration, shall hold Thai nationality.

In case of a partnership or limited company or public limited company, it shall be registered under the law of Thailand, the principal place of business of the partnership or company is situated in the Kingdom, and:

1) In case of an ordinary partnership, all partners shall hold Thai nationality;

2) In case of a limited partnership, all partners who jointly have unlimited liability shall hold Thai nationality and at least 51 percent of the capital of such partnership shall belong to natural persons who hold Thai nationality;

3) In case of a limited company or public limited company, such company shall not have bearer shares on issue, a majority of its directors shall hold Thai nationality, and at

least 51 percent of all shares shall belong to any one or any combination of the following persons:

a) Natural persons who hold Thai nationality;

b) Ministries, sub-ministries, [or] departments of the Government;

c) Limited companies or public limited companies, of which ministries, sub-ministries, [or] departments of the Government hold not less than 51 percent of all shares;

Aircraft Registration eligible to register in Thailand when;

A. An application for aircraft registration will only be accepted for aircraft of a type that is acceptable to the Authority. Before submitting the application, prospective applicants are advised to consult the CAAT Aircraft Airworthiness and Engineering Department (AIR) and discuss the aircraft and its operation.

B. For aircraft type or model that is new on the Thailand register it is recommended that the applicant must first consult the CAAT prior to aircraft acquisition in order to confirm whether the aircraft type conforms to the Thailand airworthiness code.

C. It is a requirement that in the event the aircraft is the first of its type to be entered into the Thailand civil aircraft register, the operator/ importer must decide for maintenance training courses that are considered necessary and relevant to CAAT Airworthiness AWI Inspector in order to enable them to conduct the certification and continuous safety oversight of the aircraft and its components. This training must be conducted at the Manufacturers' training facilities.

D. Attendance at these courses will be undertaken at no charge to the CAAT and will be considered essential for issuance of a Thailand Certificate of Airworthiness and the amendment of the AOC to include the type in question as detailed in AOC Requirement.

E. At the time of application for a Certificate of Registration, the importer/operator must be able to confirm the arrangements in place for maintenance and overhaul of the airframe, its engines, and associated equipment. In the event that facilities that meet the Authority's requirements are not available in the country, the operator must provide facilities in another country that meet the CAAT requirements to hold a maintenance approval certificate. These arrangements for maintenance facilities must be completed prior to the aircraft entering service.

5.5. Qualification for Register an aircraft under Thai's registration

According to Air Navigation Act B.E. 2497, Chapter 3, Section 31

1) Personnel Registration
   - Applicant must hold a Thai Nationality.
   - Applicant shall own an aircraft or right of possess an aircraft with Approved letter from CAAT Director to register aircraft.
2) Corporate Registration
   - Applicant must hold a Thai Nationality.
   - Applicant shall own an aircraft or right of possess an aircraft with Approved letter from CAAT Director to register aircraft.

If, Applicant is Partnership/ Limited Partnership/ Company Limited/ Public Company Limited must register under the law of Thailand including head office must be in Kingdom of Thailand under these following rules;

1) In case of Partnership

   All Shareholders must hold Thai Nationality
2) In case of Limited Partnership
   a) All shareholders that have unlimited liability must hold Thai Nationality.
   b) Must be Thai nationals that have invested at least 51 percent of the capital of Limited partnership.
3) In case of Public Company Limited
   - Such company shall not have bearer shares on issue

   a) Most of Company's boards must hold Thai Nationality

   b) At least 51 percent of all shares must belong to person or company qualified as follows;

   c) At least 51 percent of all shares shall belong to any one or any combination of the following persons:

- A Thai national
- Ministry, Department under Government Affairs
- Company Limited or Public Company Limited, which Ministry, Department under Government Affairs hold at least 51 percent of all shares
- Company Limited or Public Company Limited, which a Thai national hold at least 51% of total shares
- Other juristic persons as prescribed in the Ministerial Regulations

4) In case of Association

a) The association must be registered under Thai Laws

b) The association headquarter must be in Kingdom of Thailand

c) Association regulations must be approved from Director of The Civil Aviation Authority of Thailand

5.6. Application for Registration Aircraft.

According to Requirement of the Civil Aviation Authority of Thailand No. 11, Applicant shall submit Certificate of Registration Application Form (Form: AIR/AR-101) with required document as follows;

Note: The applicant can use AIR/AR-101/G as guidance to complete the form.

- Copy of document shown Ownership or Right of Processor the aircraft (i.e. Aircraft Bill of Sale, Aircraft Leasing Agreement or Purchase Agreement)
- Copy of Confirmation of Cancellation from the Foreign Registry or Certificate of Non-Registration from State of Aircraft Manufacture
- Aircraft Insurance
- Evidence of Tax payment (In case of import an aircraft from outside country)
- Confirmation of Reservation of Registration mark letter (Form: AIR/AR-002) (if any)
- Additional documents as follows;

1) In case of Personnel Registration

a) Copy of Thai's Identification card or other relevant document issued by Thai government duly certified true copy and Copy of House Registration duly certified true copy

2) In case of Corporate Registration

a) Copy of Credential or any evidence of being corporate or juristic person listed Name, Purpose of the company, Head quarter location, and list of the Managing Director or authorized signatories of the current entity as juristic person. (A certified copy shall not exceed six months from the date of issuance of the certificate or evidence)

b) Copy of shareholders listed Certified by the Registrar office.

c) Copy of Thai's Identification card and house registration duly of all shareholders

d) Memorandum of association and Published Regulations

e) Confirmation of Reservation of Registration mark letter (Form: AIR/AR-002)

3) In case of Association

a) Copy of registrar credentials shown Association registration

b) Copy of association regulation, which approved by CAAT

c) Copy of Thai's Identification card and house registration duly of all shareholders association director or Association board.

4) In case of Government or State Enterprise

a) Copy of establishment of juristic person or corporate registration.

When AWI Inspector receives the application together with the documents and evidence under Clause 4, DG will register the aircraft under Thai's registration when

a) Applicant is Owner or Right of Processor the aircraft
b) Applicant qualified as specific in Air Navigation Act B.E.2497, Section 31
c) An aircraft meets requirement of National and Registration Marks Requirement in Civil Aviation Board Regulation No.95
d) If applications not reserve aircraft registration, AWI Inspector will be assigned. Decision of AIR Manager has surcease.

5.7. Process of Aircraft Registration Reservation

5.7.1 Applicant submit application (Form: AIR/AR-101) via E-Services system and/or submit hard copy at CAAT office

Note: The applicant can use AIR/AR-001/G as guidance to complete the form.

5.7.2 Head of AR assigned to AWI Inspector

5.7.3 Document evaluation process

5.7.3.1. Verify application and relevant document according to The Civil Aviation Authority of Thailand Aircraft Registration Marks Reservation

5.7.3.2. Verify availability of aircraft register via E-License System and AIR site > AR > Aircraft List https://datastudio.google.com/u/0/reporting/172B3JxVLtMRymZZdU2MAibFFfkBmSotP/page/zUCO) and E-License System

i. If the registration available continue to process 4)

ii. If the registration not available

iii. Selected reject in E-Services System together with reason of rejection.

5.7.4 AWI Inspector Approved application via E-Services system

5.7.5 Applicant make Certification Fee payment

5.7.6 Official registration reservation letter process

5.7.6.1. AWI Inspector fill all aircraft information and generate Confirmation Aircraft Registration Form (FORM: AIR/AR-002) via E-License system

5.7.6.2. Process internal letter to CAAT Director (Delegated to AIR Manager) for sign (Before submit Draft of Confirmation Aircraft Registration (FORM: AIR/AR-002) to CAAT Director, AWI Inspector have attached evidence of Fee payment)

5.7.7 Document and Record keeping procedure as specific in Claus 13 following checklist (Form: AIR/AR-203)

5.8. Process of Aircraft Registration

5.8.1 Applicant submit application (Form: AIR/AR-101) via E-Services system and/or submit hard copy at CAAT office

Note: The applicant can use AIR/AR-101/G as guidance to complete the form.

5.8.2 Head of AR assigned to AWI Inspector

5.8.3 Document evaluation process, AWI Inspector shall use AIR/AR-105 Certificate of Registration audit checklist to check following item;

5.8.3.1. Verify application and relevant document according to Requirement of the Civil Aviation Authority of Thailand No. 11

5.8.3.2. Verify Registration Reservation Letter (If not reservation AWI Inspector has assigned according to available registration)

5.8.3.3. Check qualification of applicant according to Air Navigation Act B.E. 2497, Chapter 3 (Section 30-31)

5.8.3.4. In case of AOC holder lease the aircraft from another operator.

Aircraft leasing arrangement review shall be applied as per Airworthiness Manual Part 24 - Aircraft Leasing Arrangements.

* For assign registration to Aircraft without reservation letter

Available registration is provided on www.caat.or.th which required quarterly update. Applicant without reservation letter can selected one of the list to register. (List of available registration is limited start from A – Z each list contains 2 set of alphabets e.g. HS-AAA through HS-ABA)

5.8.4 AWI Inspector accept application via E-Services system and arrange inspection schedule which have to be approved by AR Head.

5.8.5 Invoice for inspection fee will be generated by FAB and send to the applicant directly. Then applicant makes Inspection Fee payment.

5.8.6 AWI Inspector start Aircraft inspection process (Physical Check) using AIR/AR-105 Certificate of Registration audit checklist in accordance with Civil Aviation Board Regulation No.95 (Aircraft Registration and National Marks). If aircraft not satisfied as specific regulation AWI Inspector will issue non-compliance list in checklist signed by both parties.

5.8.7 After Aircraft inspection process (Physical Check) if satisfied, AWI Inspector Approved Registration via E-Services system. If not, Applicant shall correction as non-compliance issued on site.

5.8.8 After AWI Inspector send the result "Pass" via E-Service then FAB will issue an invoice for certificate fee (According to Ministerial Regulations relating to the administrative fee and high rate for service fee of airport B.E. 2554). The applicant makes Certification Fee payment.

5.8.9 Certificate of Registration Issuance Process

5.8.9.1. AWI Inspector fill all aircraft information and generate certificate via E-License system. Certificate number will automatically generated by the system.

5.8.9.2. Process internal letter to DG (Delegated to AIR Manager) with draft Certificate of Registration (Form: AIR/AR-103) for sign (Before submit the package to DG, AWI have to attach all evidence included Certification Fee payment)

5.8.10 In case of

5.8.10.1. The Aircraft operate RVSM, AWI Inspector shall submit MAAR Form F2 to Aeronautical Radio of Thailand Ltd. (AERO Thai) via e-mail to maar@aerothai.co.th by copy to RVSM@caat.or.th and registration@caat.or.th

5.8.10.2. The Aircraft operate under an AOC holder, AWI Inspector shall notice Head of AO to arrange the notification form and submit OPS/POI in order to add the Aircraft in AOC operation specification.

** MAAR FORM F2 must be created via AIR site (https://sites.google.com/caat.or.th/air/air) > AR > Generate MAAR F2 Form. The system will be created immediately after input all information into the site via e-mail to AWI Inspector whom submit this form.*

Document and Record keeping procedure as specific in Claus 14 following checklist (Form: AIR/AR-102)

5.9. First Aircraft Type entered Kingdom of Thailand

For First Aircraft Type entered Kingdom of Thailand, AWI Inspector must submit First Type of Aircraft Entry Notification Form (FORM: AIR/AR-104) to State of Design after completed Aircraft Registration process in Section 6 of this document.

5.9.1 Digital Copy must be kept at

5.9.1.1. AIR SHARE DRIVE (10.10.22.2) > AIRCRAFT DATA > Select or Create Aircraft registration;

5.9.1.2. AIR SITE > AR > AIRCRAFT LIST > ADD AIRCRAFT DATA > Fill information

5.9.2 Hard Copy must be kept at

5.9.2.1. Record in folder following Certificate of Registration Package Checklist (Form: AIR/AR-102)

5.9.2.2. AWI Inspector put folder with Package Checklist in shelf

5.9.2.3. Every quarter Aircraft Registration Division will check and re-arranged to Sub-Contract Document Control Unit

5.10. Re-Issue and Replacement Certificate of Registration

According to Requirement of The Civil Aviation Authority of Thailand No. 11 Claus 8.

5.10.1 Re-Issued

In event that any change of information or right of aircraft processor/owner has been changed certificate registrar must be applied application for Re-Issued and Replacement Certificate of Registration (Form: AIR/AR-201) with relevant evidence and reason of Re-Issued to CAAT DG within 30 days after change has been made. For Re-Issued Certificate of Registration can be identified by “RE-ISSUED” stamp with red ink above Certificate number.

5.10.2 Replacement

In event that registrar of Certificate of Registration requires to issue Replacement Certificate of Registration due to lost, damaged or fail to fetch information in the Certificate, registrar must be applied Application for Replacement Certificate of Registration (Form: AIR/AR-201) with relevant evidence. For Re-Issued Certificate of Registration can be identified by “REPLACEMENT” stamp with red ink above Certificate number.

5.11. Process of Re-Issue and Replacement Certificate of Registration

5.11.1 Applicant submit application (Form: AIR/AR-201) via E-Services system and/or submit hard copy at CAAT office

Note: The applicant can use AIR/AR-201/G as guidance to complete the form.

5.11.2 Head of AR assigned to AWI Inspector and AWI Inspector accepted application via E-Services system.

5.11.3 Document evaluation process

5.11.3.1. Check that the applicant has authority or not. If the person who signs on the requested letter and this application form is not the registration owner, Power of Attorney is required.

5.11.3.2. Check with E-License to ensure that the certificate is correct.

5.11.3.3. In case of change detail in the certificate, Relevant documents for consideration to revise in detail and certified true copy must be submitted for review.

5.11.3.4. In case of loss, notification letter from police is required.

5.11.4 After AWI Inspector send the result “Pass” via E-Service then FAB will issue an invoice for certificate fee (According to CAAT announcement relating to the administrative fee B.E. 2561). The applicant makes Certification Fee payment.

5.11.5 Certificate of Registration Issuance Process

5.11.5.1. AWI Inspector fill change of aircraft information and generate certificate via E-License system (First Issued Certificate of Registration date must be place in Remark column)

5.11.5.2. Process internal letter to DG (Delegated to AIR Manager) with draft Certificate of Registration for sign (Before submit the package to DG, AWI Inspector have attached all evidence included certification Fee payment and stamp “RE-ISSUED” or “REPLACEMENT” with red ink above certification number)

** In case of Re-Issued and Replacement Certificate Number is same as First Issued Certificate of Registration, in addition date in both Certificate are replace by current Re-Issued and Replacement.*

5.11.6 Document and Record keeping procedure as specific in Claus 14 following checklist (Form: AIR/AR-203)

5.12. Certificate of Registration become ineffective

According to Air Navigation Act B.E. 2497, Chapter 3 (Section 32) A certificate of registration of an Aircraft shall become ineffective when;

5.12.1 There is a change in ownership of the Aircraft if the owner is a registrant, or a change in the possessory right in such Aircraft in case that the person having the possessory right is a registrant;

5.12.2 The Aircraft registrant lacks the qualifications pursuant to Section 31;

5.12.3 It appears that the ownership or possessory right of the Aircraft registrant is not as shown in the registration as having such right in the particulars of the application;

5.12.4 The Aircraft is so damaged that it is unfit for further use;

5.12.5 The Certificate of Airworthiness of the Aircraft has expired for more than six months;

5.12.6 The Aircraft has been missing for more than three months.

In the events of 1) to 5), the Aircraft registrant shall return the certificate of registration to CAAT without delay.

5.13. Revocation Aircraft Registration

According to Requirement of the Civil Aviation Authority of Thailand No. 11 Claus 11. The Director has the authority to revoke the aircraft registration. When it comes to the fact ;

5.13.1 The qualifications of the applicant for an aircraft are not in accordance with Section 31, of the Air Navigation Act, 1954

5.13.2 The applicant for registration of aircraft is false.

5.13.3 The aircraft is already registered with another foreign state.

5.13.4 The aircraft is permanently destroyed or revoked.

5.13.5 Right of Processor of aircraft under aircraft lease agreement end. In the case of aircraft register by processor.

5.13.5.1. Lease agreement end as specific in agreement

5.13.5.2. Lessor or Lessee terminates lease agreement in accordance with term of the contract

5.13.5.3. Lessor and Lessee agree to terminate the aircraft lease agreement

5.13.5.4. Lessor terminates aircraft lease agreement and submit request of The Irrevocable De-Registration and Export Request Authorization

5.13.5.5. The Supreme Court is order to revoke aircraft registration

5.13.5.6. Aircraft was prosecuted under Business Security act B.E. 2558

5.14. Process of De-Registration

5.14.1 Applicant submit application (Form: AIR/AR-301) via E-Services system and/or submit hard copy at CAAT office

Note: The applicant can use AIR/AR-301/G as guidance to complete the form.

5.14.2 Head of AR assigned to AWI and AWI accepted application via E-Services system.

5.14.3 Document evaluation process

5.14.3.1. Verify application and relevant document according to Requirement of the Civil Aviation Authority of Thailand No. 11

5.14.3.2. If the applicant is not the registered owner, power of attorney is required.

5.14.3.3. Check information of the aircraft compare with E-License. Such as name of owner and name of operator.

5.14.4 Certification process

5.14.4.1. After send the result “Pass” via E-Service, AWI Inspector will fill out all information for de-registration of the aircraft in E-License

5.14.4.2. Process internal letter to DG with draft of Official Cancellation Letter

5.14.4.3. DG will allow de-registering the aircraft by give the authorization to AIR manager to de-register the aircraft and notify to the operator and importing country.

5.14.4.4. Inform to the applicant that ELT shall be decoded to other Registration Mark or shall be removed from aircraft and provide CAAT the evidence.

5.14.5 Notification and record

5.14.5.1. After DG allow in 4), AIR manager will sign on De-Registration Confirmation Fax Form (Form: AIR/AR-302)

5.14.5.2. AWI Inspector send the completed Fax form to Civil Aviation Authority of importing country

5.14.5.3. AWI Inspector will record de-registration date in E-License and Head of AR will approve.

5.14.6 In case of

5.14.6.1. The Aircraft operate RVSM, AWI Inspector shall submit MAAR Form F3 to Aeronautical Radio of Thailand Ltd. (AERO Thai) via e-mail to maar@aerothai.co.th by copy to RVSM@caat.or.th and registration@caat.or.th

5.14.6.2. The Aircraft operate under an AOC holder, AWI Inspector shall notice Head of AO to arrange the notification form and submit OPS/POI in order to remove the Aircraft from AOC operation specification.

** MAAR FORM F3 must be created via AIR site (https://sites.google.com/caat.or.th/air/air) > AR > Generate MAAR F3 Form. The system will be created automatedly after input all information into the site via e-mail to AWI Inspector whom submit this form.*

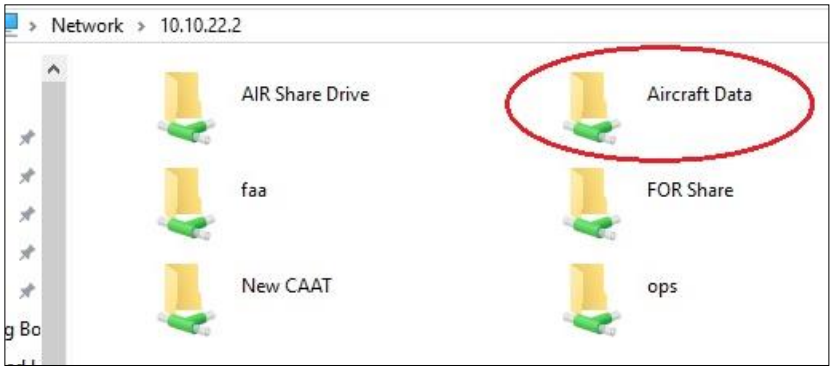
5.14.7 Document and Record keeping procedure as specific in Claus 14 following checklist (Form: AIR/AR-303)

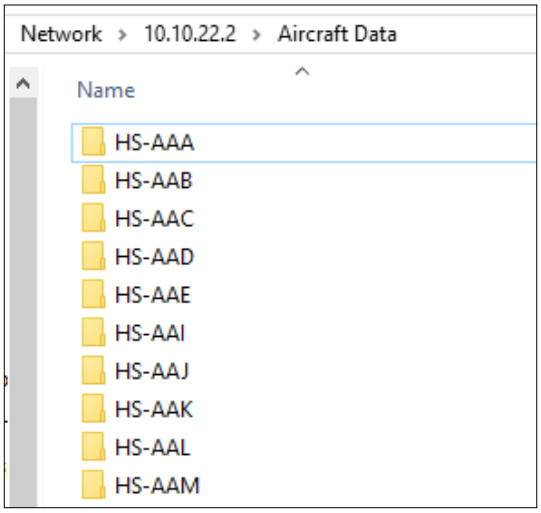
5.15. Certificate of Registration and Relevant Document Record Keeping.

5.15.1 Electronic Copy

According to AIR Circular Number 02/2018 Date May 17, 2018 “Aircraft Data Record” provides guidance for data record of each aircraft in AIR SHARE DRIVE (http:\\10.10.22.2)

1) **Aircraft data** folder has been created in our share drive consists of most of the aircraft register folder in side

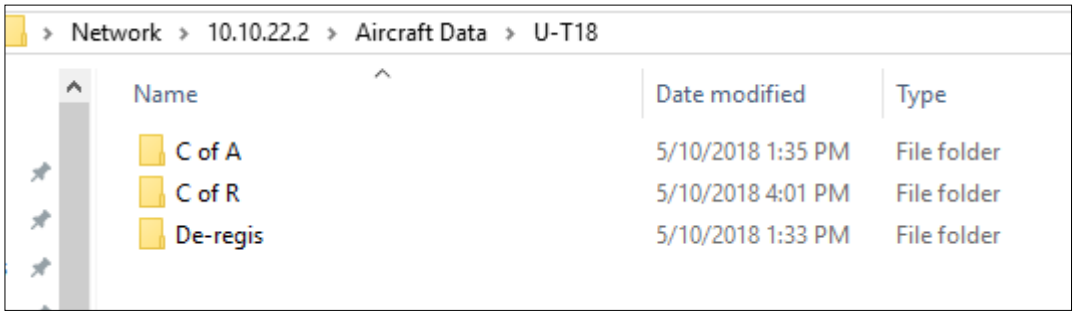


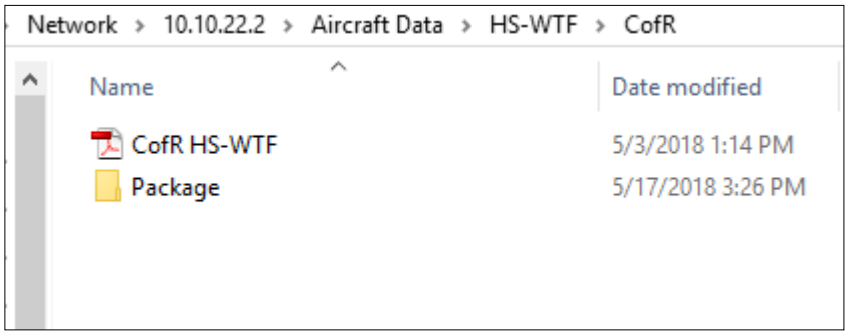


2) If you can’t find your aircraft folder, please create it yourself

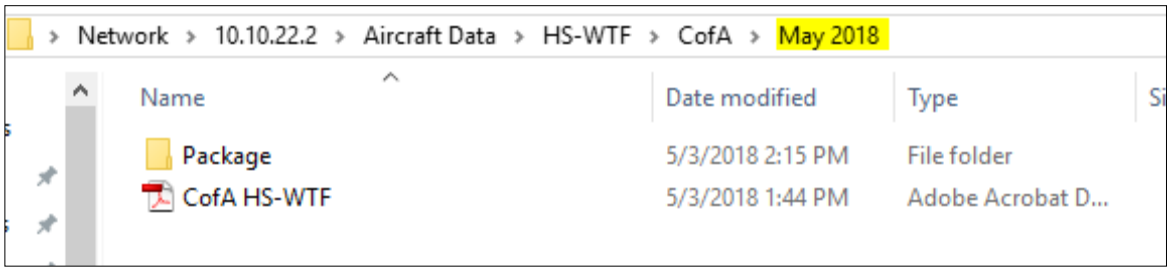
3) In each aircraft folder they should have only 3 folders or less which are C of A, C of R and De-Registration (if already out de-registered from Thailand)

4) In C of R folder consist of PDF file of signed certificate and 1 folder for all documents of C of R package





5) In **C of A** folder, create the folder name after month and year of the issue certificate and inside each folder will have PDF file of signed certificate and 1 folder for **all documents of the C of A package**



5.15.2 Hard Copy

AWI Inspector must keep Hard Copy of item as listed in Certificate of Registration Package Checklist (Form: AIR/AR-102)

Certificate of Registration Document Control Process with Sub-Contract Document Control Unit.

For document security Persons whom may access Sub-Contract Document Control Unit is limited to Authorizes persons only including classification of each person.

Document Access Classification		
1.	Admin User	Access to Aircraft registration document only
2.	Basic User	Add new document, Delivery Requested, Refiled, Supply and other services except Permanent out and Destroy
3.	Super User	Add new document, Delivery Requested, Refiled, Supply and other services including Permanent out and Destroy

List of Authorize Persons		
No.	**Position**	**Classification**
1.	General Director of The Civil Aviation Authority of Thailand	Super User
2.	Manager of Airworthiness and Aircraft Engineering Department	Super User
3.	Chief of Aircraft Registration Division	Basic User
4.	Staff of Aircraft Registration Division	Basic User

Certificate of Registration Document Control Process

Every quarter Aircraft Registration Division will check and re-arranged to Sub-Contract Document Control Unit for submit new Registry aircraft documentation. Process was section in 3 difference type

5.15.3 For submit new documentation or additional documentation

5.15.3.1. Staff of Aircraft Registration Division re-check all document following to Certificate of Registration Package Checklist (Form: AIR/AR-102)

5.15.3.2. Made official requested by contact Sub-Contract Document Control Unit by email via service@kdc.co.th

5.15.3.3. Confirmation of Services requested is provide by Confirmation Email and Phone call to Aircraft Registration Division

5.15.3.4. Sub-Contract Document Control Unit pick-up document on appoint date

5.15.3.5. Sub-Contract Document Control Unit assign Key number and Box index at warehouse

** Notified Key number and Box index (In-Out and Summary Sheet) will be providing to airworthiness@caat.or.th within first week of every month*

5.15.4 For request documentation current store at Sub-Contract Document Control Unit

5.15.4.1. Staff of Aircraft Registration Division check Key number and Box index using updated summary sheet in AIR SHARE DRIVE (http://10.10.22.2) > AR > @ KDC Summary Sheet

5.15.4.2. Made official requested by contact Sub-Contract Document Control Unit by email via service@kdc.co.th

5.15.4.3. Confirmation of Services requested is provide by Confirmation Email and Phone call to Aircraft Registration Division

5.15.4.4. Sub-Contract Document Control Unit delivery document on appoint date

5.15.5 For return documentation to Sub-Contract Document Control Unit

5.15.5.1. Made official requested by contact Sub-Contract Document Control Unit by email via service@kdc.co.th

5.15.5.2. Confirmation of Services requested is provide by Confirmation Email and Phone call to Aircraft Registration Division

5.15.5.3. Sub-Contract Document Control Unit pick-up document on appoint date

5.16. Business security act B.E. 2558.

In order to complied Business Security Act B.E. 2558 Section 19 AWI Inspector must record aircraft consider as “Secured property” under business security act B.E. 2558 into E-License System.

“Business Security Act B.E. 2558 Section 19, Where the secured property is a registered property, the Registration Officer shall notify the Registrar and other creditors, who have an interest over the secured property through other relevant specialized registries, of its registration under this Act. Upon receiving notification under paragraph one, the Registrar shall without delay, undertake all necessary amendments, filing or any other steps needed to ensure that registration of that property reflects its registration under this Act”

5.16.1 Secure property record process

5.16.1.1. Received Official Notification of Secured property letter from Department of Business Development (DBD).

5.16.1.2. Head of AR assigned to AWI Inspector.

5.16.1.3. Document evaluation process.

a) Verify aircraft information including possessory right of the aircraft and possessory right of aircraft registration according to Requirement of The Civil Aviation Authority of Thailand No. 11.

b) In case of facts in Secured property letter has been changed possessory right of the aircraft and possessory right of aircraft registration effected to Certificate of Registration. AWI Inspector shall notify to AR Head and continue further verification.

5.16.1.4. Record aircraft status as under secure property into E-License system by record only DBD Registration number other information available on DBD website. (https://esecured.dbd.go.th/esecure-web/login.xhtml)

5.17. Certificate of Registration (AIR/AR-103).

CAAT Certificate of Registration is automatic generated and record in electronic format available in E-License system after AWI Inspector record all relevant information, pre-printed as hard copy certificate to registration owner. All blocks of the form must be filled out and made all entries in English as follows;

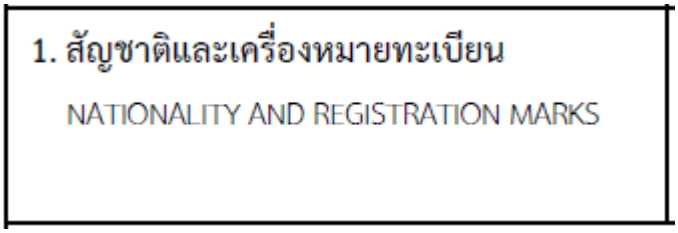
- **Certificate Number**

Certificate Number is automatic generated by E-Service system with unique number.


ประเทศไทย
THAILAND
เลขที่
NO.
สำนักงานการบินพลเรือนแห่งประเทศไทย
THE CIVIL AVIATION AUTHORITY OF THAILAND
ใบสำคัญการจดทะเบียน
CERTIFICATE OF REGISTRATION

- **Block Number 1 – Nationality and Registration Marks**

All aircraft registered under Kingdom of Thailand must be used Nationality Marks "HS" represented Kingdom of Thailand which notified to ICAO and acknowledge to all member states. The followings three alphabet are controlled and assigned by CAAT.



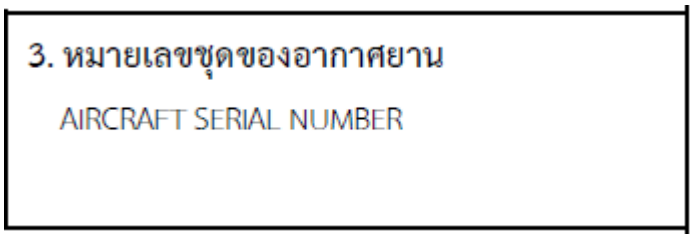
- **Block Number 2 – Manufacture and Manufacturer's Designation of Aircraft**

The aircraft manufacturer and model must be filled in this block using information in Aircraft Type Certificate Data Sheet (TCDS) from state of design.

For aircraft without Type Certificate, AWI Inspector will fill information from manufacturer official document. (e.g. Aircraft flight manual, aircraft operating manual or aircraft maintenance manual)

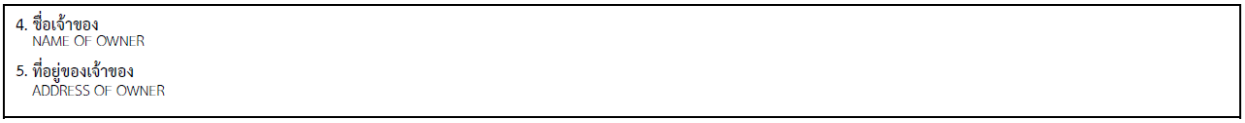
- **Block Number 3 – Aircraft Serial Number**

This block must be filled in accordance with manufacture statement of conformity and actual aircraft serial number plate as specific in National and Registration Marks Requirement in Civil Aviation Board Regulation No.95



- **Block Number 4 and 5 – Name of owner and Address of owner**

Name of Owner and Address of Owner in this block mean Name of Persons/ Association/ Company who has ownership rights of the aircraft not aircraft register or possess right in accordance with Aircraft Bill of Sale or other related evidence.



- **Block Number 6 – Date of issue and Competent official**

Competent official signatory block is reserved for Director General of The Civil Aviation Authority of Thailand or Delegated personnel. Date of Issue block will be fill with director general acknowledge date in CAAT internal letter.

6. ใบสำคัญการจดทะเบียนฉบับนี้ให้ไว้เพื่อแสดงว่า อากาศยานที่กล่าวแล้วข้างบนนี้ ได้จดทะเบียนในประเทศไทยแล้ว ตามอนุสัญญาการบินพลเรือนระหว่างประเทศ ลงวันที่ ๗ ธันวาคม พุทธศักราช ๒๔๘๗ และตามพระราชบัญญัติการเดินอากาศ พุทธศักราช ๒๔๙๗ IT IS HEREBY CERTIFIED THAT THE ABOVE DESCRIBED AIRCRAFT HAS BEEN DULY ENTERED ON THE REGISTER OF THAILAND IN ACCORDANCE WITH THE CONVENTION ON INTERNATIONAL CIVIL AVIATION DATED 7 DECEMBER, 1994 AND WITH THE AIR NAVIGATION ACT B.E. 2497. วันที่ออกให้ DATE OF ISSUE — พนักงานเจ้าหน้าที่ COMPETENT OFFICIAL

- **Remarks**

Remarks block is usually reserved for CAAT used. Other relevant information such as Aircraft operator name and address (In case of different with aircraft owner), Reissued and replacement information.

หมายเหตุ REMARKS ใบสำคัญการจดทะเบียนฉบับนี้มิใช่หลักฐานยืนยันการเป็นเจ้าของอากาศยานตามกฎหมาย (THIS CERTIFICATE OF REGISTRATION IS NOT PROOF OF LEGAL OWNERSHIP.)

6. CHAPTER 6 RESERVED

7. CHAPTER 7 GUIDANCE FOR SERVICE DIFFICULTY REPORT

7.1. related document

RELATED MATERIAL	ASSOCIATED FORMS
Regulation of the Civil Aviation Board, Issue No. 86 on Aircraft Operations, Given on 23 December B.E. 2552	Example of Service Difficulty Report Form
Notification of Department of Civil Aviation on Air Navigation by Air Operator's Aircraft Operations, Given on 24 August B.E. 2555	
Notification of Department of Civil Aviation on Air Navigation by Air Operator's Helicopter Operations B.E. 2557, Given on 6 February B.E. 2557	
Notification of Department of Civil Aviation on Procedures for Standard Certification and Continuity of Air worthiness for Private Aircrafts, the First Amendment, Given on 6 February B.E. 2547	
Notification of the Department of Civil Aviation Notification on Service Difficulty Reporting System, Given on 19 June B.E. 2551	
ICAO Annex 8, Part II, Chapter 4, 4.2.3 (f), 4.2.4	

ICAO Doc 9760-AN/967, Airworthiness Handbook, Vol II, Part B, Chapter 8, 8.3.1, 8.3.2	
Doc 9388-AN/979, Continuing Airworthiness of Aircraft, Chapter 4, Attachment 4-A	

7.2. Objective.

This document is intended for use as the guidance for aircraft owner/possessor or air operator with maximum takeoff weight (MTOW) more than **5,700** kilograms or helicopters with maximum takeoff weight (MTOW) more than **3,175** kilograms to report service difficulty to Civil Aviation Authority of Thailand and the State of Design.

7.3. General Criteria

To comply with Department of Civil Aviation Notification on Service Difficulty Reporting System, the aircraft owner/possessor or operator must file Service Difficulty Report (SDR) to the Civil Aviation Authority of Thailand (CAAT) and to the State of Design. Aircraft operators with foreign registration must submit the aforementioned report to CAAT and to the State where the aircraft is registered.

7.4. Reporting Procedures

7.4.1 To improve the safety of civil aviation, the aircraft owner/possessor or operator with maximum takeoff weight (MTOW) more than 5,700 kilograms or helicopters with maximum takeoff weight (MTOW) more than 3,175 kilograms must submit Service Difficulty Report (SDR) in case of the following events:

7.4.1.1. Fire during flight regardless of whether Fire Warning System is operating correctly or incorrectly or not working at all.

7.4.1.2. Engine exhaust system causes damage to the engine, adjacent structure, equipment, or components during flight.

7.4.1.3. Aircraft component causes accumulation or circulation of smoke, vapor, or toxic or noxious fumes in the crew compartment or cabin during flight.

7.4.1.4. Engine shutdown because of engine failure during flight

7.4.1.5. Engine shutdown when external damage to the engine or aircraft structure occurs during flight.

7.4.1.6. Engine shutdown due to foreign object ingestion or icing during flight.

7.4.1.7. Engine shutdown more than one engine during flight.

7.4.1.8. Propeller rotating system or performance of the system to control speed exceeds a specified maximum speed threshold during flight

7.4.1.9. Fuel or fuel- dumping system affects fuel flow or causes hazardous leakage during flight.

7.4.1.10. Unintended landing gear extension or opening or closing of landing gears door during flight.

7.4.1.11. Brake system components results in loss of brake actuating force when the aircraft is moving on the ground.

7.4.1.12. Aircraft structure damage that requires major repair.

7.4.1.13. Cracks, permanent deformation or severe corrosion of aircraft structure more than the maximum limit acceptable to the manufacturer or the Department of Civil Aviation.

7.4.1.14. Aircraft component or system malfunctions, which results in taking emergency actions during flight) . except action to shut down an engine.(

7.4.1.15. Interruption to a flight, unscheduled change of aircraft route, unscheduled stop or diversion from route caused by or suspected to be caused by mechanical difficulties or malfunctions.

7.4.1.16. Abnormal vibration or buffeting caused by a structural or system malfunction, defect, or failure.

7.4.1.17. A failure or malfunction of more than one attitude, airspeed, or altitude instrument during flight.

7.4.1.18. The number of engines removed prematurely because of malfunction, failure or defect; a list shall be submitted to according to make and model and aircraft design in which it is installed.

7.4.1.19. The number of propeller featherings in flight; a list shall be submitted by type of propeller and engine and aircraft on which it is installed.

7.4.1.20. The number of propeller featherings in flight; a list shall be submitted by type of propeller and engine and aircraft on which it is installed.

7.4.2 In the events, other than those listed under (A), the aircraft owner/possessor or operator must file reports related to aircraft malfunctions, defects, or failures that occurred or that have been detected should the aircraft owner/possessor or operator deem that the malfunctions, defects, or failures will or may affect the safety of aircraft operations.

7.4.3 Aircraft owner/possessor or operator must file reports in accordance with (A) and (B) and submit to airwothiness@caat.or.th by 09.00 Hour of the next day (for Saturdays, Sundays, or holidays, reports shall be submitted on the next working day). Additionally, the aforementioned reports must be submitted to the Type Certificate Holder and the Production Approval Holder that are responsible for the design and manufacturing of the aircraft. Air operators whose aircrafts are registered with a foreign registry must submit the aforementioned report to the Civil Aviation Authority of Thailand (CAAT) and to the State that the aircraft is registered.

7.4.4 Aircraft owner/possessor or operator must file report in accordance with (1) and (2) using the forms indicated by airworthiness department and must include as much of the following information below as is available:

7.4.4.1. Type and identification number of the aircraft

i. Name of aircraft owner/possessor

ii. Date, flight number, and stage during which the incident occurred (e.g., preflight, takeoff, climb, cruise, descent landing, and inspection).

iii. Procedures of respective emergencies (e.g., unscheduled landing and emergency descent).

iv. Type of the failure, malfunction, or defect.

v. Identification of the part and system involved, including available information pertaining to important component and time since overhaul.

vi. Possible cause of failure, malfunction, or defect (e.g., wear and tear, crack, design deficiency, or personnel error).

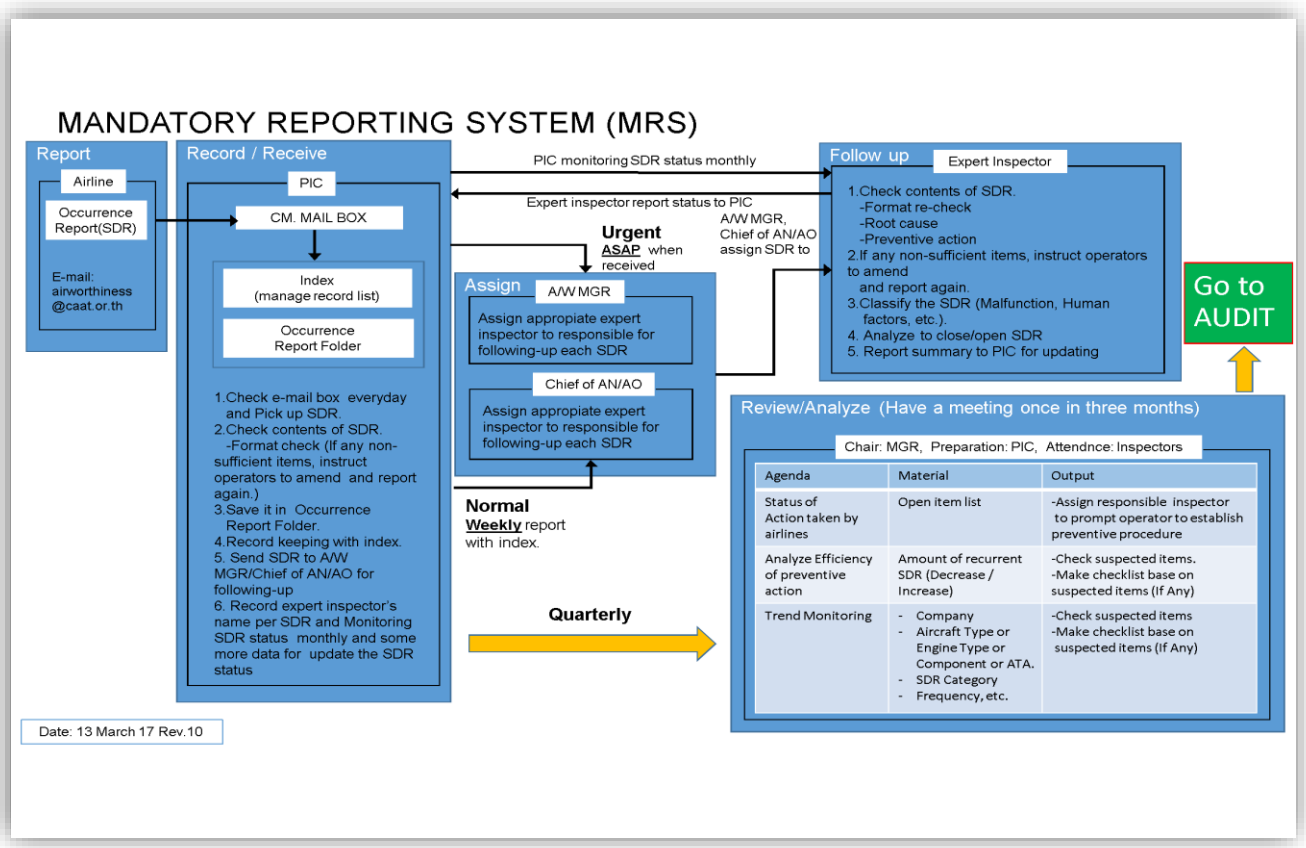
vii. Whether the part was repaired, replaced, sent to the manufacturer, or any other action taken.

viii. Whether the aircraft was grounded

ix. Other information necessary for more complete identification, determination of seriousness, or corrective action.

x. Once the aircraft owner/possessor or operator receives additional information including information from manufacturer or agencies related to the SDR, the aircraft owner/possessor must report to airworthiness department via airworthiness@caat.or.th without any delay.

7.4.5 Once receive the SDR, Airworthiness Group shall examine the report and follow the action as the following flowchart. in some cases, Authorized person might send an inspector to investigate the aircraft.



7.5. Appendix i

How to use SDR Index

The purpose of SDR Index is to collect the SDR information in to in excel database storage system that take into account several factors. The SDR Index management allows for exchange of information and provides a method of communication between Civil Aviation Authority of Thailand (CAAT) and the operator concerning in-service problems. The consolidation, collation,

and analysis of the data, and rapid dissemination of trends, problems, and alert information to the appropriate segments of the operator and CAAT. The basis for collecting this data is to provide a database that would substantiate. Service difficulty data can be used for a variety of purposes and in a variety of ways. The chain may simultaneously involve a design deficiency, a defect induced during the manufacturing process, improper maintenance or other human factors.

The SDR information to be recorded in SDR Index:

ATA	SDR ID INDEX	AOC	TYPE OF AIRCRAFT AND SERIES	TYPE OF AIRCRAFT	REG NO.	DATE OF OCC	RECEIVING DATE(FIRST)	RECEIVING DATE(LATEST)

REVISION NO.	FOLLOW-UP PERSON	CAT. OF SDR	CLASSIFICATION	OUTLINE	ACTION TAKEN	ROOT CAUSE ANALYSIS	PREVENTIVE ACTION	AIRLINES STATUS	CAAT STATUS

Information	Description in SDR Index
ATA	ATA Code of occurrences from SDR
SDR Index	The date of occurrence and register of aircraft YYYY-MM-DD HS-XXX
AOC	Name of operator
Type of Aircraft	Record type of aircraft; (B737, A320, A350, A330)
Registration Number	Record Registration Number
Date of Occurrence	Record Date of Occurrence
Information	**Description in SDR Index**
Receiving Date (First, Latest)	Record Receiving Date (First, Latest)
Follow Up Person	The division that responsible for SDR
Category of SDR	Categorize type of SDR by considering Notification of the Department of Civil Aviation Notification on Service Difficulty Reporting System, Given on **19** June B.E. **2551**
Classification	Classify type of occurrences

- Malfunction **- Human Factor (Maintenance)** **- Human Factor (Manufacture)** **- Lightning** **- FOD (Foreign Object Damaged)** **- Other** **/Continue...**	**- Malfunction:** the occurrences that failure to work or to function correctly **- Human Factor (Maintenance):** the occurrence that happened because of human handle, and react to, things in their environment. **- Human Factor (Manufacturer):** the occurrence that happened because of human handle in manufacturer. **- Lighting:** the occurrence that happened because of the lighting. **- Foreign Object Damage:** the occurrence that happened because of the Foreign Object Damage (FOD). **- Other:** the occurrence that happened because of another reason that already mention above.
Outline	The occurrences detail.
Action Taken	The action taken by operator.
Information	**Description in SDR Index**
Root Cause Analysis	Root Cause Analysis (RCA) is a set of analyzing and problem solving techniques targeted at identifying the actual root cause or the reason that caused the problem. The need for RCA stems from the fact that the elimination of the symptoms of the problems is not alone sufficient to address the problem, it has to be addressed at the

	cause level. If you solve a problem at this root level, it is highly probable that you can prevent its recurrence.
Preventive Action	Preventive Action is a proactive process and is initiated to stop a potential problem from occurring or from becoming too severe. Preventive action focuses on identifying negative trends & addressing them before they become significant.
Airlines Status	The status of open / close consider from operators
CAAT Status	The status of open / close consider from CAAT Inspector.

8. CHAPTER 8 GENERAL MAINTENANCE MANUAL (GMM) REVIEW AND APPROVAL

8.1. RELATED MATERIAL

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6	CAAT AOCR, General Maintenance Manual **(**GMM**) (**TDCA**/**AW**-**REV**-**001**)**
CAAT AC AW-01-GMM	Form AWE A1
CAAT AOCR Chapter 8	Centrik Checklist 58. AOC AW-REV-01 (General Maintenance Manual Review)
Civil Aviation Board Requirement (CAB) 86	

8.2. Objective

This chapter provides guidance for the Airworthiness Inspector to use in reviewing and approving an operator's General Maintenance Manual. (GMM)

8.3. General

CAAT AOC Requirements, Chapter 8, Para 2 requires that an Air Operator Certificate (AOC) applicant must prepare and maintain a General Maintenance Manual (GMM) for the use and guidance of the maintenance personnel, and contracted maintenance organisations of the operator. The GMM prepared by the operator must be kept current and should be acceptable to CAAT.

This procedure is intended for use by CAAT Airworthiness inspectors for the review and approval of a GMM and to ensure it is accomplished in a in a standardized format.

8.4. Applicability

This procedure applies to CAAT Airworthiness inspectors who oversee the airworthiness arrangements of (AOC) Holders in the Kingdom of Thailand.

8.5. Guidance and Procedures

8.5.1 The GMM is an air operator's manual for use and guidance by maintenance and operational personnel on maintenance issues. It states the organization management team and the organization commitment to comply with the regulatory requirement and to maintain the standards established during the approval certification process.

8.5.2 It explains in detail the operator's maintenance responsibilities, functions and obligations. It further explains the regulatory processes, methods, procedures and capabilities the operator employs to satisfy these regulatory requirements.

8.5.3 The GMM defines the operator's aircraft maintenance structure, quality system management, maintenance activity coordination, duties, responsibilities, qualification and training requirements of technical personnel

Notes:

(i) The GMM is normally presented with all other required manuals during the Formal Application phase of the Air Operator Certification.

(ii) The GMM provides the reference datum by which the Authority conducts the operator's approval inspection, the compliance surveillance and audit functions

8.6. GMM Development and Preparation

8.7. An AOC holder's GMM shall include the following information which may be issued in one volume or separate parts depending on the size and capacity of the operator's maintenance activities

8.7.1 A description of the administrative agreements between the AOC holder and an AMO/MRO (internal or contracted);

8.7.2 A description of the maintenance procedures and the procedures for completing and signing the certificate of release to service;

8.7.3 A description of the procedures to ensure each aircraft an AOC holder operates is in an airworthy condition including the issue of the Certificate of Maintenance Review;

8.7.4 A description of the procedures to ensure the operational emergency equipment for each flight is serviceable;

8.7.5 the names and duties of the Maintenance Review personnel required to ensure that all maintenance is carried out in accordance with the GMM;

8.7.6 A reference to the maintenance programme required by the CAAT Regulations and Requirements.

8.7.7 A description of the methods for completion and retention of the operator's maintenance records required by the CAAT Regulations and Requirements (AOCR, paras 8.12 and 8.13 refer).

8.7.8 A description of the procedures for monitoring, assessing and reporting maintenance and operational experience;

8.7.9 A description of the procedures for obtaining and assessing continued airworthiness information *(*e.g. ADs and OEM Technical information*)* and implementing any resulting actions from the organisation responsible for the type design, and shall implement any other actions considered necessary by the CAAT;

8.7.10 A system of ensuring that any fault, malfunctions, defects and other occurrences that cause or might cause adverse effects on the continuing airworthiness of aircraft shall be transmitted to the organization responsible for the type design of that aircraft and in accordance with the CAAT Regulations and Requirements;

8.7.11 A description of the procedures for implementing mandatory continuing airworthiness information as required by CAAT Regulations and Requirements.

8.7.12 A description of establishing and maintaining a system of analysis and continued monitoring of the performance and efficiency of the maintenance programme in order to correct any deficiency in that programme as required by the CAAT Regulations and Requirements.

8.7.13 A description of aircraft types and models to which the GMM applies;

8.7.14 A description of procedures for ensuring that un-serviceability affecting airworthiness are recorded and rectified;

8.7.15 A description of the procedures for reporting to the State of Design and OEM of significant in- service occurrences; and

8.7.16 A description of the operator's safety management system as required by the CAAT Regulations.

Notes:

(iii) The GMM is normally presented with all other required manuals during the Formal Application phase of the Air Operator Certification.

8.8. GMM content format

8.8.1 An AOC holder or applicant for an AOC shall submit and maintain the GMM containing at least the information set out in CAAT AC-AW-01-GMM

8.8.2 The GMM may be put together in one volume or separate subject user volumes provided all applicable subjects are covered as indicated in the CAAT regulations.

8.9. GMM approval

8.9.1 The GMM should be submitted to the CAAT inspector for approval (this is normally during the Formal Application phase of the AOC certification). It should be submitted with the Statement of Compliance document which identifies in what section of the GMM the applicable requirements of the regulations have been complied with

8.9.2 CAAT Inspector will use form TDCA-AW-REV-001 to review GMM, if discrepancies are found, the inspector will notify the air operator or applicant in writing about the observed discrepancies and recommendations, outlining what will be required to correct the discrepancies. If it becomes apparent that the amendment of the manuals is likely to delay commencement of the inspection as indicated in the Schedule of Events, the applicant is notified.

8.9.3 Normally the certification process cannot proceed until the CAAT is satisfied and has accepted the GMM.

8.9.4 When the CAAT inspector is satisfied that the GMM meets the requirements, the GMM initial approval Certificate form AWE A1 will be issued and the List of Effective Pages will be stamped approved by the CAAT and returned to the operator. A copy of the approved GMM will be retained by the CAAT in the AOC file.

8.10. Amendments to the Approved GMM

8.10.1 The operator shall submit all proposed amendments to the GMM to the CAAT for approval before implementation.

8.10.2 The CAAT will review all amendments to the manuals. The CAAT shall not limit this review to the amendments alone but also the impact of the changes on the overall manual system.

8.10.3 Continuous review of the manuals by the operator is necessary because both the aviation environment and the operations are constantly changing.

8.11. Certification Via Centrik

8.11.1 When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

8.11.2 For the General Maintenance Manual Review via Centrik, the checklist (58. AOC AW-REV-01). Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the

applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliance

9. CHAPTER 9 AIR OPERATOR CERTIFICATION

9.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Civil Aviation Board Regulation (CAB) 85	Refer to 9.5.4 Summary of Checklist
Civil Aviation Board Regulation (CAB) 86	
CAAT Announcement : Air Operator Certificate requirements (AOCR)	
CAAT Announcement :Operation of Aeroplane for Air Operator	
CAAT Announcement :Operation of Helicopter for Air Operator	
CAAT Surveillance/Inspection Policy and Procedures Manual	
ICAO Air Operator Certification and Surveillance Handbook	
ICAO Annex 6 Volume 1 and 3	

9.2. DEFINITION

9.2.1 CAAT Certification Team; mean group of CAAT staff which consisting of qualified and experienced inspectors of the necessary specializations, such as flight operation, airworthiness, and security from various department such as OPS, AIR who responsible for AOC of each applicant.

9.2.2 AIR Certification Team; mean group of airworthiness staff who responsible for AOC in part of airworthiness of each applicant.

9.2.3 Flight Operation Department (OPS); mean department which responsible for AOC in part of flight operation.

9.2.4 Prospective Operator's Pre-Assessment Statement (POPS or CAAT-OPS-AOC-FORM100); mean form completed by applicant specified the intent of the applicant to continue with the process for certification and to thereby enable CAAT to commit resources and plan the certification process.

9.2.5 CAAT-OPS-AOC-FORM 101; mean application for operations specification

9.3. DUTIES AND RESPONSIBILITIES

9.3.1 Airworthiness and Aircraft Engineering Manager (AIR Manager); responsible for overall AOC administration program in part of airworthiness.

9.3.2 Head of Air Operator Inspection (Head of AO); responsible to assign member of AIR Certification Team for each AOC applicant and confirm accuracy and completeness of related documents and checklist for AOC after Airworthiness Inspector (AWI) had accepted and completed.

9.3.3 Airworthiness Inspector (AWI); is qualified inspector who responsible for being leader of AIR Certification Team to perform all activities for AOC in each phase such as meeting, review related documents, complete checklist, co-ordinate with other department such OPS, conduct AOC inspection and etc.

9.3.4 Airworthiness Staff (AIR Staff); responsible for support AWI for related activities that responsible by AWI in part of AIR Certification Team.

9.4. THE CERTIFICATION PROCESS

The certification process which will be followed by the CAAT inspectors for the initial issuance of an Air Operator's Certificate (AOC) is divided into the following steps:

Phase 1: Pre-application phase

Phase 2: Formal application phase

Phase 3: Document evaluation phase (Preliminary financial, economic, and legal assessment of the application, Preliminary technical assessment of the application including document review)

Phase 4: Applicant's demonstration and Authority's evaluation phase. This phase divided in two sub-phases:

Phase 4.1: Main Base Audit & Aircraft Ramp inspections

Phase 4.2: Demonstrations and Inspections including Line stations.

Phase 5: Certification phase (Decision on application and award of AOC and operations specifications)

The overview of certification process in each phase is described in FLIGHT OPERATIONS INSPECTOR MANUAL VOL 2, Chapter 3

9.5. PROCEDURE FOR INITIAL AOC

9.5.1 Introduction

This procedure provides guidance to Civil Aviation Authority of Thailand (CAAT) Airworthiness staff when involved in Air carrier's certification activities with CAAT Certification Team. The process of formal coordination including minutes of meetings is described in FLIGHT OPERATIONS INSPECTOR MANUAL VOL 2 for each phase.

Every inspector from the AOC Certification Team (Flight Operations Inspector (FOI), Airworthiness Inspector (AWI), and other domains as necessary) is required to attend all pre- and post- phase meeting after each Certification Phase.

The Project Manager or Principle Operation Inspector (POI) shall ensure that those who could not attend the meetings are required to read and sign the minutes of those meetings.

9.5.2 Procedure in each phase

The tasks that AIR Certification Team may be involved in to support Flight Operations during certification process may include, but not limited to:

9.5.2.1. Pre-Application Phase (Phase 1)

- Once applicant making an initial inquiry by letter, telephone call or personal visit to CAAT office, POI will request AIR Certification Team to be member of CAAT Certification Team for applicant
- Head of AO will assign AIR Certification Team consisted of AWI and AIR staff(s) and accepted by AIR Manager to join with CAAT certification team.
- A preliminary discussion between CAAT and applicant will be held by CAAT (OPS) to provide basic information, discuss general certification requirements.
- During preliminary discussion, in part of airworthiness, AIR Certification Team shall advise the applicant to thoroughly review Civil Aviation Regulation Requirement

of Thailand and advisory materials and provide guidance concerning personnel, facilities, equipment and technical data requirements and an explanation of the certification process, in the standard information package for applicants for an AOC.

- When the applicant desires to continue with the AOC application. Prospective Operator' s Pre-Assessment Statement (POPS or CAAT-OPS-AOC-FORM100) will be provided by applicant to CAAT Certification Team.
- AIR Certification Team led by AWI will conduct a review of the applicant' s pre-assessment statement to enable AIR to commit resources and plan the certification process.
- AIR Certification Team might be re-considered amount of AIR Certification Team' s member by Head of AO and accepted by AIR Manager, it is depend on intent of applicant specified in POPS. Head of AO will consider AIR Certification Team's member based on Man Days Table.
- AIR Certification Team will prepare related compliance checklist, document and regulation in part of airworthiness and attend internal meeting as requested by POI to clarify the 5 phases process & timeline before start Pre-Application Meeting with applicant.
- In internal Meeting with CAAT Certification Team, AIR Certification Team may Inform information in meeting such as available time, regulation issue, process changing in AIR department whatever which might impact AOC Certification Process.
- If the information provided by applicant is considered acceptable, the POI will schedule a pre-application meeting with the applicant.
- In Pre-Application Meeting, AIR Certification Team shall provide a list of the documents, any form including

compliance checklists in part of airworthiness that shall be provided with the formal application to applicant and The required documents shall be discussed in detail at the pre-application meeting to provide the applicant with as much assistance as possible.

- During Pre-Application Meeting, AIR Certification Team will support CAAT Certification Team to confirm the information provided in the pre-assessment statement to determine whether or not the applicant has sufficient knowledge of the appropriate CAAT regulations and requirements and to confirm, for the applicant, the expectations of CAAT. With the aim of clarifying the scope and scale of the intended operation; making the applicant aware of CAAT procedures involved in processing an application, and answering any questions the applicant may have.
- AIR Certification Team will support CAAT Certification Team to evaluate the results of the meeting.
- If the applicant is not ready to make a formal application, advice shall be given on further preparation and another pre-application meeting shall be scheduled or, alternatively, the applicant may be advised to withdraw the intent to apply for certification.
- If the information provided in the pre-application statement is satisfactory and that the applicant has a clear understanding of the certification process, the applicant shall then be invited to prepare and proceed with a formal application.
- AIR Certification Team will support POI to complete Pre-Application Phase Checklist

9.5.2.2. Formal Application Phase (Phase 2)

- if the payment for pre-application fee, had been done by applicant, POI will conduct meeting with the certification team for the propose of preparing the Formal-Application Meeting.
- After that, Applicant is required to submit formal application package, AIR Certification Team will make a cursory review of the formal application package to check that the required attachments in part of airworthiness have been presented, that these attachments shall address the required information including manufacturer document and that the documentation is of appropriate quality.
- Information that be specified in POPS or CAAT-OPS-AOC-FORM100 and CAAT-OPS-AOC-FORM101 shall be made a cursory review to understand intent of applicant and desired operations specifications and assert scope of work of AIR Certification Team in part of airworthiness.
- Information on management organization and key staff members, including for each of them. their title, name, background, qualifications, and experience shall be made a cursory review of document in format of OPS-FORM4 or AIR FORM 4 which should be provided in this phase, However, such form might be provided in Document Evaluation Phase to ensure that key staff members will be qualified and accepted by AWI before consider to approve related manual that contains information of such key staff members.
- The following specific maintenance documents and specific compliance checklist shall be made a cursory review but not limit to

i. General Maintenance Manual (GMM)

ii. Minimum Equipment List (MEL)

iii. Aircraft Maintenance Program (AMP)

iv. Maintenance Training Program/Manual

v. Maintenance Reliability Program

vi. Special Operation Procedures

vii. EDTO/ETOPS Procedure or Manual

Above procedures/ manuals will be considered to approve according to procedure in item 9. 5. 2. 3 (Document Evaluation Phase)

- In case, applicant use leased aircraft, aircraft lease agreement of each leased aircraft and specific compliance checklist (Aircraft leasing arrangement) should be provided by applicant and shall be made a cursory reviewed by AWI.
- Please be noted that such aircraft lease agreement shall be reviewed and the approval will be granted by AWI according to Airworthiness Manual Chapter 24 - Aircraft Leasing Arrangements, prior to the lease agreement effectivity date.
- list of aircraft equipment that complies with desired operation of aircraft and specific compliance checklist should be provided by applicant and shall be made a cursory reviewed by AWI.
- Other information other than specified above, might be mad a cursory review based on intent of applicant and operation specification.
- If the formal application package in part of airworthiness is incomplete or otherwise unacceptable, AIR Certification Team shall inform CAAT Certification

Team to inform the applicant, providing details of the deficiencies and advice on the resubmission of the formal application.

- If the information in the formal application package in part of airworthiness is considered acceptable by AIR Certification Team, AIR Certification Team will inform the POI to schedule a formal application meeting with the applicant.
- During Formal Application Meeting, AWI will outline the maintenance section. AWI will also confirm the type and provenance of the proposed aircraft and ensure that the applicant is aware of any attendant requirements (e.g. ageing aircraft, imported aircraft, etc.)
- Subsequent to the Formal Application meeting and subject to successful acceptance of the application package, AIR Certification Team will support information for POI to complete Formal Application Phase Checklist

9.5.2.3. Document Evaluation Phase (Phase 3)

- After the formal application has been accepted, POI conduct meeting with certification team to inform the Document Evaluation Phase process and timeline
- POI will prepare to distribute AOC documentations to certification team by computer based system (if computer based system is not available, paper based system will be used for backup system)
- POI will prepare related checklist for CAAT Certification Team, However, AIR Certification Team will support POI to confirm applicable checklists (AIR Certification Team will prepare related checklist itself if computer based system is not available) based on intent of applicant and operation specification to evaluate all the documents

and manuals that are required by the regulations to be submitted to CAAT Certification Team.

- AIR Certification Team should endeavor to complete these evaluations in accordance with the schedule of events prepared by the applicant and agreed at the formal application meeting.
- The following is a list of the documents and manuals as mentioned in Formal Application Phase that provided by the applicant Which shall be evaluated by AIR Certification Team during this phase. The procedure to evaluate to each document and manual will be refer to other chapter in Airworthiness Manual (The complexity of the information that needs to be addressed in the applicant's documents and manuals depends upon the complexity of the proposed operation).

  i. General Maintenance Manual (GMM), Maintenance Training Program/ Manual, Maintenance Contract Agreement: Chapter 8

  ii. Minimum Equipment List (MEL): Chapter 10

  iii. List of Nominated Persons: Chapter 20

  iv. EDTO/ETOPS Procedure or Manual: Chapter 22 (if applicable)

  v. Aircraft Lease Agreement: Chapter 24 (if applicable)

  vi. Aircraft Maintenance Program (AMP): Chapter 26

  vii. Maintenance Reliability Program: Chapter 27 (if applicable)

  viii. Special Operation (CPDLC/ ADS-C, RVSM, MNPS, EDTO/ETOPS, LVO, EFB, PBN, etc.) Procedures: Chapter 22, 28 - 34 (if applicable)

- If a document or manual is incomplete or deficient, or if noncompliance with regulations or safe operating

practices is detected, the document or manual shall be returned to the applicant for corrective action.

- Documents or manuals that are satisfactory will be approved or accepted, as required by the regulations. Approval shall be indicated by a signed document. Acceptance of material that does not require formal approval shall be confirmed by letter.
- After above document and manual as applicable are reviewed by AIR Certification Team and accepted by AWI, AWI propose formal letter to accept such manuals to applicant ,such letter will be verified by Head of AO and signed by AIR Manager.
- Documents or manuals that are satisfactory will be will be record to computer based system
- Then AWI will completed Document Evaluation Phase Checklist together with other inspector of CAAT Certification Team

9.5.2.4. Demonstration and Inspection Phase (Phase 4)

- CAAT regulations require an applicant to demonstrate the ability to comply with regulations and safe operating practices before beginning revenue operations.
- These demonstrations will include actual performance of activities and/ or operations while being observed by inspectors of the certification team. This will also involve on-site evaluations of aircraft maintenance equipment and support facilities. During these demonstrations and inspections, CAAT evaluates the effectiveness of the policies, methods, procedures and instructions as described in the manuals and other documents developed by the applicant.
- During this phase, emphasis should be placed on the applicant' s management effectiveness. Deficiencies

shall be brought to the attention of the applicant, and corrective action shall be taken before an AOC can be issued.

- The preliminary assessment of the application, as described in formal application phase and document evaluation phase in this airworthiness manual, should provide CAAT with a general appreciation of the scope of the proposed operation and the potential ability of the applicant to conduct it safely.
- However, before authorizing the issuance of the AOC, CAAT will need to thoroughly investigate the operating ability of the applicant. This important and more detailed phase of the investigation and assessment will require the applicant to demonstrate thorough, day to-day administrative and operational capabilities, including, in some cases, proving flights over proposed or similar routes, the adequacy of facilities, equipment, operating procedures and practices, and the competence of administrative, and ground personnel.
- Demonstration flights may include any aspect to be covered by a special authorization in the operations specifications which will be associated with the AOC when issued.
- Inspections in the phase will involve base and station facility inspections, inspection of the operational control and supervision facilities and inspection of training programmes and maintenance facilities.
- The operational aspects demonstration and inspection phase shall encompass all aspects of the proposed operation. However, such matters as the inspection of the passenger services organization, though necessary, is not covered in this manual.

- Precise details of inspections will be determined by many factors, such as the nature, scope and geographical areas of operations, the type of airborne and ground equipment to be used and the method of operational control and supervision.
- Many of the inspections required for initial certification or addition of a new aircraft type will subsequently be conducted as part of CAAT surveillance plan. For ease of reference the detailed procedures are contained in CAAT Surveillance/ Inspection Policy and Procedures Manual.
- Operational demonstration and inspection (Phase 4) is comprise of 2 stages as following description;

  a) On-site inspection (Phase 4.1)

  - POI will prepare related checklist for CAAT Certification Team. However, AIR Certification Team will support POI to confirm applicable checklists (Main base checklist and Ramp Inspection Check List)
  - Pre-audit meeting in CAAT Certification Team shall be conducted to ensure audit criteria, roles and responsibility of each inspector, and audit methodology standard.
  - POI will conduct " Open Meeting" with auditee to inform audit scope and audit schedule.
  - During Meeting, AIR Certification Team might have discussion in part of airworthiness with the post holders will be required at a time and dates suitable to the individuals and will address their duties and responsibilities.
  - After Meeting, AIR Certification Team will perform on-site audit by reference of assigned checklists.

- AIR Certification Team will ensure that applicant has ability to comply with regulations in part of airworthiness and safe operating practices before actual revenue operations can begin.
- AIR Certification Team will use Main base checklist to perform audit in this phase together with related compliance checklist such as maintenance contract agreement, aircraft lease agreement (for leased aircraft), list of aircraft equipment (to ensure that performance of aircraft is suitable for desired operation) and etc. and approved manuals that mention in document evaluation phase such as GMM, MPD, MEL and etc. to confirm that procedure that contain in approved manuals will be complied.
- All activities relate to arrangements for Engineering and Maintenance Support will be audit based on procedure that contain in approved manuals which comply with regulation as following subject:

  i. Engineering and Maintenance Support

  ii. Personnel

  iii. Staff Strength

  iv. Staff Standards and Training

  v. Contracted Out Maintenance

  vi. Airworthiness Control Procedures

  vii. Maintenance Facilities

  vii. Quality Control and Assurance
- During on-site audit, all non-conformance items will be raised and preliminary brief to applicant.

- All non-conformance items will be summarized and inform to POI
- POI and certification team will conduct close meeting with auditee to inform informal result of audit.
- AIR Certification Team will make formal result of audit including non-conformance items and send to applicant
- AIR Certification Team will review evidence of correction and corrective action plan (CAP) submitted by applicant for closure of non-conformance items.
- If the submitted evidence of correction and CAP from applicant is not satisfied, AIR Certification Team (Agreed by AWI) may reject and ask for resubmitted of evidence of correction and revised CAP.
- After all non-conformance items are considered to be closed by AWI, AIR Certification will inform POI to propose date for Demonstration Flight (Phase 4.2) would be scheduled.

b) Demonstration Phase (Phase 4.2)

- The demonstration flights are designed to determine prior to the issuance of the AOC that the applicant is capable of operating and maintaining each aircraft type which he proposes to use in accordance with CAAT requirements.
- During these inspections, AIR Certification Team led by will observe and evaluate the in flight operations within the total operational environment of the air transportation system.

- Check R - Ramp Check will be used to during this phase.
- Line Station and Facility Inspection Check List might be used if the demonstration relate to line maintenance activity.
- AIR Certification Team will ensure that applicant can perform according to related procedure contained in GMM.
- AIR Certification Team may generate scenario or ask question(s) regarding any case which might happen such as some aircraft system has failed or etc., to ensure that applicant can manage such problem properly and comply with related procedure.
- all non-conformance items raised by AIR Certification Team during any part of the demonstration inspection shall be brought to the attention of the applicant in writing for corrective action and inform POI
- examples of deficiencies requiring corrective action are:
  i. numerous aircraft deficiencies and/ or system malfunctions;
  ii. unsatisfactory operational control, e.g. improper maintenance release procedures;
  iii. unacceptable maintenance procedures or practices; and/or
  iv. improper aircraft servicing and ground handling procedures.
- if the submitted evidence of correction and CAP from applicant is not satisfied, inspector may

reject and ask for resubmitted of evidence of correction and revised CAP.

- After all non-conformance items are considered to be closed, AIR Certification will inform POI to inform CAAT management and auditee the readiness of next phase (Certification Phase).
- AWI will completed AOC Demonstration and Inspection Phase Checklist together with other inspector of CAAT Certification Team

9.5.2.5. Certification Phase (Phase 5)

- AWI will prepare formal letter to approve related manuals which might be revised due to correct related non-conformance items in Demonstration and Inspection Phase.
- Such letter will be verified by Head of AO and signed by AIR Manager.
- Documents or manuals that are satisfactory will be will be record to computer based system
- Co-ordination form will be completed by AWI to ensure that all tasks that be done with OPS will be acknowledged and confirmed by OPS.
- AIR Certification Team will prepare internal letter including completed AOC Package Checklist that verified by Head of AO and signed by AIR Manager. Such letter will be send to POI to confirm that all airworthiness tasks are done.
- Such letter will be considered by POI and support POI for final preparation for the issuance of an AOC.
- Surveillance plan will be establish and will be inform POI.

- AIR Certification Team will attend internal meeting with CAAT Certification Team to summarize result of evaluation for AOC.
- AIR Certification Team will attend certification meeting with applicant, Certification Meeting with the applicant will be conducted in order to review overall certification process and result and to inform the applicant the oversight programme.
- AWI will completed Certification Phase Checklist together with other inspector of CAAT Certification Team.

9.5.3 Procedure Summary for each phase

Summary of Procedure will address person who responsible for each task, action, record and length of time as applicable to support AIR Staff to work for each phase. Please be note that length of time of activity will be checked to comply with OPS service level before start each phase to ensure that AIR will perform according to specific AOC Certification's timeline.

9.5.3.1. Pre-Application phase (Phase 1)

Procedure below lists the sequence of actions and persons responsible for processing an AOC application in Pre-application phase.

Person Responsible	**Action**	**Record**	**Length of Time (Day)**	
Applicant	Notifies CAAT of intention to apply for an AOC	Applicant Internal		
OPS Manager	Assigns a POI to the application	Note of Action		
POI	Set up audit or inspection team and request team member as required from relevant department such as AIR, SFD, or PEL (as applicable).	Note of Action	10	30
AIR Manager	Inform Head of AO to assign AIR Certification Team as POI requested	Note of Action		
Head of AO	Assign AWI and AIR Staffs as AIR	Electronic file		

	Certification Team as to join CAAT Certification Team			
AIR Certification Team	☐ Meeting with CAAT Certification Team as POI Requested ☐ Attend preliminary discussion between CAAT and applicant ☐ Provides applicant with CAAT Requirement of Thailand and advisory materials and guidance. ☐ Review Pre-Assessment Statement (POPS or CAAT-OPS-AOC-FORM 100) ☐ Discuss with Head of AO to re-consider team member of AIR Certification Team based on intent of applicant and operation specification in POPS	Note of Action	-	
Head of AO	Consider to re-team member of AIR Certification team base on intent of applicant and operation specification in POPS and Inform AIR Manager	Electronic file	-	
AIR Certification Team	☐ Attend Pre-Application Meeting ☐ Provides applicant with list of the documents, any form including compliance checklists in part of airworthiness ☐ Support Information for POI to complete Pre-Application Phase Checklist		-	

9.5.3.2. Formal Application Phase (Phase 2)

Procedure below lists the sequence of actions and persons responsible for processing an AOC application in Formal application phase.

Person Responsible	Action	Record	Length of Time (Day)
Applicant	☐ Completes any form and compliance checklist as provided by AIR Certification Team ☐ Provide required documents and manuals	Applicant Internal	30
POI	Receive AOC application package including all required or request document from applicant then distribute to CAAT Certification Team	Note of Action	14
AIR Certification Team	☐ Review any form, compliance checklist and required document for completeness. ☐ Inform result of review to POI to proceed further based on result of review. ☐ Attend Formal Application Meeting to outline maintenance section and confirm the type and provenance of the proposed aircraft and ensure that the applicant is aware of any attendant requirements (e.g. ageing aircraft, imported aircraft, etc.)	Note of Action	-
POI	Inform applicant for result of review	Note of Action	7
Applicant	Submit correction as applicable	Note of Action	30
AIR Certification Team	Support Information for POI to complete Formal Application Phase Checklist	Note of Action	-

30

9.5.3.3. Document Evaluation Phase (Phase 3)

Procedure below lists the sequence of actions and persons responsible for processing an AOC application in document evaluation phase.

Person Responsible	Action	Record	Length of Time (Day)	
POI	Distribute AOC documentations including completed form and compliance checklist in part of airworthiness to AIR certification team.	Centrik		
POI	Prepare related checklist for CAAT Certification Team (Supported by AIR Certification Team)	Centrik		
AWI	Confirm related checklist based on intent of applicant and operation specification	Note of Action		
AIR Certification Team	☐ Review and comment related manual such as GMM, MEL, MPD and other manual as applicable (In case of special operation approval, AIR certification Team will consider related procedure in each manual involving of each special operation) ☐ Review and comment relate document such maintenance contact agreement, aircraft lease agreement (for leased aircraft), list of aircraft equipment based of desired operation, list of nominated person in part of airworthiness and etc. (In case of special operation approval, AIR certification Team will consider related information in each document involving of each special	Centrik	90	105

	operation). ☐ Please be noted that such aircraft lease agreement shall be reviewed and the approval will be granted by AWI prior to the lease agreement effectivity date. ☐ Review and comment basic qualification of nominated person in part of airworthiness. ☐ Raise non-conformance items as applicable			
AIR Certification team	Inform nominated person in part of airworthiness to make appointment date of interview (if AWI plan to interview in this phase)	Note of Action as applicable		
AWI	☐ Interview nominated person in part of airworthiness for acceptance (this step can be done in demonstration and inspection phase : on-site inspection)	Note of Action as applicable		
AWI	☐ Raise non-conformance items as applicable	Centrik		
Applicant	☐ Addresses findings as applicable ☐ Submits amended manual or corrected document to AIR Certification Team	Centrik	3 - 90	
AIR certification team	☐ Review corrective actions, corrected document and amended manual	Centrik	15	
AWI	☐ Final Review for acceptance of manual then close related manual	Centrik as applicable		

	checklist, document checklist and operation checklist (such as special operation checklist) ☐ Complete nominated checklist (if applicable)			
AIR certification team	Make a letter that include completed checklist for acceptance of manuals.	File		
Head of AO	Verify a letter to accept related manuals	Note of Action		
AIR Manager	Consider to accept related manuals and sign letter to applicant	Note of Action		
AIR certification team	Record related manuals.	Centrik		
AWI	Inform result of review to POI for proceed further.	Note of Action		
AWI	Complete Document Evaluation Phase Checklist provided by POI	File		

9.5.3.4. Demonstration and Inspection Phase (Phase 4)

a) On-site inspection (Phase 4.1)

Procedure below lists the sequence of actions and persons responsible for processing an AOC application in on-site inspection phase.

Person Responsible	Action	Record	Length of Time (Day)
AIR Certification Team	Attend Pre-audit meeting as POI request to ensure audit criteria, roles and responsibility of each inspector, and audit methodology standard.	Note of Action	45
AIR Certification Team	Prepare Audit Agenda then send to POI (Format of Audit Agenda provided by POI)	File	
POI	Prepare related checklist for CAAT Certification Team (Supported by AIR Certification Team)	Centrik	

AWI	Confirm related checklist based on scope of inspection	Note of Action		
POI	Conduct “ Open Meeting” with AIR certification Team led by AWI to inform audit scope and audit schedule.	Audit Agenda		
AIR Certification Team	Perform on-site audit by reference of assigned checklists, comment and checklists. (AIR Certification Team will use related regulation, accepted manual and document from document evaluation phase for audit reference)	Centrik		
AIR Certification Team	Raise non-conformance items and inform POI. (Draft Report)	File		
AIR Certification Team	Attend Close Meeting with auditee to inform result of the audit. Inform observed nonconformance items and follow up process for further correction, corrective action plan (CAP) and evidence references.	Note of Action		
AIR Certification Team	Make formal result of audit including non-conformance items and send to applicant	File (Formal letter) and Centrik (non-conformance items)		
Applicant	Submit correction, CAP and evidence references.	Centrik	60	90
AIR Certification Team	Review and comment correction, CAP and evidence references for closure of non-conformance items. If the submitted correction, CAP from applicant is not satisfied, AIR Certification (Agreed by AWI) may reject and ask for resubmitted of	Centrik		

	revised CAP and more evidence references. Please be noted that all CAP of phase 4.1 and 4.2, maximum number of CAP proposal should not exceed 3 times per each finding and AIR Certification Team should response CAP proposal within 3 days from CAP proposal received date. (CAP verification)			
AWI	Consider all non-conformance items to closed	Centrik		
AIR Certification Team	inform POI to cancel or propose date for Demonstration Flight	Note of Action	7	

b) Demonstration inspection (Phase 4.2)

Procedure below lists the sequence of actions and persons responsible for processing an AOC application in demonstration inspection phase.

Person Responsible	Action	Record	Length of Time (Day)
POI	Prepare related checklist for CAAT Certification Team (Supported by AIR Certification Team)	Centrik	30
AWI	Confirm related checklist based on scope of inspection	Note of Action	
AIR Certification Team led by AWI	Perform demonstration flight audit by reference of assigned checklists and complete the checklists. (AIR Certification Team will use related regulation, accepted manual and document from document evaluation phase for audit reference)	Centrik	
AIR Certification Team led by AWI	Raise all non-conformance items during any part of the demonstration inspection to applicant and inform	Note of Action	15

	POI		
AIR Certification Team	Record all non-conformance items	Centrik	
Applicant	Submit correction, CAP and evidence references.	Centrik	
AIR Certification Team	Review and comment correction, CAP and evidence references for closure of non-conformance items. If the submitted correction, CAP from applicant is not satisfied, AIR Certification (Agreed by AWI) may reject and ask for resubmitted of revised CAP and more evidence references.	Centrik	30
AWI	Consider all non-conformance items to closed	Centrik	
AIR Certification Team	Inform result of review to POI for proceed further.	Note of Action	7
AWI	Complete Demonstration and Inspection Phase Checklist provided by POI	File	-

9.5.3.5. Certification Phase (Phase 5)

Procedure below lists the sequence of actions and persons responsible for processing an AOC application in certification phase.

Person Responsible	Action	Record	Length of Time (Day)
AWI	Prepare formal letter to approve related manuals which might be revised due to correct related non-conformance items in Demonstration and Inspection Phase	File	
Head of AO	Verify a letter to approve related	Note of Action	

	manuals		10
AIR Manager	Consider to approve related manuals and sign letter to applicant	Note of Action	
AIR Certification Team	Record approved manuals	Centrik	
AWI	Complete Co-ordination form with POI	Centrik	
AIR Certification Team	Prepare internal letter to confirm that all airworthiness tasks are done. (such letter will be attached with completed AOC Package Checklist and related checklist.)	File	
Head of AO	Verify letter for completeness	Note of Action	
AIR Manager	Sign letter to OPS	Note of Action	
Head of AO	Establish surveillance plan for applicant by coordinate with OPS	File	
AIR Manager	Consider to accept such surveillance plan then send to POI	Note of Action	
AIR Certification Team	Attend internal meeting with CAAT Certification Team to summarize result of evaluation for AOC	Note of Action	
AIR Certification Team	Attend certification meeting with applicant (Certification Meeting with the applicant will be conducted in order to review overall certification process and result and to inform the applicant the oversight programme)		
AWI	Complete Certification Phase Checklist provided by POI	File	15

9.5.4 Summary of Checklist for each phase

Please be noted that latest revision of each checklist will be shown in Master Checklist Manual

9.5.4.1. Pre-Application Phase Checklist (Phase 1)

No	Checklist Code	Checklist Name	Remark
1.	OPS-AOC-FORM 4	CAAT OPS Form 4	File (Controlled by OPS)
2.	AIR FORM FOUR	CAAT AIR Form 4	File
3.	TDCA/AW-REV-001	GMM Compliance Review and Approval Checklist	File
4.	TDCA/AIR-REV-004	MEL Compliance Review and Approval Check List	File
5.	TDCA/AW-REV-006	EDTO/ ETOPS Procedures or Manual Review Checklist	If applicable
6.	TDCA-AW-REV-007	Training Program Manual/ Program Compliance Review and Approval Checklist	File
7.	ENG A1-1	Maintenance Programme Compliance and Approval Checklist	File
8.	ENG A1-3	Reliability Programme Compliance and Approval Checklist	File
9.	AIR/AR-401	Aircraft Leasing Arrangement – Airworthiness aspects review	File
10.	CAAT/AWE-INSP-001(AID)	Aircraft Equipment Inspection AID Checklist / Doc Requirements of Operation of Aircraft	File

9.5.4.1. Formal Application Phase Checklist (Phase 2)

No	Checklist Code	Checklist Name	Remark
None			

9.5.4.2. Document Evaluation Phase Checklist (Phase 3)

No	Checklist Code	Checklist Name	Remark
1.	TDCA/AW-REV-001	GMM Compliance Review and Approval Checklist	Centrik
2.	CAAT / AIR HXXX	Review of operators maintenance agreement	Centrik
3.	TDCA/AIR-REV-004	MEL Compliance Review and Approval Check List	Centrik
4.	TDCA/AW-REV-006	EDTO/ ETOPS Procedures or Manual Review Checklist	Centrik (If applicable)
5.	TDCA-AW-REV-007	Training Program Manual/ Program Compliance Review and Approval Checklist	Centrik
6.	ENG A1-1	Maintenance Programme Compliance and	Centrik

		Approval	
7.	ENG A1-3	Reliability Programme Compliance and Approval Checklist	Centrik (If applicable)
8.	ENG A6	LVO Assessment Checklist	Centrik (If applicable)
9.	ENG A7	PBN Assessment Checklist	Centrik (If applicable)
10.	ENG A8	MNPS Assessment Checklist	Centrik (If applicable)
11.	ENG A9	RVSM Assessment Checklist	Centrik (If applicable)
12.	ENG A9-1	MAAR FORM F2	File (If applicable)
13.	ENG A11	Electronic Flight Bag Assessment Checklist	Centrik (If applicable)
14.	ENG A13	ADSC and CPDLC Assessment Checklist	Centrik (If applicable)
15.	ENG A14	ADS-B assessment checklist	Centrik (If applicable)
16.	TDCA-AW-INSP-016	ETOPS Assessment Checklist	Centrik (If applicable)
17.	OPS-AUDIT-CHKO	Check O - Organizational Competence	Centrik (Controlled by OPS)
18.	AIR-AO-902	AIR Nominated Persons Checklist	Centrik

9.5.4.3. Demonstration and Inspection Phase Checklist (Phase 4)

Checklists in this section as following will be used for AIR Certification and Surveillance

a) On-site inspection Phase checklist (Phase 4.1)

No	Checklist Code	Checklist Name	Remark
1.	TDCA-AW-INSP-010	Main Base Inspection Checklist	Centrik

b) Demonstration Phase checklist (Phase 4.2)

No	Checklist Code	Checklist Name	Remark
1.	TDCA/AW-INSP-011	Line Station and Facility Inspection	Centrik

2.	AIR-AO-801	AOC Audit Ramp Inspection Checklist (For AOC Surveillance only)	Centrik
3.	OPS-AUDIT-CHKR	Check R - Ramp Check (For AOC certification only)	Centrik (Controlled by OPS)
4.	FOS-AOC-CHK-400	AOC Document Evaluation Checklist (For AOC certification only)	File (Controlled by OPS)

9.5.4.4. Certification Phase Checklist (Phase 5)

No	Checklist Code	Checklist Name	Remark
1.	ENG/AW/FO	Coordination Form	Centrik
2.	AIR-AO-901	AOC Package Checklist	File
3.	FOS-AOC-CHK-500	Certificate Phase Checklist	File (Controlled by OPS)

9.6. COORDINATION BETWEEN AIR AND OPS DEPARTMENTS

During the certification process:

AIR Certification team shall notify in writing the POI of any technical issue, or problem in meeting the timescales**.** Upon completion of a task, the Airworthiness Inspector notifies in writing (by memo or by using the appropriate form) the POI of the result of the task (Approval, recommendation for approval or not).

For Certification purpose, the CAAT is using Centrik software.

The use of that software facilitates the coordination between OPS and the other departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by

CAAT during the certification process. AIR staff involved in Certification will verify the result via Centrik software.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions.

The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification.

Each item of a checklist is allocated to a department (AIR, OPS, DG…).

Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections).

Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

9.7. VARIATIONS TO EXISTING AIR OPERATOR CERTIFICATE

9.7.1 Procedure for adding variant aircraft to AOC

9.7.1.1. General

The addition of a variant aircraft to an existing fleet of that aircraft type requires CAAT approval before any operations of that aircraft. The CAAT must-

i. Determine that this aircraft is compatible with the operations and maintenance procedures previously approved for the specific aircraft fleet; and

ii. Ensure that any differences between the variant aircraft and the specific fleet have been addressed by AIR Operator. AIR Operator must preparation and submission of a formal application for the addition of the aircraft. AIR staffs will perform the document conformance evaluation and subsequent inspections and demonstrations necessary to this addition.

9.7.1.2. Determining of approval process

i. How variant of proposed aircraft?

☐ The CAAT AIR highly recommends that the AOC holder conduct an evaluation of the differences between the proposed aircraft and the existing fleet of that aircraft type.

☐ The AOC holder' s evaluation team should consist of aircraft type-specific qualified operations and airworthiness personnel.

☐ AIR Operator should be completed Compliance and Evaluate Variant Aircraft (Same Make/Model) Checklist (CAAT/AIR H010-1) and

send to AIR for verification. It will be the basis for the CAAT AIR decision regarding the extent of the application and approval process.

ii. Determine the differences

Determine the differences between the proposed aircraft and the existing fleet as the following listing:

- ☐ Procedure in each approved or accepted required to change due to differences of proposed aircraft
- ☐ Personnel briefings required to ensure workforce understand differences
- ☐ Formal training required to ensure workforce understand of differences.

9.7.1.3. CAAT AIR Evaluation

i. Head of AO AIR Certification team accepted by AIR Manager to evaluate information (such as aircraft type) submitted by AIR Operator.

ii. AIR Certification team will review each element to confirm the differences by using Compliance and Evaluate Variant Aircraft (Same Make/Model) Checklist (CAAT/AIR H010-1)

iii. AIR Certification team inform operator to complete Aircraft Equipment Inspection AID Checklist (CAAT/AWE-INSP-001(AID))

iv. In case of leased aircraft, AIR Certification team will inform operator to provide aircraft lease agreement and Aircraft Leasing Arrangement – Airworthiness aspects review Checklist (AIR/AR-401), such checklist will be verified by AWI according to Airworthiness Manual Chapter 24 - Aircraft Leasing Arrangements. Please be noted that such aircraft lease agreement shall be reviewed and the approval will be granted by AWI prior to the lease agreement effectivity date.

v. In case of new aircraft type.

☐ AIR Certification team will use specific centrik checklist for each special operation as requested by AIR Operator. (specific centrik checklist will be mentioned in 9. 5. 4. 2 document evaluation phase checklist)

☐ Impacted manual (GMM, MPD MEL and etc.) will be provided by operator and reviewed by AIR Certification team via centrik checklist.

☐ Procedure for Demonstration and Inspection Phase might be applied as POI request.

vi. In case of same aircraft type with difference special operation(s) which requested by AIR Operator to exist operation specification of aircraft fleet of AIR Operator.

☐ AIR Certification team will use specific centrik checklist for each difference special operation of exist operation specification. (specific centrik checklist will be mentioned in 9. 5. 4. 2 document evaluation phase checklist)

☐ Revised manual (GMM, MPD MEL and etc.) will be provided by operator and reviewed by AIR Certification team via paper checklist.

vii. Documents or manuals that are satisfactory will be will be record to computer based system.

viii. When AIR Operator complied all airworthiness and maintenance aspects as required by AIR Certification Team and accepted by AWI, Co-ordination form (ENG/ AW/ FO) will be completed by AWI to ensure that all tasks that be done with OPS will be acknowledged and confirmed by OPS.

ix. AIR Certification Team will prepare internal letter including completed AOC Package Checklist (AIR-AO-901) that verified by Head of AO and signed by AIR Manager. Such letter will be send to POI to confirm that all airworthiness tasks are done.

9.8. PROCEDURE FOR CHANGING OF AOC AIRCRAFT INFORMATION

In case of AIR received information that aircraft in AOC's fleet cannot operate according to AOC Operation Specification such as AOC cannot maintain capability of aircraft for approved special operation. Airworthiness Inspector assigned by Head of AO will consider AOC's affected manual to inform AIR Operator to revised and inform OPS by email to notice such matter and consider to proceed further which might lead to revise AOC Operation Specification.

Additional to above procedure, in case of de-registration of aircraft , Airworthiness Inspector assigned by Head of AO shall submit MAAR Form F3 to Aeronautical Radio of Thailand Ltd. (AERO Thai) via e-mail to maar@aerothai. co. th by copy to RVSM@caat.or.th which include OPS in loop.

9.9. PROCEDURE FOR RENEWAL AND SURVEILLANCE AOC

The continued validity of an AOC is dependent upon an AIR Operator maintaining the requirements for an adequate organization, method of control and supervision of flight operations, training programme as well as ground handling and maintenance arrangements consistent with the nature and extent of the operations specified in the AOC and the associated operations specifications, under the supervision of CAAT.

AIR Certification Team will conduct continuing surveillance of AIR Operator and thus to continuously determine that the AOC remains valid. Procedures for the establishment and implementation of an annual surveillance plan are outlined in CAAT Surveillance/ Inspection Policy and Procedures Manual. However, related checklist for surveillance will be used according to 9.5.4.3

AIR Operator shall be required to demonstrate compliance of the existing CAAT regulations with a Statement of Compliance. AIR Certification Team will evaluate the AIR Operator to renewal AOC as procedure for initial AOC as applicable.

10. CHAPTER 10 MELS AND RECTIFICATION INTERVAL EXTENSIONS (RIE)

10.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6	MEL Compliance and Approval Check List (TDCA/AIR-REV-004)
CAAT AC AW-02-MEL	Form AWE A2 Rev.1 dated 12/1/17
CAAT AOCR Chapter 2, Section 39	Centrik Checklist: 98. MEL-OPS/AW
	Coordination Form: ENG/AW/FO

10.2. INTRODUCTION

10.2.1 This procedure defines how the CAAT Airworthiness Inspectorate participates in the assessment, approval and oversight of an Operators or owner Minimum Equipment List (MEL), in support of the Flight Operations Inspectorate.

10.2.2 The Flight Operations section is responsible for the oversight and approval of all MEL's used by Thailand Operators or owner. The Airworthiness department are the primary department responsible for the approval of the MEL and are supported by the Flight Ops department.

10.2.3 This procedure also defines how the CAAT approves an operator's rectification interval extension procedures.

10.3. PURPOSE AND SCOPE

To assist the CAAT airworthiness Inspectors in approving Minimum Equipment Lists and Rectification Interval Extensions.

10.4. DEFINITIONS

10.4.1 MEL: Minimum Equipment List.

10.4.2 MMEL: Master Minimum Equipment List.

10.4.3 RIE: Rectification Interval Extension

10.5. PROCEDURE – MEL APPROVAL AND AMENDMENT

10.5.1 The operators or owner MEL must be based on the MMEL approved by the state of design for the aircraft type, i.e. FAA for Boeing types.

For some single engine aircraft, there is no specific MMEL available so in this case it is acceptable for the operator or owner to customize the FAA Generic Single Engine MMEL to create a MEL. This generic MMEL is available from the FAA Flight Standards Website.

10.5.2 The MEL must be customised by the operator or owner to reflect the model and configuration of aircraft operated. References to systems or equipment in the MMEL, which are not installed or not applicable to his aircraft, must not be included.

10.5.3 The maintenance procedures (M) identified in the MEL should be reviewed in order to confirm that they are acceptable and conform to the manufacturers recommended procedures.

10.5.4 The effects on the MEL of modifications and STCs carried out to the aircraft must be considered. For example, a STC, which converts a passenger aircraft to cargo configuration or even a minor change to the cabin configuration, may affect the contents of the MEL. In the case of major modifications like the cargo conversion, the STC holder should have produced a MMEL supplement for the modification approved by the State of Design, which will need to be reviewed for changes to the operators' MEL.

10.5.5 The operator or owner's reliability data should be reviewed to see if there are any reliability issues that should be reflected in the MEL. For example, problems with pneumatic bleed systems may mean that more restrictive dispatch criteria should be applied to these systems. For a new aircraft type or where no operator or owner's reliability data is available, the manufacturer should be contacted and asked to supply reliability data for the world-wide fleet.

10.5.6 Operator should be reviewed the draft of MEL to comply with AOCR or ADCA of the operation of the privated aircraft that requested for the C of A and CAAT AC AW-02-MEL then fill the MEL

10.5.7 Any corrections to the MEL required to address maintenance or continued airworthiness issues should be discussed with the responsible FOI. The Operator or owner should be informed in writing of the findings.

10.5.8 The approval of the MEL or any amendments to the MEL is the responsibility of the Flight Operations Inspectorate. When the airworthiness inspector reviewing the maintenance and airworthiness aspects of the MEL are satisfied that the MEL or MEL amendment are acceptable, he should inform the responsible Flight Operations Inspector in writing.

10.5.9 For certain equipment, the Civil Aviation Authority of Thailand, after considering the specific nature of the local operating environment, may have a local alleviation policy for safety purpose. Besides, certain items in the MMEL may be specified with “As required by Regulations” or “As required by the Authority”. Operators or owner, when compiling their MEL should specify clearly any limitations as required by CAAT regulations on those relevant items such that dispatch of the aircraft could be allowed. The item list for item 5.8 specifies CAAT AC AW-02-MEL.

10.5.10 Prior to approving the MEL the Airworthiness inspector shall co-ordinate the position with Flight Operations department department to review all items with airworthiness and Flight Operation aspects. After all the rectifications are made by the operator / owner and satisfactory, recommendation for approval should be made and provided using Coordination Form: ENG/AW/FO. The coordination forms will detail the operator, aircraft type and registration(s), AOC No as applicable to which the MEL approval is applicable

10.5.11 For MEL initial approval Certificate form AWE A2 will be issued by Airworthiness Inspector, after that initial MEL acceptable by airworthiness inspector and FOI.

10.6. RECTIFICATION INTERVAL EXTENSION APPROVAL

10.6.1 CAAT procedures for approving MMEL and MEL include the concept of "Rectification Interval Extension" (RIE). Under this process Operators or owner may permit a one-time extension of the applicable category B, C or D rectification interval, for the same duration as specified in the MEL, provided that they work in accordance with a Rectification Interval Extension procedure that has been approved by the CAAT. (CAAT AC AW-02-MEL).

10.6.2 Category A rectification intervals cannot be extended by the Operator or owner. This can only be done in exceptional circumstances and with the permission of the CAAT Airworthiness Inspector.

10.6.3 The RIE procedure must describe the specific duties and responsibilities for controlling extensions established by the Operator or Owner. The CAAT must be notified in writing within 10 (ten) days of any extension authorised by the Operator or Owner.

10.6.4 CAAT AC AW-02-MEL provides a guidance to be used by inspectors when reviewing the Operator or owner's RIE procedure and includes the control and authorisation of RIE's. If the procedure is not acceptable, the Operator or owner should be informed in writing and asked to amend the procedure. The operator should refer all further extensions to the CAAT for authorisation until the revised procedure is approved.

10.6.5 Approval of the RIE procedure should take the form of a letter to the operator or the approval of a suitable amendment to their GMM.

10.7. PERFORMANCE MEASURE

The inspector should review and accept or reject an initial or amended MEL and or RIE within 20 days.

10.8. DOCUMENTATION AND REFERENCES

Copies of all documents/records created as part of this process are to be saved to the AOC or aircraft file.

10.9. RECORDS

The Airworthiness Inspector shall ensure that all checklists, and correspondence related to an operators MEL approval or acceptance of RIE procedure are filed in the AOC file, or in the case of a Non-AOC holder the Aircraft registration file.

10.10. RESPONSIBILITIES

Inspector – ensure compliance with the requirements for Approval.

10.11. CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the MEL – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (98. MEL-OPS/AW). The use of Centrik software facilitates the coordination between OPS and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process. Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

Note: For MEL approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will done by FOI.

11. CHAPTER 11 MAINTENANCE RECORD KEEPING

11.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6 to the Convention on International Civil Aviation	

11.2. OBJECTIVE.

The chapter provides guidance for evaluating an applicant's procedures for utilizing, preserving, and retrieving the maintenance records as required. ICAO Annex 6 to the Convention on International Civil Aviation, 8.7 Records An operator shall ensure that the following records are kept:

11.2.1 The maintenance organization shall retain detailed maintenance records to show that all requirements for the signing of a maintenance release have been met.

11.2.2 The records required by (a) shall be kept for a minimum period of one year after the signing of the maintenance release.

11.3. Maintenance organization

Requirement

11.3.1 Any person who carried out maintenance on an aircraft or aircraft component shall record, on completion of the maintenance:

11.3.1.1. Detail of the maintenance including, where applicable, the type of inspection and any approved data used;

11.3.1.2. For a mandatory periodic, progressive or schedule inspection, whether a detailed inspection or routine inspection of the particular components or areas of the aircraft was carried out;

11.3.1.3. The serial number, if any, of components removed or fitted.

11.3.1.4. Details of measurements or test results obtained, including the results of any ground or air tests;

11.3.1.5. For an airspeed indicator or altimeter system pitot static test and inspection, the date on which, and maximum altitude to which the altimeter has been tested;

11.3.1.6. The date of completion of such maintenance;

11.3.1.7. The reference to the documents used to carry out the maintenance and their revision status;

11.3.1.8. The name of the person completing such maintenance, if other than the person certifying the release to service;

11.3.1.9. The location and, if applicable, the name of the facility where such maintenance was carried out and

11.3.1.10. Where such maintenance has been carried out as a consequence of the failure of any equipment, or damage caused by forced landing or accident, the reason for carrying out the maintenance.

11.3.2 The person who carries out the maintenance shall:

11.3.2.1. Record the details referred to in) b (above in the appropriate logbook or in a maintenance record approved by the Director;

11.3.2.2. Where worksheets or other associated maintenance records are used to document the details of the maintenance, make a reference to those records in logbook, flight folio or in the maintenance record approved by the Director.

11.3.3 The holder of an AMO approve shall keep adequate of record of all maintenance performed by the AMO

11.3.4 The record shall:

11.3.4.1. Indicate the name of each person who performed the work; and

11.3.4.2. Indicate the name of each person who inspected the work.

11.3.5 The holder of an approval shall provide a copy of each certificate of release to service to the operator of the aircraft, together with a copy of any specific airworthiness data used for repairs or modifications carried out

11.3.6 The holder of an approval shall establish a procedure for recording maintenance detail and for the retention of such maintenance records.

11.3.7 The organization shall record all details of maintenance work carried out. As a minimum, the organization shall retain records necessary to prove all requirement have been met for issuance of the certificate of release to service, including subcontractor's documents

11.3.8 The organization shall retain a copy of all detailed maintenance records and any associated maintenance data for five years from the date the aircraft or component to which the work relates was release from the organization.

11.3.8.1. Records under this paragraph shall be stored in a safe way with regard to fire, flood and theft.

11.3.8.2. Computer backup disc, tape etc . shall be stored in a difference location from that containing the working disc, tape etc., in an environment that ensure they remain in good condition.

11.3.8.3. Where an organization approved under this Part terminates its operation, all retained maintenance records covering the last five years shall be distributed to the last owner or customer of the respective or component or shall be stored as specified by CAAT.

11.4. Guidance

11.4.1 Associated maintenance data specific information such as repair and modification data. This does not necessarily to require the retention of all aircraft maintenance manual, component maintenance manual, IPC etc. Maintenance record should refer to the revision status of the data used.

11.4.2 Properly executed and retained records provide owners, operators and maintenance personnel with information essential in controlling unscheduled and scheduled maintenance, and troubleshooting to eliminate the need for re- inspection and rework to establish airworthiness.

11.4.3 The maintenance record can be either a paper or computer system or any combination of both. The records should remain legible throughout the required retention period.

11.4.4 Paper systems should use robust material, which can withstand normal handing and filling.

11.4.5 Computer system may be used to control maintenance and/or record details of maintenance work carried out. Computer systems used for maintenance should have at least one backup system, which should be updated at least within 24 hours of any maintenance. Each terminal is required to contain programme safeguards against the ability of unauthorized personnel to alter the database.

11.5. Operator's aircraft continuing airworthiness record systems.

11.5.1 Requirement

11.5.1.1. At the completion of any maintenance, the associated certificate of release to service shall be entered in the aircraft continuing airworthiness records . All rectification away from base must be entered and certified in the aircraft's flight folio and transferred in the appropriated logbook)s (within 48 hours after aircraft return base.

11.5.1.2. The aircraft continuing airworthiness records shall consist of, as appropriate, an aircraft logbook, engine logbook(s) (or engine module log cards, propeller logbook(s) (and log cards, for any service life limited component and the operator's technical log.

11.5.1.3. The aircraft type and registration mark, the date, together with total flight time and/or flight cycles and/or landing, as appropriate, shall be entered in the aircraft logbook.

11.5.1.4. The aircraft continuing airworthiness records shall contain the current:

i. Status of Airworthiness directive (AD), Service bulletins as measures mandated by CAAT in immediate reaction to a safety problem;

ii. Status of modifications and repairs;

iii. Status of compliance with maintenance programme;

iv. Status of service life limited components;

v. Mass and balance report;

vi. List of deferred maintenance, etc.

11.5.1.5. Record pertaining to life-limited or previously used parts must be available and traceable . Parts with no historical record shall be considered to be unserviceable and such parts shall not be filled to an aircraft.

11.5.1.6. In addition to the authorized release document, component release from or equivalent, the following information relevant to any component installed shall be entered in the appropriated engine or propeller logbook, engine module or service life limited component log card:

i. Identification of the component, and;

ii. The type, serial number and registration of the aircraft to which the particular component has been fitted, along with the reference to the installation and removal of the component, and;

iii. The particular component accumulated total flight time and/ or flight cycles and/ or landings and/ or calendar time, as appropriate, and;

iv. The current information applicable to the component.

11.5.1.7. The owner or Operator's person responsible for the management of continuing airworthiness tasks and records shall control the records as detailed in this paragraph and present the records to CAAT upon request.

11.5.1.8. All entries made in the aircraft continuing airworthiness records shall be clear and accurate . When it is necessary to correct an entry, the correction shall be made in a manner that clearly shows the original entry and the use of tipped or similar correction methods is prohibited.

11.5.1.9. An owner or operator shall ensure that a system has been established to keep the following records for the periods specified unless the Director has prescribed a longer period in respect of an aircraft, its engine) s (or propeller) s (involved in an accident or incident .

i. All detail maintenance records in respect of the aircraft and any life- limited component fitted thereto, at least 6 months after the aircraft or component was permanently withdrawn from services and;

ii. The total time and flight cycles as appropriate, of the aircraft and all life- limited component, at least 6 months after the aircraft or component has been permanently withdraw from services;

iii. The time and flight cycles as appropriate, since last scheduled maintenance of the component subjected to a service life limit, at least until the component scheduled maintenance has been superseded by anther scheduled maintenance of equivalent work scope and detail;

iv. The current status of compliance with maintenance programme such that compliance with the approve aircraft maintenance programme can be established, at least until the aircraft or component scheduled maintenance has been superseded by other scheduled maintenance of equivalent work scope and details;

v. The current status of airworthiness directives)AD (applicable to the aircraft and components, at least 6 month after the aircraft or component has been permanently withdraw from service, and;

vi. The details of current modifications and repairs to the aircraft, engine)s(, propeller)s (and any other component vital to flight safety, at least 6 month after they have been permanently withdraw from services.

vii. When an aircraft is exported and the logbooks are transported with the aircraft, a copy of the last major overhaul and repairs performed as well as copies of the defects ratification for the last six)6 (month prior to export shall be retained by the exporter or the responsible aviation maintenance organization, as the case may be.

11.5.1.10. Information on times, dates, cycle, etc . should give an overall picture on the state of maintenance the aircraft and its components . The current status of all services life-limited aircraft component should indicate the component life limitation, total number of hours, accumulated cycles or calendar time and the number of hours/ cycle/ time remaining before the require retirement time of the component is reached.

11.5.1.11. The current status of ADs should identify the applicable AD including revision or amendment numbers . Where AD is generally applicable to the aircraft or component type but is not applicable to the particular aircraft or component, then this should be identified

i. The AD status includes the date when the AD was accomplished, the method of compliance and where the AD is controlled by flight hours or flight cycles it should include the aircraft or engine or component total flight hours or cycles, as appropriate .

ii. The status should also specify, which part of a multi-part directive has been accomplished and the method of compliance, where a choice is available in the AD . For only the best application should be recorded in the AD status.

11.5.1.12. The status of current modification and repairs means a list of embodied modification and repairs together with the substantiating data supporting compliance with the airworthiness requirement . This can be in the form of a Supplemental Type Certificate) STC(, SB, Structure Repair Manual) SRM (or similar approved document . The substantiating data may include:

i. Compliance programme;

ii. Master drawing or drawing list, production drawing, and installation instruction.

iii. Engineering report) Static strength, Damage tolerance, Fault analysis, etc(.

iv. Ground and flight test programme and results;

v. Mass and balance change data;

vi. Maintenance and repair manual supplement;

vii. Maintenance programme changes and instructions for continuing airworthiness; and,

viii. Aircraft flight manual supplement.

11.5.1.13. Some gas turbine engines are assembled from modules and a true total time in service for a total engine is not kept . When owners and operators wish to take advantage of the modular design, then total time in service and maintenance records for each module is to be maintained . The continuing airworthiness records as specified are to be kept with the module and should show compliance with any mandatory requirements pertaining to that module.

11.5.1.14. When an owner/ operator arranges for the relevant maintenance organization to retain to be responsible for the retention of records . In the event an aeroplane is leased or otherwise transferred temporality to another operator, the records shall be made available to the new operator . If they cease to be the owner/operator of the aircraft, they also remain responsible for the transferring the records to any other person who becomes the owner/operator of the aircraft.

11.5.1.15. Keeping continuing airworthiness records in a form acceptable to CAAT normally means in paper form or on a computer database or a combination of both methods . Records stored in microfilm or optical disc form are also acceptable All records should remain legible throughout the required retention period.

11.5.1.16. Paper system should use robust material, which can withstand normal handing and filling . Computer systems should have at least one backup system, which should be updated at least within 24 hours of any maintenance .Each terminal is required to contain programme safeguards against the ability of unauthorized personnel to alter the database.

11.5.1.17. Details of current modifications and repairs include the data supporting compliance with the airworthiness requirement . This can be in form of a STC, SB, SRM, or similar document .Continuing airworthiness records should be stored in a safe way with regard to fire, flood, theft and containing the current working discs, tape, etc .and in safe environment.

11.5.1.18. Reconstruction of lost or destroyed records can be done by reference to other records which reflect the time in service, research of records maintained by repair facilities and reference to records maintained by individual mechanics etc .When these things have been done and the record is still incomplete, the owner/ operator may make a statement in the new record describing the loss and establishing records should be submitted to CAAT for acceptance.

NOTE: Additional maintenance may be required.

11.5.1.19. For the purpose of this paragraph, a " component vital to flight safety " means a component that includes certified life-limited parts or is subject to airworthiness limitations or a major component such as undercarriage or flight controls.

11.6. Falsification, reproduction or alteration of maintenance documents.

No person shall make or cause to be made:

11.6.1 Any fraudulent or false entry in any record, which is required to be made, kept, or used to show compliance with any requirement prescribed in this part; or

11.6.2 Any reproduction or alteration for fraudulent purposes, of any record or report made in terms of the provisions of this part.

11.7. Loss of logbooks.

11.7.1 When the registered owner of an aircraft reports the loss f logbook currently in use, a request to open a substitute logbook shall be made in writing to the Director accompanied by affidavit and appropriate data for the purpose of reconstructing the logbook.

11.7.2 When the Director approves the opening of substitute logbook, the relevant authorization shall be made a permanent part of the logbook.

11.7.3 The procedure to be followed for the opening of a substituted logbook is prescribed in section V below.

11.7.4 When a logbook has been lost, the relevant certificate of airworthiness or authority to fly shall be considered invalid until such time that all the requirements for the opening of a substitute logbook have been met.

11.8. Procedure for opening new logbooks.

11.8.1 The registered owner shall submit to the Director an affidavit detailing the circumstances leading to the loss of the logbook(s)

11.8.2 The person or organization responsible for the opening of a new logbook;

11.8.2.1. May consult relevant records at the premises of CAAT and at the prescribed fee obtain copies of relevant pages;

11.8.2.2. Obtain any further information required to open the substitute logbook) s (so that these comply with the relevant regulations and technical standards, copies of which shall be supplied to the Director;

11.8.2.3. Shall provide proof of overhaul of all class I and all installed class II product;

11.8.2.4. Shall research and certify that all relevant Airworthiness Directive)AD(, Services bulletins or Service Letter declared mandatory by the Director have been complied with;

11.8.2.5. Shall certify that the aircraft, its engine)s (and in particular its tubular engine mountings) if applicable (have been inspected for corrosion; and;

11.8.2.6. Shall in the substitutes logbook)s (detail and certify the inspection)s (and test)s (carried out to ensure that the aircraft, engine or propeller and there components is indeed serviceable.

11.8.3 The total hours operated or the times since overhaul of the relevant aircraft, engine(s) or propeller(s) shall be manually agreed upon between the owner, maintenance organization(s) and the Director.

11.8.4 The substitute logbook(s) shall be inspected by an Airworthiness Inspector of CAAT who will date and insert the Director's authorization to open the substitute logbook.

In the event of all relevant documentation having been lost, all documents required for the issue of a Certificate of Airworthiness or Authority to fly must be prepared in accordance with this technical standard, and the aircraft and its documents shall be re-inspected by an Airworthiness Inspector of CAAT.

11.9. Approval procedure.

11.9.1 Review the Applicant's Maintenance Manual.

11.9.1.1. Ensure that the necessary procedures exist in the applicant's manual to ensure a suitable system for creating, preserving and retrieving required records.

11.9.1.2. Ensure that all records will contain the following information, as applicable:

Description of the work performed (or reference to data acceptable to the (Director))

- Name of the person(s) performing the work.
- Name or other positive identification of the individual approving the work.

11.9.2 Review the Applicant's Manual's Procedures. Review the applicant's record keeping procedures to ensure that the requirements of (Appropriate State Regulation) are met for the following:

11.9.2.1. Airworthiness Release Records .Ensure the following:

a. Airworthiness release records will be retained for one year after the work is performed or until the work is repeated or superseded.

b. The applicant's manual identifies the person)s (authorized to sign an airworthiness release.

11.9.2.2. Flight Maintenance Records . Ensure that procedures provide for the following entries:

a. Flight discrepancies to be entered at the end of each flight.
b. Corrective actions and certification, per manual procedures.
c. Certifications for Duplicate Inspection, according to manual procedures by authorized personnel.
d. Minimum Equipment List)MEL (deferment per the manual procedures.

11.9.2.3. Total Time In Service Records.

a. Evaluate the method of recording total time in service of airframes . This record must show the current time in service in hours.

b. Ensure that procedures are in place to retain the records until the aircraft is sold and that the records will then be transferred with the aircraft.

11.9.2.4. Life-Limited Parts Status.

a. Ensure that the applicant has procedures for tracking the current status of life- limited parts for each airframe, engine, propeller, rotor, and appliance, to include the following information:

I. Total operating hours (including calendar time)/cycles accumulated.

II. Life limit (total service life).

III. Remaining time/cycles.

IV. Modifications.

b. Ensure that procedures are in place to retain the records until the aircraft is sold and are then transferred with the aircraft.

11.9.2.5. Time Since Last Overhaul Records .Ensure that the manual includes a method/ procedure for updating this document from the overhaul records and ensuring that this document accompanies the aircraft upon sale.

11.9.2.6. Overhaul Records.

Ensure that the manual describes how the applicant will document the last complete overhaul of each airframe, engine, propeller, rotor and appliance. The overhaul record should include the following information:

I. Disassembly data
II. Dimensional check data
III. Replacement parts list
IV. Repair data
V. Reassembly/test data
VI. Reference to data including overhaul specifications
VII. Ensure that these records will be retained until the work is superseded by work of equivalent scope and detail.

11.9.2.7. Current Aircraft Inspection Status.

a. Evaluate the method the applicant will use to record the time in service since the last inspection.

b. Determine if procedures ensure that these records are retained until the aircraft is sold and are then transferred with the aircraft.

11.9.2.8. Airworthiness Directive)AD (Compliance, evaluate how the applicant will comply with the record keeping requirements of the ADs . The procedures must generate a record that contains the following data:

a. Current status . Ensure that the current status data will include the following:

I. A list of all ADs applicable to the aircraft
II. The date and time of compliance
III. The time and/or date of next required action (if a recurring AD)
IV. Method of compliance. Ensure that this data will include either a record of the work performed or a reference to the applicable section of the AD.

NOTE: This data must be retained until the aircraft is sold and transferred with the aircraft.

11.9.2.9. Major modification Records.

a. Evaluate the manual procedures to ensure that the applicant prepares and maintains a list of current major modifications to each airframe, engine, propeller, rotor, and appliance.

b. Ensure that the list includes the following information:

I. The date of the modification

II. A brief description of the modification

Major repair records.

Evaluate the manual procedures to ensure that the applicant prepares and maintains a report of all major repairs to each airframe, engine, propeller, rotor, and appliance.

11.9.2.10. Analyze the findings Evaluate all deficiencies to determine if corrective actions will be required.

12. CHAPTER 12 APPROVE OF A WEIGHT AND BALANCE PROGRAM

12.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Ministerial Regulation of the Ministry of Transportation Prescribing Rules and Procedures Pertaining to the Application for Issuance and Renewal of Certificate of Airworthiness B.E. 2555	TDCA/AW-INSP-001 (Form for the inspection of aircraft and the requirements for airworthiness certification)
Ministerial Regulation of the Ministry of Transportation on Application for Export Certificate of Airworthiness B.E. 2555	Main Base Check List TDCA-AW-INSP-010 edited
Notification of the Department of Commercial Aviation (Department of Civil Aviation) on Aircraft Weight and Balance Conditions, Given on 8 September B. E. 2543	
ICAO Doc 9760 AN/ 967 Airworthiness Handbook	

Figure I: AIR Chart.

12.2. Objective

This chapter provides guidance for evaluating an operator/applicant's weight and balance control programme.

12.2.1 Approved weight and balance control procedures are the only means for an operator/applicant to authorize the use of other than known weights for crew, passengers, baggage, or cargo. The weight and balance control programme, including loading schedules and charts, are approved on operations specifications by the Director General of Civil Aviation Authority of Thailand (CAAT). This programme must be included in the operator/applicant's policies and procedures manual.

12.2.2 The operator/applicant may develop and submit for approval any method or procedure by which it can show that an aircraft:

12.2.2.1. Is properly loaded according to approved configuration (loading schedules or charts).

12.2.2.2. Will not exceed authorized weight and balance limitations during all ground and flight operations.

12.2.2.3. Will be periodically reweighed and its data re-evaluated.

12.2.2.4. Will have its data recalculated, if changes necessitate.

12.2.3 The operator/applicant's weight and balance control procedures may either be an independently controlled document, which includes all the instructions and procedures for maintenance, operations, and baggage/cargo control, or it may be included in the manual.

12.3. Established weight and center of gravity (CG) limits.

12.3.1 During type certification, the aircraft manufacturer must flight test weight and balance under all conditions and establish center of gravity limits. These limits are approved by the State of design.

12.3.2 If an operator/applicant proposes an unusual or complex weight and balance programme, or a programme substantially different from the Approved Aircraft Flight Manual or Pilot Operating Handbook, additional assistance should be requested.

12.3.3 Methods for establishing, monitoring and adjusting individual aircraft or fleet empty mass and center of gravity (CG) in conjunction with the initial and periodic re- weighing of aircraft.

12.3.4 Procedures for using the loading schedule to establish that the loaded condition of the aircraft is within approved weight and CG limits.

12.3.5 A load manifest to document loading information by personnel responsible for weight and balance control and procedures for its preparation.

12.3.6 The operator/applicant's weight and balance control procedures may either be an independently controlled document which includes all the instructions and procedures for maintenance, operations, and baggage/cargo control, or it may be included in the manual.

12.3.7 Upon the application for issuance or renewal of Certificate of Airworthiness the operator would be required to provide current mass and balance report of the aircraft.

12.3.8 The operator/applicant may develop and submit for approval any method or procedure by which it can show that an aircraft.

12.3.8.1. Is properly loaded according to approved configuration (loading schedules or charts)

12.3.8.2. Will not exceed authorized weight and balance limitations during all ground and flight operations.

12.3.8.3. Will be periodically reweighed and its data re-evaluated;

12.3.8.4. Will have its data re-calculated, if changes necessitate

12.4. loading procedure.

12.4.1 Use of Average Passenger Weights.

For some types of regular operations, average passenger and baggage weights may be authorized.

12.4.1.1. Average weights may be determined by actually weighing passengers and baggage and documenting the weights. Average weights must be based on acceptable data collected during actual operations.

12.4.1.2. Generally, average weights for operations in warm climates are lighter than those in colder climates. In establishing average passenger and baggage weights, operating environment must be considered. For example, clothing worn or carried in colder climates may affect the established weight.

NOTE: The average passenger and baggage weights in found in documents such as FAA Advisory Circular 120-27, Aircraft Weight and Balance Control, is for guidance only and must be evaluated for applicability to individual operators in the various countries they operate in.

12.4.2 Non-standard Weight Groups.

12.4.3 Average weights are not suitable for groups that tend to be heavier or lighter than the average. The operator/applicant must use actual weights for loading nonstandard weight groups and their baggage (such as athletic squads, military personnel, and children's groups).

12.4.4 Carry-on Baggage

Procedures must be provided for controlling carry-on baggage.

12.4.4.1. Carry-on baggage must be limited to articles that may be placed in overhead compartments or under seats. No article may be placed in an overhead compartment that causes the weight limit of the compartment to be exceeded.

12.4.4.2. Carry-on baggage weight must either be accounted for in the same manner as checked baggage or be added to the passenger weight.

12.4.4.3. Operators using average weights for computing weight and balance should re-evaluate carry-on baggage weight at least once per year.

12.4.5 Aircraft weights.

Weighing of Aircraft.

12.4.5.1. Individual aircraft weighing programme.

Aircraft are normally weighed at intervals of 36 calendar-months. Both the operator/applicant's operations specifications and manual must reflect this requirement.

12.4.5.2. Fleet weighing

An operator may choose to weigh only a portion of the fleet every 36 calendars-months and apply the weight and moment change determined by these, sample weighing to the remainder of the fleet. For each aircraft weighed, the new aircraft empty weight (and moment) is determined by the weighing and entered in the aircraft weight log. The difference

between this new aircraft weight (and moment) and the previous aircraft weight (and moment) shown in the log is the unaccounted weight (and moment) change. The average of the unaccounted weight and moment changes for the aircraft weighed as part of this fleet weighing is then entered as an adjustment to the aircraft weight logs for each of the aircraft in the fleet that were not weighed.

- *A fleet is composed of a number of aircraft of the same model. (For example, B747-200s in a passenger configuration and B747-200 freighters should be considered different fleets. Likewise, B757-200s and B757-300s should be considered different fleets.) The primary purpose of defining a fleet is to determine how many aircraft should be weighed in each weighing cycle.*
-

Fleet size	Weighting policy
1 to 3 aircraft	All aircraft.
4 to 9 aircraft	3 aircraft, plus at least 50 percent of the number of aircraft greater than 3.
More than 9 aircraft	6 aircraft, plus at least 10 percent of the number of aircraft greater than 9.

Table 1 Number of Aircraft to weight in fleet.

- In choosing the aircraft to be weighed, the aircraft in the fleet having the most hours flown since last weighing should be selected.

Scales used to weigh passengers, aircraft, cargo, and baggage must be calibrated and traceable to a national standard. Calibration must be performed in accordance with the civil authority for weights and measures having jurisdiction over the area in which the scales are used. The frequency of testing depends on use and handling.

12.4.5.3. Weighing aircraft (Modifications)

For most aircraft modifications, computing the weight and balance changes is practical. For some modifications, such as interior reconfigurations, the large number of parts removed, replaced, and installed may make an accurate determination of the weight and balance change by computation impractical.

- In those instances when the accuracy of the calculation is questionable, the weight and moment change estimate should be verified by reweighing the aircraft. The operator should weigh two or more aircraft to confirm the computed weight change estimate. The operator may choose to weigh the aircraft before and after the modification, or just after the modification. If the weightings are inconsistent with the computed weight change estimate, then additional aircraft should be weighed as prescribed in Table 1, based on the size of the fleet.

- The operator may choose not to calculate the weight change but to reestablish the aircraft weight and balance by reweighing the aircraft prior to subsequent revenue operation. An operator using an individual aircraft weighting program would weigh each aircraft modified, and an operator using a fleet weighing program would weigh the number of aircraft as prescribed in Table 1, based on the size of the fleet.

12.4.5.4. Contractors.

An operator/applicant may use a contractor to weigh items required to weight. However, the operator/applicant is responsible for ensuring the contractor complies with the operator/applicant's approved weight and balance control program. This includes ensuring scales are calibrated and tested in accordance with the operator/applicant's Policies and Procedures Manual

12.4.5.5. Evaluation procedures

- Coordination with operator/applicant.

Operator/applicant must submit the following for reviews:

1. Manual or revision.
2. Weight and Balance Program document (if not part of manual).
3. Pertinent company procedures.

4. Instructions for completing forms used in aircraft weight control and aircraft loading.
5. Mathematical justification for loading provisions or schedules.

- Review the Operator/Applicant's Manual/Program Document.

The manual must include procedures, levels of authority, and information appropriate to CAAT Requirement. In addition, the following must be included:

1. Manual introduction, to include:
    a. Description of the philosophy and the goals of the manual
    b. Description of the division of contents between volumes, if more than one volume.
    c. List of effective pages, including dates.
2. Manual revision and distribution procedures, to ensure:
    a. Current information is provided to all manual holders;
    b. Manuals are available to maintenance, operations and ground personnel and are furnished to the Director General.

3. Definitions of all significant terms used in the program.

   The definitions must reflect their intended use. Acronyms or abbreviations unique to the manual must also be defined
4. Description of the organizational unit responsible for the control and maintenance of the weight and balance program, to include:
   a. Definitions of lines of authority.
   b. Description of the support structure.
5. Job descriptions for all elements.
6. Training programs that include the following:
   a. Maintenance personnel.
   b. Operations and dispatch personnel.
   c. Ground handling personnel.
7. A means of documenting and retaining individual training records.
8. Procedures for:
   a. Determining standards and schedules for calibration of aircraft scales;
   b. Pre-weighing instructions and requirements;
   c. Determining which aircraft are to be weighed;

d. Establishing and maintaining equipment lists for each aircraft;
e. Recording the type and serial number for each scale used, the airplane weight, residual fluids, and scale tare weights;
f. Initial weighing of aircraft;
g. Monitoring and adjusting individual aircraft or fleet, empty weight and center of gravity;
h. Periodic re-weighing of aircraft;
i. Ensuring aircraft are configured in accordance with approved data;

9. A load manifest on which all required loading information shall be entered by personnel responsible for weight and balance control, including procedures for: Completing the load manifest;
    a. Completing the load manifest;
    b. Ensuring load manifest is carried on the aircraft;
    c. Retaining the load manifest for the time periods specified in the (National regulation);

d. Distribution of the load manifest in accordance with (National regulation).

10. Procedures to be used by crew members, cargo handlers, and other personnel concerned with aircraft loading, for the following:

    a. Distribution of passengers;

    b. Distribution of fuel;

    c. Distribution of cargo;

    d. Verification and acceptance of actual cargo weights as listed on a bill of lading;

    e. Restriction of passenger movement during flight, if applicable;

    f. Hazardous material requirements, if applicable.

11. A drawing of each cargo and/or passenger configuration to include emergency equipment locations.

12. Mathematical justification for loading provisions or schedules. This may be included under separate cover and not as part of the company manual.

13. An alternate procedure for allowing manual computations, if a computerized weight and balance program is utilized.
14. Procedures for a weight range system, if applicable, that ensures:
    a. The range is typical of passengers carried on similar operations;
    b. Computations for critical load considerations support the ranges;
    c. Personnel responsible for loading the aircraft are required to prepare appropriate loading records;
    d. The system includes methods for loading passengers whose weights are outside the range;
    e. Loading records indicate the number of passengers within the stated range and account for passengers that do not fall within the range.
    f. Loading records indicate the number of passengers within the stated

range and account for passengers that do not fall within the range.

15. A system for loading nonstandard weight groups, such as athletic squads or military groups and their baggage, which must utilize actual weights for both passengers and baggage.
16. Procedures to verify actual weight of cargo.
17. Standards and schedules for calibration of commercial scales used to determine baggage/cargo weights.
18. Procedures to ensure that carryon baggage is limited to articles which may be placed in overhead compartment or under seats. Carry-on baggage weight must be accounted for in the same manner as checked baggage or added to the average passenger weight.
19. Review Operator/Applicant's Operations Specifications. Review the draft operations specifications to ensure that operations specifications Paragraph/Part E include the following:

    a. Aircraft make/model/series.

    b. Type of loading schedule.

    c. Loading schedule instructions for:

i. Passenger and crew (average or actual weight).

ii. Baggage (average or actual weight) and cargo (actual).

iii. Nonstandard weight groups.

d. Weight and balance control procedures.

20. Analyze the results.

Upon completion of review, analyze the results and determine whether the Operator/applicant's manual and operations specifications meet all requirements.

13. CHAPTER 13 GUIDANCE FOR AOC & FOREIGN AOC AIRCRAFT RAMP INSPECTION

13.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Surveillance Policy and Procedure Manual	AOC Audit - Ramp Inspection Checklist- (TDCA/AW-INSP-012)
AOC ramp inspection Manual	Foreign Aircraft Ramp Inspection Checklist
Foreign Air Operators Surveillance Manual (FOSM)	

13.2. OBJECTIVE

This chapter provides general guidance for sampling the quality of maintenance and the degree of compliance with the operator's maintenance procedures on in service airline aircraft. Detailed auditing procedures *(*exterior, cabin and cockpit*)* are contained in CAAT Surveillance Policy and Procedure Manual and AOC ramp inspection Manual for Thai AOC and for Foreign AOC please refer to Foreign Air Operators Surveillance Manual (FOSM).

13.3. GENERAL

13.3.1 CAAT Inspection Personnel

13.3.1.1. 1). It is important that Airworthiness Inspectors (AWIs) become familiar with the type of aircraft to be inspected before performing the inspection. This can be accomplished by on the job training.

13.3.1.2. 2). Due to the hub and spoke concept, many aircraft have less than one hour ground time. To ensure that the inspection is performed adequately, it is recommended that two inspectors perform this task in exterior and interior phases.

13.3.2 Coordination

13.3.2.1. 1). Airworthiness and Operations Inspectors possess various degrees and types of expertise and experience. An AWI who needs additional information or guidance should coordinate with personnel experienced in that particular specialty.

13.3.3 Use of an Identification Card. Conflicts occurring between AWIs performing ramp inspections and airport security personnel allowing access to aircraft and other secure areas. Proper use of airport identification badges should relieve some of these problems.

13.4. INITIATION AND PLANNING

13.4.1 Initiation: This task is scheduled as part of the Surveillance Plan. Additional inspections are initiated by Airworthiness and Aircraft engineering department.

13.4.2 Planning: the ramp inspection frequency documented in Surveillance policy and procedure manual chapter 2. AWI have to ensure that the compliance dates and requirements of new regulatory revisions have been met. Service Difficulty Report Summaries, Maintenance record, deferred defect item and previous reports should be reviewed, when available, so as to become familiar with current service difficulty information.

Note: Refer to AOC ramp inspection Manual for detail of planning process, frequency of inspection and risk base consideration.

13.5. MAINTENANCE RECORDS

13.5.1 CAAT Regulations require that maintenance be recorded whenever it is performed prior to an approval for return to service. The operator's maintenance procedures manual should describe the procedures for ensuring that these recording requirements are met, including the specific instructions on when an airworthiness release or appropriate maintenance log entry is required.

13.5.2 All mechanical discrepancies entered in the maintenance log must be either corrected or deferred using the methods identified in the operator's maintenance procedures manual.

13.5.3 C. The Minimum Equipment List has certain procedures and conditions that must be met prior to deferring the item(s)

13.5.3.1. These procedures are identified by "O", "M", and "O/M" and are normally contained in the operator's approved Minimum Equipment List. There are occasions in which the list references these procedures to another document.

13.5.3.2. When reviewing the records for Minimum Equipment List compliance, the AWI must determine what procedures are required for deferral and ensure that these procedures are accomplished. Any MEL time limits must be adhered to or evidence of concessions must be produced

13.5.3.3. The AWI must ensure that all applicable repetitive Minimum Equipment List procedures are accomplished for those items that are deferred and are continuing to be deferred through the station. These repetitive maintenance procedures must be signed off in the maintenance log as evidence that the procedures were accomplished.

13.6. DEFERRED MAINTENANCE

13.6.1 Minimum Equipment List/Deferred Maintenance.

The operator's approved Minimum Equipment List allows the operator to continue a flight or series of flights with certain inoperative equipment. The continued operation must meet the requirements of the Minimum Equipment List deferral classification and the requirements for the equipment loss.

13.6.2 Other Deferred Maintenance.

13.6.2.1. Operators frequently use a system to monitor items that have been inspected previously and found to be within serviceable limits . These items are still airworthy, yet warrant repair at a later time or when items no longer meet serviceable limits . This method of deferral may require repetitive inspections to ensure continuing airworthiness of the items .Examples of items that are commonly deferred in this manner are fuel leak classifications, dent limitations, and temporary) airworthy (repairs.

13.6.2.2. Passenger convenience item) not safety/ airworthiness related (deferrals should be handled in accordance with the operator's programme.

13.6.2.3. The maintenance programme approved for an operator must provide for prompt and orderly repairs of inoperative items.

13.7. CABIN INSPECTION

13.7.1 This inspection should be performed, when possible, without disturbing the loading and unloading of passengers. The inspection can still be performed when some passengers are on board during through flights, but good judgment must be exercised by inspecting areas away from the passengers.

13.7.2 Any discrepancy should be brought to the attention of the flight crew or appropriate maintenance personnel immediately.

13.8. CARGO/COMBINATION CONFIGURED AIRCRAFT

13.8.1 Inspection results have disclosed instances of significant aircraft structural damage resulting from careless loading of cargo, such as:

13.8.1.1. Torn or punctured liners, indicating hidden damage to circumferential stringers, fuselage skin, bulkheads and decreasing fire extinguishing effectiveness .

13.8.1.2. Damaged rollers, ball mats, etc. , causing significant structural damage to the floors.

13.8.1.3. Corrosion and structural damage caused by improper handling of some hazardous materials.

13.8.2 The surveillance of hazardous material handling is not the primary function of the AW inspector. The AWI should contact the appropriate Operations Inspector if discrepancies are noted in the handling of hazardous materials.

13.9. PERFORMING THE RAMP INSPECTION

This inspection must be accomplished without interfering with the turnaround of the aircraft. The following list of items are just some of the activities that could cause a delay in the turnaround time if interfered with.

13.9.1.1. Boarding and deplaning of passengers.

13.9.1.2. Servicing.

13.9.1.3. Fueling.

13.9.1.4. Maintenance.

13.9.1.5. Baggage handling.

13.9.1.6. Any other operator activity.

Any discrepancies noted must be brought to the attention of appropriate personnel immediately, to allow the operator the opportunity to take corrective action without interrupting the flight schedule. The AWI must verify that all corrective actions taken were in accordance with the requirements of the operator's maintenance procedures manual.

13.10. PROCEDURES

13.10.1 Initiate Ramp Inspection in Accordance with the Surveillance/Inspection Policy and Procedure manual

13.10.2 Prepare for the Inspection

13.10.2.1. Review the operator's schedule, select the flight to be inspected, and determine the type of equipment and ground time

13.10.2.2. Determine if any recent problem areas have been identified for that type of aircraft.

13.10.2.3. Determine if recent regulatory changes and AD requirements affect the aircraft to be inspected.

13.10.3 Conduct Exterior, Cabin and Flight Deck inspection, as Applicable. Perform this inspection by used Checklist TDCA/AW-INSP-012 and used Guidelines found in AOC ramp inspection manual. For foreign AOC, both guidance and checklist refer to Foreign Air Operators Surveillance Manual.

13.10.4 Interview Flight Crew. Introduce yourself to the flight crew and describe the purpose and scope of the inspection.

13.10.5 Inspect Aircraft Maintenance Records

13.10.5.1. Ensure that all open discrepancies from the previous flight are resolved per the operator's manual, prior to departure of the aircraft.

13.10.5.2. Review the maintenance records to determine if repetitive maintenance problems exist that might indicate a trend.

13.10.5.3. Ensure that all Minimum Equipment List items are deferred in accordance with the provisions of the operator's approved Minimum Equipment List.

i. Review the operator's approved Minimum Equipment List to determine that conditions, procedures, and placarding requirements were accomplished to correctly defer specific items.

ii. Note the date when an item was first deferred to determine if the maximum allowed length of deferral was exceeded. Accomplish this by examining maintenance record pages, the deferred maintenance list, or deferred maintenance placards or stickers.

13.10.5.4. Ensure that an airworthiness release, maintenance record entry, or appropriate approval for return to service has been made after the completion of maintenance.

13.10.5.5. Ensure that the maintenance record contains the following for each discrepancy:

i. Description of the work performed or a reference to acceptable data

ii. Name or other positive identification of the person approving the work

iii. Name of the person performing work, if outside the organization

13.10.6 Perform Exterior, Cabin and Flight Deck inspection, as Applicable. Perform this inspection by used the same Guidelines found in AOC ramp inspection Manual.

13.10.7 Debrief Operator. Inform the flight crew or appropriate personnel that the inspection has been completed. Discuss the discrepancies brought to the operator's attention during the inspection.

13.10.8 Examine Maintenance Record Entries. Ensure that the operator has recorded all discrepancies noted during this inspection. If time is available, monitor the operator's corrective actions.

13.10.9 Analyze Findings. Analyze each finding to determine if the discrepancies are the result of improper maintenance and/or missing or inadequate maintenance/inspection procedures.

13.11. TASK OUTCOMES

13.11.1 Completion Thai AOC ramp inspection checklist (TDCA/AW-INSP-012)

13.11.2 Completion Foreign AOC ramp inspection checklist documented in FOSM

13.11.3 Completion of this task can result in the following:

13.11.3.1. Appropriate enforcement action when analysis of the findings disclose improper maintenance.

13.11.3.2. Written draft of notification to the operator of the necessary changes to the manual, when analysis of the findings disclose missing or inadequatemaintenance/inspection procedures.

13.11.3.3. Communication with Ramp Inspection Team (FOI and CSI) of the finding discrepancies.

13.11.4 Document Task. File all supporting paperwork in the operator's office file.

13.11.5 Make the official Report and send to operator. Reporting template for Foreign AOC can be found in FOSM

13.12. FUTURE ACTIVITIES

13.13. Based on inspection findings, determine if closer surveillance, additional enforcement, other job tasks, and/or additional coordination between AWI, FOI and CSI are required to regain compliance.

14. CHAPTER 14 GUIDANCE FOR ISSUANCE, RENEWAL OF REPAIR STATION CERTIFICATE AND VARIATION, OVERSIGHT OF APPROVED MAINTENANCE ORGANIZATIONS

14.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Air Navigation Act BE. 2497	AIR-RI-202 Application for RS certificate
Announcement of The Department Of Civil Aviation On Repair Station Approval	AIR-RI-301 RSM QCM Compliance Review and Approval Checklist
Airworthiness Manual Chapter 15, RSM Review and Amendment	AIR-RI-302 Training Manual Program Compliance Review and Approval Checklist
Airworthiness Manual Chapter 16, Base Maintenance Inspections	AIR-RI-401 Repair Station Checklist
Airworthiness Manual Chapter 17, Line Maintenance Inspections	AIR-RI-010 RS Audit Aid Memo
Airworthiness Manual Chapter 18, Workshop Inspections	AIR-RI-501-1 RS Certificate Class I form
Airworthiness Manual Chapter 19, Engine Test Cell Inspections	AIR-RI-501-2 RS Certificate Class II form
Airworthiness Manual Chapter 20, Acceptance of Nominated Persons	AIR-RI-501-3 RS Certificate Class III form
Guidance Material for Training Program Manual (CAAT-AIR-GM01)	AIR-RI-206 AIR Form4

Advisory Circular Guidelines for Aircraft Maintenance Organization Manual (AC AW-04-AMOM)	QAG-AI-101 Non-Compliance Form (NCF)
Advisory Circular Guidelines for Acceptance of Nominated Persons for AOC Engineering and AMO/MRO organizations (AC AW-05-NOM)	QAG-AI-102 Audit Report

14.2. Introduction

14.2.1 This procedure defines how CAAT approvals are to be issued or varied. It amplifies and expands on the applicable Approval Certificate Requirements, which must be read in conjunction with this Airworthiness Manual.

14.2.2 The procedure is divided into the following parts:

14.2.2.1. Part A – Initial Maintenance Organization approval

14.2.2.2. Part B – Continuing oversight

14.2.2.3. Part C – Assessment of changes to Approved Maintenance Organization (AMO)

14.2.2.4. Part D – Renewal of AMO

14.2.3 The following additional procedures give guidance to support this procedure for the various activities that may be undertaken by AMO:

14.2.3.1. Airworthiness Manual Chapter 16 - Base Maintenance Inspections

14.2.3.2. Airworthiness Manual Chapter 17 - Line Station Inspections

14.2.3.3. Airworthiness Manual Chapter 18 - workshop Inspections

14.2.3.4. Airworthiness Manual Chapter 19 - Engine Test Cell Inspections

14.2.3.5. Airworthiness Manual Chapter 20, Acceptance of Nominated Persons

14.3. PURPOSE AND SCOPE

To ensure that an application for initial issue, renewal and/or variation approval to an AMO fully meets the published regulations prior issuing a formal approval.

14.4. part A: initial Maintennce organization approval

14.4.1 Procedure

14.4.2 **Pre-application meeting** – AMO/MRO Applicant shall make an appointment with CAAT inspector to schedule a pre-application meeting to discuss and explain the approval process, CAAT regulation and requirement for maintenance organization via 145@CAAT.or.th. The attendant of pre-application meeting shall include Accountable manager and management personnel

14.4.2.1. The inspector will explain related document, forms, regulation, guidance and CAAT process for maintenance organization approval.

14.4.2.2. CAAT Inspector will give the organization copies of the AIR Form 4s for completion by the nominated management personnel as required by CAAT regulations and advisory circular guidelines for acceptance of nominated persons for AOC Engineering and AMO/MRO organizations (AC AW-05-NOM). If guidance is requested on the production of the Repair Station Manual (RSM), details can be found on the Announcement Of The Department Of Civil Aviation On Repair Station Approval, under section 5 - item 26 Repair Station Manual and item 27 Repair Station Manual Contents.

14.4.3 **Formal application** - Application shall prepare all required document, manuals and submit an AMO/MRO Application specifying the scope of work to CAAT via CAAT E-Service and send signed application form, AIR-RI-202, together with related required document to 145@CAAT.or.th.

14.4.4 Manual review

14.4.4.1. **Repair Station Manual**– The procedures specified in the RSM must be reviewed to verify that they comply with Approval Certificate requirements and the Accountable Manager has signed the commitment statement.

A standard checklist AIR-RI-301, RSM QCM compliance review and approval checklist, should be used as an aid during the exposition review. Any changes, that the airworthiness

inspector requires to be made by the organization before the RSM can be approved, must be recorded in AIR-RI-301 and the findings or changes must be cross-referenced to the related requirement and inform the organization via e-mail. Approval of RSM is confirmed by sending the accountable manager a RSM approval letter.

14.4.4.2. **Training Program or Manual**– The training program or manual must ensure each employee assigned to perform maintenance, preventive maintenance or alterations, inspection and quality control function is capable of performing the assigned task. The training program or manual must consist of initial training, recurrent training and training records.

A standard checklist, AIR-RI-302-Training Manual-Program Compliance Review and Approval Checklist, should be used as an aid during the training program or manual review. The findings (if any) should be recorded in AIR-RI-302 and organization should be informed via formal letter or e-mail. Acceptance of training program or manual is confirmed by sending the organization a letter of acceptance.

14.4.5 **On-site Audit(s)** – An audit programme should be agreed with the organization covering all activities and all locations that request for approved. One audit or several audits may be carried out as considered necessary by airworthiness inspector.

14.4.5.1. A standard checklist: AIR-RI-401 - Repair Station Inspection Checklist should be used during the audit(s), as well as to record the findings of the audit(s). An audit report, QAG-AI-102, must be completed indicting the activities and locations audited and identifying any non-compliance with regulations observed. All audit findings must be transferred from the audit checklist onto an audit report and Non-Compliance Forms (NCF). The findings on the Non-Compliance Forms (NCF) must be cross-reference to applicable CAAT AMO/MRO requirement. A copy of the audit report and Non-Compliance Forms (NCF) must be sent to the accountable manager for organization action. You may also use form AIR-RI-010 as an aid memoire as well to assist in the audit.

14.4.5.2. Management Personnel – The management personnel, as identified in AC AW-05-NOM, shall be interviewed during on-site audit. Formal acceptance of management personnel should be indicated by the signing of an AIR-RI-206 AIR Form4 by the airworthiness inspector. The acceptance of the accountable manager is signified via the approval of the Repair Station Manual (RSM) containing the accountable manager's signature. Guidance on the acceptance of management personnel is given in Airworthiness Manual Part 20, Acceptance of Nominated Persons.

14.4.5.3. AMO/MRO approvals outside the Kingdom of Thailand -

i. Foreign Maintenance Organization shall be approved by Initial Maintenance Organization Approval Procedure as identified in Part 2 Chapter 14 Section ***14.4*** which normally consists of 5 phases.

ii. The first phase – Pre-application meeting can be conducted by electronic mail conference communication and discussion via 145@caat.or.th instead of face-to-face meeting for approval process explanation..

Note: CAAT approval must be revoked or suspended if the parent NAA suspends or revokes its approval.

14.4.5.4. Classification of Audit findings – Audit findings on the audit report and Non-Compliance Forms must be classified by the airworthiness inspector as either level 1 or level 2, as described below. These must be closed prior to the recommendation of the approval.

i. **Level 1 finding** – In practical terms, a level 1 finding is a significant non-compliance with approval certificate. For example, failure to gain access to the organization in accordance after two written requests. Another example would be if the calibration control system has broken down so that the calibration status of most calibrated equipment was suspect.

ii. **Level 2 finding** – In practical terms, a level 2 finding is an individual finding against Approval Certificate that does not indicate that the day to day implementation of the organizations procedures has resulted in a widespread or systemic non-compliance with approval certificate regulations. For example, the training documents of the certifying staff are not complete.

An audit report must be completed and is the key document on which a recommendation to issue an approved repair station certificate. The completed audit report must be subject to a quality check by another member of the airworthiness inspector who has received training on AMO/MRO certification requirements including its intended meaning and standards. This will usually be the senior airworthiness inspector. The quality review should confirm that the recommendation is compatible with the audit findings and actions shown and that the report has been fully and correctly completed.

A recommendation for issuing a repair station certificate cannot be accepted if there is outstanding finding. All correspondence with the organization, associated audit forms and the completed checklists, relating to issuance of the approval must be kept on digital file. The complete package of documentation shows the basis on which the approval was issued and should be made available to ICAO or another competent authority on request.

14.4.6 **Certification Process** - A standard checklist, AIR-RI-303 "CAAT Repair Station Approval Issue Checklist", should be raised to track the certificate issuance process and kept up to date to indicate when each required stage of the approval process has been completed. This document is a vital record of the process used to issue the approval.

The approval reference should be allocated when the initial application has been received. The approved repair station certificate will be given the number/issue year. This number will be a reference number for AMO until revoke and cancel the certificate.

14.4.6.1. **Issue of Approval** – when satisfied that the organization has demonstrated that it complies with all applicable CAAT repair station requirements;

i. The Director General will sign the repair station certificate and repair station operations specification(s)

ii. The airworthiness inspector can approve the RSM, if this has not already been done prior to issuing repair station certificate to the organization. RSM must clearly indicate the scope and limitation of the approval.

The issue of the approval document is a good time to meet with the accountable manager. The responsibilities place on him and his organization under the terms of the approval should be explained to him.

If it is not possible to see the accountable manager at this stage, a meeting must be arranged with him during the approval process.

14.4.7 **Documentation and references record** Copies of all documents/records created as part of this process are to be saved to the organization file. All completed documentation is scanned and kept in AIR share drive: RI document and uploaded in AIR-Site: Repair station list.

14.4.8 **Performance Measure** Raising and processing of inspector's audit report and non-compliance forms (if any) should be completed within 20 days

14.4.9 Responsibilities

i. Inspector

ii. Ensure that the approved repair station complies with the related requirements

iii. Prepare and completes the audit report.

iv. Ensure that the inspection fee and certification fee is correct

v. Ensure all records are completed, correct and properly kept.

14.4.10 Director **General** - to sign repair station certificate and repair station operations specification(s)

14.5. part b: continuing oversight

14.5.1 Procedures

14.5.1.1. **Audit Policy -** Each maintenance organization must be completely reviewed for compliance with AMO/MRO requirements prior to the certificate renewal (every 3 years) and prior to submission of a completed audit report recommending the continuation of approval. Scheduled inspections must be augmented by periodic random inspections of all aspects of the operation.

This requirement allows credit to be taken for audits, which have been carried out during the preceding 36-month period, provided that a record is kept of any "interim" auditing which takes place.

14.5.1.2. **Alternative audit methods -** The following methods of auditing are available for adoption:

i. A complete audit carried out at 36-month intervals by an audit team (one inspector or more as considered appropriate).

ii. A "rolling" audit in which the organization is continuously monitored throughout the 36-month period in accordance with a programme defined by the responsible airworthiness inspector. The final audit in this “rolling” audit should be a “consolidation” audit.

iii. Random audits where inspectors conduct an audit without in advance noticing. (e.g. during night shift working, or as a result of CAAT concerns or reports)

14.5.1.3. **Recommended audit method –** Experience has shown that, unless the organization is very large, or complex a single audit of each approved site, within the 36-month period, possibly over several consecutive days, is the best audit method as this gives a completed view of an organization compliance with CAAT regulations.

14.5.1.4. **Multiple site organizations –** All approved activities and locations shall be audited at least once every 36 months. For example, if an organization has its main operation at Bangkok International Airport, a workshop facility in the city centre and a line station at Pattaya. All three sites must be audited at least once during the 36-month period.

In case an organization has multiple line stations, a suitable audit program shall be established to select a sample of the line stations during the 36-month period.

14.5.1.5. **Composition of audit teams -** The composition of the audit team will depend on the nature/size of the organization and the scope/volume of work. Normally 2 inspectors will be assigned for each audit. All audit team members shall pass AMO/MRO training and audit techniques training.\

14.5.1.6. **Accountable Manager -** The accountable manager must be seen at least once during every 36-month period, during an audit, to ensure that he fully understands the significance of the approval and remains aware of the significant issues arising during the audit period. A meeting with him at the end of the audit period provides an excellent opportunity to review the progress of the approval in the period and to discuss the contents of the audit reports and review all deficiencies in the organization's approval, which have been identified during the audit period, together with clearance actions.

14.5.1.7. **Audit Programme –** The senior airworthiness inspector is responsible for producing an audit programme for every organization holding a CAAT AMO/MRO approval. The audit programme should be developed in consultation with AIR manager. A record of the audit programme for each organization, listing dates when audits are due and when audits were carried out, must be kept for at least 6 years. The audit programme should evolve, and should include random audits when applicable.

14.5.2 Audit Guidance – Complete Audits

14.5.2.1. **Scope of Audit** - In order to be able to fully complete the audit report at the end of the audit, it is necessary to audit all of the subjects addressed by the requirements.

14.5.2.2. **Product audits** - Audit programmes should include an element of product auditing. The standard of the end product gives an indication of the effectiveness and competence of the organization, its facilities, procedures, management and quality systems, although it should not be relied upon as the sole evidence.

14.5.2.3. **Multi - site organizations** - A standard checklist, AIR-RI-401 Repair Station Checklist, should be used during the audit of each site and every activity. All found findings must be recorded and specified in audit report and non-compliance forms. Completed audit report and non-compliance form must be sent to the accountable manager or his/her representative for acknowledgement, correction, corrective action, preventive action and/or root course analysis.

14.5.3 Audit Guidance Rolling Audits

14.5.3.1. **Scope of Audit** - In order to be able to fully complete AIR-RI-401 Repair Station Checklist at the completion of the audit period it is necessary to audit all of the subjects addressed by the requirements.

14.5.3.2. **Rolling audit concept** - In a rolling or "progressive" audit the total requirement, for accomplishment over the three-year period, is subdivided into "equalized" packages which can be completed at monthly, quarterly or longer periods, at the discretion of assigned airworthiness inspectors. The AIR-RI-401 Repair Station Checklist should be used during each audit of each site as an aid, as well as to record the findings of the audits. All audit findings must be transferred from the AIR-RI-401 Repair Station Checklist to audit report and non-compliance forms. Completed audit report and non-compliance forms must be sent to the accountable manager or his/her representative for acknowledgement, correction, corrective action, preventive action and/or root course analysis. It is essential to ensure that each audit is recognized by the organization as part of a whole process and is not perceived by the organization as a constant presence resulting in continuous auditing. Balancing will be needed between regular monitoring visits, distinct from other contacts with the organization, and the need to stand back to allow the organization to address the AMO/MRO regulations as they affect the particular organization and to respond to the findings of internal self-monitoring.

14.5.3.3. **Product audits -** Audit programmes should include an element of product auditing. The standard of the end product gives an indication of the effectiveness and competence of the organization, its facilities, procedures, management and quality systems, although it should not be relied upon as the sole evidence.

14.5.4 Classification of Non-compliance

Audit findings on the audit report and non-compliance forms must be classified by the airworthiness inspector as either level 1 or level 2, as described below.

14.5.4.1. **Level 1 finding** – In practical terms, a level 1 finding is a significant non-compliance with AMO/MRO regulations. For example, failure to gain access to the organization after two written requests. Another example would be if the calibration control system has broken down so that the calibration status of most calibrated equipment was suspect.

14.5.4.2. **Level 2 finding** – In practical terms, a level 2 finding is an individual finding against AMO/MRO Regulations that does not indicate that the day-to-day implementation of the organizations procedures has resulted in a widespread or systemic non-compliance with AMO/MRO regulations. For example, the training documents of the certifying staff are not complete.

14.5.4.3. Action and Closure Timescale

i. For a level 1 finding, immediate action must be taken. If the correction is not made immediately, within 3 days, the airworthiness inspector can revoke, limit, or suspend in whole or part, depending on the scope of the level 1 finding, until successful corrective action has been taken by the organization and it may be necessary for the airworthiness inspector to ensure that further maintenance and re-certification of all affected products is accomplished before the finding closure is accepted.

There is no closure timescale associated with a level 1 finding as immediate action needs to be taken to limit or revoke the approval. The AMO/MRO is responsible to act and address the finding to satisfy the airworthiness inspector.

ii. For a Level 2 finding, the corrective action period granted by the airworthiness inspector must be appropriate to the nature of the finding, but in any case, initially not more than three months. In certain circumstances and subject to the nature of the finding, the airworthiness inspector may extend the three-month period subject to a satisfactory corrective action plan being agreed with the organization.

If the organization fails to comply with the closure timescale agreed with the airworthiness inspector, then the CAAT Director General shall be informed and should take action to suspend in whole or in part the approval.

14.5.5 General

Airworthiness inspector needs to document all audit activities in a clear and concise manner. The records held by CAAT are the product of the monitoring carried out and must reflect the on-going status of the approval.

Suspension or revocation of approval will not be justified if the record of approval monitoring does not support such action. Audit report, non-compliance forms and associated correspondence with organization must illustrate the organization's decline to an unacceptable level with warning letters to the accountable manager.

Single-audit survey can reveal unacceptable conditions, which warrant immediate response, of which there was no fore-knowledge. However, in most cases, a negative trend will be observed during audits, which if not corrected by the organization, will lead to suspension or revocation of the approval.

14.5.6 Reporting

5.1.1 An audit report must be used to recommend the acceptability, or otherwise, of the operator's maintenance arrangements every thirty-six months. The document must be completed on the basis of the audit(s) and audit reports and non-compliance forms specified above.

5.1.2 The completed audit report must be subject to a quality check by another airworthiness inspector who has received training on AMO/MRO regulations including its intended meaning and standards. This will usually be the senior airworthiness inspector. The quality review should confirm that the recommendation made in the audit report is compatible with the audit findings and actions identified.

Recommendation for the continuation of AMO/MRO approval cannot be accepted if there are outstanding level 1 findings or time-expired level 2 findings.

14.5.7 Performance Measure

Raising and processing of inspector's report (audit report and non-compliance forms) should be completed within 20 days.

14.5.8 Documentation and References

Copies of all documents/ records created as part of this process are to be saved to organization file.

14.5.9 Records

All documentation is filed on the organization file.

14.5.10 Responsibilities

14.5.10.1. **Inspector** – ensure compliance with the requirements for approval and completes and signs the audit report and non-compliance forms (if any) and ensure that the inspection fee and certification fee is correct**,** all records are completed, correct and properly kept.

14.5.10.2. **Admin** – Support the Inspector to ensure all records are completed and corrected and that all fees are invoiced for.

14.6. Part c: variation of approval

14.6.1 Procedures

14.6.1.1. **Application –** The applicant for variation of an approval must be submitted to CAAT giving details of the variation required. Based on the application is should be decided if a variation of the operations specification of the approved certificate is appropriate

A variation is usually as the result of one or more of the following:

i. Name Change

ii. New Accountable Manager

iii. Nominated Persons (Form 4 Staff)

iv. New Facility

v. Amended Approval Ratings

vi. New processes that affect approval

14.6.2 **Assessment -** Where any doubt as to the need for variation remains following assessment, the airworthiness inspector may need to make further enquiries. Re-assessment of the need for variation of the approved certificate approval may be made at any time up to and including the subsequent inspection visit.

14.6.3 **Approval Variation Process -** A standard checklist, AIR-RI-011 RS, CAAT AMO/MRO Approval Variation Checklist, should be raised to track the progress of the approval variation and kept up to date to indicate when each required stage of the variation process has been completed. This document is a vital record of the approval variation process.

14.6.4 **Initial Meeting -** A meeting with the management personnel of the organization should be arranged to discuss and explain the approval variation process. This is also a good time to give the organization copies of AIR-RI-206 AIR Form4 for completion by any additional nominated management personnel, if required as part of the variation process.

14.6.5 **Management Personnel -** Formal acceptance of any new management personnel should be indicated by the signing of completed AIR-RI-206 AIR Form4 by the airworthiness inspector.

14.6.6 **Repair Station Manual –** The organization must provide an amended RSM, which includes any additional or amended procedures required by the variation of the approval.

A standard checklist, AIR-RI-301 RSM QCM Compliance Review and Approval Checklist, should be used as an aid during the review of the amended RSM. An audit report must be completed to confirm the review of the amended RSM. Any changes that the organization is required to make before the RSM can be approved must be recorded on the audit report.

The findings on the audit report must be cross-referenced to the applicable CAAT AMO/MRO requirement. A copy of the findings must be sent to the accountable manager or his/her representative for action by the organization. Approval of the

amended exposition is confirmed by sending the accountable manager a letter approving the exposition.

14.6.7 **Audit(s) of Organization –** An audit programme should be agreed with the organization covering all activities and sites affected by the variation of the approval. One audit or several audits may be carried out as considered necessary by the airworthiness inspector.

A standard checklist, AIR-RI-401 Repair Station Checklist and/or AIR-RI-010 RS Audit Aid Memo, should be used during the audit(s) as an aid, as well as to record the findings of the audit(s). An audit report must be completed indicting the activities and locations audited and identifying any non-compliance with approval certificate observed.

All audit findings must be transferred from the checklist onto an audit report and non-compliance forms. The findings on the audit report and non-compliance form must be cross-reference to applicable CAAT regulations or requirements. A copy of the findings must then be sent to the accountable manager for action by the organization.

14.6.8 **Classification of Audit findings –** Audit findings on the non-compliance forms must be classified by the airworthiness inspector as either level 1 or level 2, as described below. These must be closed prior to the recommendation of the approval.

14.6.8.1. **Level 1 finding** – In practical terms, a level 1 finding is a significant non-compliance with AMO/MRO regulations. For example, a failure to gain access to the organization after two written requests. Another example would be if the calibration control system has broken down so that the calibration status of most calibrated equipment was suspect.

14.6.8.2. **Level 2 finding** – In practical terms, a level 2 finding is an individual finding against AMO/MRO regulations that does not indicate that the day to day implementation of the organizations procedures has resulted in a widespread or systemic non-compliance with the regulations.

For example, the onetime use of a component without a serviceable tag or the training documents of the certifying staff are not complete.

14.6.9 **Recording –** An audit report and non-compliance forms must be completed in full and is the key document on which a recommendation to vary an AMO/MRO approval is based. The completed audit report and non-compliance form must be subject to a quality check by another member of the airworthiness inspector who has received training on AMO/MRO regulations including, its intended meaning and standards. This will usually be the senior airworthiness inspector. The quality review should confirm that the recommendation made is compatible with the audit findings and actions shown and that the audit report and non-compliance forms have been fully and correctly completed.

A Recommendation for the variation of a AMO/MRO approval cannot be accepted if there are outstanding findings. All correspondence with the organization, associated audit forms and the checklists relating to the variation of the approval must be kept in digital file in CAAT server. The complete package of documentation shows the basis on which the airworthiness section varied the approval and should be made available

to ICAO or another competent authority on request. These records must be retained for at least the minimum period required by CAAT.

14.6.10 **Variation of Approval –** when satisfied that the organization has demonstrated that

it qualifies for the variation of its approval certificate approval

14.6.10.1. The Director General will sign the approval certificate if it is affected.

14.6.10.2. The Director General will sign the operations specification

14.6.10.3. The airworthiness inspector can approve the RSM, if this has not already been done prior to issuing the organization with the revised approval certificate. This must clearly indicate the scope and limitation of the approval.

The issue of the amended approval is a good time to meet with the accountable manager. The additional responsibilities undertaken by the organization due to the variation of the approval should be explained to him and any problems or concerns observed during the variation process discussed. If it is not possible to see the accountable manager at this stage, a meeting must be arranged with him during the approval variation process.

14.6.11 Performance Measure

Raising and processing of inspector's audit report and non-compliance forms (if any) should be completed within 20 days

14.6.12 Documentation and References

Copies of all documents/records created as part of this process are to be saved to the organization file.

14.6.13 Records

All documentation is filed in the appropriate organization file.

14.6.14 Responsibilities

14.6.14.1. **Inspector –** ensure compliance with the requirements for approval and completes and signs the audit report and non-compliance forms (if any). Ensure that the approved repair station complies with the related requirements, the inspection fee and certification fee is correct and all records are completed, correct and properly kept.

14.6.14.2. **Director General** - to sign the approval certificate and operations specification (if required)

14.6.14.3. **Admin –** Support to the Inspector and ensure all records are complete and correct and that all fees are invoiced for.

14.7. Part D: renew of amo/mro approval

14.7.1 Procedure

14.7.1.1. **Application** - Application shall be made on an AMO/MRO Application specifying the scope of work requested by the applicant via CAAT E-Service and send signed application form, AIR-RI-202, together with related required document to 145@CAAT.or.th at least 60 days before expiry date.

14.7.1.2. **Approval Reference** - The approval reference should be allocated when the initial application has been received. The approval number shall be issued in the required CAAT format which is “Number/Issue Year” and the approval number will be the same number as the first approval. Approvals issued prior to the introduction of this procedure can continue to be used if so desired.

14.7.1.3. **Approval Renew Process** - A standard form AIR-RI-011 RS, CAAT AMO/MRO Approval, should be raised to track the approval issue process and kept up to date to indicate when each required stage of the approval process has been completed. This document is a vital record of the process used to issue the approval.

14.7.1.4. **Initial Meeting** - A meeting with the accountable manager and all his management personnel shall be arranged to discuss and explain the approval process with them. This is also a good time to give the organization copies of the AIR-RI-206 AIR Form4 for completion by the nominated management personnel (if there's change) as required by CAAT regulations.

14.7.1.5. **Management Personnel** - Formal acceptance of management personnel should be indicated by the signing of an AIR-RI-206 AIR Form4 by the airworthiness inspector. The acceptance of the accountable manager is signified via the approval of the Repair Station Manual (RSM) containing the accountable managers signature. Guidance on the acceptance of management personnel is given in Advisory Circular Guidelines for Acceptance of Nominated Persons for AOC Engineering and AMO/MRO organizations (AC AW-05-NOM).

14.7.1.6. **Repair Station Manual–** The procedures specified in the RSM must be reviewed to verify that they comply with Approval Certificate requirements and the accountable manager has signed the commitment statement.

A standard checklist, AIR-RI-301 RSM QCM Compliance Review and Approval Checklist, should be used as an aid during the exposition review. Any changes, that the airworthiness inspector requires to be made by the organization before the RSM can be approved, must be recorded in AIR-RI-301 and the findings or changes must be cross-referenced to the related requirement and inform the organization via e-mail.

Approval of RSM is confirmed by sending the accountable manager a RSM approval letter.

14.7.1.7. **Audit(s) of Organization –** An audit programme should be agreed with the organization covering all activities and all locations that are to be approved. One audit or several audits may be carried out as considered necessary by the airworthiness inspector. A standard checklist, AIR-RI-401 Repair Station Checklist and/or AIR-RI-010 RS Audit Aid Memo, shall be used.

14.7.1.8. **A standard checklist,** AIR-RI-401 Repair Station Checklist as applicable, should be used during the audit(s) as an aid, as well as to record the findings of the audit(s).

An audit report must be completed indicting the activities and locations audited and identifying any non-compliance with Approval Certificate regulations observed. All audit findings must be transferred from the audit checklist onto an official audit report and non-compliance forms. The findings on the audit report and non-compliance forms must be cross-reference to applicable CAAT AMO/MRO requirement. A copy of the findings must be sent to the accountable manager or his/her representative for action by the organization. You may also use form AIR-RI-010 RS Audit Aid Memo as an aid memoire as well to assist in the audit.

14.7.1.9. **Classification of Audit findings –** Audit findings on the audit report must be classified by the airworthiness inspector as either level 1 or level 2, as described below. These must be closed prior to the recommendation of the approval.

i. **Level 1 finding** – In practical terms, a level 1 finding is a significant non-compliance with Approval Certificate. For example, failure to gain access to the organization in accordance after two written requests. Another example would be if the calibration control system has broken down so that the calibration status of most calibrated equipment was suspect.

ii. **Level 2 finding** – In practical terms, a level 2 finding is an individual finding against Approval Certificate that does not indicate that the day to day implementation of the organizations procedures has resulted in a widespread or systemic non-compliance with Approval Certificate regulations. For example, the training documents of the certifying staff are not complete.

14.7.1.10. **Recording -** An audit report must be completed in full and is the key document on which a recommendation to issue an Approval Certificate approval is based. The completed audit report must be subject to a quality check by another member of airworthiness inspector who has received training on Approval Certificate AMO/MRO requirements including, its intended meaning and standards. This will usually be the senior airworthiness Inspector. The quality review should confirm that the recommendation made is compatible with the audit findings and actions shown and that the report has been fully and correctly completed.

14.7.1.11. A recommendation for renewal AMO/MRO certificate cannot be accepted if there are outstanding findings. All correspondence with the organization, associated audit forms and the completed checklists, relating to the issue of the approval must be kept on file. The complete package of documentation shows the basis on which the approval was issued and should be made available to ICAO or another competent authority on request. These records must be retained for at least the minimum period required by CAAT.

14.7.1.12. **Issue of Approval –** when satisfied that the organization has demonstrated that it complies with all applicable approval certificate requirements;

i. The Director General will sign the AMO/MRO Approval certificate and operation specification

ii. The airworthiness inspector can approve the RSM, if there's any changes. This must clearly indicate current the scope and limitation of the approval.

14.7.2 Performance Measure

Raising and processing of inspector's audit report and non-compliance forms (if any)
should be completed within 20 days.

14.7.3 Documentation and References

Copies of all documents/records created as part of this process are to be saved to the organization file.

14.7.4 Records

All documentation is filed in the appropriate organization file.

14.7.5 Responsibilities

14.7.5.1. **Director General -** to sign the approval certificate and operations specification

14.7.5.2. **Inspector -** ensure compliance with the requirements for Approval and completes and signs the audit report, all records are complete and correct and that all fees are invoiced for.

14.7.5.3. **Admin -** Support the Inspector and ensure all records are complete and correct and that all fees are invoiced for.

14.7.6 Approval

Name of Approver:	
Approved by:	
Date of Approval:	

15. CHAPTER 15 REPAIR STATION MANUAL REVIEW AND AMENDMENT PROCESS

15.1. RALATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ADCA 145	AIR-RI-301 Repair Station Manual - Compliance Review and Approval Checklist
AC AW-04-AMOM	AIR-RI-302 Training Manual Program Compliance Review and Approval Checklist
Guidance Material for Foreign Approved Maintenance Organization (CAAT-AIR-GM03)	
AC AW-05-NOM	
Guidance Material for Training Program Manual (CAAT-AIR-GM01)	

15.2. Introduction

This procedure provides information to assist an airworthiness Inspector in dealing with Repair Station Manual Review and amendments.

15.3. Purpose and Scope

To assist the CAAT airworthiness Inspectors in dealing with Repair Station Manual Review and amendments.

15.4. Definitions

15.4.1 AMO - Approved Maintenance Organisation Management Organisation.

15.4.2 FAMO – Foreign Approved Maintenance Organisation Management Organisation.

15.4.3 RSM – Repair Station Manual.

15.4.4 QCM – Quality Control Manual

15.4.5 RSQCM - Repair Station and Quality Control Manual

15.4.6 TPM – Training Program Manual

15.4.7 CAAT Supplemental Manual

15.5. RSM,QCM and TPM Reviewing procedure

15.5.1 The applicant for a CAAT Approval shall prepare an RSM , QCM and TPM to comply with the CAAT regulations and requirements. Each applicant should be given a copy of the example RSM , QCM and TPM to assist them in their preparation.

15.5.2 The RSM , QCM should follow the template of the example RSM and contain the relevant information to address each section.

The RSM typically shall contain six main parts, these are:

15.5.2.1. Part 0 : Introduction(Contents, List of Effective Page, Issue Record, Distribution List)

15.5.2.2. Part 1 : Management(Accountable Manager Corporate Commitment, Safety and Quality Policy, Organization Chart, Duties and responsibilities, Resources, etc.)

15.5.2.3. Part 2 :Maintenance Procedure

15.5.2.4. Part L2 :Line Maintenance Procedures

15.5.2.5. Part 3 :Quality System Procedure

15.5.2.6. Part 4 :Contracting Operator, Operators Procedures

15.5.2.7. Part 5 : Sample of Document (Form etc. List of Subcontractors, Line Maintenance Facilities)

15.5.3 The TPM should follow the template of the example TPM and contain the relevant information to address each section.

The TPM typically shall contain six main parts, these are:

15.5.3.1. Part 0 : Introduction(Contents, List of Effective Page, Issue Record, Distribution List)

15.5.3.2. Part 1: General

15.5.3.3. Part 2 : Indoctrination Training (Initial And Recurrent)

15.5.3.4. Part 3 : Recurrent Training

15.5.3.5. Part 4 : Specialized Training

15.5.3.6. Part 5 : Remedial Training

15.5.3.7. Part 6 : Training Needs Analysis

*Repair station can combine RSM, QCM and TPM in one manual as RSQCM

15.5.4 Other formats may be acceptable to CAAT subject to agreement. When the inspector receives the RSM/QCM and TPM. He/She should review it by using RSM and QCM Checklist AIR-RI-301, and Checklist AIR-RI-302 for TPM, Advisory Circular Aircraft Maintenance Organization Manual (AC AW-04-AMOM) and verify RSM and QCM complied with CAAT announcement for Repair Station Approval (CAAT 145) and record any deficiencies.

15.5.5 It would be normal for the inspector to notify the organisation by raising a single finding against the RSM/QCM/TPM and writing the non-compliances and any further questions in letter to the AMO Manager responsible for producing and updating the RSM/QCM/TPM (this person is normally the quality manager).

15.6. CAAT Supplemental Manual Reviewing procedure

15.6.1 CAAT Supplemental Manual is the supplemental manual of FAMO. appropriate, to address the additional conditions require by CAAT-AIR-GM03. The applicant for a CAAT Approval shall prepare an CAAT Supplemental Manual to comply with the CAAT regulations and requirements. Each applicant should be given a copy of the example CAAT Supplemental Manual assist them in their preparation.

15.6.2 CAAT Supplemental Manual should follow the template of the example CAAT Supplemental Manual in CAAT-AIR-GM03 Appendix A and contain the relevant information to address each section. CAAT Supplemental Manual typically shall contain subjects in CAAT-AIR-GM03 Part 6 Appendix

15.6.3 It would be normal for the inspector to notify the organisation by raising a single finding against CAAT Supplemental Manual and writing the non-compliances and any further questions in letter to the FAMO Manager responsible for producing and updating the CAAT Supplemental Manual (this person is normally the quality manager).

15.7. Acceptance Process

RSM, QCM and TPM Acceptance Process for AMO

15.7.1 Prepare official acceptance letter to CAAT Director General (DG), Stamped on List of Effective Page (LEP), completed compliance checklist

15.7.2 Submit to DG for signatory

15.7.3 Scan completed file and keep in AIR SHARE DRIVE and update in Repair station list.

15.7.4 Send original official acceptance letter and Stamped LEP to AMO CAAT Supplemental Manual Acceptance Process for FAMO

15.7.5 Official stamps on LEP, Inspector stamps and signs to accept the CAAT Supplemental Manual on the first page or revision control page.

15.7.6 Scan completed file and keep in AIR SHARE DRIVE and update in Repair station list

15.7.7 Send scan stamped LEP and acceptance CAAT Supplemental Manual to FAMO

15.8. Repair station documents Amendment

15.8.1 The Repair station document refers to RSM, QCM, TPM and CAAT Supplemental Manual.

15.8.2 The Repair station document are accepted by the CAAT as Competent Authority.

15.8.3 The CAAT should retain a (PDF/electronic) copy of the The Repair station document and including all Associated Procedures referenced within it.

15.8.4 Associated procedures are those documents, lists or procedures required to support The Repair station document compliance with the CAAT regulations and requirements, these may include:

15.8.4.1. Capability Lists for an AMO's/FAMO's Component Ratings

15.8.4.2. Certifying Staff Lists

15.8.4.3. List of Commercial Operators

15.8.4.4. List of Subcontracted Organisations

15.8.4.5. List of Line Stations (An application required for additional permanent line stations)

15.8.4.6. List of Contracted Organisations

15.8.4.7. NDT Written Practice

15.8.4.8. Quality Manual

15.9. Performance Measure

Review and acceptance/rejection of RSM and QCM revisions should be accomplished within 60 days from date of receipt.

15.10. Documentation and References

Copies of all documents/records created as part of this process are to be saved in the organisation file.

15.11. Records

All documentation is filed in the organisation file.

15.12. Responsibilities

15.12.1 **Director General** - to sign the approval certificate and operations specification

15.12.2 **Inspector** - ensure compliance with the requirements for Approval and completes and signs the audit report, all records are complete and correct and that all fees are invoiced for.

15.12.3 **Admin** - Support the Inspector and ensure all records are complete and correct and that all fees are invoiced for

Approval

Name of Approver:	
Approved by:	
Date of Approval:	

16. CHAPTER 16 BASE MAINTENANCE INSPECTIONS

16.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 8	TDCA-AW-INSP-009 - Repair Station Inspection Checklist
CAAT AOCR	Approval certificate
Technical Procedure AW Handbook Chapter 14, Initial, Oversight, and Change of Repair Station Approval	TDCA-AW-INSP-010 = Base Inspection Check List

16.2. INTRODUCTION

This procedure provides guidance when performing routine inspections on an operator's base maintenance facility or standalone AMO/MRO as part of the regulatory oversight for regulatory compliance with CAAT AMO/MRO Regulations and Requirements. It is intended to support the AMO/MRO AW Handbook Part 14, Initial, Oversight, and Change of Repair Station Approval, when conducting inspections. There are separate supporting procedures when assessing line stations, workshops, engine cells, aircraft spot inspections, and ageing aircraft under an AMO/MRO approval. The procedure should also be read in conjunction with CAAT AMO/MRO Regulations and Requirements.

16.3. Purpose and scope

To assist the CAAT airworthiness Inspectors in auditing Base maintenance facilities as part of the overall AMO/MRO oversight

16.4. definition

16.4.1 AMO- Approved Maintenance Organisation Management Organisation.

16.4.2 MRO- Maintenance Repair Organisation

16.4.3 RSM - Repair Station Manual

16.5. general.

Base Maintenance Facilities approved in accordance with CAAT AMO/MRO Regulations and Requirements may perform work at its fixed location, and have satellite facilities under its managerial control, and at other locations when it is necessary due to a one-time special circumstance or when it is necessary to perform such work on a recurring basis. Wherever the work is

performed the AMO/MRO must have a procedure in the RSM and have CAAT approval to do this work.

An AMO/MRO performing maintenance for any operator in the Kingdome of Thailand must follow the operators (AOC holders) maintenance programme and any additional procedures in the GMM. To meet this requirement, the AMO/MRO must hold (the manuals required for the performance of maintenance, preventive maintenance, or alterations as required by the AMO/MRO station certificate, operations specifications, capability list and must keep current as a minimum:

16.5.1 Standard Practice Manuals (The RSM and Quality Control Manuals).

16.5.2 Airworthiness Directives.

16.5.3 Instructions for Continued Airworthiness.

16.5.4 Maintenance Manuals (aircraft and components).

16.5.5 Overhaul Manuals.

16.5.6 Service Bulletins.

16.5.7 Other applicable data acceptable to or approved by the CAAT.

16.6. satellite facilities (additional sites)

An approved AMO/MRO may have an additional site listed on its approval certificate. The additional site

16.6.1 Must be listed and outlined in the RSM;

16.6.2 Must meet the requirements for each rating it holds;

16.6.3 Must be addressed in the AMO/MROs quality control manual.

16.6.4 Unless the CAAT indicates otherwise, personnel and equipment from the approved AMO/MRO and additional sites may be shared. Suitable certifying staff and support personnel must be designated and available for each site any time a determination of airworthiness or return to service is made.

16.6.5 May be located in another state provided the management and control is under that of the main site in Brunei and the additional site is under the main sites quality system. The additional site will be subject to oversight by the CAAT insofar as the CAAT. AMO/MRO approval is concerned

16.7. capability list

16.7.1 An approved AMO/MRO with a limited Class 3 rating may perform maintenance, preventive maintenance, or alterations on a component if the article is listed on a current capability list acceptable to the CAAT. The list should be derived from the ATA ratings.

16.7.2 The capability list must identify each article by make and model or other nomenclature designated by the article's manufacturer and be available in a format acceptable to the CAAT. An article may be listed on the capability list only if the article is within the scope of the Class 3 ratings of the AMO/MRO's certificate, and only after the AMO/MRO has performed a self-evaluation in accordance with the procedures under AC FAMO

16.7.3 The AMO/MRO must perform this self-evaluation to determine that it has all of the housing, facilities, equipment, material, technical data, processes, and trained personnel in place to perform the work on the article as required by CAAT AMO/MRO Regulations and Requirements. The AMO/MRO must retain on file documentation of the evaluation. Upon listing an additional article on its capability list, the AMO/MRO must provide the CAAT with a copy of the revised list for approval in accordance with the procedures required in the RSM. This is called Direct Approval.

16.8. housing and facilities

16.8.1 An approved AMO/MRO must continue to have the housing (Hangars), facilities, equipment, materials, and data that meet requirement of the ratings originally applied for. To continue to meet these requirements the AMO/MRO must have as a minimum:

16.8.1.1. Housing for the aircraft types, equipment, materials, and personnel consistent with the ratings.

16.8.1.2. Facilities for properly performing the maintenance, preventive maintenance, or alterations of articles or the specialized services for which it is rated. Facilities must include the following:

i. Sufficient work space and areas for the proper segregation and protection of articles during all maintenance, preventive maintenance, or alterations;

ii. Segregated work areas enabling environmentally hazardous or sensitive operations such as painting, cleaning, welding, avionics work, electronic work, and machining to be done properly and in a manner that does not adversely effect of the maintenance or alterations articles or activities;

16.8.1.3. Suitable racks, hoists, trays, stands, and other segregation means for the storage and protection of all articles undergoing maintenance, preventive maintenance, or alterations and including the following:

i. 8.1.3.1 Space sufficient to segregate articles and materials stocked for installation from those articles undergoing maintenance, preventative maintenance, or alterations;

ii. 8.1.3.2 Ventilation, lighting, and climatic control of temperature, for humidity, and other climatic conditions sufficient to ensure personnel perform maintenance, preventive maintenance, or alterations to the standards required by regulations.

16.9. personnel.

16.9.1 Each Approved AMO/MRO for base maintenance must;

16.9.1.1. Designate an employee with corporate authority as the accountable manager;

16.9.1.2. Have a Base Maintenance Manager approved by CAAT via a Form 4.

16.9.1.3. Have a workshop manager approved by CAAT via a Form 4 for any workshops under its approval

16.9.1.4. Have a line maintenance manager approved by CAAT via a Form 4 for any line maintenance under its approval

16.9.1.5. Provide qualified personnel to plan, supervise, perform, and approve for return to service the maintenance, preventive maintenance, or alterations performed under the AMO/MRO's certificate and operations specifications;

16.9.1.6. Ensure it has a sufficient number of employees with the training or knowledge and experience in the performance of maintenance, preventive maintenance, or alterations authorised by the AMO/MRO certificate and operations specifications to ensure all work is performed in accordance with CAAT regulations;

16.9.1.7. Determine the abilities of its non-certifying employees performing maintenance functions based on training, knowledge, experience, or practical tests

16.10. personnel.

16.10.1 An AMO/MRO must ensure it has a sufficient number of supervisors to direct the work performed under the approval certificate and operations specifications. The supervisors must oversee the work performed by any individuals who are unfamiliar with the methods, techniques, practices, aids, equipment, and tools used to perform the maintenance, preventive maintenance, or alterations. He/she also must ensure that all tasks are signed for release to service by suitable approved certifying staff. Each supervisor must:

16.10.1.1. If employed by an AMO/MRO located inside the Kingdom of Thailand, be licensed in accordance with CAAT regulations

16.10.1.2. If employed by an AMO/MRO located outside the Kingdom of Thailand:

i. Hold an acceptable ICAO Annex 1 maintenance license

ii. Be trained in or thoroughly familiar with the methods, techniques, practices, aids, equipment, and tools used to perform the maintenance, preventive maintenance, or alterations.

iii. An AMO/MRO must ensure its supervisors understand, read, and write English.

16.11. Training Programs

All approved AMO/MROs must have an employee training program approved by the CAAT that consists AMO/MROs initial and recurrent training. Any new applicant for an AMO/MRO certificate must submit a training program for approval by the CAAT at the time of application as part of the RSM.

An AMO/MRO approved before that date must submit its training program to the CAAT for approval by the last day of the month in which its approval certificate was issued. The training program must ensure each employee assigned to perform maintenance, preventive maintenance, or alterations, and inspection functions is capable of performing the assigned task. An approved AMO/MRO must document, in a format acceptable to the CAAT, the individual employee training. These training records must be retained for a minimum of 2 years.

16.12. Certifying Staff

16.12.1 An approved AMO/MRO must ensure that persons signing a Certificate of Release to Service (CRS) under the AMO/MRO certificate and operations specifications are:

16.12.1.1. Thoroughly familiar with the applicable regulations in this chapter and with the inspection methods, techniques, practices, aids, equipment, and tools used to determine the airworthiness of the article on which maintenance, preventive maintenance, or alterations are being performed;

16.12.1.2. Proficient in using the various types of inspection equipment and visual inspection aids appropriate for the article being inspected; and an AMO/MRO must ensure its certifying staff and support staff understand, read, and write English, and;

16.12.1.3. Authorised by the AMO/MRO and Licensed in accordance with CAAT Licencing Regulations, or for Component certifying staff authorised by the AMO/MRO and suitably trained on the component/s, including Human Factor training and continuation training.

16.13. Equipment and Tools

16.13.1 An AMO/MRO must have the equipment, tools, and materials necessary to perform the maintenance, preventive maintenance, or alterations under its AMO/MRO certificate and operations specifications. The equipment, tools, and material must be located on the premises and under the AMO/MROs control when the work is being done.

16.13.2 An AMO/MRO must ensure all test and inspection equipment and tools to make airworthiness determinations on articles are calibrated to a standard acceptable to the CAAT.

16.13.3 The equipment, tools, and materials must be those recommended by the manufacturer of the article or must be at least equivalent to those recommended by the manufacturer and acceptable to the CAAT.

16.13.4 The use of any alternative tooling must be agreed with the OEM.

16.14. Maintenance Data

16.14.1 An AMO/MRO must hold or have access to the maintenance data required for the maintenance being undertaken. The data may be in hard (paper copy) or soft copy via CD ROMs or OEM Web portals. The data may include:

16.14.1.1. Aircraft Maintenance Program

16.14.1.2. Aircraft Maintenance Manual

16.14.1.3. Component Maintenance Manual

16.14.1.4. Engine Maintenance Manual

16.14.1.5. Wiring Diagram Manual

16.14.1.6. Illustrated Parts Catalogue

16.14.1.7. Ads

16.14.1.8. SBs

16.14.2 The AMO/MRO must ensure the data is up to date and is as specified on the Maintenance work order or contract.

16.14.3 An AMO/MRO that performs maintenance, preventive maintenance, or alterations for an operator must follow the operator's GMM, maintenance program and applicable sections of its maintenance manuals.

16.14.4 An AMO/MRO that performs inspections for a certificate holder conducting operations under any other CAAT approved program must follow the operator's CAAT-approved program.

16.14.5 An AMO/MRO that performs maintenance, preventive maintenance, or alterations for a foreign operator or foreign person operating an aircraft registered in the Kingdom of Thailand must follow the operator's CAAT approved maintenance program.

16.14.6 Notwithstanding the housing requirement of CAAT AMO/MRO Regulations and requirements, the CAAT may grant approval for an Approved AMO/MRO to perform line maintenance for a an operator, or a foreign operator or foreign person operating Kingdom of Thailand registered aircraft in common carriage on any aircraft of that operator or person, provided:

16.14.6.1. The AMO/MRO performs such line maintenance in accordance with the operator's manual, if applicable, and approved maintenance program;

16.14.6.2. The AMO/MRO has the necessary equipment, trained personnel, and technical data to perform such line maintenance; and

16.14.6.3. The AMO/MRO’s approval certificate includes an authorisation to perform line maintenance.

16.15. Records and Reports

16.15.1 An approved AMO/MRO must retain records that demonstrate compliance with the requirements of CAAT AMO/MRO regulations. Records must contain:

16.15.1.1. A description (or reference to data acceptable to CAAT) of the work performed.

16.15.1.2. The date of completion of the work performed.

16.15.1.3. The signature, authorisation/certificate number and kind of certificate held by the person certifying the work.

16.15.1.4. The signature constitutes the approval for return to service only for the work performed.

16.15.2 The records must be retained in a format acceptable to the CAAT.

16.15.3 An approved AMO/MRO must provide a copy of the maintenance release to the owner or operator of the article on which the maintenance, preventive maintenance, or alteration was performed.

16.15.4 An approved AMO/MRO must retain the records required by this section for at least 3 years from the date the aircraft or component was approved for return to service. An approved AMO/MRO must make all required records available for inspection by the CAAT or ICAO.

16.16. Reports of Failures, Malfunctions, or Defects

16.16.1 An approved AMO/MRO must report to the CAAT within 72 hours after it discovers any failure, malfunction, or defect of an article. The report must be in a format acceptable to the CAAT. The report must include as much of the following information as is available:

16.16.1.1. Aircraft registration number;

16.16.1.2. Type, make, and model of the article;

16.16.1.3. Date of the discovery of the failure, malfunction, or defect;

16.16.1.4. Nature of the failure, malfunction, or defect;

16.16.1.5. Time since last overhaul, if applicable;

16.16.1.6. Apparent cause of the failure, malfunction, or defect; and

16.16.1.7. Other pertinent information that is necessary for more complete identification, determination of seriousness, or corrective action.

16.16.2 The holder of an AMO/MRO approval that is also the holder of an Air Operator Certificate does not need to report a failure, malfunction, or defect under CAAT AMO/MRO Regulations if the failure, malfunction, or defect has been reported under their other applicable CAAT regulations.

16.16.3 An approved AMO/MRO may submit a Service Difficulty Report (operational or structural) for an Air Operator Certificate holder, provided the report meets the requirements of the applicable CAAT regulations.

16.16.4 An approved AMO/MRO authorised to report a failure, malfunction, or defect for another Air Operator, must not report the same failure, malfunction, or defect under the CAAT, AMO/MRO Approval certificate. A copy of the report must be forwarded to the operator.

16.17. Repair Station Manual

16.17.1 The RSM is a document required by CAAT AMO/MRO Regulations and requirements and is used to define the organisation, its safety and quality policy, and control and direct personnel. It should define all aspects of the maintenance operation and must be kept current at all times.

16.17.2 The RSM must include all CAAT AMO/MRO requirements. An example Manual showing what information should be provided is given in Part I to the AW Procedure Handbook [Inset Link].

16.17.3 The Quality Control Manual must include all CAAT, AMO/MRO requirements and may be referenced within the RSM.

16.17.4 The AMO/MRO Training programme must include all applicable CAAT AMO/MRO requirements.

16.17.5 All other manuals, or directives including detailed instructions or specific references for accomplishing inspection and maintenance functions. These include manufacturer's manuals, ADs, SBs, operator's manuals, or any other technical data approved by the CAAT.

16.17.6 The manual must also include procedures for training personnel in Required Inspection Item as required by the Operators maintenance program, or any other special training required by Operat

16.18. Procedures

16.18.1 The procedures of AW Handbook Part 14 and associated checklists should be followed when assessing the AMO/MRO. This document should be used to complement those when assessing a Base Maintenance facility.

16.18.2 When an AMO/MRO inspection is performed as part of an AMO/MROs oversight the maintenance facilities and their related activities must be evaluated. The performance of assigned tasks must fall within the limitations and the capabilities of the facility (refer to Approval Certificate). Inspectors should be aware that equipment and activities will vary between AMO/MRO's and operators due to differences in the complexity and capabilities of their respective maintenance facilities.

16.18.3 The inspector should complete the applicable sections of the Repair Station audit checklist (TDCA-AW-INSP-009 -AMO/MRO Audit checklist and TDCA-AW-INSP-AID-009 AMO/MRO Audit aid) and enter the results in the audit report after the audit.

16.18.4 Equipment Identification. Inspectors should be aware of the type of aircraft being maintained at the line station.

16.19. Analyse the Findings

Upon completion of the inspection, record all deficiencies noted and enter them in Part 4 of the audit report

16.20. Performance Measure

Raising and processing of the audit report should be completed within 20 days.

16.21. Records

All documentation is filed on appropriate organisation file.

16.22. Responsibilities

16.22.1 Inspector – ensure compliance with the requirements for Approval.

16.22.2 Approvals – Support to the Inspector and ensure all records are complete and correct and that all fees are invoiced for

17. CHAPTER 17 LINE STATION INSPECTION

17.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 8 Airworthiness of Aircraft	AMO/ MRO – Audit Checklist: CAAT TDCA-AW-INSP-009
CAAT the Air Navigation Act B.E. 2497	Manual Review: TDCA-AW-REV-008
Technical Procedure Chapter 14, Initial, Oversight and Change of Approval	Line Station and Facility Inspection Check List: TDCA-AW-INSP-011

Table 17.1: Line Station Inspection

17.2. Introduction

This procedure describes the process used to perform routine inspections on an operator's line station as part of the regulatory oversight for regulatory compliance with CAAT AMO/ MRO Regulations and requirements. This procedure is intended to support Procedures AIR Chapter 14 when conducting inspections for Initial, Variation or Continuation of approval. There are separate supporting procedures when assessing line stations, workshops, engine cells, aircraft spot inspections, and ageing aircraft

17.3. Purpose and Scope

To assist the airworthiness Inspectors in auditing Line maintenance facilities (line stations) as part of the overall Part 145 oversight.

17.4. Definitions

AMO - Approved Maintenance Organisation Management Organisation.

MRO- Maintenance repair and overhaul

RSM- Repair Station Manual.

17.5. General

The line station inspection is performed to ensure that adequate housing, equipment, spare parts, technical data and qualified personnel are available to satisfactorily complete all maintenance functions.

17.6. Performing the Inspection

17.6.1 When a line station inspection is performed as part of an AMOs/MROs oversight the maintenance facilities and their related activities must be evaluated. The performance of assigned tasks must fall within the limitations and the capabilities of the facility (refer to Approval Certificate and ops specs). Inspectors should be aware that equipment and activities will vary between operators due to differences in the complexity and capabilities of their respective maintenance facilities.

17.6.2 The inspector should complete the applicable sections of the CAAT TDCA-AW-INSP-009 AMO/MRO Audit Checklist and TDCA-AW-REV-008 Manual Review audit checklist and enter the results in the audit report after the audit.

17.6.3 Equipment Identification. Inspectors should be aware of the type of aircraft being maintained at the line station.

17.6.4 Facilities

The line station is required to perform maintenance in accordance with the operator's maintenance manuals and GMM. The inspector should use these documents to determine what special equipment, housing, and environmental conditions are necessary to perform the work.

17.6.5 Contract Maintenance Arrangements

If any maintenance is being performed by a contract facility, an inspection must be performed at the contractor's facility.

17.6.6 Enforcement History

Inspectors should check the enforcement file determine if there are any areas that require special attention. If a contract maintenance organisation is used, it should also be checked.

17.6.7 Prerequisites and Coordination Requirements

17.6.7.1. Prerequisites:

i. Knowledge of CAAT AMO/ MRO Regulations and requirements, and ICAO regulatory requirements.

ii. Familiarity with the type of operation being inspected.

17.6.7.2. Coordination

This task requires coordination with the assigned Principal Airworthiness Inspectors.

17.7. Procedures

17.7.1 A Review the Operator's Data including the following:

17.7.1.1. The office files, to determine if any chronic or open items exist.

17.7.1.2. The operator's maintenance manuals, to determine the level of maintenance accomplished and the complexity of the operation of the line station.

17.7.1.3. The operator's operations specifications, to determine the maintenance and inspection program's content and complexity.

17.7.2 Inspect the Operator's Technical Library, if applicable. Ensure that all required technical data is available and current. If data is on microfiche, ensure that readers are available and serviceable.

If the data is on line ensure the internet connection functions and the docs can be readily accessed.

17.7.3 Inspect the Maintenance Records and ensure the following:

17.7.3.1. Maintenance is accomplished in accordance with operator's manual procedures.

17.7.3.2. Transfer of records to the main base facility is accomplished in accordance with operator's manual procedures.

17.7.4 Inspect the Line Station Maintenance Organisation and ensure the following:

17.7.4.1. Staffing meets maintenance needs based on the complexity of the operation.

17.7.4.2. Certifying staff hold the appropriate licenses in accordance with CAAT licensing requirements

17.7.4.3. Responsibilities are separated between inspection and maintenance organisations.

17.7.5 Review the Maintenance and Service Personnel Training Records. If the records are located at the line station, determine if personnel are trained in accordance with the manual requirements.

17.7.6 Inspect the Operator's Maintenance Facilities and inspect the following:

17.7.6.1. Parts and storage areas, to ensure:

i. Spare parts are adequate to support the complexity of the operation.

ii. Shelf life- limits are established for items, and control is in accordance with operator's manual or manufacturer's recommendations.

iii. Components and hardware are properly identified, protected, and classified as to serviceability.

iv. Segregation of serviceable and unserviceable components and hardware is maintained.

v. Hazardous materials are suitably segregated and stored.

17.7.6.2. Special tools and test equipment, as applicable, to ensure:

i. Serviceability and calibration is accomplished in accordance with the operator's manual.

ii. All required items are serviceable and within calibration criteria, to include traceability to one of the following:

- The Bureau of Standards)National or International.(
- Standard established by the item's manufacturer.

iii. Appropriate type and quantities are available.

iv. Proper storage and protection is utilized.

17.7.6.3. Fuel/ oil dispensing and storage facilities, if operated and maintained by operator.

17.7.6.4. Deicing chemical storage and dispensing equipment, if applicable . The following must be inspected to ensure compliance with the operator's manual:

i. Chemical storage and dispensing.

ii. Serviceability of equipment.

iii. General condition and safety of storage areas.

iv. Training of personnel in operator/applicant's deicing procedures.

Note: *If deicing services are provided on a contract basis, ensure that the contractor meets the above requirements.*

17.7.6.5. Ground support equipment, to ensure equipment is serviceable and appropriate for the complexity of operation.

17.7.7 Inspect the Inspection Department, if Applicable and ensure the following:

17.7.7.1. Designated staffing is adequate for the complexity of the operation.

17.7.7.2. Delegated staffing) Required Inspection Items (is at a reasonable level.

17.7.8 Inspect the Aircraft. Inspect any available aircraft to determine the quality of maintenance being performed.

17.8. Analyse the Findings

Upon completion of the inspection, record all deficiencies noted and enter them in the audit report.

17.9. Performance Measure

Raising and processing of the audit report should be completed within 20 days.

17.10. Documentation and References

Copies of all documents/records created as part of this process are to be saved in the organisation file

17.11. Records

All documentation is filed in the organisation file.

17.12. Responsibilities

17.12.1 Inspector – ensure compliance with the requirements for Approval.

17.12.2 Approvals – Support to the Inspector and ensure all records are complete and correct and that all fees are invoiced for.

17.13. Approval

Name of Approver:	
Approved by:	
Date of Approval:	
ate of Next Review:	

18. CHAPTER 18 WORKSHOP INSPECTION

18.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 8	TDCA-AW-INSP-009 AMO/MRO Audit Checklist, TDCA-AW-REV-008 AMO/MRO Manual Review, and TDCA-AW-INSP-AID-009 AMO/MRO Audit Aid
CAAT Air Navigation Act	Approval Certificate
CAAT AOCR Chapter 8	Form: TDCA-AW-INSP-A5 – Workshop Inspection Checklist
Technical Procedure CHAPTER 14, Initial, Oversight and Change of Approval	

Table 18.1: Workshop Inspection

18.2. Introduction

This procedure describes the process used to perform routine inspections on AMO/MRO Workshops (Avionic, Battery and Mechanical) as part of its Component Ratings during the regulatory oversight for regulatory compliance with CAAT AMO/MRO Regulations and Requirements.

This procedure is intended to support Procedures CHAPTER 14 when conducting inspections for Initial, Variation or Continuation of approval.

There are separate supporting procedures when assessing base maintenance, line stations, engine cells, aircraft spot inspections, and ageing aircraft

The procedure should also be read in conjunction with CAAT AMO/MRO Regulations and Requirements.

18.3. Purpose and Scope

To assist the airworthiness Inspectors in auditing workshop facilities as part of the overall CAAT AMO/MRO oversight.

18.4. Definitions

18.4.1 AMO - Approved Maintenance Organisation Management Organisation.

18.4.2 MRO Maintenance Repair and overhaul

18.4.3 RSM- Repair Station Manual.

18.5. General

The Workshop inspection is performed as part of a CAAT AMO/MRO Oversight to ensure that adequate housing, equipment, spare parts, technical data and qualified personnel are available to satisfactorily complete shop maintenance functions.

18.6. Maintenance Training

18.6.1 The scope of maintenance training of the staff must ensure that shop components are maintained in an airworthy condition

18.6.2 The complexity of the training program depends on the individual AMO/MROs experience and the type of work performed. The type of training necessary may range from on the job training to formal classroom training. The end product must be an individual competent to perform the work as authorised.

18.6.3 An AMO/MRO, regardless of size, must have an effective training program. However, an AMO/MRO should not be expected to duplicate all the training facilities normally provided by a large AMO/MRO. To comply with the regulatory requirements, the operator may use contract facilities or other means that will provide equivalent training.

18.7. Performing the Inspection

18.7.1 When a workshop inspection is performed as part of a CAAT AMO/MRO audit the maintenance facilities and their related activities must be evaluated. The performance of assigned tasks must fall within the limitations and the capabilities of the facility (refer to Approval Certificate). Inspectors should be aware that equipment and activities will vary between AMO/MRO's due to differences in the complexity and capabilities of their respective maintenance facilities.

18.7.2 The inspector should complete the applicable sections of the TDCA-AW-INSP-009 AMO/MRO Audit Checklist, TDCA-AW-REV-008 AMO/MRO Manual Review, TDCA-AW-INSP-AID-009 AMO/MRO Audit Aid and TDCA-AW-INSP-A5 – Workshop Inspection Checklist and enter the results in the audit report after the inspection/audit.

18.7.3 Equipment Identification. The inspector must be knowledgeable of the components being maintained.

18.7.4 Previous Inspection Reports. Previous inspection reports, correspondence, and other documents in the office files should be reviewed to determine if there are any open items or if any areas are identified that require special attention.

18.7.5 Facilities. The maintenance facility is required to perform maintenance in accordance with the Components maintenance manuals and Operators (where applicable). The inspector should use these documents to determine what special equipment, housing and environmental conditions are necessary to perform the work. For example, the manufacturer may require special stands, hand tools, or a dust-free environment to repair a specific item.

18.7.6 Contract Maintenance Arrangements. If any maintenance is being performed by a contract facility, an inspection must be performed at the contractor's facility in accordance with the annual work program.

18.7.6.1. The operator's and AMO/MRO's manuals must be reviewed to determine the levels of maintenance performed at the contract maintenance facility.

18.7.6.2. The contract maintenance facilities should be inspected to ensure that they are properly certificated and rated for the scope of work performed, e.g., aircraft, power-plant, propeller, radio, instruments, components, and accessories.

18.7.7 Enforcement History. Inspectors should check the enforcement history to determine if there are any areas that require special attention. If a contract maintenance organisation is used, it should also be checked.

18.7.8 Coordination: This task requires coordination between assigned Principal Airworthiness Inspectors.

18.8. Procedures

18.8.1 Review the following data:

18.8.1.1. The office files to determine if any open findings exist, status of Enforcement Investigation Reports, exemptions, etc. Check previous closed findings in order to follow up during audit and check they are not re-occurring.

18.8.1.2. The operator's maintenance manuals to determine the level of maintenance accomplished and the complexity of operation at the maintenance facility/shop.

18.8.2 Inspect the AMO/MRO's Technical Library. Ensure all required technical data is available and current. If data is on microfiche, ensure that readers are available and serviceable.

If the data is available on–line ensure that the internet functions and the data can be readily accessed. The data must include the following, as applicable:

18.8.2.1. Component Maintenance manuals. (including Propeller, appliance, engine, and emergency equipment manufacturer's manuals).

18.8.2.2. Ops Specs.

18.8.2.3. Operator's general maintenance manual.

18.8.2.4. Aircraft manufacturers' manuals.

18.8.2.5. Manufacturer's and vendor's service bulletins/letters.

18.8.2.6. Applicable [Company] Regulations and requirements.

18.8.2.7. Applicable Airworthiness Directives.

18.8.2.8. Applicable type data sheets/Supplemental Type Certificates.

18.8.3 Inspect the Maintenance Record Retention System and ensure:

18.8.3.1. Accomplishment is in accordance with operator's manual procedures.

18.8.3.2. System provides for the retrieval of records within a reasonable period of time.

18.8.3.3. If a computer system is utilized:

i. An adequate security system exists (password protection, and restricted access).

ii. A continuous backup system exists.

iii. Source documents are retained as required by regulations, such as:

- Aircraft maintenance and inspection records
- Overhaul, repair and modification documents
- Records for Airworthiness Directive compliance and weight and balance control

Note: Sample a representative number of shop records to ensure the integrity of the system.

18.8.4 Inspect the Maintenance Organisation and ensure the following:

18.8.4.1. The staffing meets maintenance needs based on the complexity of operation.

18.8.4.2. Responsibilities are separated between inspection and maintenance sections.

18.8.4.3. Maintenance and inspection management personnel are qualified.

18.8.5 Inspect the Operator's Training Program. Ensure the following:

18.8.5.1. Program defines any specific training requirements.

18.8.5.2. Individual training records are retained and current.

18.8.5.3. Training facilities are appropriate for the complexity of the operation.

18.8.5.4. Training personnel are qualified.

18.8.5.5. Training aids and materials are current and appropriate.

18.8.5.6. Special training requirements are addressed and incorporated, e.g. non destructive testing (NDT), inspection techniques and methods, and composite material.

18.8.5.7. Inspection and Required Inspection Item (RII) personnel are trained in appropriate inspection methods and techniques.

Note: The Inspector should review sample number of individual training records and monitor classroom training to evaluate program.

18.8.6 Inspect the Shop Facilities. Using the operator's manual as a reference, inspect the following:

18.8.6.1. Parts and storage areas, to ensure:

i. Adequate spare parts are available to support complexity of operation.

ii. Receiving inspections are accomplished in accordance with operator's manual.

iii. Shelf life-limits are established for items, and that these items are controlled in accordance with operator's manual or manufacturer's recommendations.

iv. Components and hardware are properly identified, protected, and classified as to serviceability.

v. Segregation of serviceable and unserviceable components and hardware is maintained.

vi. Hazardous materials are suitably segregated and stored.

18.8.6.2. Special tools and test equipment, to ensure:

i. Serviceability and calibration are accomplished in accordance with operator's manual.

ii. All required items are serviceable and within calibration criteria, to include traceability to one of the following:

- The Bureau of Standards.
- Standard established by the item's manufacturer.
- If foreign manufactured, the standards of the country where manufactured.

18.8.6.3. Appropriate types and quantities are available.

18.8.6.4. Proper storage and protection is utilised.

18.8.6.5. All required technical data is current and available. If data is on microfiche, ensure that readers available and serviceable.

18.8.6.6. Staffing reflects complexity of shop.

18.8.6.7. Personnel are properly trained, qualified, and authorised.

18.8.6.8. Procedures for shift turnover are in place and properly utilised.

18.8.6.9. All required special tooling and equipment is available, serviceable; and within calibration criteria.

18.8.6.10. Maintenance tasks and inspection functions are being accomplished in accordance with operator's maintenance manual.

18.8.6.11. Safety equipment is available and serviceable.

18.8.6.12. Individual shop storage areas are maintained to same standards as main storage area.

18.8.6.13. Work areas do not conflict with each other, e.g., lathe next to avionics repair area.

18.8.6.14. Lighting, ventilation, and general housekeeping are adequate.

18.9. Analyse Findings

Upon completion of inspection, record all deficiencies noted on the audit report and determine the appropriate corrective action(s) to be taken. Notify the organisation.

18.10. Performance Measure

Raising and processing of the audit report should be completed within 20 days.

18.11. Documentation and References

Copies of all documents/records created as part of this process are to be saved in the organisation file.

18.12. Records

All documentation is filed in the organisation file.

18.13. Responsibilities

18.13.1 Inspector – ensure compliance with the requirements for Approval.

18.13.2 Approvals – Support to the Inspector and ensure all records are complete and correct and that all fees are invoiced for.

18.14. Approval

Name of Approver:	
Approved by:	
Date of Approval:	

19. CHAPTER 19 ENGINE AND APU TEST CELL INSPECTIONS

19.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 8	TDCA-AW-INSP-009 AMO/MRO Audit Checklist, TDCA-AW-REV-008 AMO/MRO Manual Review, and TDCA-AW-INSP-AID-009 AMO/MRO Audit Aid
CAAT Air Navigation Act	Audit report
CAAT AOCR Chapter 8	Approval certificate and Ops specs
Technical Procedure AIR CHAPTER 14, Initial , Oversight and Change of Approval	

Table 19.1: Engine and APU Test Cell Inspection

19.2. Introduction

This procedure describes the process used to perform routine inspections on Engine and APU Test Cells of an AMO/MRO as part of the regulatory oversight.

This procedure is intended to support Procedures AIR CHAPTER 14, when conducting inspections for Initial, Variation or Continuation oversight.

There are separate supporting procedures when assessing base maintenance, line stations, workshops, aircraft spot inspections, and ageing aircraft.

19.3. Purpose and Scope

To assist the airworthiness Inspectors in auditing engine and APU test cell facilities as part of the overall AMO/MRO oversight.

19.4. Definitions

19.4.1 AMO - Approved Maintenance Organisation Management Organisation.

19.4.2 MRO Maintenance Repair and overhaul

19.4.3 RSM- Repair Station Manual.

19.5. General

A test cell shall be deemed as the test equipment of engines and APUs. The purpose of performing this inspection is to ensure that the test cell has adequate housing facilities, test equipment, computer software, technical data and qualified personnel to satisfactorily accomplish all maintenance tasks.

19.6. Description of Terminology

19.6.1 Back-to-Back Test: Prior to and after the repair or modification of test cell devices and/or test hardware, the same engine/APU is used for testing to compare the performance parameters obtained to find out whether such parameters have changed after the repair or modification of the test cell.

19.6.2 Baseline Facility: The test cell designated by the engine/APU manufacturer as the location for verifying the standard of certain type of engine or APU.

19.6.3 Cell Depression (Pcd): The differential value between the ambient atmospheric pressure and the engine inlet pressure at the test cell.

19.6.4 Correlation: The same engine (which is called “Correlation Engine”) is tested at two engine test cells located at two different places, one of the engine test cell is called “Baseline Facility”. The relationship between the comparisons of these two sets of engine parameters is called “Correlation”.

19.6.5 Correlation Engine: An engine (which might be equipped with additional instruments) with known performance and is able to reach this performance repeatedly and designated for the “correlation” of the engine test cell.

19.6.6 Correlation Factor: This parameter is used to correct the performance parameters obtained when the engine is tested at a non-Baseline Facility to make such parameters the same as those obtained at the Baseline engine test cell after correction

19.6.7 Engine Dress Kit: Including the engine external bell-shape inlet duct, exhaust nozzle accessory and test apparatus to complete the requirements of test cell operation.

19.6.8 One-Away Facility: The engine test cell approved by the regulatory authority for engine test. The “correlation” of this test cell has been conducted with the Baseline test cell.

19.6.9 Quick Engine Change (QEC) Kit: Engine accessories that can be easily and quickly installed on and removed from the engine.

19.6.10 Test Cell: A shop facility equipped with instruments under environmental control and is designed to evaluate the performance of an engine after the engine's maintenance or overhaul. The design specification of this test cell shall be based on the specifications provided by the engine manufacturer.

19.7. Performing the Inspection

19.7.1 When a test cell inspection is performed as part of a [Subject]audit the associated maintenance facilities and their related activities must be evaluated. The performance of assigned tasks must fall within the limitations and the capabilities of the facility (refer to the Approval Certificate). Inspectors should be aware that equipment and activities will vary between operators due to differences in the complexity and capabilities of their respective maintenance facilities.

19.7.2 The inspector should complete the applicable sections of the TDCA-AW-INSP-009 AMO/MRO Audit Checklist, TDCA-AW-REV-008 AMO/MRO Manual Review, and TDCA-AW-INSP-AID-009 AMO/MRO Audit Aid and enter the results in the audit report after the audit.

19.7.3 This chapter provides guidance to the inspectors for conducting evaluations, inspections and approvals of an engine test cell within a CAAT approved organisation.

19.7.4 Prerequisites and Coordination Requirements:

19.7.5 Knowledge of CAAT AMO/MRO Regulations and Requirements and ICAO regulatory requirements.

19.7.6 Familiarity with the type of Engine/APU Maintenance being inspected.

19.7.7 Enforcement History. Inspectors should check the enforcement file determine if there are any areas that require special attention. If a contract maintenance organization is used, it should also be checked.

19.7.8 Operation Manual Requirement

19.7.9 When conducting inspections of engine/APU test cells, the inspector shall evaluate the maintenance devices and related activities. The authorised Class 2 rating capabilities of the AMO/MRO shall be as specified in the Approval certificate and the RSM.

19.7.10 The engine/APU test cell shall be addressed within the Maintenance Organisation Exposition, or alternatively may be a separate operations manual that is cross referenced within the RSM. If the manual is separate from the RSM it shall also be approved by the [Company].

19.7.11 The RSM or operation manual shall include at least, but not limited to, the following items:

19.7.11.1. Layout of the shop facilities, organizational chart and job functions.

19.7.11.2. Record-keeping system for various maintenance records: As a minimum, it has to meet the regulations of [Company]'s maintenance release procedures, including the maintenance records of both software and hardware of the test cell and the cause analyses of engines/APUs that failed to pass the test run.

19.7.11.3. Test cell operation procedures: It shall include normal operation procedure, operation procedures for emergency (such as fire, engine/APU failure, compressor stall, etc). Moreover, it shall also include the handling procedure when warning signals appear on the control consoles during engine/APU test runs.

19.7.11.4. Maintenance procedures for test cell facilities: The applicant shall establish procedures for determining whether the "Correlation Status" has been affected by the repair or modification of the test cell facilities, for recording such activities and record-keeping system. The applicant shall also establish a periodic maintenance program for the software and hardware facilities (including fuel farm) of the test cell, calibration intervals for instruments, calibration requirements and calibration methods.

19.7.11.5. Quality control procedures: The engine/APU test cell shall have a monitoring procedure to ensure the "Correlation Status" is maintained. Besides, the following items shall be established and maintained at the most current and valid status:

i. Documents provided by the engine/APU manufacturers and test cell documents.

ii. Correlation Report.

iii. The qualified test procedures established based on the specifications and technical instructions provided by the engine/APU manufacturers for maintaining the continuous airworthiness of engines in service.

iv. Procedure for the revision, validation and control of software.

v. Other relevant information.

19.8. Procedures

19.8.1 Inspection of Manuals: When applying for engine/APU test cell certification, the applicant shall provide the inspector with the RSM/operation manual and other relevant information (including the evidence showing that the engine/APU test cell has been assessed by the engine manufacturer as a qualified test cell, personnel training records, etc.) to enable the inspector to review in advance the relevant manuals and data.

19.8.2 On-site Inspection: Housing and facilities, evidence of noise level for the environment, quality control of fuel at fuel farm, adequacy of environmental control and the prevention of foreign object.

19.8.3 Instrument Calibration.

Confirm:

19.8.3.1. The calibration standards can be traced to the national standards or an institute widely recognized the world over (e.g. Central Bureau of Standards and NIST, etc.).

19.8.3.2. Adequacy of the calibration interval (in general, the maximum interval is a year or as specified by the test equipment OEM).

19.8.3.3. The inspection methods, completeness and validity of manuals and records for items calibrated by outside agency or internally.

19.8.3.4. Does the calibration program cover all items of the entire test cell that need calibration.

19.8.4 Validation of Data Acquisition System and Software:

19.8.4.1. Is the software for the data acquisition system revised in accordance with the engine/APU maintenance manual provided by the manufacturer? Review previous revision records.

19.8.4.2. Are the data points in the data acquisition system in line with the contents of the engine/APU maintenance manual provided by the engine manufacturer?

19.8.4.3. Are the measuring units in the data acquisition system in line with the contents of the engine/APU maintenance manual provided by the engine manufacturer?

19.8.4.4. Are there any unknown latent errors hidden in the software of the data acquisition system?

19.8.4.5. Are the charts and curves of the data acquisition system in line with the engine maintenance manual provided by the engine/APU manufacturer and all corresponding channels are correct?

19.8.5 Correlation Report, Maintenance, Service and Test Records:

19.8.5.1. Check to see whether the deficiencies in the Correlation Report noted by the engine manufacturer have been corrected.

19.8.5.2. Records of impact on the engine/APU test cell performance caused by various kinds of maintenance and repair of the test cell.

19.8.5.3. Records of previous testing and servicing.

19.8.5.4. Performance trend of the engine/APU test cell.

19.8.6 Actual Operations:

19.8.6.1. Operation sequences.

19.8.6.2. Shift Working

19.8.6.3. Human Factors and training of staff

19.8.6.4. Handling of emergencies (e.g. warning signals, fire and earthquake, etc.).

19.9. Analyse Findings

Upon completion of the inspection, record all deficiencies noted and enter them in the audit report.

19.10. Performance Measure

Raising and processing of audit report should be completed within 20 days.

19.11. Documentation and References

Copies of all documents/records created as part of this process are to be saved in the organisation file.

19.12. Records

All documentation is filed in the organisation file.

19.13. Responsibilities

19.13.1 Inspector – ensure compliance with the requirements for Approval.

20. CHAPTER 20 ACCEPTANCE OF NOMINATED PERSONS FOR AOC ENGINEERING AND AMO/ MRO ORGANISATION PROCEDURE

20.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Air Navigarion Act	CAAT Form 4 – Nominated Persons
AOC Requirement	

Table 20.1: Acceptance of Nominated Persons for AOC Engineering and AMO/ MRO Organisations procedure

20.2. Introduction

The purpose of this procedure is to give guidance on the acceptance of Nominated Persons, also known as “CAAT Form 4” holders, for CAAT Approved AOCs and AMOs/MROs.

20.3. Purpose and Scope

To assist the CAAT inspectors in reviewing and assessing nominated persons in a consistent manner.

20.4. Definitions

20.4.1 NDI: Non Destructive Inspection.

20.4.2 NDT: Non Destructive testing

20.5. Discussion

20.5.1 CAAT ADCA 145 Personnel Requirements (Item 17)

The organisation shall appoint an Accountable Manager who has corporate authority for ensuring that all maintenance required by the customer can be financed and carried out to the standard required by CAAT ADCA 145.

The organisation must nominate a person or group of persons, acceptable to the CAAT, whose responsibilities include ensuring that the Organisation is in compliance with CAAT ADCA 145 requirements. The nominated person(s) represent the

management structure of the organisation and are responsible for all functions specified in and ADCA 145. This ADCA 145 requires the Managers to be identified and their credentials submitted for acceptance on a CAAT Form 4.

A typical CAAT, 145 AMO/MRO management structure may include:

20.5.1.1. The Accountable Manager

20.5.1.2. Quality Manager

20.5.1.3. Base Maintenance Manager

20.5.1.4. Line Maintenance Manager

20.5.1.5. Engine Shop Manager

20.5.1.6. Workshop Manager

20.5.2 AOC Airworthiness Personnel Requirements (AOCR Chapter 8, Para 4)

The organisation shall appoint an Accountable Manager who has corporate authority for ensuring that all AOC Engineering activities can be financed and carried out in accordance with AOCR.

The organisation must nominate a person or group of persons, acceptable to the CAAT, whose responsibilities include ensuring that the Organisation is always in compliance with CAAT requirements. The nominated person(s) represent the management structure of the organisation and are responsible for all functions specified in AOCR Chapter 8. The AOCR requires the Managers to be identified and their credentials accepted by the CAAT. These should be submitted for acceptance on a CAAT Form 4.

In a typical AOC Engineering department, the management structure may include:

20.5.2.1. The Accountable Manager

20.5.2.2. Continued Airworthiness Manager) Nominated Post Holder for Maintenance(

20.5.2.3. Quality Manager

20.5.2.4. Technical Services Manager

20.5.2.5. Certificate of Maintenance Review Staff

20.6. Procedure

When accepting Nominated Persons on a CAAT Form 4 the following relevant knowledge and experience should be requested:

20.7. For AOC, Engineering

1.1.1 Accountable Manager/ Chief Executive should be able to demonstrate:

1.1.1.1. A basic understanding of the applicability and extent of CAAT, AOCR and/ or ADCA 145 in relation to the approval . This includes the Operations Manual, GMM and RSM, privileges of the approval, changes, continued validity and suspension requirements applicable to the approval in accordance with the applicable requirements.

1.1.1.2. That the nominee has the seniority and financial control necessary to ensure that all necessary resources i.e .personnel, facilities and an acceptable quality system are available to support the organisation's approval and to ensure that adequate operational, airworthiness and maintenance standards) as appropriate (are maintained.

1.1.1.3. An acceptable record of management or supervision experience in support of the nomination, taking into account the need to manage the organisation concerned in a manner which assigns appropriate priority to safety in order to secure a safe operation in compliance with regulations, to the satisfaction of the CAAT Airworthiness Inspector.

Note: Accountable Manager/Chief Executive does not require an AIR Form 4. The acceptance of this person is achieved through approving the GMM.

1.1.2 Quality Manager should be able to demonstrate*:*

1.1.2.1. Five years relevant work experience of which at least two years should be from the aeronautical industry in an appropriate position.

20.7.1.1. A relevant degree or an aircraft maintenance technician qualification with additional education acceptable to the CAAT.

20.7.1.2. A comprehensive knowledge of AOCR, and CAAT ADCA 145.

20.7.1.3. Thorough familiarity with the Operations Manual, GMM, and/or RSM as applicable.

20.7.1.4. Knowledge of SMS

20.7.1.5. Knowledge of Human Factors

20.7.1.6. A sound knowledge of the application of Quality Systems.

20.7.1.7. Appropriate management experience, and the ability to manage a Quality System.

20.7.1.8. Familiarity with the product)s (for which the organisation is approved.

1.1.3 Technical Service Managers should be able to demonstrate:

1.1.3.1. Five years relevant work experience of which at least two years should be from the aeronautical industry in an appropriate position.

20.7.1.9. A relevant degree or an aircraft maintenance technician qualification with additional education acceptable to the CAAT.

20.7.1.10. A comprehensive knowledge of AOCR and ADCA 145.

20.7.1.11. Thorough familiarity with the GMM.

20.7.1.12. Familiarity with the organisations quality system.

20.7.1.13. Knowledge of SMS

20.7.1.14. Knowledge of Human Factors

20.7.1.15. Technical service experience or qualifications appropriate to the duties to be performed.

20.7.2 Continuing Airworthiness Manager (Nominated Post Holder for Maintenance) should be able to demonstrate:

1.1.3.2. Five years relevant work experience of which at least two years should be from the aeronautical industry in an appropriate position

20.7.2.1. A relevant degree or an aircraft maintenance technician qualification with additional education acceptable to the CAAT.

20.7.2.2. Appropriate managerial experience including a working knowledge of aviation safety standards and the ability to manage in such an environment.

20.7.2.3. A thorough knowledge of AOCR requirements and the organisations continuing airworthiness management exposition.

20.7.2.4. Knowledge of the Airworthiness control procedures through the GMM

20.7.2.5. Knowledge of Human Factors

20.7.2.6. Knowledge of SMS

20.7.2.7. Familiarity with the organisation's Quality System.

20.7.2.8. An understanding of the organisation's contracted and sub-contracted maintenance and technical/engineering services arrangements (contract content).

20.7.2.9. Appropriate technical knowledge of the type (s) operated.

1.1.4 CMR Signatory Staff issues the CMR certificate at the intervals specified in the approved Maintenance Programme for an aircraft.

The CMR indicates that the nominated LAE for the type who has signed it has examined the Aircraft Technical Log and associated documentation and satisfied themselves that in the period since the previous CMR:

1.1.4.1. All maintenance specified in the approved Maintenance Programme has been carried out

20.7.2.10. All mandatory modifications and inspections have been complied with within the prescribed time periods .

20.7.2.11. All Defects recorded in the Aircraft Technical Log have been rectified or deferred in accordance with the prescribed procedures .

20.7.2.12. Issue of each required Certificate of Release to Service)CRS (has been correct

The CMR signatory shall be authorised by the AOC with their approval, hold an appropriate aircraft maintenance licence covering the aircraft type and shall have at least 5 years of continuing airworthiness experience

1.1.5 Audit staff

Shall have a knowledge of the regulation they are to audit against, have undergone audit techniques training, and performed two audits successfully under supervision

They shall not work in the department they are auditing and for the purpose of the audit shall report to the Quality Manag

20.8. For AMO/MRO Approvals

1.1.6 Accountable Manager/ Chief Executive should be able to demonstrate:

1.1.6.1. A basic understanding of the applicability and extent of ADCA 145 and/ or CAAT AOCR in relation to the approval . This includes the RSM, and the purpose of the GMM, privileges of the approval, changes, continued validity and suspension requirements applicable to the approval in accordance with the applicable requirements.

20.8.1.1. That the nominee has the seniority and financial control necessary to ensure that all necessary resources i. e . personnel, facilities and an acceptable quality system are available to support the organisation's approval and to ensure that adequate operational, airworthiness and maintenance standards)as appropriate (are maintained.

20.8.1.2. An acceptable record of management or supervision experience in support of the nomination, taking into account the need to manage the organisation concerned in a manner which assigns appropriate priority to safety in order to secure a safe operation in compliance with regulations, to the satisfaction of the CAAT Airworthiness Inspector.

Note: Accountable Manager/ Chief Executive does not require an AIR Form 4. The acceptance of this person is achieved through approving the RSM.

1.1.7 Quality Manager should be able to demonstrate:

1.1.7.1. Five years relevant work experience of which at least two years should be from the aeronautical industry in an appropriate position.

20.8.1.3. A relevant degree or an aircraft maintenance technician qualification with additional education acceptable to the CAAT.

20.8.1.4. A comprehensive knowledge of ADCA 145, and CAAT AOCR.

20.8.1.5. Thorough familiarity with the RSM and the knowledge of a contracted operators GMM.

20.8.1.6. Knowledge of SMS

20.8.1.7. Knowledge of Human Factors

20.8.1.8. A sound knowledge of the application of Quality Systems.

20.8.1.9. Appropriate management experience, and the ability to manage a Quality System.

20.8.1.10. Familiarity with the product)s (for which the organisation is approved.

1.1.8 AMO/ MRO Managers (Base, Line, Engine Workshop, Component Workshop Managers) should be able to demonstrate:

1.1.8.1. Five years relevant work experience of which at least two years should be from the aeronautical industry in an appropriate position.

20.8.1.11. A relevant degree, aircraft maintenance technician qualification or other relevant qualifications and experience acceptable to the CAAT.

20.8.1.12. A working knowledge of CAAT ADCA 145 and the RSM.

20.8.1.13. Knowledge of SMS

20.8.1.14. Knowledge of Human Factors

20.8.1.15. Familiarity with the organisations Quality System.

20.8.1.16. Knowledge of a contracted operators GMM.

20.8.1.17. A working knowledge of aviation safety standards, safe maintenance practises, and the ability to manage a facility in such an environment.

20.8.1.18. Appropriate management experience.

20.8.1.19. Appropriate familiarity with the product.

1.1.9 AMO/ MRO Certifying Staff (Mechanics) for base or line maintenance shall:

1.1.9.1. Hold an appropriate CAAT Licence containing ratings relevant to the aircraft type being reviewed,

20.8.1.20. Be authorised by the AMO on the products it maintains.

20.8.1.21. Formal aeronautical maintenance training.

20.8.1.22. Have knowledge of Human Factors

20.8.1.23. Have knowledge of SMS

20.8.1.24. Knowledge of SFAR 88)CDCCL (and EWIS

20.8.1.25. A thorough knowledge of AOCR requirements and the organisations continuing airworthiness management procedures.

20.8.1.26. A good understanding of the organisation's Quality System.

20.8.1.27. An understanding of the organisation's contracted and sub-contracted maintenance and technical/engineering services arrangements)contract content.(

20.8.1.28. Hold a suitable position within the organisation having appropriate responsibilities and have received training on the Organisations C of A renewal procedures and is accepted by the organisation as competent to perform C of A renewals without supervision.

Note: AMO/MRO Certifying staff do need to be approved by CAAT via a CAAT Form 4, they shall be authorised by the AMO via a procedure in the RSM, that is approved by CAAT

1.1.10 Technicians

Technicians who do not hold an appropriate licence may only be permitted to work under the supervision of licensed mechanics, knowledge of SMS, human factors , SFAR 88 (CDCCL) and EWIS.

1.1.11 Inspectors

Inspectors shall hold an appropriate maintenance licence for the product they are inspecting and shall have received type training on the aircraft type, SMS and Human Factors, SFAR 88 (CDCCL) and EWIS

1.1.12 NDT Staff

1.1.12.1. The CAAT recognises the following independent qualifications from ADCA 145 as appropriate for the qualification of NDT staff:

i. EN4179 as administered by a BINDT accredited Outside Agency

ii. PCN/AERO

iii. ASNT

1.1.12.2. If an AMO undertakes NDT it is required to have a nominated qualified Level III person to manage the activity as described below:

- Level III : The NDT Level III role has a variety of responsibilities .They are management personnel and must be capable of assuming technical responsibility for the NDT facility and staff.

  The Level III individual must direct training, possess knowledge of other NDT technologies, approve procedures and related work instructions, and be capable of selecting an appropriate inspection method for a given task.

  The NDT Level III must possess the comprehension and acumen to interpret codes, standards, and related contractual documents .When required, the Level III must also be capable of auditing outside agencies for technical adequacy .The nominated level lII person must have a knowledge of ACDA 145

- Level II : The level II individual must possess the skills and knowledge to set up equipment, interpret specifications, conduct tests, evaluate for acceptance or rejection, and file reports . Other duties include, but are not limited to, supervision of Level I personnel, knowledge of other NDT methods, the ability to develop test procedures with Level III approval, and possess basic knowledge of manufacturing and inspection technology .The Level II is the backbone of the NDT industry . They possess all the rights and responsibilities commensurate with performing tests and signing reports.

- Level I : This is an apprenticeship rating . The Level I individual cannot act independently of Level II or Level III supervision over the course of their daily duties . They cannot accept or reject parts and assemblies or write reports

- Level I Limited : Personnel when authorized by the employer's written practice, personnel certified to Level I Limited may perform a specific NDT test or evaluation of a specific part, feature, or assembly . The technician cannot perform tests outside of his or her limited rating .

- Instructor: The NDT instructor must have the skills and knowledge to organize and present classroom exercises or on-the-job-training in accordance with approved outlines. Instructors are designated by the employer's Level III or by the outside agency that is responsible for training .

- NDT Auditor: The NDT personnel performing external supplier audits must have the education, training, skills, and knowledge to comprehend the processes and procedures utilized in the application of the NDT process. The individual must be familiar with all relevant codes and standards that control the applicable method.

Further information on NDT and other specialised services is given in guidance document XYZ

1.1.13 Welders

1.1.13.1. The procedures for the issue and control of welding approval are dependent upon the circumstances of employment of the welder . For welders not employed by a CAAT approved Organisation the provisions of paragraph)b (shall apply .

- Where a welder is in the employment of an Organisation approved by the CAAT the CAAT will not undertake direct approval of the welder . The Organisation is required to establish its own effective system for their control. The system shall, as a minimum, include records of all sample tests (and results) and a ready means of establishing the current qualification status of all welders employed. All records shall be available to the CAAT upon request, including details relating to welders who have since left the employment of the Organisation.

- No essential records, e.g .Approval Cards and Test Reports shall be destroyed without the permission of the CAAT .

- A description of the control system shall be included in the Company GMM or RSM required by the relevant CAAT regulation and CAAT approval of the system will be indicated by inclusion of the control of welders in the Schedule of Approval.

1.1.13.2. The processes for obtaining welder's approval are as follows:

iv. Where the welder is employed by a CAAT approved Organisation, that Organisation shall make arrangements for the welder to prepare and weld an appropriate test sample(s). The Organisation shall submit the test sample(s) to a CAAT approved Test House, or test house acceptable to CAAT for examination together with full particulars of the welder concerned, materials used, details of any post- welding treatment (e.g. heat treatment for stress relief), and identification marks on the test sample(s). Upon receipt of an Approved Test Certificate from the test house, indicating successful test results for the sample(s), the Organisation may grant approval to the welder . Only then may the welder be employed on work of significance to airworthiness.

- In the event of a welder leaving the employment of an Organisation approved by the CAAT or not working for such an organisation, the welder may seek an individual approval to work independently from an organisation . In this case he could apply to the UK CAA for a Welders approval in accordance with CAP 533, Section A8- 10, or to another competent authority acceptable to CAAT

1.1.14 Audit Staff

Shall have a knowledge of the regulation they are to audit against, have undergone audit techniques training, and performed two audits successfully under supervision

They shall not work in the department they are auditing and for the purpose of the audit shall report to the Quality Manager.

1.1.15 Persons contracted to perform line maintenance tasks through maintenance agreements in addition to holding an appropriate licence shall be trained in any significant differences which exists between the operator's aircraft and that which they are normally employed to maintain together with any relevant company procedures they are required to observe.

20.9. Continuation (Recurrent) Training

Personnel engaged in maintenance-related tasks shall receive continuation training covering any changes to the aircraft and its maintenance, taking into account the result of in-service experience gained by the operator and that published by the aircraft, engine and equipment manufacturers.

Attention shall also be paid to changes in company procedures, the Thailand Regulations and Requirements

20.10. Performance Measure

Reviewing and accepting/rejecting of an AIR Form 4 should be completed within 20 days of receipt.

20.11. Documentation and References

Copies of all documents/records created as part of this process are to be saved to the organisation file

20.12. Records

All documentation is filed on appropriate company file.

20.13. Responsibilities

20.13.1 Inspector – ensure compliance with the requirements for Approval.

20.13.2 Approvals – Support to the Inspector and ensure all records are complete and correct and that all fees are invoiced for.

20.14. Approval

Name of Approver:	
Approved by:	
Date of Approval:	
Date of Next Review:	

21. CHAPTER 21 RESERVED

22. CHAPTER 22 GUIDANCE FOR ETOP/EDTO APPROVAL

22.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Requirement Notification of Department of Civil Aviation on Air Operation of Aeroplane of Air Operator B.E. 2553 on 24 August B.E. 2553 Section 2 Clause 4 (17)	(TDCA/AW-INSP-015) ETOPS Compliance Review Checklist – Maintenance
Notifications of Department of Air Transport on Certification of Air Operation Type Extended Range Twin - Engine Aircraft Operation (ETOPS), Given on 24 January B.E. 2551	(TDCA/AW-INSP-016) ETOPS Review Approval Checklist – Maintenance
ICAO Annex 6, Part I - Operations of Aircraft	CENTRIK CHECKLIST 93 ETOPS-OPS/AW
ICAO Doc 9760-AN/967 Airworthiness Handbook, Chapter 7	Coordination Form: ENG/AW/FO
CAA UK CAP 513 ETOPS	
Civil Aviation Board Requirement (CAB) 86	
CAAT AOC Requirements, Chapter 2 Para 20	
GUIDANCE MATERIAL FOR Extended Diversion Time Operations (EDTO/ETOPS)	

Table 22.1: Guidance for ETOP/EDTO Approval

22.2. **Purpose and Scope**

AOCR requires the operator to seek CAAT approval prior to operating their aircraft for ETOPS or ETOPS OR EDTO. Detailed airworthiness/operations requirements for ETOPS OR EDTO approval are described in the above AOCR and CAAT announcement. This chapter provides guidelines to Airworthiness officers to be followed for ensuring compliance of policy and CAAT requirements while processing the requests for grant of Initial and subsequent approvals to operators to undertake ETOPS or ETOPS OR EDTO. Each aircraft is required to be approved for ETOPS or ETOPS OR EDTO.

22.3. **Applicability**

This procedure applies to CAAT Airworthiness inspectors who oversee the airworthiness arrangements of (AOC) Holders in the Kingdom of Thailand.

22.4. Procedure Initial Approval

22.4.1 Application for approval for ETOPS OR EDTO shall be submitted to the CAAT offices where the aircraft is based along with para wise compliance of the AOCR related to the operation. The supporting documents confirming compliance with requirements of AOCR, ETOP/EDTO Guidance Material and the Checklist attached with this chapter shall also be enclosed by the concerned operator seeking approval. The checklist should clearly show the compliance and the location of the compliance in the notes section. Verification remarks column to be used by CAAT officer while reviewing the operator request for approval.

22.4.2 The operator should further furnish details of the procedure/instructions and methodology for continued capability to adhere to conditions laid down at the time of grant of approval

22.5. Contents of the ETOPS OR EDTO manual:

ETOPS OR EDTO Manual should include procedures and guidelines for the maintenance program and other requirements for ETOPS OR EDTO. In addition, all ETOPS OR EDTO requirements, including supportive programs, procedures, duties and responsibilities including actions to be taken in case of adverse trend, including IFSD rate, reliability level etc. should be identified and documented. This manual should be submitted two months in advance to the Airworthiness office before seeking approval of ETOPS OR EDTO flight. The content of manual should be as per the AOCR as mentioned above. The manual shall be scrutinized and approved by CAAT office.

22.6. Airworthiness consideration for ETOPS OR EDTO approval

22.6.1 CAAT Airworthiness office shall carry out necessary investigation of the application from airworthiness point of view. Contents of Manual shall be as per the CAAT announcement. The manual is to be scrutinized to ensure that all ETOPS OR EDTO requirements, including supportive programme procedures, duties and responsibilities, are identified and be subject to revision control.

22.6.2 The responsible officer should ensure that the aircraft is Compliant by build standards at certification or by post certification modification action. The necessary amendments to the Approved Maintenance Programme/Schedule have been approved, MEL is amended. It is to be ensured that the necessary ETOPS OR EDTO applicable amendments to the Maintenance documents, Maintenance programme, and CAME (as appropriate) have been supplied and approved where necessary.

22.6.3 Any deficiency noticed during investigation by Airworthiness shall be referred to the operator by the Regional office for corrective action. Verification/ remark Column on the checklist shall be completed by the responsible officer.

22.6.4 After having satisfied with the AOCR and CAAT ETOPS announcement compliance, Contents of ETOPS OR EDTO Manual, Aircraft eligibility etc. The request of operator along with approved manual and a copy of completed checklist shall be forwarded to the CAAT Airworthiness Director for further action.

22.6.5 On being satisfied with proposal, and completeness of checklist (TDCA-AW-INSP-015 and TDCA-AW-INSP-016) and contents of EDTO manual, the Airworthiness Department shall forward the proposal to Flight Operation Department for further investigation from Operation aspect.

22.6.6 Prior to approving the ETOPS OR EDTO, the Airworthiness inspector shall co-ordinate the position with Flight Operations department department to review all items with airworthiness and Flight Operation aspects. After all the rectifications are made by the operator / owner and satisfactory, recommendation for approval should be made and provided using Coordination Form: ENG/AW/FO. The coordination forms will detail the operator, aircraft type and registration(s), AOC No as applicable to which the ETOPD/EDTO approval is applicable

22.7. Demonstrations flight

The Airworthiness officer nominated by Airworthiness Department shall associate with the proving/validation flight required completing the process of demonstration of flight for initial ETOPS or EDTO approval process in association with Flight Operation Department.

22.8. Issue of initial Approval for ETOPS or EDTO

Final approval letter indicating Airframe engine combination and serial no of aircraft, after satisfactory scrutiny both by Airworthiness offices and the Flight Operation Officer shall be issued by CAAT under intimation to CAAT Directorate for endorsement in the AOC Opspec.

22.9. Approval of additional aircraft

22.9.1 Whenever an additional aircraft is added by an operator to their fleet for ETOPS or EDTO operation that already has such approvals (i.e. holding same type of Airframe/engine Combination approval) the approval will be granted by the CAAT after scrutiny of operator request from Airworthiness aspect and Operational aspect from the assigned AWI and FOI. The necessary amendment of ETOPS or EDTO manual shall be approved by CAAT office before approval of additional aircraft is considered. The checklist from Airworthiness aspect and operation aspect shall be completed by the responsible AWI and FOI respectively

22.9.2 Approval letter shall be issued by CAAT office under intimation to the CAAT Directorate for endorsement in the AOC Opspec.

22.10. Continuing surveillance

CAAT may ensure the compliance for maintenance and regulatory requirement relevant to the ETOPS or EDTO approval during routine surveillance. Necessary follow up action depend upon nature of finding shall be initiated in accordance with enforcement policy and procedure manual. Ongoing monitoring, for AOC maintenance support arrangements, will be subject to the routine audit as per normal procedures.

The fleet average engine in- flight shut- down (IFSD) rate for the specified airframe- engine combination should be monitored by CAAT Airworthiness office. In the event that an acceptable level of reliability is not maintained, significant adverse trends exist, or if significant deficiencies are detected in the design of the aeroplane or propulsion system, the ETOPS or EDTO approval granted to the operator may be reviewed. The procedures for monitoring of above data contained in IFSD of the operator are described in appendix A of this chapter. Further, the CAAT officers shall attend the reliability program meeting conducted by the operator periodically as an observer and record it as part of oversight audit program.

22.11. Record

22.11.1 The CAAT shall retain the following records:

22.11.1.1. Copies of correspondence between Flt Operations and AW sections.

22.11.1.2. Copies of Recommendations of AW acceptance of the ETOPS or EDTO capability of the aircraft or fleet.

22.11.1.3. Statements from TC holder or STC holders

22.11.1.4. Information gathered during the ETOPS assessment with include IFSD and operator experience.

All records from the reviews shall be kept in the operator's files and/or AMO files in appropriate.

22.12. Responsibilities

Inspector – ensure compliance with the requirements for Approval.

22.13. Appendix A ENGINEERING STATISTICS REPORT

22.13.1 INTRODUCTION

22.13.1.1. Civil Aviation Requirements (Section 2 – Airworthiness) Series "A" Part III lays down that scheduled, non-scheduled and private operator should furnish certain data at specified intervals to CAAT.

22.13.1.2. CAAT announcement subject ETOPS approval requires that the fleet average IFSD rate for the specified airframe engine combination be monitored by CAAT in accordance with propulsion system reliability assessment and EDTO/ETOPS maintenance requirements. The Regional Airworthiness office will also monitor all aspects of the EDTO/ETOPS operation to ensure that the operation continues to be conducted safely. In the event that an acceptable level of reliability is not maintained, significant adverse trend exists or if significant deficiencies are detected in the conduct of EDTO operation, the Regional Airworthiness Office will initiate a special evaluation, pose operational restriction if necessary, to resolve the problem in a timely manner so as to ensure safe EDTO operations.

22.13.2 PURPOSE

22.13.2.1. The purpose of this chapter is to analyze the statistical data submitted by the operator to observe the performance of the aircraft and its system, identify any deficiency in the basic design in a component or in the layout of a system or in the maintenance practices followed by the operator. If required, based on the observations/ findings, the operator is expected to take necessary steps to make good the deficiencies so that the reliability of the aircraft systems and components is satisfactory and an acceptable level of operational reliability and safety has been achieved.

22.13.2.2. This chapter details the procedures to be followed by AW officers to analyze fleet performance and Engineering Statistics Report (ESR) submitted by the operator to identify any deficiency and initiate remedial action if any.

22.13.3 CONTENTS OF ENGINEERING STATISTICS REPORT

22.13.3.1. The ESR is generally divided into three parts. Each part contains the following minimum data according to the size and type of fleet of the operator.

i. Part 1 - This part is general and contains a brief introduction to the ESR of the operator, distribution list, and glossary of terms/ definitions used in there port as applicable to individual operator.

ii. Part 2 - This part will include the entire fleet registration details for the period under review.

iii. Part 3 - This part may be divided into number of sections according to the type of aircraft and each section contains aircraft operating summary for the particular type of aircraft, summary of mechanical delays, ATA chapter wise, cancellation / diversions of flight, details of engine premature removals, engine IFSD, premature removal of APU, summary of system reliability ATA chapter wise, summary of system performance, summary of unscheduled component removal, details of CVR/FDR removal, release of aircraft under MEL, auto land system reliability, ETOPS status etc

22.13.3.2. In addition to the numerical data, a Bar Chart/ graph corresponding to each type of aircraft fleet on the following may be available in the ESR.

i. Average daily utilization of aircraft- This bar chart will be a rolling one, by which it can compare the utilization of the type of aircraft fleet.

ii. Hours/ Cycles logged by the type of aircraft- this bar chart may be prepared as per aircraft type & registration wise.

iii. Engineering defects, Aircraft registration wise.

iv. Engineering defects ATA system wise

v. The system reliability-This will be a linear graph and there will be individual graph for each ATA Chapter.

22.13.4 PROCEDURE FOR REVIEW OF ENGINEERING STATISTICS REPORT

22.13.4.1. The responsible Airworthiness officer shall review the statistical data submitted by the operator to observe the performance of the aircraft and its system. Special emphasis shall be given to identify any adverse trend related to system reliability and component reliability, IFSD rate and identify the cause of the adverse trend. Depending upon the nature of deficiency observed either in the basic design in a component or in the layout of a system or in the maintenance practices followed by the operator, the necessary steps to make good the deficiencies shall be initiated so that the reliability of the aircraft systems and components is restored to an acceptable level of operational reliability. In the event of remedial action already initiated by the operator, the adequacy of remedial action may be ascertained. The responsible officer shall submit his observation along with the proposed remedial action to the next level of officer. The proposed remedial action shall be reviewed by an officer at least at the level of Director of Airworthiness for its adequacy and accordingly operator shall be informed to take immediate corrective action. A check list as is attached with this chapter shall be used during review of ESR of schedule operator.

22.13.5 CONTINUING SURVEILLANCE FOR EDTO OPERATION

22.13.5.1. The responsible officer shall also review the fleet average IFSD rate for the specified airframe engine combination in accordance with propulsion system reliability assessment and EDTO/ETOPS maintenance requirements. The Airworthiness office will also monitor all aspects of the EDTO/ ETOPS operational restriction if necessary, to resolve the problem in a timely manner so as to ensure safe components reliability. In the event that an acceptable level of reliability is not maintained, significant adverse trend exists or if significant deficiencies are detected in the conduct of EDTO operation, the Airworthiness Office will initiate a special evaluation, impose EDTO operations.

22.13.6 INTIMATION

In the event that an acceptable level of reliability is not maintained, significant adverse trend exists or if significant deficiencies are detected in the conduct of EDTO operation, an report shall be forwarded by the AW officer to the Director of Airworthiness with the details of measure initiated to address the deficiencies.

NO.	Document(s) Requirement	Remark
1	Name of the operator.	
2	Period Under Review.	
3	Whether IFSD rate for Airframe / Engine combination is at an acceptable level.	
4	Whether system reliability, system wise is considered acceptable.	
5	Whether component reliability, component wise is considered acceptable.	
6	Whether component reliability, for ETOPS / EDTO components is considered acceptable.	
7	Whether any adverse trend is observed.	
8	Whether remedial action initiated by the operator on the adverse trend observed is considered acceptable.	
9	If remedial action taken by the operator on the adverse trend is not adequate, additional measure recommended.	

Table 22.2: ESR Review Report (Schedule operator)

The ESR of the under review is considered satisfactory / unsatisfactory In case of adverse trend observed. The proposed remedial action Remark.

22.14 CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the ETOPS OR EDTO – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (93 ETOPS-OPS/AW). The use of Centrik software facilitates the coordination between OPS and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process. Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

Note: For ETOPS OR EDTO approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will done by FOI.

23. CHAPTER 23 CAAT RECORD KEEPING

23.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
	Form: C of R Package Checklist
	Form: C of A Package Checklist
	Form: Noise Certificate Package Checklist
	Form: Repair Station Package Checklist

23.2. OBJECTIVE.

This chapter contains information and guidance for keeping and control all work packages and all AIR documents such as certification package, Aircraft manufacturer documents, operator surveillance and audit data, training records etc. All the documents are stored in shared folders in an internal network system which is allowed only AIR staff who has a password to get access in. The documents will be separated in different folders named according to the function as the following categories.

23.3. CERTIFICATE TASK

23.3.1 Certificate tasks consists of

All Division tasks packages will be stored separately by each AIR division as follows:

23.3.1.1. Aircraft Inspection Division (AN)

23.3.1.2. Air Operator Division (AO)

23.3.1.3. Repair Station Inspection Division (RI)

23.3.1.4. Airworthiness Standards Development Division (AT)

23.3.1.5. Aircraft Registration Division (AR)

23.3.1.6. Aircraft Design and Aviation Products Inspection Division (DP)

Tasks for each Division as per duty and responsibilities in Airworthiness Handbook Chapter 1.

23.3.2 Certification Package for each certification task consists of;

23.3.2.1. Intension letter and/ or application form and all support documents

23.3.2.2. AIR associated checklists and evaluation report which included the discrepancies report which informed to the applicant

23.3.2.3. NCF from the applicant

23.3.2.4. Certificate issue or Certification letter

23.3.2.5. Other document/Package requirement will be stated in Package checklist as Classified task in 3.3.

23.3.3 AIR Certification tasks are classified as listed below:

23.3.3.1. C of A, C of R

23.3.3.2. AOC Certification and all associated manual

23.3.3.3. Modification and Repair Approval

23.3.3.4. Foreign AMO Certification

23.3.3.5. Domestic AMO Certification

23.3.3.6. TC and STC validation

23.3.3.7. Noise Certificate

23.3.3.8. Special Flight Permit

23.3.3.9. Export C of A The work packages of certification package and all related document of each package are stored in AIR computer base system and AIR SITE online follow as;

Certification tasks	Location	Retention Period
1. C of A, C of R	Air share drive: \\10.10.22.2\Aircraft data\each Aircraft registration mark	1 year after the aircraft deregistered
2. AOC Certification and all associated manual	Air share drive: \\10.10.22.2\AIR Share Drive\AO - Air Operater Division\AOC Re Cert Package/Each AOC	
2.1 Manual Certification		
2.1.1 GMM	Centrik	1 year after invalid of the AOC
2.2.2 MEL	Centrik	1 year after invalid of the AOC
2.2.3 EMP	Centrik	1 year after invalid of the AOC
2.2.4 Training Program	Centrik	1 year after invalid of the AOC
2.2.5 Reliability Program	Centrik	1 year after invalid of the AOC
2.2.6 Special Operation Approval	Centrik & AIR SHARE DRIVE	

3. Modification and Repair Approval	Air share drive: \\10.10.22.2\Aircraft data\each Aircraft registration mark	1 year after the aircraft deregistered
4. Foreign AMO Certification	Repair station list (AIR site) and Air share drive: \\10.10.22.2\AIR Share Drive\ RI - Repair Station Inspection Division\Repair Station Documents/Each repair station number	1 year after invalid of the Certificate
5. Domestic AMO Certification	Repair station list (AIR site) and Air share drive: \\10.10.22.2\AIR Share Drive\RI - Repair Station Inspection Division\Repair Station Documents/Each repair station number	1 year after invalid of the Certificate
6. TC and STC Validation	Air share drive: \\10.10.22.2\AIR Share Drive\DP - Aircraft Design and Aviation Products Inspection Division\TC and STC Validation	Forever
7. Noise Certification	Air share drive: \\10.10.22.2\Aircraft data\each Aircraft registration mark	1 year after the aircraft deregistered

8. Special flight permit	Air share drive: \\10.10.22.2\Aircraft data\each Aircraft registration mark	1 year after the aircraft deregistered
9. Export C of A	Air share drive: \\10.10.22.2\Aircraft data\each Aircraft registration mark	1 year after the aircraft deregistered
10. Finding record and NCF	Non-Compliance Monitoring System in AIR site	1 year after the aircraft deregistered

Table 23.1 record/File Location for each task

23.3.3.10. Inspector in charge of each task in certification will be responsible from start of audit and inspection until Closing finding, after certification process was closed, Inspectors shall scan Surveillance Document and keep in a location as stated in Table 23.1

23.3.3.11. If any finding has been raised, inspector must create a reference number of finding and keep updating regularly in Table 23.1

23.3.3.12. The Surveillance/Inspection will be completed after and record/Package are kept in Location as Table 23.1 and Verified by Technical Administrator (Signed by Technical Administrator in Form: AIR-CA-001).

23.3.4 Surveillance DOCUMENT

23.3.4.1. surveillance audits are classified as listed below;

i. Main base
ii. Line station
iii. Ramp
iv. Foreign Ramp (FAOC)
v. Domestic AMO
vi. Foreign AMO
vii. Reliability Meeting

23.3.4.2. The work packages of surveillance audit and surveillance document of each year are stored in AIR computer base system;

Surveillance tasks	Location
1. Main base	Centrik
2. Line Station	Centrik
3. Ramp	AIR SHARE DRIVE
4. Foreign Ramp (FAOC)	OPS Department
5. Domestic AMO	AIR SHARE DRIVE
6. Foreign AMO	AIR SHARE DRIVE
7. Reliability Meeting	Centrik

Table 23.2 record/File Location for each Surveillance

23.3.5 OEM Technical PublicTION

23.3.5.1. Inspector will access to OEM Technical Publication for more information Engineering, Maintenance, Aviation magazine and other publication as list below:

MANUFACTURER	PORTAL
ICAO	https://portal.icao.int/
AIRCRAFT	
Airbus	http://airbusworld.com/
Boeing	https://myboeingfleet.boeing.com
Aviation Id	https://sso.aviationid.com/idprov/pages/home/dashboard.faces
Bombardier	https://iflybombardier.com
Cessna	http://www.txtavsupport.com
Hawker	http://www.beechcraft.com/customer_support/technical_publications/
Beechcraft	
1View	https://ww2.txtav.com/MyTools
Gulfstream	https://idp.gulfstream.com/
ATR	http://www.atrdoc.com/default_aut.asp
Diamond	http://support.diamond-air.at/techpubs+M52087573ab0.html
Cirrus	http://servicecenters.cirrusdesign.com/memberlogin.asp
SOCATA	http://www.mysocata.com

Tecnam	http://reservedarea.tecnam.com/Login.aspx
PIPER	http://www.piper.com/technical-publications-documents/
Pilatus	https://auth.pilatus-aircraft.com/core/login
HELICOPTER	
Airbus Helicopter	https://keycopter.airbushelicopters.com
Sikorsky	https://www.sikorsky360.com
Aguta	https://leonardo.agustawestland.com/public/welcome
Robinson	https://robinsonheli.com
CAMERON Balloon	http://www.cameronballoons.co.uk/support
ENGINE	
Tubomega	http://www.turbomeca-support.com
Lycoming	http://www.lycoming.com/contact/knowledge-base/publications
Pratt and Whitney	https://fleetcare.pw.utc.com
Boeing training	https://www.alteontraining.com/login.aspx?role=0
Honeywell	https://myaerospace.honeywell.com/
MAGAZINE	

Aviationweek	http://archive.aviationweek.com/
KITPLANES	http://kitplanes.com/magazine/

23.3.5.2. The username and Password to access the website will be provided and updated in https://docs.google.com/spreadsheets/d/1q9JARZ6PL33WxnvuXolqVzcPC7U6j8pWxIU6BlEIKXI/edit#gid=0

23.3.6 Manual and Checklist

The manual and check list will be record and keep update to;

Document	Reference
1. Manual	
1.1 Airworthiness Manual	\\10.10.22.2\AIR Share Drive\@Control Document\AIR Handbook and Guidance Manual\AW Handbook\Rev.30
1.2 Engineering Manual	\\10.10.22.2\AIR Share Drive\@Control Document\AIR Handbook and Guidance Manual\ENG Handbook
2. Checklist (Master Checklist)	\\10.10.22.2\AIR Share Drive\@Control Document\Master checklist

24. CHAPTER 24 AIRCRAFT LEASING ARRANGEMENT

24.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL
Civil Aviation Authority of Thailand Air Operator Certificate Requirement - AOCR Chapter 1 item 9
Announcement of Department of Civil Aviation of Thailand concern Wet lease and Code sharing of the air operator issued May 14, 2009
Annoucement of Ministry of transport – Air Operator License (AOL)
ICAO Annex 6, 8
ICAO Doc 9760

No.	Form Number	Subject
1.	AIR/ AR- 401 (CENTRIK CHECKLIST 131. AIR/AR-401 AW)	Aircraft Leasing Arrangement – Airworthiness aspects

24.2. PURPOSE

AOC holder intending to be involved in operational leasing arrangements. AIR inspectors should refer to this chapter for considering an acceptance of leasing agreement. This Chapter provides general guidance to individuals, organizations and other entities regarding the policies that are applicable to aircraft leasing arrangements that may be acceptable to the CAAT.

24.3. Definitions and Acronyms

24.3.1 The following definitions are used in this chapter:

24.3.1.1. **Air Operator Certificate:** A certificate issued under AOCR of the Civil Aviation Authority of Thailand (CAAT) authorizing an air operator to carry out commercial air transport operations.

24.3.1.2. **Lease:** Any agreement by a person (the lessor) to provide an aircraft to another person (the lessee) who will use the aircraft for compensation or hire purposes. A lease is not an agreement for the sale of an aircraft or a contract of conditional sale.

24.3.1.3. **Lessor:** The party furnishing the aircraft under a lease.

24.3.1.4. **Lessee:** The party using the aircraft under the provisions of a lease.

24.3.1.5. **Dry lease:** A lease arrangement whereby a lessor provides an aircraft without crew to lessee, operated under the AOC of the lessee.

24.3.1.6. **Wet lease:** A lease arrangement whereby a lessor provides an aircraft with crew to the lessee, operated under the AOC of the lessor.

24.3.1.7. **Damp lease:** A lease arrangement whereby a lessor provides an aircraft with partial crew to the lessee, operated under the AOC of the lessor.

24.3.1.8. **Charter:** Any arrangement in which an individual, operator or organization, having passengers or cargo

24.3.1.9. **Operational control:** means the exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of safety of the aircraft and the regularity and efficiency of the flight.

Note: Determination of operational control rests with the CAAT and shall be made in accordance with the Civil Aviation (Air Operator Certificate Requirements, AOCR).

24.3.1.10. **Maintenance**: means tasks required to ensure the continued airworthiness of an aircraft or aircraft component including any one or combination of overhaul, repair, inspection, replacement, modification and defect rectification.

24.3.1.11. **General Maintenance Manual (GMM):** A document that describes an air operator' s procedures necessary to ensure that all scheduled and unscheduled maintenance is performed on the operator's aircraft on time and in a controlled and satisfactory manner.

24.3.1.12. **Operator:** means the holder of an Air Operator Certificate (also called "air operator")

24.3.1.13. **State of Operator:** means the State in which the Operator's principal place of business is located, or if there is no such place, the Operator's permanent residence.

24.3.1.14. **State of Registry:** means the State on whose register the aircraft is entered. The state of registry is responsible for the safety oversight and airworthiness standard for aircraft on its register

24.3.2 The following acronyms are used in this circular

24.3.2.1. AOC Air Operator Certificate

24.3.2.2. CAA Civil Aviation Authority

24.3.2.3. CAAT Civil Aviation Authority of Thailand

24.3.2.4. CARs (Thailand) Civil Aviation Regulations

24.3.2.5. AIR Airworthiness and Aircraft Engineering Department (of the CAAT)

24.3.2.6. OPS Flight Operations Standards Department (of the CAAT)

24.3.2.7. GMM General Maintenance Manual

24.3.2.8. MEL Minimum Equipment List

24.4. Background

The leasing of aircraft, especially those involving aircraft registered in different States, has become an international focus**.** Given the international concern and focus, this Chapter was developed to clarify the definitions and process that will be applied by CAAT. Whatever the leasing arrangement may be in place, the Authority shall have free and uninterrupted access to the aircraft at any place and time.

All leasing agreements and arrangements involving transportation of passengers and property for hire must be submitted to the CAAT AIR and CAAT OPS for approval or acceptance prior to executing and implementing these arrangements. Operators are expected to anticipate their possible leasing arrangements and obtain prior authorization as far in advance of a proposed implementation date as possible.

24.5. Type of Operational leasing arrangement

24.5.1 **Dry lease arrangement**

In a dry lease agreement, the lessee usually assumes operational control of the aircraft. The aircraft is operated under the lessee's air operator certificate. Compliance to other relevant regulatory requirements include airworthiness of aircraft would depend on the civil aviation authority of the State where the aircraft is registered.

Dry lease (in) of foreign registered aircraft by Thai AOC holder without change of aircraft registration (**CAAT not allow dry leasing (in) of Foreign Registered Aircraft**).

Dry lease (out) of Thai registered aircraft to a foreign / Thai AOC holder without change of aircraft registration (**CAAT not allow dry leasing (out) to a foreign AOC by remaining Thai Register**). When a Thai registered aircraft is dry leased out to a Thai AOC holder, it will be considered as additional aircraft (type) in lessee's AOC operation specification.

24.5.2 **Wet lease or damp lease arrangement**

In a wet or damp lease arrangement, the lessor assumes operational control of the aircraft operations. Aircraft operations must be in compliance with the requirements in the lessor's air operator certificate for the duration of the lease and airworthiness of the aircraft must be in compliance with the requirement of state of registry.

Wet or damp lease (in) of foreign registered aircraft by Thai AOC holder without change of aircraft. The AOC holder shall comply with Announcement of Department of Civil Aviation of Thailand concern Aircraft wet lease B.E. 2552 (2010) and following procedure may be applied;

24.5.2.1. Each AOC holder shall provide CAAT with a copy of the wet lease to be executed. Checklist AIR/AR-401 shall be used for acceptance of the lease agreement.

24.5.2.2. CAAT (AIR and OPS) will determine which party to a wet lease agreement has operational control considering the extent and control of certain operational functions such as:

i. Initiating and terminating flights.

ii. Maintenance and servicing of aircraft.

iii. Continue Airworthiness of aircraft.

iv. Scheduling crewmembers.

v. Paying crewmembers.

vi. Training crewmembers.

24.5.2.3. Each AOC holder engaged in a wet leasing arrangement shall amend its operations specifications to contain the following information:

i. The names of the parties to the agreement and the duration of the agreement.

ii. The make, model, and series of each aircraft involved in the agreement.

iii. The kind of operation.

iv. The expiration date of the lease agreement.

v. A statement specifying the party deemed to have operational control.

vi. Any other item, condition, or limitation the Authority determines necessary.

Wet or damp lease (out) of Thai registered aircraft to a foreign or Thai AOC holder without change of aircraft registration. The lessor remains responsible for the Maintenance and continuing airworthiness of the aircraft as it is still Thai registered aircraft. The lessor shall operate the aircraft under CAAT AOC requirement as it is still operated under lessor's AOC. Additional, in some cases The AOC holder (lessor) may be required to comply with requirement of foreign authority

24.6. Duration of lease

Type of operation lease (Aircraft registration is not changed)	Duration
Dry lease (out)	Not allow
Dry lease (in)	Not allow
Wet or Damp lease (out)	12 months, But not later than C of A expiry date
Wet or Damp lease (in)	Not more than 6 months, subject to a one time extension of an additional 3 months.

24.7. Aircraft registered with the Authority of the Lessee

Parties to a dry lease agreement may register the aircraft with the Authority of the lessee. This change of registration of the leased aircraft will result in the lessee being solely responsible for the operational control and the airworthiness of the aircraft.

24.7.1 **Dry lease-(in)** of foreign registered aircraft by Thai AOC holder with change of aircraft registration.

As CAAT not allow dry lease (in) of foreign registered aircraft. All dry leases (in) aircraft shall be changed to Thai registration. This is similar to registering an aircraft by a Thai AOC holder. The Thai AOC holder shall comply with all regulatory requirements related to a Thai registered aircraft and be responsible for the operational control of the aircraft for the duration of the lease. Following procedure may be applied.

24.7.1.1. An AOC holder may dry lease an aircraft for the purpose of commercial air transportation from any AOC holder of a State which is signatory to the Chicago Convention provided that the following conditions are met:

i. Aircraft shall be registered by an AOC holder in term of processor. CAAT will inspect the aircraft for Type acceptance, issue C of R and C of A.

ii. CAAT will follow Engineering Manual Chapter 5 for Type acceptance and Airworthiness Manual Chapter 5 guidance for Certificate of registration and Chapter 2 Guidance for issue and renewal C of A.

24.7.1.2. Each AOC holder shall provide the Authority with a copy of the dry lease to be executed. Checklist AIR/AR-401 shall be used for acceptance of the lease agreement.

24.7.1.3. Operational control of any dry leased aircraft rests with the AOC holder operating that aircraft.

24.7.1.4. AOC holder responsible for all continue airworthiness of aircraft include establish all concern technical manual and send to CAAT for approval such as the general maintenance manual, maintenance programme and MEL to be followed during the term of the dry lease.

24.7.2 **Dry lease out Dry lease – (out)** of Thai registered aircraft to a foreign operator with change of aircraft registration. (CAAT not allow dry leasing (out) by remain Thai Register)

All dry leases (out) aircraft to a foreign operator shall be de-registered from Thai registry. Regulatory requirements related to Thai registered aircraft will not be applicable when the aircraft is de-registered from the Thai registry. The leased aircraft may be re-registered back onto Thai registry at the end of the lease provided it meets all applicable CAAT requirements at the time of re-registration. De-registered procedure in chapter 5 may be applied.

24.8. Key AOC-Related Responsibilities

For the purposes of aircraft leasing arrangements, the key AOC-related responsibilities are

24.8.1 Operational control to make the final decisions related to route of flight, actual departure times and need for and implementation of necessary diversions and those functions associated with flight locating, flight following and/or flight watch.

24.8.2 Flight preparation requirements, including flight planning; operational flight plan and minimum fuel loading, calculations of mass and balance and performance; provision of adequate flight documentation.

24.8.3 Maintenance control, including planning, deferring and performing of maintenance.

24.8.4 Crew scheduling, including responsibility for crew duty, flight and rest periods.

24.8.5 Crew qualification, including responsibility for training, proficiency and currency requirements.

24.8.6 Ground handling responsibilities, ensuring the proper loading, fueling and servicing of the aircraft.

24.9. Guidance Regarding acceptance of Leasing Arrangements in airworthiness matter

Wet lease in; AIR as a party of Leasing arrangements approval is responsible to perform certification in airworthiness aspects and then notify to OPS when all airworthiness requirements are satisfied.

24.9.1 Assign staff

According to Procedure in Flight Operation Inspector manual volume 2 chapter 10, AIR manager will assign an AIR staff to perform certification in airworthiness aspects.

24.9.2 Certification in airworthiness aspects.

24.9.2.1. The assigned AIR staff shall use Checklist AIR/AR-401 as guidance to check leasing arrangement in airworthiness matter.

24.9.2.2. Maintenance documents (GMM or Maintenance control manual, Maintenance Program and Minimum Equipment List) shall be reviewed to ensure that there is no conflict with CAAT requirement.

24.9.2.3. Lease agreement shall be reviewed to ensure that the agreements contain all necessary subject concern airworthiness. Elements in section 10 must be included in lease agreement.

24.9.2.4. Review AOC Operation specification in special Operation authorization such as EDTO, RVSM, PBN, LVO etc.

24.9.2.5. Aircraft physical ramp inspection may be performed by the assigned AIR staff before acceptance to ensure that the aircraft complies with ICAO standard

24.10. Contents of Leasing Arrangements

24.10.1 The following elements will be a part of all leasing agreements submitted for CAAT evaluation

Note: Operators are encouraged to use the aircraft leasing arrangements CENTRIK CHECKLIST 131. AIR/AR-401 AW when preparing aircraft lease agreement.

24.10.1.1. The official names and address of the parties; (Lessor and Lessee)

24.10.1.2. Aircraft owner name and address;

24.10.1.3. The duration of the agreement, with specific start and expiration dates;

24.10.1.4. The make, model, series and registration mark of each aircraft involved in the agreement;

24.10.1.5. An explanation of the type of operations that will be conducted by the lessee

24.10.1.6. The interchange point (interchange agreements only); verify by OPS

24.10.1.7. The specifications regarding which party has responsibility and authority for operational control, including the final decisions for initiating, terminating or diverting a flight; verify by OPS

24.10.1.8. The specifications regarding which party has the responsibility and authority for provision of aeronautical data, weather and flight planning and operational flight plan for the operation of the aircraft; verify by OPS

24.10.1.9. The specifications regarding which party has the responsibility and authority for provision of aircraft loading, computation of mass and balance and performance associated with each flight of the aircraft; verify by OPS

24.10.1.10. The specifications regarding which party has responsibility and authority for crew scheduling including assignment to duty and compliance with duty, flight and rest period requirements; verify by OPS

24.10.1.11. The specifications regarding which party has responsibility and authority for ensuring that crew training, proficiency and line checks, and currency requirements are met; verify by OPS

24.10.1.12. The specifications regarding which party has responsibility and authority for maintenance control of the aircraft involved;

24.10.1.13. The specifications regarding which party has responsibility and authority for Airworthiness of the aircraft involved;

24.10.1.14. The specifications regarding which party has responsibility and authority for planning, arranging, performing and deferring maintenance for the aircraft;

24.10.1.15. The specifications regarding which party has responsibility and authority for maintaining the official maintenance records for the aircraft involved;

24.10.1.16. The control of aircraft parts

24.10.2 CAAT may specify additional elements for specific leasing agreements depending on the extenuating circumstances

24.11. Notify to OPS

When Lease agreement was reviewed in airworthiness aspects and accepted by Assigned AIR staff. Assigned AIR staff will notify POI (OPS) by email with attached form number AIR/AR-401. Such Email will be sent to CAATAOC@caat. or. th then CC: AIR Manager and Head of AIR Operator Inspection.

Wet lease out; CAAT/AIR remains responsible for the continuing airworthiness of the aircraft as it is still registered in Thailand.

24.12. After Acceptance of Leasing Agreement

24.12.1 CAAT have authorized to perform ramp inspection on the aircraft to confirm the equivalent safety audit and complies with ICAO standard.

24.12.2 If there is any change of lease agreements, it is responsibility of the operator to submitted revision of lease agreements to CAAT for review and accept.

25. CHAPTER 25 PROCEDURE FOR DEALING WITH AMENDMENT OF REGULATIONS, REQUIREMENTS AND PROCEDURES BASED ON AMENDMENTS OF ICAO SARPS, OTHER INTERNATIONAL REGULATIONS AND PERIODIC REVIEW OF EXISTING REGULATIONS, REQUIREMENTS AND PROCEDURES:

25.1. Introduction:

CAAT - ICAO Annex Management Manual provides an overview of CAAT's regulatory development based on ICAO SARPs.

This Chapter details the guidelines to be followed by the officers of Airworthiness and Aircraft Engineering Department (AIR) on receipt of ICAO technical State Letters for annex amendments, amendment to ICAO Annexes/documents for incorporating the same in CAAT regulations/ requirements and process the notification of differences to SARPs related to Airworthiness, if any. This chapter also details introduction/amendments of regulation, requirements and procedures.

CAAT is also recognising the standards and practices (where appropriate) of the major aviation countries. In developing the rules for aviation safety, CAAT typically reviews and assesses comparable rules of the:

- Federal Aviation Administration (FAA)
- European Aviation Safety Agency (EASA)
- Etc.

Where it is appropriate to incorporate or reflect the rules of other major aviation countries, CAAT makes whatever changes are required to reflect the Thailand's operating environment.

It is important to note that if CAAT regulations/requirements incorporates international, foreign or industry standards by way of reference

(either as of a fixed date or as amended from time to time), then the identification of differences with the SARPs must take into account the differences contained in the international, foreign or industry standards.

CAAT aims to conduct a review of current compliance and differences, including for incorporated foreign legislation. This is undertaken in conjunction with the confirmation (or otherwise) of all differences registered with ICAO and the updating of the ICAO Compliance Checklists that indicated Thailand's compliance or non-compliance with ICAO SARPs.

The process reveals any changes in adopted foreign regulations/requirements and standards, any differences filed by the foreign authority in relation to this legislation and the subsequent registration or removal of differences to coincide with the foreign legislation/standard.

25.2. Procedure

25.2.1 Whenever an amendment to an ICAO Annex is received related to Annex 6, 7, 8 and 16 and 19 requiring amendment in the regulations/requirements pertaining to airworthiness, the amendment will be studied in light of existing Regulations/Requirements. Special emphasis will be on Standards /Recommended Practices which may warrant amendment in Aircraft Regulations/Requirements. The amendment to the procedures shall be within the framework of the existing Regulations/Requirements.

25.2.2 AT Division Coordinate with LEG Department and internal AIR Division to review, comments and drafing the regulation if concerned according to timeframe as mentioned in Annex Management Manual. For a draft Regulations/Requirements amendments will be prepared and forwarded to the Legal Department (LEG) for further review and discussion. The draft Regulations/Requirements will be presented for adoption and subsequent notification on the CAAT website for public comments.

25.2.3 After receipt of public comments within stipulated time, the final draft of Regulations/Requirements amendments will be evaluated within CAAT, before submitted to CAAT Director General (DG) for consideration/approval.

25.2.4 In case of identifying and notifying differences concerning the Annexes., AT division as a focal point of AIR Department will responsible to inform LEG Department according to timeframe as mentioned in the Annex Management Manual. SARPs which are not acceptable/ feasible to comply shall be notified as "Differences" to ICAO in coordination with the Legal Department (LEG). Draft proposal for filing differences should be made following the guidelines as detailed in the CAAT - ICAO Annex Management Manual.

25.2.5 It shall be ensured that the effective date of the applicability of the amendment to the Annex is adhered to.

25.2.6 After DG approval, the Regulations/Requirements amendments will be published and uploaded on the CAAT website.

25.2.7 After approval of draft Regulations/Requirements, the responsible AIR functions will also propose necessary draft procedure (Issue/ revision) including relevant checklists and also surveillance checklist, if applicable. The draft procedure and checklists will be submitted for approval by the DG or AIR manager

25.3. Periodic Review of existing regulations, requirements and procedures:

Existing regulations/requirements/procedures will be reviewed periodically by Airworthiness and Aircraft Engineering Department (AIR) to ascertain the viability and effectiveness of such regulations/requirements/procedures as and when it considered necessary and take appropriate action to amend the regulations/requirements /procedures.

25.4. Record Keeping:

All records pertaining to handling of ICAO annexes and guidance materials related to Airworthiness are to be maintained by Airworthiness and Aircraft Engineering Department (AIR). Records should comprise at least the followings:

25.4.1 ICAO State letter accompanying the ICAO Annexes/SARPs;

25.4.2 All documents related to analysis of particulars ICAO Annexes/SARPs in chronological order.

25.4.3 All public comments received.

25.4.4 All the file noting related to the decisions with regards to the implementation of particular Annex/SARPs;

25.4.5 All documents related to revision to regulations/requirements and decision taken

26. CHAPTER 26 APPROVAL OF A MAINTENANCE PROGRAMME

26.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6, Parts 1 and 2	FORM ENG A1 – Maintenance Programme Approval Certificate
CAAT AOCR, Chapter 8,Para 8.2	FORM ENG A1- 1 – Maintenance Programme Assessment Checklist
DCA Announcement on Maintenance programme Approval	FORM ENG A1- 2 – Maintenance Programme Amendment Form
CAAT ENG- 01 Information and Guidance for Maintenance Schedule and Programme	FORM ENG A1- 3 – Reliability Programme Assessment Checklist
CAAT ENG-02 Condition Monitored Maintenance & Explanatory Handbook	

26.2. General

The approval of a Maintenance programme is a key element prior to granting an Air Operator Certificate to an operator.

26.2.1 An operator must ensure that the aeroplane is maintained in accordance with the operator's aeroplane maintenance programme. The programme must contain details, including frequency, of all maintenance required to be carried out. The programme will be required to include a reliability programme when the Authority determines that such a reliability programme is necessary.

26.2.2 The aeroplane maintenance programme should be managed and presented by the operator to the Authority.

26.2.3 The operator's aeroplane maintenance programme should contain a preface which will define the maintenance programme contents, the inspection standards to be applied, permitted variations to task frequencies and, where applicable, any procedure to escalate established check/inspection intervals

26.3. Detailed guidance on the content

The Aircraft Engineering inspector of the CAAT should ensure that the following data are included in the maintenance programme prior to approval.

26.3.1 The type/model and registration number of the aeroplane, engines and, where applicable, auxiliary power units and propellers.

26.3.2 The name and address of the operator.

26.3.3 The operator's reference identification of the programme document; the date of issue and issue number.

26.3.4 A statement signed by the operator to the effect that the specified aeroplanes will be maintained to the programme and that the programme will be reviewed and updated as required by paragraph 5

26.3.5 Contents/list of effective pages of the document.

26.3.6 Check periods which reflect the anticipated utilisation of the aeroplane. Such utilisation should be stated and include a tolerance of not more than 25%. Where utilisation cannot be anticipated, calendar time limits should also be included.

26.3.7 Procedures for the escalation of established check periods, where applicable and acceptable to the Authority.

26.3.8 Provision to record date and reference to approved amendments stated in the programme.

26.3.9 Details of pre-flight maintenance tasks which are accomplished by maintenance staff and not included in the Operations Manual for action by flight crew.

26.3.10 The tasks and the periods (intervals/frequencies) at which each part of the aeroplane, engines, APU's, propellers, components, accessories, equipment, instruments, electrical and radio apparatus, and associated systems and installations should be inspected, together with the type and degree of inspection.

26.3.11 The periods at which items as appropriate, should be checked, cleaned, lubricated, replenished, adjusted and tested.

26.3.12 Details of specific structural inspections or sampling programmes.

26.3.13 Details of the corrosion control programme, when applicable.

26.3.14 The periods and procedures for the collection of engine health monitoring data.

26.3.15 The periods at which overhauls and/or replacements by new or overhauled parts should be made.

26.3.16 A cross-reference to other documents approved by the Authority which contain the details of maintenance tasks related to mandatory life limitations, Certification Maintenance Requirements (CMR's) and Airworthiness Directives (AD's).

26.3.17 Note: To prevent inadvertent variations to such tasks or intervals these items should not be included in the main portion of the maintenance programme document, or any planning control system, without specific identification of their mandatory status.

26.3.18 Details of, or cross-reference to, any required Reliability Programme or statistical methods of continuous Surveillance.

26.3.19 A statement that practices and procedures to satisfy the Programme should be to the standards specified in the Type Certificate Holder's Maintenance Instructions.

26.3.20 Each maintenance task quoted should be defined in a definition section of the Programme.

26.4. Programme basis

26.4.1 Operator's Aeroplane Maintenance programmes should normally be based upon the Maintenance Review Board Report, where available, and the Type Certificate Holder's Maintenance Planning Document or Chapter 5 of the Maintenance Manual, (i.e. the Manufacturer's recommended Maintenance Programme). The structure and format of these maintenance recommendations may be re-written by the operator to better suit his operation and control of the particular maintenance programme.

26.4.2 For a newly type-certificated aeroplane, where no previously approved Maintenance Programme exists, it will be necessary for the operator to comprehensively appraise the manufacturer's recommendations (and the MRB Report where applicable), together with other airworthiness information, in order to produce a realistic Programme for approval.

26.4.3 For existing aeroplane types it is permissible for the operator to make comparisons with maintenance programmes previously approved. It should not be assumed that a Programme approved for another operator will automatically be approved for the operator. Evaluation is to be made of aircraft/fleet utilisation, landing rate, equipment fit and, in particular, the experience of the maintenance organisation must be assessed.

26.5. Basis of document

26.5.1 Where an operator wishes to use an aeroplane with the initial operator's aeroplane maintenance programme based upon the Maintenance Review Board Report (MRBR) process, any associated programme for the continuous surveillance of the reliability, or health monitoring of the aeroplane should be considered as part of the aeroplane maintenance programme.

26.5.2 Where an aeroplane type has been subjected to the MRBR process, an operator should normally develop the initial operator's aeroplane maintenance programme based upon the MRBR.

26.5.3 The documentation supporting the development of operator's aeroplane maintenance programmes for aeroplane types subjected to the MRBR process should contain identification cross reference to the MRBR tasks such that it is always possible to relate such prevent the approved operator's aeroplane maintenance programme from being developed in the light of service experience to beyond the MRBR recommendations but will show the relationship to such recommendations.

26.6. Evaluation and approval process by CAAT

26.6.1 The maintenance program shall be evaluated to ensure that items as per the source documents as required as per CAAT announcement on Maintenance Programmes are included in. The officer responsible for evaluation of AMP shall ensure that all the requirements of CAAT are also complied with. After evaluation, if discrepancies are found, a notice listing specific discrepancies found and recommendations shall be recorded in the verification column of the checklist. The discrepancies outlining what will be required to correct the discrepancies is issued to the operator concerned for necessary correction.

26.6.2 The following requirements for content of the maintenance programme should be considered by the responsible officers during the evaluation of the proposed maintenance programme for approval.

26.6.2.1. MRB report approved by the State of Design;

26.6.2.2. MPD issued by the type certificate holder or manufacturer;

26.6.2.3. ALIs specified in the type certificate data sheet. These may include CMRs, safe life airworthiness limitation items, and damage tolerant ALIs;

26.6.2.4. Specific operation requirements of the CAAT.

26.6.2.5. These requirements may relate to maintenance of additional configuration items required for the type of operations and to any additional maintenance tasks required by CAAT regulations. Examples include maintenance requirements relating to operations over uninhabited terrain, operations over water, EDTO, reduced vertical separation minima (RVSM) operations, all-weather operations (AWOPS) and navigation system requirements relating to polar operations and minimum navigation performance specifications (MNPS). Additional maintenance requirements relating to extreme climates (temperature, humidity, salt spray, ice or dust) in the area of operations may also be required by national regulations, specific maintenance requirements relating to the flight data recorder (FDR) system, the cockpit voice recorder (CVR) system, emergency equipment and other systems;

26.6.2.6. Mandatory life limits for engine life-limited parts specified by the manufacturer;

26.6.2.7. Engine and APU off-wing maintenance as specified in the engine and APU work scope planning guides; and

26.6.2.8. Instructions for continuing airworthiness (ICAs) specified for air operator installed equipment or required by STC modifications, including emergency equipment.

26.6.2.9. All items in the maintenance programme should have the source document clearly identified and mandatory items (such as CMRs, ALIs and ADs) must be clearly distinguished from items that are subject to adjustments or changes based on operating experience.

26.7. Amendments

Amendments (revisions) to the approved Programme should be raised by the operator, to reflect changes in the type certificate holder's recommendations, modifications, service experience, and required accepted by Aircraft Engineering inspector. Reliability programmes form one important method of updating approved programmes.

26.8. Permitted variations to maintenance periods

The Operator may only vary the periods prescribed by the Programme with the approval of the Authority.

26.8.1 Short Term Escalation Guidance and Procedures

26.8.1.1Under controlled conditions, an operator may use short-term escalation for an individual component, engine or aircraft without affecting safety. These procedures require close monitoring to ensure that they do not conceal unsound maintenance practices, maintenance program deficiencies, or poor management decisions.

26.8.1.2Short-term escalations for operators not under an approved maintenance reliability program must be approved by the CAAT.

26.8.1.3Operators with escalations (Maximum 10%, refer to ADCA maintenance program requirement) as part of an approved maintenance program do not require DAH approval before using an escalation. The operator must, however, inform and accept by CAAT of an escalation as soon as possible after the escalation is put into effect.

26.8.1.4A short-term escalation should only be used after carefully analysing the history of the aircraft and its components. A review of the proposed escalation should include:

26.8.1.4.1. Previous inspection results;

26.8.1.4.2 Supplemental/additional inspection that may be needed to ensure continued airworthiness during the escalation;

26.8.1.4.3 Items not covered by the escalation, should not exceed their maintenance intervals;

26.8.1.4.4 Cross checking with the overall maintenance program to ensure that the escalation will not create an unsafe condition;

26.8.1.4.5 Ensuring that the program does not compromise any due mandatory inspection and escalation of repetitive Airworthiness Directives or fatigue life limited parts;

26.8.1.4.6 Restrict the occurrence of repetitive short-term escalations that indicate a need for a change in the maintenance program;

26.8.1.4.7 Provide a method for recording all escalations, with provisions for submitting and reporting escalations to the Authority;

26.8.1.4.8 May require a manufacturer's comment or recommendation

26.8.1.4.9 The procedure and process of applying for approval and management of short term escalations must be well defined in the operators approved maintenance control manual (GMM).

26.8.1.5The procedure and process of applying for approval and management of short term escalations must be well defined in the operators approved maintenance control manual (GMM).

26.8.1.6Maximum short-term escalation intervals may be a percentage of an existing interval for a particular inspection, or may be designated in hours of service, cycles, or in other increments. Except under certain conditions, the maximum time for an escalation is refer to ADCA maintenance program requirement. It must not be used repetitively to, in effect, constitute fleet time extension.

26.8.1.7Extension of Short-Term Escalations. The 10% maximum time limit (refer to ADCA maintenance program requirement) for an Escalation is usually sufficient for an operator to position and/or repair the affective Item.

Occasionally, an operator cannot effectively accomplish the task within this time limit. After an in-depth review of this situation, an individual item may be extended beyond the 10%. In order to do this, an operator must submit justification (must be discussed, agreed and approved by DAH and evaluation all the tasks) to the CAAT airworthiness inspector prior to approval.

26.9. Periodic review of maintenance programme contents

26.9.1 Operator's approved aeroplane Maintenance Programmes should be subject to periodic review to ensure that they reflect current Type Certificate holder's recommendations, revisions to the Maintenance Review Board Report, mandatory requirements and maintenance needs of the aircraft.

26.9.2 The Operator should review the detailed requirements at least annually for continued validity in the light of operating experience.

26.10. Reliability programme:

26.10.1 Some approved operator's aeroplane maintenance programmes, not developed from the MRB Process, utilise reliability programmes. Such reliability programmes should be considered as a part of the approved maintenance programme.

26.10.2 Reliability programmes should be developed for aeroplane maintenance programmes based upon MSG logic or those that include condition monitored components or that do not contain overhaul time periods for all significant system components.

26.10.3 Reliability programmes need not be developed for aeroplane maintenance programmes of aeroplanes of 5,700 kg and below or that do contain overhaul time periods for all significant system components.

26.10.4 The purpose of a reliability programme is to ensure that the aeroplane maintenance programme tasks are effective and their periodicity is adequate. It therefore follows that the actions resulting from the reliability programme may be not only to escalate or delete maintenance task, but also to de-escalate or add maintenance tasks, as necessary.

26.10.5 A reliability programme provides an appropriate means of monitoring the effectiveness of the maintenance programme.

26.11. Review Reliability Document

26.11.1 Review the operator's reliability programme paragraphs to understand the scope, conditions, and limitations of the authorisation. Ensure that the operations specifications include all items controlled by the reliability programme, to include the following:

26.11.1.1. All aircraft

26.11.1.2. Engines

26.11.1.3. Systems

26.11.1.4. Components

Note: *It is recommended the inspector develop a procedural flowchart to gain a better understanding of how the entire reliability programme functions and how the systems interrelate. It should be used during on-site inspections of the reliability programme. He may use Checklist ENG A1-3 to assess the reliability programme.*

26.11.2 Ensure that the reliability document is on file in the CAAT.

26.11.3 Ensure that the reliability document has procedures for obtaining CAAT approval before changing any of the following:

26.11.3.1. Performance standards

26.11.3.2. Data collection system

26.11.3.3. Data analysis system

26.11.3.4. Process(es) / task(s)

26.11.3.5. Procedures / organisation for administering the programme

26.11.3.6. Before adding or deleting aircraft or components / systems

26.11.4 Ensure reliability document includes a glossary of significant terms

26.11.5 Review the Data Collection System

26.11.5.1. Determine what operational data is used to measure the mechanical performance of the programmes specified in the reliability document (aircraft, engines, appliances, systems and components, and / or structure). Examples include pilot reports, engine utilisation, failure rates, shop findings, and structural inspection findings.

26.11.5.2. Identify forms used to collect operational data.

26.11.5.3. Determine who has responsibility for compiling the data and routing it to the responsible person(s) for review.

26.11.5.4. Determine how the operator assures operational data is accurate and factual.

26.11.6 Review the data analysis system

26.11.6.1. Determine who is responsible for analysing trend related information. Trend related information is analysed by comparing data to established performance standard.

26.11.6.2. Determine the criteria for conducting further analysis.

26.11.6.3. Determine who will conduct any further analysis for corrective action (i.e. quality control or engineering).

26.11.7 Review procedures for instituting corrective action

26.11.7.1. Ensure that the reliability document describes the criteria that requires further analysis to determine causal factors.

26.11.7.2. Ensure that the reliability document describes definitive conditions when corrective action will take place.

26.11.7.3. Determine who implements corrective action.

26.11.7.4. Ensure the time limits are set for completing corrective action and that there is a chain of authority for carrying out the corrective action.

26.11.7.5. Determine if follow-up procedures exist to ensure the corrective action was effective.

26.11.8 Review Performance Standards

26.11.8.1. Determine who is responsible for establishing or revising performance standards.

26.11.8.2. Ensure the reliability document contains the methods used to establish and revise performance standards.

26.11.8.3. Determine what periodic review the operator has established to ensure the performance standard remains realistic.

26.11.8.4. Review data display and report requirements.

26.11.8.5. Determine if the reliability document provides for data displays (such as forms, reports and graphs) that summarise the previous month's activities.The report must be in sufficient depth to enable the carrier or the recipient of the report to evaluate the effectiveness of the total maintenance programme.

26.11.8.6. Determine whether the reliability document has procedures for reporting continuing over alert conditions and the status of ongoing corrective action.

26.11.8.7. Review maintenance intervals and process / task change procedures.

26.11.8.8. Identify the organisational element responsible for approving changes to the maintenance programme.

26.11.8.9. Ascertain the criteria used to substantiate each revision.

26.11.8.10. Review method of distributing and implementing changes to the maintenance programme (for example, job cards, shop manuals, etc).

26.11.9 Review established escalation limitations.

26.11.9.1. Identify established procedures for changing the maintenance process(es).

26.11.10 Review reliability programme revision procedures.

26.11.10.1. Ensure that there are procedures for programme revisions and that items requiring formal CAAT approval are clearly identified.

26.11.10.2. Review method of distributing changes to the reliability document.

26.11.11 Maintenance Manual Review

Review the Maintenance Manual Sections Referenced in the Reliability Document.

26.11.12 Review the CAAT Files

26.11.12.1. Review substantiating data to support all changes produced by the reliability programme. Ensure that the changed procedures defined in the programme are being followed.

26.11.12.2. Review previous inspection reports, correspondence, and other documents in the office files to determine if there are open items or if any areas were identified requiring special attention.

26.11.13 Review the Operator's Reliability Reports

This information may display the current fleet status, information about any system that has exceeded the performance standards, and any corrective action.

26.11.13.1. Ensure the reliability report required by the document has been submitted to the CAAT and reflects all aircraft, engines, systems, and components controlled by the programme. Reports must specify the items exceeding established performance standards and the corrective action being taken.

26.11.13.2. Identify trends by reviewing reliability reports for the previous six months.Determine the effectiveness of the corrective actions.Highlight areas with decreasing reliability characteristics for follow-up during on-site inspection.

26.11.13.3. Review Mechanical Reliability Reports (MRR), Mechanical Interruption Summaries (MIS), and Engine Utilisation Reports if these reports are not included in the reliability document. Analyse reports for the previous six months to identify trends. Ensure the reliability programme has also identified these trends.

26.11.14 Document Findings

After reviewing all operator data, and before coordination, ensure that any confusing areas, obvious omissions, or apparent discrepancies are documented.

26.11.15 Contact the Operator to Schedule an On-Site Inspection.

Advise the operator of the scope of the inspection. Confirm the inspection date in writing to ensure the operator's personnel are available.

26.11.15.1. Brief the Operator's Personnel.Advise personnel of the scope and detail of the inspection.

26.11.15.2. Compare Operator's Documents and CAAT Copies. Compare operator's operations specifications and reliability document to the CAAT copies to ensure dates and revision numbers agree.

26.11.15.3. Evaluate the Organisation. Compare the actual organisational structure and personnel duties and responsibilities with the requirements in the approved reliability document.

Note: *Until all the elements of the reliability programme are inspected, the effectiveness of the organisation cannot be determined. Inspection findings may be a direct result of organisational problems (for example, unqualified personnel or personnel not following procedures).*

26.11.16 Approval of the programme

The approval or rejection of the programme shall be in writing to the operator.

26.11.17 Evaluate the Effectiveness of Reliability Programme

After the reliability programme has been approved the CAAT Airworthiness inspector shall ensure he attends a number of the operators reliability meetings per year (it is recommended that the frequency of attendance be determined on a risk based approach (inch size, complexity, number of aircraft in fleet, previous occurrences)

26.11.17.1. Data collection system

26.11.17.2. Determine if the data collection system in the reliability document is used in day to day operations and if the data collected is accurate and useful for controlling the maintenance programme.

26.11.17.3. Ensure that all necessary data is being collected and reported on the forms identified in the reliability document.

26.11.17.4. Ensure that data collection duties are carried out by the personnel identified in the reliability document.

26.11.17.5. Ensure data is being routed to the proper organisational element for review.

26.11.17.6. Ensure that data is routed to the proper organisational element in a timely manner by comparing the operational data's initiation dates, receipt dates, and final incorporation dates.

26.11.17.7. Ensure that data accuracy by comparing original operational data documents to the information collected by the reliability programme.Reliability programmes collect different types of operational data, such as pilot reports by Air Transportation Association (ATA) chapter, component removal rates by ATA chapter, engine shutdown rates, etc.

26.11.17.8. Ensure that the data is complete.Compare operational data documents with the required procedures in the maintenance manual or reliability document.

26.11.17.9. Ensure that the data collected is relevant to the maintenance programme and can accurately predict changes to, and determine effectiveness of the maintenance programme

26.11.18 Dealing with Ineffective Reliability Reports

26.11.18.1. Reliability programme evaluation and approval is one of the most complex duties a CAAT inspector will perform. Special attention should be given to every aspect of the proposed programme submitted by the operator.

26.11.18.2. Previous experience with the type of equipment the operator proposes to include in the reliability programme is recommended. When the CAAT inspector does not have sufficient technical knowledge in an area he may consider obtaining technical assistance from regional NAAs possessing experience in these areas, or the NAA of the State of design or Manufacture or design

26.11.18.3. If it is found during the reviews of the reliability reports the targets are not being met, alert levels are being exceeded or the reliability programme is being ineffective in some areas, the airworthiness inspector can regulatory take action by:

i. Requesting that the operator reviews the suitability of the aircraft maintenance programme.

ii. Requesting the Operator discusses the problem with the aircraft or Engine OEM to seek their advice,

iii. Mandating additional instructions for continued airworthiness

(e.g. SBs, publishing CAAT ADs)

iv. Restricting operation of the aircraft type (eg removal of ETOPS Special approval) after liaison and agreement with CAAT flight operations as appropriate,

v. discussing the matter with the NAA of the state of design or manufacture, or

vi. A combination of any of the above.

26.11.18.4. All conclusions reached by the CAAT inspector should be addressed in writing to the operator with a copy kept in the CAAT operator's file. Revisions to the reliability programme requiring formal CAAT approval should be subject to the same provisions as initial approval.

26.11.19 Analysed Data

26.11.19.1. Review the items identified as exceeding performance standards and requiring analysis.Determine if the analysis of these items has been accomplished according to the reliability document.

26.11.19.2. Check records to verify the required analysis was performed.

26.11.19.3. Corrective action system. Corrective action is a result of the data analysis. Corrective actions usually are accomplished through product improvement, procedures improvement, time limitation revision, etc. Once authorised, the corrective action becomes mandatory.

26.11.19.4. Determine if an attempt was made to find the cause of all identified areas that exceeded performance standards. Review records to verify the attempt. Determine if the attempt was made by the appropriate personnel (for example, powerplant problems assigned to propulsion engineering.

26.11.19.5. IIf a cause was not identified, determine if the procedures specified in the reliability document for this situation were followed.

26.11.19.6. If the cause was identified, determine if corrective action was initiated in accordance with the reliability document.

26.11.19.7. Ensure the corrective action was performed through the chain of authority described in the reliability document.

26.11.19.8. Determine if the persons responsible for executing corrective actions were notified.

26.11.19.9. Determine if the time limits in the reliability document for the completing corrective action were met.

26.11.19.10. Determine if follow-up procedures outlined in the reliability document were followed to ensure corrective actions taken were effective.

Note: *A corrective action is considered effective if the out of limit condition is brought back to an acceptable level of performance.*

26.11.20 Performance Standards System

26.11.20.1. Examine a cross section of performance standards revision to ensure they were accomplished according to the reliability document.

26.11.20.2. Determine if performance standards were revised by the personnel specified in the reliability document.

26.11.20.3. Check records to verify performance standards are reviewed periodically.

26.11.20.4. Review data display. Identify possible performance standards that are not responsive or sensitive enough to reflect changes in actual performance.For example, a data display that shows almost no change could indicate the performance standards are not sensitive or responsive.

26.11.21 Data Display and Reports

26.11.21.1. Ensure data displays and reports cited in the reliability report are being used.

26.11.21.2. Ensure data displays and reports highlight systems that exceeded the established performance standards and include proposed corrective actions.

26.11.21.3. Determine whether continuing over-alert conditions are carried forward from previous reports and provide the status of ongoing corrective action.

26.11.22 Maintenance intervals and process / task changes

26.11.22.1. Review operator's file of all maintenance programme revisions. Select a representative sample to determine compliance with the revision section of the reliability document.

26.11.22.2. Ensure that revisions were authorised by the organisational element identified in the reliability document.

26.11.22.3. Ensure all maintenance programme revisions were based on the criteria in the reliability document and include the specified substantiating data.

26.11.22.4. Determine if the operator exceeded the escalation limitations in the reliability document.

26.11.22.5. Determine if all required changes to the maintenance programme were distributed and implemented. Review documentation to determine if changes are distributed and implemented using methods in reliability document.

26.11.23 Reliability programme revision system

Ensure formal CAAT approval was obtained before implementing changes to any of the following:

26.11.23.1. Performance standards

26.11.23.2. Data collection system

26.11.23.3. Data analysis system

26.11.23.4. Process(es) / task(s)

26.11.23.5. Procedures / organisation concerning programme administration

26.11.23.6. Alert-type programmes to non-alert programmes or vice versa

26.11.23.7. Adding or deleting aircraft, components, or systems

26.11.24 Review records and Reports

Determine if records and reports are prepared and processed in accordance with the reliability document.

26.11.25 Short Term Escalation Programme

Evaluate the Short Term Escalation Programme, if authorised.

26.11.26 Assess Findings from the report

Evaluate reliability report findings to get an overall picture of how well the reliability programme controls the maintenance programme.

26.11.26.1. Determine if there has been an increase in any of the following:

i. Aircraft delays

ii. Premature component removal rates

iii. The engine shut down rates

iv. Inspection scheduling adjustments (short term escalations)

v. Deferred maintenance or minimum equipment list items

vi. Pilot reports

vii. Aircraft inspection findings

Note: *If any of the above circumstances are present, it could indicate the reliability programme is not properly controlling the maintenance programme.*

26.11.26.2. If there is a problem with the reliability programme based on inspection findings or any of the above circumstances, accomplish the following:

i. Determine if the deficiencies were a result of the organisational structure, lines of authority, staffing, personnel qualifications, or other problems related to the organisation.

ii. Determine if deficiencies were due to incomplete or ineffective methods and / or procedures in the overall programme.

26.11.26.3. Identify findings that are contrary to the approved reliability programme.

26.11.26.4. Identify all findings that are in compliance with the document but are still not producing satisfactory results.

26.11.27 Debrief the Operator and its Airworthiness department

26.11.27.1. Meet with the operator and its Airworthiness department to discuss any discrepancies discovered during the inspection.

26.11.27.2. Agree to corrective action to be taken by the operator.Advise the operator that a plan, including a schedule, must be submitted for completing the corrective action.If mitigating circumstances arise, the schedule can be renegotiated.

26.11.28 Process Enforcement Action

Inspectors must be alert at all times for possible noncompliance with the approved procedures. If it is found that the operator failed to follow approved procedures, appropriate enforcement action must be taken. See para 6.16 for dealing with ineffective reports.

26.12. Issuing of programme approval

The Aircraft Engineering may approve a maintenance programme if –

26.12.1 The applicant has complied this appendix.

26.12.2 The applicant has shown that: the content of the programme complies with this chapter and all the guidance for maintenance program and reliability program

26.12.3 Aircraft Maintenance Schedules and Programmes (CAAT ENG-01 and Condition Monitoring Maintenance Handbook (CAAT ENG -02)

26.12.4 The approval should be inserted in the original manual with stamp/signature and date

26.13. Record keeping

For each programme, a complete the manual shall be held by the applicant and the copy of the manual will keep in CAAT Aircraft Engineering Office and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the product.

26.14. CAAT SPECIFIC MAINTENANCE REQUIREMENTS.

26.14.1 AIRCRAFT BATTERY CAPACITY CHECKS.

Aircraft batteries shall be maintained in accordance with the manufacturer's recommendations. In the absence of any manufacturer's instructions the following periods apply

26.14.1.1. Lead acid Battery - not exceeding 3 months.

26.14.1.2. Ni-Cad Battery - not exceeding 4 months.

26.14.2 EMERGENCY EQUIPMENT.

The required Emergency Equipment will be maintained to a programme based on the equipment manufacturer's recommendations. In addition, the following requirements are complied with in the Maintenance Programme: Emergency equipment is to be checked for correct complement, stowage, installation and expiry date(s) at suitable periods. First Aid Kit(s) contents are checked at periods not exceeding 12 months.

26.14.3 EMERGENCY ESCAPE PROVISIONS (as applicable)

26.14.3.1. Portable Valise Type Life rafts. At the appropriate Overhaul Period, 10% of all life rafts installed in fleets will be test inflated using system bottle and release mechanisms.

26.14.3.2. Door and Escape Chutes/Slides. A programme of release and inflation tests will be carried out to the requirements specified in Civil Aircraft Airworthiness Information and Procedures (CAP 562) leaflet 11-22, Appendix 25-6.

26.14.3.3. Emergency Exits/Hatches. All emergency exits and hatches are functioned by both internal and external means at periods specified in this Maintenance Programme. In the absence of manufacturer's specific recommendations these occur at suitable periods not exceeding 6 months elapsed time.

26.14.4 FLEXIBLE HOSES.

Flexible hoses shall be inspected, overhauled or life limited in accordance with the manufacturer's recommendations. In the absence of manufacturer's recommendations, hoses shall be subject to a programme of pressure testing at periods not exceeding 6 years from installation and 3 yearly thereafter, or in accordance with an alternative programme as agreed by the CAAT.

26.14.5 FUEL/OIL SYSTEM CONTAMINATION CHECKS.

Consumable fluids, gases etc. uplifted prior to flight will be of the correct specification, free from contamination, and correctly recorded Fuel system water drain checks are to be carried out in accordance with CAME procedures. The procedures shall be in accordance with the manufacturer's recommendations. In the absence of manufacturer's recommendations, the frequency of the water drain checks shall be approved by the CAAT.

26.14.6 PRESSURE VESSELS.

Pressure vessels are to be overhauled or tested in accordance with manufacturer's recommendations. In the absence of any such recommendations the appropriate International standards should be applied.

26.14.7 SEAT BELTS AND HARNESSES.

In the absence of manufacturer's recommendations, all installed seat belts and harnesses shall be subject to a programme of Detailed Visual Inspection at periods not exceeding 6 months.

26.14.8 Procedures

Procedure are in place to assess all Airworthiness Information and Procedures on a continuing basis for applicability to aircraft maintained to this Maintenance Programme. Where necessary relevant maintenance tasks are included in the Maintenance Programme.

26.14.9 VITAL POINTS AND CONTROL SYSTEMS.

Whenever inspections are made or work is undertaken on vital points, flying or engine control systems, a detailed investigation must be made on completion of the task to ensure that all tools, rags or any other loose articles which could impede the free movement and safe operation of the system(s) have been removed and that the system(s) and installation in the aircraft zone are clean and unobstructed. If, as a result of the application of tasks associated with the programme, any part of either the main or any associated system is dismantled, isolated, adjusted, repaired or renewed, that part of the system(s) which has been disturbed shall be subjected to an independent inspection.

26.14.10 CAAT SPECIFICATIONS.

Maintenance requirements resulting from the application of CAAT Specifications for Type Certification.

26.14.11 MAINTENANCE APPLICABLE TO SPECIFIC AEROPLANE OPERATIONS.

The Maintenance Programme contains the necessary tasks required to ensure continued compliance with additional special authorizations/approvals: Automatic Approach and Automatic Landing CAT II/CAT III Minimum Navigation Performance Specifications (MNPS) Reduced Vertical Separation Minima (RVSM) Extended Range Operations with two-engine aeroplanes (ETOPS) Sea Pilot transfers Offshore operations Helicopter Emergency Medical Service (HEMS) Transportation of Dangerous Goods Other (Specify) .....

26.14.12 CUSTOMER FURNISHED EQUIPMENT (CFE/VFE/BFE).

The Maintenance Programme contains the necessary tasks required to ensure continued airworthiness of additional equipment fitted to this aircraft.

26.14.13 ENGINE AND APU MAINTENANCE PROGRAMME.

For engine and APU's which are controlled by a Reliability Centered Maintenance and Condition Monitored Maintenance Programme, compliance with

Note: For engines and APU's controlled by a fixed Hot Section Inspection and Overhaul Life, no entry is required.

26.14.14 MANDATORY REQUIREMENTS - AIRWORTHINESS DIRECTIVES

The following Airworthiness Directives (ADs) are applicable to aircraft maintained in accordance with this Maintenance Programme. Procedures are in place to assess all ADs on a continuing basis for applicability to aircraft maintained to this Maintenance Programme.

26.14.15 FLIGHT RECORDER SYSTEMS

Approval, Operational Serviceability and Readout of Flight Recorder Systems. The Maintenance Programme should contain the necessary tasks required to ensure that the Flight Data Recorder System(s) remain serviceable with regard to the parameters to be recorded and the duration of recording.

26.14.16 MODE "S" TRANSPONDER ICAO 24-BIT AIRCRAFT ADDRESSES

The correct Mode S address should be periodically confirmed for each transponder installed on the aircraft, via a field test set at an appropriate maintenance opportunity (not to exceed a 2-year periodicity). This task should be incorporated into the Approved Maintenance Programme.

26.14.17 IN-FLIGHT ENTERTAINMENT SYSTEMS (IFE)

Continuing Airworthiness and Safety Standards of Passenger Service and In-Flight Entertainment Systems. Instructions specific to IFE installations, which should be addressed and form part of the periodic programme review.

26.14.18 COCKPIT VOICE RECORDERS

Reference: The maintenance programme should contain the necessary tasks required to ensure the Cockpit Voice Recorder (CVR) system remains serviceable. In the absence of maintenance tasks being prescribed by the TC / STC

26.15. MAINTENANCE PROGRAMME EVALUATION – GUIDANCE (See detail in CAAT ENG-01)

26.15.1 Description of maintenance programme

26.15.1.1. A description of the maintenance programme to include the aircraft type the programme is for and the basis for developing the programme.

26.15.1.2. The clear description of the basic requirements of the programme to include inspections, repairs, scheduled maintenance, overhauls and maintenance tasks and their intervals.

26.15.2 Format of maintenance programme

26.15.2.1. A table of content referencing Chapters, Sections and page numbers.

26.15.2.2. The design and layout of the Maintenance Programme observes human factor principles

26.15.3 Revision and distribution control

26.15.3.1. A list of effective pages (LEP) is used to ensure that every manual contains current information. The LEP shows the revision status of each page.

26.15.3.2. Details the process of revising the Maintenance Programme.

26.15.3.3. The procedures to amend the Maintenance Programme.

26.15.3.4. The approval and control and distribution of a revision to the Maintenance Programme.

26.15.3.5. Description of how the Maintenance Programme should be made available to each person who performs or manages the maintenance of the aircraft. All copies of the MCM are serialized with a corresponding distribution list.

26.15.4 Maintenance programme development basis and contents

26.15.4.1. Description on the maintenance programme basis with references made to MRBR, MPD and Maintenance Manual (Chapters 4 and 5) and any other other relevant documents where applicable.

26.15.4.2. Mandatory maintenance tasks and intervals as specified in the type design must be identified.

26.15.4.3. Airworthiness limitation items specified in the TC. These may include CMR items, safe-life airworthiness limitation items and damage tolerance ALIs.

26.15.4.4. mandatory life limits for engine life-limited parts specified by the manufacturer;

26.15.4.5. engine and auxiliary power unit off-wing maintenance as specified in the engine and APU work scope planning guides;

26.15.4.6. Special operations requirements relating to maintenance of additional configuration items e.g. EDTO, RVSM, Cat II and Cat III operations.

26.15.5 Maintenance tasks and their intervals

26.15.5.1. The tasks and intervals would include those of aircraft, engine, propeller and components that are based on the documents submitted in (4) used for the development of the maintenance programme.

26.15.5.2. the task intervals commonly used includes cycles, flight hours or calendar time. For planning convenience, the applicant may group the tasks into packages or scheduled maintenance checks (for example, A-check or 150-hour check).

26.15.5.3. some operators may accomplish scheduled maintenance checks in separate “phases” which combine to make up a complete check. This is acceptable provided that the interval between repetitions of tasks is not exceeded.

26.15.5.4. Ensure that maintenance tasks packaged into check packages (hour or letter checks) are within their recommended time intervals.

26.15.6 Structure Integrity Programme (SIP)

26.15.6.1. When applicable, to include supplemental inspections, corrosion prevention and control processes, structural modification and associated inspections, repair assessment methodology and widespread fatigue damage review procedures.

26.15.7 Procedures for tasks deviation

26.15.7.1. If applicable, a description of appropriate means to assess the continued effectiveness of the approved maintenance programme. The documented process should ensure the continued effectiveness of the approved maintenance programme.

26.15.7.2. The process should comprehensively identify any need for changes to the maintenance schedule and would usually include analysis of flight crew reports (PIREPS), or a full-fledged reliability program.

26.15.7.3. The use of tolerances to scheduled maintenance task intervals is permitted only when the checks prescribed by the maintenance programme, or supporting documents in support of the schedule, cannot be complied with due to circumstances that could not reasonably have been foreseen by the operator. Where an operator wishes to include tolerances in a maintenance programme, the application must contain full details of the tolerance, including the means of control, and the applicant must demonstrate that the items concerned can safely be operated at the resulting higher intervals.

26.15.7.4. No approval should be given interval escalations or task modifications related to AD, ALI and CMR items without an appropriate coordination with the State of Design.

26.15.8 Reliability Programme

If applicable, see “Approval of Reliability Programmes”

26.15.9 Engine trend monitoring

For aircraft that may not require a reliability programme, a conditioning monitoring programme for engines may be required.

26.15.10 Review and updating of maintenance programme

26.15.10.1. A description of procedures to periodically review the maintenance programme to ensure they take into account TC holder's latest recommendations, revisions to MRBR, new requirements contained in ICAs relating to any modifications, MCAI (ADs) etc.

26.15.10.2. A description of the resources, organization and processes to perform continuous assessment of 8a above.

26.15.11 Forms to be used

If the maintenance programme refers to specific company forms, list them and attach examples, if applicable.

26.15.12 Any additional item(s)

Reserved for any additional items that may need to be evaluated for the issue of AOC

27. CHAPTER 27 ESTABLISHMENT AND OVERSIGHT OF RELIABILITY PROGRAMS

27.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Doc. 9389, Chapter 7.3	FORM ENG A1-4 – Evaluation of Reliability Report/ Program Once in Service
ICAO Doc. 9760 Part IV; Chapter 6.7 and Appendix A	

27.2. AOC requires the aircraft maintenance program to include a reliability program For large aircraft

When the maintenance program is based on maintenance steering group logic or on condition monitoring, and develop and control a maintenance program for the aircraft managed including any applicable reliability program.

27.3. CAAT Surveillance Policy and Procedures Manual "Establishment of an Annual

Surveillance Program for Airworthiness" requires to Perform inspection on Maintenance Program compliance and Reliability Evaluation One every 6 months. Therefore, AIR hereby develops a documented process for the on-going oversight of reliability programs including procedures for AIR to initiate a special evaluation or impose special operational restrictions if information obtained from reliability monitoring indicates degraded level of safety.

27.4. Objective

- To determine the effectiveness of the AOC holder's procedures in meeting the desired output of the process.

- To determine if the certificate holder follows its procedures, controls, process measurements and interfaces for the Reliability Program.
- To determine if there were any changes in the personnel identified by the AOC holder as having responsibility and/or authority for the Reliability Program.

27.5. Specific Instructions:

- To accomplish this oversight, the Airworthiness Inspector (AWI) should review the AOC holder's reliability program policies, procedures and reports. The AWI should attend the AOC holder's reliability program review meetings(s) and meet with AOC holder's reliability specialists. The AWI should discuss the reliability results, including corrective actions, with other AWIs to identify related issues with the AOC holder's reliability program. The AWI should discuss the reliability program with the AOC holder's personnel having overall responsibility for the reliability program.
- The AWI should review logbook, pilot information reports, chronic reports, component tear down analysis reports, vendor reports, component failure rates, reliability program alerts, system adjustments, engine trend analysis data, and other statistical data required by the certificate holder's reliability program.
- This oversight will be accomplished at the main maintenance base and/or at the location where the reliability program is administered.

27.6. Oversight of reliability program

To meet this objective, the inspector must accomplish the following tasks:

27.6.1 Review the information listed in the Reliability oversight checklist.

27.6.2 Review the AOC holder's policies, procedures, instructions, and information for the Reliability Program.

27.6.3 Review the last accomplished associated safety attribute inspection (SAI) for this element with emphasis on the controls, process measurements and interface attribute section responses.

27.6.4 Observe the AOC holder's Reliability Program to gain an understanding of the procedures, instructions, and information.

27.6.5 Discuss the Reliability Program with the personnel (other than management) who perform the duties and responsibilities required by the Reliability Program.

27.7. Reliability program evaluation

Section 1 - Performance evaluation

1. Review the following performance measures were met:

1.1. The AOC holder comply with the provisions of its operations specifications concerning the Reliability Program?

1.2. The AOC holder collect the data required by its Reliability Program?

1.3. The AOC holder submit the reports required by the Reliability Program?

1.4. The AOC holder provide Reliability Program personnel with proper training?

1.5. The AOC holder's reliability data reflect the actual operation?

1.6. The AOC holder provide the data collected to the appropriate individual performing reliability analysis?

1.7. The AOC holder obtain the required periodic feedback (follow-up) for the corrective action system?

1.8. The AOC holder initiate and document corrective actions?

1.9. The AOC holder properly interpret critical failures?

1.10. The AOC holder properly adjust maintenance intervals?

1.11. The AOC holder properly adjust inspection intervals?

1.12. The AOC holder properly interpret the reports and Reliability Program data collected?

2. The AOC holder's policies, procedures, instructions and information for the Reliability Program followed?

3. Were the Reliability Program controls followed?

4. Did the records for the Reliability Program comply with the instructions provided by the AOC holder.

5. Were the process measurements for the Reliability Program effective in identifying problems or potential problems and providing corrective action for them?

6. Did personnel properly handle the associated interfaces by complying with other written policies, procedures, instructions and information that are related to this element?

Section 2 - Management Responsibility & Authority evaluation

Objective: Review the responsibility and authority of the process. AOC holder' s is a clearly identifiable, qualified, and knowledgeable person who is responsible for the process, is answerable for the quality of the process, and has the authority to establish and modify the process.(The person with the authority may or may not be the person with the responsibility.)

1. Identify the person who has overall responsibility for the Reliability Program.
2. Identify the person who has overall authority for the Reliability Program.
3. Review the duties and responsibilities for the person(s) who manage the Reliability Program.
4. Review the appropriate organizational chart.
5. Discuss the Reliability Program with the management personnel identified in No. 1 and 2.
6. Evaluate the qualifications and work experience of the management personnel identified in No. 1 and 2.

27.8. Continuing surveillance

CAAT will monitor all aspects of the operation it has authorized in order to ensure that the level of reliability achieved in EDTO/ ETOPS, CAT II, CAT III, PBN and other authorization remains at the necessary level and that the operation continues to be conducted safely. In the event that an acceptable level of reliability is not maintained, that significant adverse trends exist or that significant deficiencies are detected in the design or the conduct of the operation, CAAT is to initiate a special evaluation, impose operational restrictions, if necessary, and require corrective action for the operator to adopt, to resolve the problems in a timely manner or suspend the operation authorization unless there is a corrective action plan acceptable to CAAT.

The continuing surveillance process is to be conducted in accordance with CAAT approved procedures laid down in Airworthiness Manual and CAAT Surveillance Policy and Procedures Manual For Airworthiness" as amended.

Causes of engine in-flight shutdown or other engine/propulsion system problems may be associated with design problems and/or maintenance and operation procedures applied to the aeroplane. It is important to identify the root cause of events so that the appropriate corrective action is implemented. An operator should not be considered responsible for the occurrence of a design-related event in its fleet. However, maintenance or operational problems may be wholly or partially the responsibility of the operator. If an operator has an unacceptable engine in-flight shutdown rate attributed to maintenance or operational practices, then action tailored to that operator may be required by CAAT.

A high rate of engine in-flight shutdowns for a small fleet may be due to the limited number of engine operating hours and may not be indicative of an unacceptable rate. The underlying causes for such a jump in the rate will have to be considered by AOC holder and CAAT. The AOC holder or CAAT should alert the State of Design when a special evaluation is i/nitiated and provide for its participation independent of the determined cause.

Spot Inspection frequency on maintenance program compliance and reliability evaluation is required to be performed once every 6 months as established by CAAT Surveillance Policy and Procedures Manual

28. CHAPTER 28 RVSM

28.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6, Parts 1 and 2	FORM ENG A9 – RVSM Approval Checklist
ICAO Doc 9574	FORM ENG A9-1 – MAAR Form F2
EASA CS-ACNS, Subpart E	CENTRIK CHECKLIST 94 RVSM-OPS/AIR
JAA TGL 6, Rev 2	Coordination Form: ENG/AW/FO
FAA AC 91-85 (was 91-RVSM)	
CAAT AOCR, Chapter 8,Para 8.18	
CAAT GM for RVSM	

Table 28.1: RVSM

28.2. Introduction

28.2.1 This procedure gives guidance to airworthiness inspectors on the approval of RVSM maintenance support arrangements. The FOI responsible for the operator will normally undertake the overall RVSM approval investigation, but will seek Airworthiness input from the Airworthiness and Engineering Departments.

28.2.2 Reduced Vertical Separation Minima (RVSM) operations commenced in the North Atlantic MNPS airspace on the 27th March 1997 and within European MNPS airspace on the 24th January 2002.

28.2.3 RVSM operations are not limited or restricted to Commercial Air Transport operations. General aviation aircraft that wish to operate in RVSM airspace also require an RVSM approval.

28.3. Policy or policy reference

CAAT AOCR Chapter 8, Para 8.18.

28.4. Purpose and scope

To provide guidance to CAAT inspectors on assessing an Operator's RVSM maintenance support arrangements.

28.5. Definitions

AMO: Approved Maintenance Organisation.

RVSM: Reduced Vertical Separation Minima.

28.6. Approval guidance

28.6.1 The airworthiness material for owners and operators seeking RVSM approval is published in *(*as applicable*):*

28.6.1.1. EASA CS-ACNS Subpart E

28.6.1.2. FAA AC 91-85 (Was 91-RVSM)

28.6.1.3. JAA TGL 6 Rev 2 (obsolete)

At the time of the implementation of RVSM in Europe, JAA Temporary Guidance Leaflet No.6 and FAA 91-RVSM were initially produced to give guidance to operators on RVSM approval and operation. This has recently been superseded by EASA CS- ACNS and new EASA OPS, FAA AC 91-85 formerly 91-RVSM is an equivalent means of compliance for RVSM operations. AWI Inspection will use RVSM Guidance Meterial for Approval.

28.7. General procedure

An application for RVSM approval should be made to the Flight Operations section. In the case of an AOC operator, the application will be processed as part of the AOC issue procedure. For non-commercial operators, an independent RVSM approval document will be issued by the Flight Operations Section. The airworthiness inspector performing the airworthiness approval investigation should liaise closely with the assigned Flight Operations Inspector during this process. Checklist FORM ENG A9 should be used to record the RVSM airworthiness investigation.

For an individual aircraft, compliance with Reduced Vertical Separation Minima (RVSM) airworthiness requirements will be confirmed during the C of A issue process. Most aircraft to which the requirement applies either satisfy the

requirement by type design or by compliance with a service bulletin(s). Some older aircraft types that have been out of production for many years may show compliance through the application of a Supplemental Type Certificate (STC).

When reviewing RVSM compliance via STCs be aware that some STCs address the avionic aspects only (e.g. Alt Alert) and do not address Altimetry error calibration. The latter is often accomplished by a separate STC. When in doubt consult the State of Design for the STC.

28.7.1 In most cases, the Manufacturers Maintenance Planning document (MPD) will reflect RVSM requirements. For current production Airbus and Boeing types, this should not be a problem as they comply with the standards referenced in Section 2.

However, care needs to be taken with older aircraft types, as the manufacturers' maintenance planning information may not address RVSM requirements. In these cases, the information may be contained in a Service Bulletin or the Maintenance Review Board Report document.

28.7.2 The AFM may also make reference to FAA 91-RVSM, FAA 91-85, JAATGL 6, or EASA CS-ACNS depending on the date of certification by the State of Design thereby confirming the aircraft has been certificated for RVSM operations.

28.7.3 For general aviation aircraft, confirmation from the type design organisation should be obtained confirming how RVSM compliance has been achieved and in what documentation the requirements for continuing airworthiness can be found.

28.7.4 Any specific maintenance requirements required to ensure that RVSM operational criteria are maintained must be included in the Operators GMM or referenced in the GMM, Maintenance Programme(s), MEL and approved by CAAT.

28.7.4.1. All RVSM equipment should be maintained in accordance with the component manufacturers' maintenance instructions and the performance criteria of the RVSM approval data package .

28.7.4.2. Any repairs, not covered by approved maintenance documents e.g. SRM, that may affect the integrity and accuracy of the altimeter system, e.g. those affecting the alignment of pitot/ static probes, repairs to dents or deformation around static plates should be subject to approval by the CAAT in accordance with Repair Approval Procedure Chapter 13

28.7.4.3. Airframe geometry or skin waviness checks should be performed following repairs or alterations which have an effect on airframe surface and airflow.

28.7.4.4. The maintenance and inspection programme for the autopilot should ensure continued accuracy and integrity of the automatic altitude control system .

28.8. Procedure AOC aircraft

For aircraft operated in accordance with an AOC, the GMM will need to include the following information/procedures:

28.8.1 Details of how the operator, in conjunction with the contracted maintenance organisation will manage and report height-keeping errors including details of an appropriate and discrete reliability-monitoring programme.

28.8.2 It should be clearly described how the in-house Engineering/Flight Operations interface works with regard to the downgrading and upgrading of the RVSM capability of individual airframes.

28.8.3 Training of personnel involved in RVSM maintenance within the AOC and the AMO/MRO. This training should include recurrent training elements at regular intervals. This training should address:

28.8.3.1. Aircraft geometric inspection techniques.

28.8.3.2. Test equipment calibration and use of that equipment.

28.8.3.3. Any special instructions or procedures introduced for RVSM approval.

28.8.4 The provision of/or access to all necessary test equipment and procedures.

28.9. Procedure non-AOC aircraft

For non-commercial air transport aircraft, the owner/operator will need to be able to demonstrate how they have addressed/organised the following:

28.9.1 A maintenance programme amendment, which includes the equipment installed in accordance with the manufactures approved data, to enable the RVSM operation, this may require a reliability programme.

28.9.2 RVSM Maintenance Procedures, including procedures for upgrading and downgrading the operating system, Contracted Maintenance including the approved organisation nominated to maintain the aircraft to RVSM standards.

28.9.3 Contracts or agreements between the operator and the nominated maintenance organization.

28.9.4 Ensure that the CAAT has access to the aircraft and contracted maintenance provider for the initial and any subsequent audit/surveys.

28.10. Liaison with flight operations

Prior to approving or rejecting the RVSM for the operator or owner, the Airworthiness inspector shall coordinate with Flight Operations department to review all items with airworthiness and Flight Operation aspect. After all the rectifications are made and satisfactory, recommendation should be made and provided in Coordination Form: ENG/AW/FO.

28.11. Continued airworthiness monitoring

28.11.1 For AOC operators, ongoing monitoring will be performed as part on the Operators airworthiness audit process. Continued compliance with the matter described in Paragraphs 3 and 4, should be reviewed as considered necessary.

28.11.2 For Non-AOC operators, ongoing monitoring should be performed in conjunction with the airworthiness monitoring programme and airworthiness review process as appropriate.

28.11.3 Within Asia, MAAR has height monitoring stations in the Asia Region area. It is possible to view the height keeping monitoring results by aircraft operator, using the following website link http://www.aerothai.co.th/maar/ Problems noted during height monitoring should be taken up immediately with the owner/operator.

28.11.4 The Airworthiness inspector will send MAAR Form F2 (Form ENG A9-1) to MAAR for the height keeping monitoring.

28.12. Record keeping

The Airworthiness inspector should ensure that all completed checklists, letters and correspondence relating to an AOC RVSM are filed in the Operators AOC file.

For non AOC RVSM Applications the records shall be filed in the particular aircraft registration's file.

28.13. Performance measure

Inspector to complete the audit reports for the operator and AMO within 20 days of performing the RVSM assessment.

28.14. Documentation and references

Copies of all documents/records created as part of this process are to be saved to the operators or AMO's file.

28.15. Records

All records from the reviews shall be kept in the operator's files and/or AMO files as appropriate as per Chapter 23 of AW Handbook.

28.16. Responsibilities

Inspector – ensure compliance with the requirements for Approval.

CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the RVSM – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (94 RVSM-OPS/AW). The use of Centrik software facilitates the coordination between OPS and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process. Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

Note: For RVSM approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will be done by FOI.

29. CHAPTER 29 PERFORMANCE BASED NAVIGATION (PBN)

29.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6, Parts 1 and 2	FORM ENG A7 – PBN Approval Checklist
ICAO Doc 9613 (PBN Manual)	CENTRIK CHECKLIST 96 PBN-OPS/AIR
AOCR, Chapter 8, Para 8.18	Coordination Form: ENG/AW/FO
CAAT GM for Performance Based Navigation	
JAA TGL2 Rev 1 (B-RNAV)	
EASA AMC 20-4A (B-RNAV)	
EASA AMC 20-26 RNP AR (Authorisation Required)	
EASA AMC 20-27 RNP Approach (APCH)	
EASA AMC 20-28 LPV based on SBAS	
EASA AMC 20-12 RNP 10	
JAA TGL 10 PRNAV	
FAA AC 20-138D RNAV and GNSS AW Approvals	
FAA AC20 90-96A B-RNAV and PRNAV	
FAA AC 91-70A Oceanic Operations	

Table 29.1: Performance Base Navigation (PBN)

29.2. Introduction

This procedure gives guidance to Airworthiness Inspectors on the approval of PBN (RNAV) maintenance support arrangements. The FOI responsible for the operator will normally undertake the overall PBN approval investigation

ICAO defines Performance Base Navigation as "Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace." Performance requirements are expressed in navigation specifications (RNAV specification, and RNP specifications) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

Notes:

- *A performance requirement with a RNP spec quoted must have a built in performance monitoring and crew alerting to the pilot.*
- *A performance requirement quoted for a RNAV spec does not require the performance monitoring.*

Aircraft shall only be operated in designated airspace, on routes or in accordance with procedures where performance- based navigation (PBN) specifications are established if the operator has been granted an approval by the Brunei CAAT to conduct such operations. No specific approval is required for operations in area navigation 5 (RNAV5 (basic area navigation, B-RNAV)) designated airspace."

PBN operations are required in certain airspace to provide lateral navigation accuracies of 10NM, 5NM, 2NM or 1NM, or 0.3 and 0.1 NM for various phases of a flight. The accuracies required are determined by the airspace and may vary from state to state.

This Technical Procedure gives guidance on CAAT policy for the continued airworthiness aspects of various PBN operations.

PBN operations are not limited or restricted to Commercial Air Transport operations. General aviation aircraft that wish to operate in PBN required airspace are also required to be equipped for these operations. It should be noted that PBN may only apply to those aircraft who fly in the required airspace. It is unlikely that small GA aircraft will require to be equipped with PBN.

29.3. Policy or policy reference

AOCR Chapter8

29.4. PUrpose and scope

To provide guidance to CAAT inspectors on assessing an Operator's Performance Based Navigation maintenance support arrangements.

29.5. Definition

29.5.1 AMO: Approved Maintenance Organisation

29.5.2 APV: Approach with Vertical Guidance

29.5.3 LPV: Localiser Performance with Vertical Guidance

29.5.4 PBN: Performance Based Navigation

29.5.5 RNAV: Area Navigation

29.5.6 RNP: Required Navigation Performance

29.5.7 SBAS: Space Based Augmentation System

29.5.8 VNAV: Vertical Navigation

29.6. Guidance on PBN approval status

Inspectors use PBN Guidance material for assessing particular type of PBN application approval is given in the following documents. These will vary depending upon the operators needs. These documents explain the required equipments and interfaces which are normally approved by the OEM or by STC.

These standards are normally the basis for certifying RNAV approvals and STCs with Europe and USA and are considered best practice for this type of system. These may also sometimes be referenced in the AFM.

Type of Operation	Application	Documents (EASA and FAA)
RNAV 10 (Oceanic) (RNP 10)	En route Oceanic	AMC20- 12 and FAA Order 8400.12a
RNAV 5 (was previously known as Basic RNAV)	En route, Continental and Arrival	EASA AMC 20-4A, (was JAA TGL 2 Rev 1), FAA AC 20-138, AC 90-96A
RNAV 1 (was previously known as Precision RNAV)	En route Continental, arrival and Departure	JAA TGL 10, FAA AC 20-138, FAA AC90-96A
RNP Approach AR (Authorisation Required) (RNP 0.3/0.1)	APV Approach	EASA AMC 20-26, FAA AC 20-138, AC90-101
RNP APCH (Approach) inc APV Baro VNAV (RNP 0.3/0.1)	APV Approach	EASA AMC 20- 27A, FAA AC20-138, AC90-97 and AC 90-105
RNAV Approach with LPV based on SBAS	APV Approach	AMC20-28, AC20-138 and AC90-107

Table 29.2: Guidance for Inspectors assessing particular type of PBN application approval

29.7. Procedure

An application for a particular PBN approval should be made to the Flight Operations Inspectorate. The FOI should then notify the AW Inspectorate by Memo or email to investigate the AW Aspects of the approval.

In the case of an AOC operator, the application will be processed as part of the AOC issue procedure. For non-commercial operators, an independent PBN approval document will be issued by the Flight Operations Section.

The airworthiness inspector performing the airworthiness approval investigation should liaise with the assigned Flight Operations Inspector during this process.

For an individual aircraft, compliance with PBN airworthiness requirements will be confirmed during the C of A issue process. Most aircraft to which the requirement applies either satisfy the requirement by type design, STC or by compliance with a service bulletin(s) from the TC or STC holder.

Some older aircraft types that have been out of production for many years may show compliance through the application of a Supplemental Type Certificate (STC).

Statements regarding the status of PBN capability and compliance status should be stated in the Limitations section of the AFM. The AFM should refer to the applicable standards listed in section 2. The AFM may refer to one or more of these.

The AFM should be the first place the AW inspector looks to assess the approval status. Statements may also be provided in the TCDS or by an OEM letter.

Where the AW inspector is in doubt the TC or STC holder (OEM) should be consulted.

The AW inspector should check that the FMS or RNAV equipment installed in the aircraft and its software version (usually obtained from the power up screen of the FMS controller) are those reflected in the AFM or AFM supplement.

29.7.1 For AOC aircraft, the MEL should address the RNAV or FMS system, and the navigation database should it have expired.

29.7.2 Any specific maintenance requirements required to ensure that PBN operational criteria are maintained must be included in the Maintenance Programme(s) and approved by the CAAT.

29.8. Procedure non-AOC aircraft

For Non-Commercial Air Transport Aircraft, The Owner/Operator Will Need to Be Able to Demonstrate How They Have Addressed/Organized A Maintenance Programme Amendment, Which Includes The Equipment Installed In Accordance With The Manufacturers Approved Data, To Enable The Rnp Operation

29.9. Liaison with flight operations

Prior to approving or rejecting the PBN for the operator or owner, the Airworthiness inspector shall coordinate with Flight Operations department to review all items with airworthiness and Flight Operation aspect. After all the rectifications are made and satisfactory, recommendation should be made and provided in Coordination Form: ENG/AW/FO.

29.10. Performance measure

Inspector to complete the audit reports for the operator and amo within 20 days of performing the pbn (rnav) assessment.

29.11. Documentation and references

Copies of all documents/records created as part of this process are to be saved to the operator and or AMO file.

29.12. Records

all records from the reviews shall be kept in the operator's files and/or amo files in appropriate refer to chapter 23 of aw handbook.

29.13. responsibilities

29.13.1 Inspector – ensure compliance with the requirements.

29.14. CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the PBN – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (96 PBN-OPS/AW). The use of Centrik software facilitates the coordination between OPS and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process. Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

Note: For PBN approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will done by FOI.

30. CHAPTER 30 MINIMUM NAVIGATION PERFORMANCE SPECIFICATION

30.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6, Parts 1 and 2	Form ENG A8 – MNPS Approval Checklist
AOCR, Chapter 8, Para 8.18	AIR-OPS-A8-MNPS
ICAO Doc 7030	Coordination Form: ENG/AW/FO
FAA AC20-138 Airworthiness Approval Positioning and Navigation Systems	

Table 30.1: Minimum Navigation Performance Specification

30.2. Introduction

This procedure gives guidance to Airworthiness Inspectors on the approval of MNPS maintenance support arrangements. The FOI responsible for the operator will normally undertake the overall MNPS approval investigation

MNPS and the procedures governing their application are published in the Regional Supplementary Procedures, ICAO Doc 7030, as well as in national AIPs.

30.3. Policy or policy reference

AOCR Chapter 8. Para 8.18

30.4. Purpose and scope

To provide guidance to CAAT inspectors on assessing an Operator's MNPS maintenance support arrangements.

30.5. DEFINITIONS

AMO: Approved Maintenance Organisation

LRNS: Long Range Navigation System

MNPS: Minimum Navigation Performance Specification

RNAV: Area Navigation

RVSM: Reduced Vertical Separation Minima

30.6. What is MNPS?

MNPS is airspace which has been established between FL285 and FL420. To ensure the safe application of separation between aircraft in the airspace, only MNPS approved aircraft are permitted to operate within the MNPS airspace. MNPS was established to ensure that the risk of collision as a consequence of a loss of horizontal separation would be contained within an agreed Target Level of Safety.

In certain geographical areas (e.g. the North Atlantic, and the northern portion of Canada) it is a requirement that aircraft carry navigational equipment which permits an enhanced degree of accuracy, especially as regards tracking. To this end, equipment redundancy (two independent long range navigation systems) may be legislated to provide for the failure case.

The prescribed minimum navigation performance specifications (MNPS) and the procedures governing their application are published in the Regional Supplementary Procedures (ICAO Doc 7030) as well as in national AIPS

The lateral separation applied between MNPS approved aircraft is 60NM or by the "Gentle Slope Rules" which allow lateral separation as small as 50.5 NM. For the most part, aircraft tracks are separated using the earth's coordinate system to define tracks and effect separation laterally by 60 NM or 1 degree provided a portion of the route is within, above, or below MNPS airspace. Given the curvature of the earth, "Gentle Slope Rules" have been adopted to ensure that the actual separation never falls below distances which vary with latitude but never fall short of 50.5 NM.

The longitudinal separation minima applied in the airspace vary greatly depending on aircraft class (jet, prop) among other criteria but for the target population, the values are 15 minutes for crossing tracks and 10 minutes for aircraft that have reported a common point and follow the same track or continuously diverging tracks.

For flight in MNPS airspace aircraft are also required to be RVSM equipped.

30.7. Standards for MNPS approval status

30.7.1 Long Range Navigation System (LRNS)

30.7.1.1. For unrestricted operation in MNPS airspace an aircraft should be equipped with two independent LRNSs

30.7.2 An LRNS may be one of the following:

30.7.2.1. One inertial navigation system (INS)

30.7.2.2. One global navigation satellite system (GNSS); or

30.7.2.3. One navigation system using the inputs from one or more inertial reference system (IRS) or any other sensor system complying with the MNPS requirement

30.7.3 Each LRNS must be capable of providing to the flight crew a continuous indication of the aircraft position relative to desired track.

30.7.4 It is highly desirable that the navigation system employed for the provision of steering guidance is capable of being coupled to the autopilot.

30.7.5 In the case of GNSS being used as a stand-alone system for LRNS, an integrity check should be carried out.

30.7.6 For operation in MNPS airspace along notified special routes the aircraft should be equipped with one LRNS. This normally applies to GA Business jets or corporate aircraft

30.8. Procedure

30.8.1 An application for an MNPS approval should be made to the Flight Operations Inspectorate. The FOI should then notify the AW Inspectorate by Memo or email to investigate the AW Aspects of the approval.

30.9. In the case of an AOC operator, the application will be processed as part of the AOC issue procedure.

30.10. For non-commercial operators, an independent MNPS approval document will be issued by the Flight Operations Section.

30.11. The airworthiness inspector performing the airworthiness approval investigation should liaise with the assigned Flight Operations Inspector during this process.

30.11.1 For an individual aircraft, compliance with MNPS airworthiness requirements will be confirmed during the CofA issue process. Most aircraft to which the requirement applies either satisfy the requirement by type design, STC or by compliance with a service bulletin(s) from the TC or STC holder.

30.12. Some older aircraft types that have been out of production for many years may show compliance through the application of a Supplemental Type Certificate (STC).

30.12.1 Statements regarding the status of MNPS capability and compliance status should be stated in the Limitations section of the AFM. The AFM should refer to the applicable standards. The AFM may refer to one or more of these and it may also specify particular software version that has to be loaded in the LRNS.

30.13. The AFM should be the first place the AW inspector looks to assess the approval status. Statements may also be provided in the TCDS or by an OEM letter.

30.14. Where the AW inspector is in doubt the TC or STC holder (OEM) should be consulted.

30.14.1 The AW inspector should check that the LRNS equipment installed in the aircraft and its software version (usually obtained from the power up screen of the FMS controller) are those reflected in the AFM or AFM supplement.

30.14.2 For AOC aircraft the MEL should address the LRNS system, and the navigation database should it have expired.

30.14.3 Any specific maintenance requirements required to ensure that MNPS operational criteria are maintained must be included in the Maintenance Programme(s) and approved by the CAAT.

30.15. Procedure non-AOC aircraft

For non-commercial air transport aircraft, the owner/operator will need to be able to demonstrate how they have addressed/organized a maintenance programme amendment, which includes the equipment installed in accordance with the manufacturers approved data, to enable the MNPS operation.

30.16. Liaison with flight operations

Prior to approving or rejecting the MNPS for the operator or owner, the Airworthiness inspector shall coordinate with Flight Operations department to review all items with airworthiness and Flight Operation aspect. After all the rectifications are made and satisfactory, recommendation should be made and provided in Coordination Form: ENG/AW/FO.

30.17. Performance measure

Inspector to complete the Audit reports for the Operator and AMO within 20 days of performing the MNPS assessment.

30.18. Documentation and references

Copies of all documents/records created as part of this process are to be saved to the operator and or AMO file.

30.19. Records

All records from the reviews shall be kept in the operator's files and/or AMO files in appropriate as per Chapter 23 of AW Manual

30.20. Responsibilities

Inspector – ensure compliance with the requirements for Approval.

30.21. CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the MNPS – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (AIR-OPS A8-MNPS). The use of Centrik software facilitates the coordination between OPS

and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process. Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

Note: For MNPS approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will done by FOI.

31. CHAPTER 31 LOW VISIBILITY OPERATIONS (LVO)

30.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6, Parts 1 and 2	FORM ENG A6– LVO Approval
ICAO Doc 9365, Manual of All-Weather Operations	CENTRIK CHECKLIST 95 LVO-OPS/AIR
EASA CS AWO and JAR AWO	Coordination Form: ENG/AW/FO
23.1329 or 25.1329, Cat I Autopilot Reqs	
FAA AC120-28D, Cat III and Autoland (FAA)	
FAA AC 120-29A, Cat I and Cat II (FAA)	
CAAT AOCR, Chapter 8, Para 8.18	
CAAT GM for All Weather Operations	

Table Related Material and Associated Forms

31.1. Introduction

31.1.1 Category I, Category II, Category III and Low Visibility Take Off operations are required for aircraft that wish to conduct approach, landing and or Take Off operations in low visibility conditions.

31.1.2 This Technical Procedure gives guidance to CAAT Airworthiness Inspectors for the continued airworthiness aspects of All-Weather operations.

31.1.3 AWO is not limited or restricted to Commercial Air Transport operations. General aviation aircraft that wish to perform approach and landings in low visibility conditions are required to be equipped with the appropriate systems for AWO.

31.2. Policy or policy reference

CAAT AOCR, Chapter 8, 8.18.

31.3. Purpose and scope

To provide guidance to CAAT inspectors on assessing an Operator's Low Visibility Ops maintenance support arrangements.

31.4. Definitions

31.4.1 AMO: Approved Maintenance Organisation.

31.4.2 AWO- All Weather Operations

31.4.3 GMM- General Maintenance Manual

31.4.4 LVO: Low Visibility Operations.

31.4.5 RSM- Repair Station Manual

31.5. Guidance

The following standards relate to particular LVO approvals and may be referenced in AFMs, OPS manuals etc.

Type of Operation	Compliance Standard
Cat I Approvals	23.1329/25.1329
Autoland, Cat II, Cat III, LoViz T/O (EASA)	CS.AWO/JAR AWO Subparts I, II, III or IV
Cat I/Cat II (FAA)	FAA AC 120-29A
Cat III and Autoland (FAA)	FAA AC120- 28D
Type of Operation	**Compliance Standard**

Table 2: Type of Operation and Compliance Standard

31.6. Procedure

31.6.1 Application

An application for a particular AWO approval should be made to the Flight Operations Inspectorate.

In the case of an AOC operator, the application will be processed as part of the AOC issue procedure.

For non-commercial operators, an independent AWO approval document will be issued by the Flight Operations Section.

The airworthiness inspector performing the airworthiness approval investigation should liaise with the assigned Flight Operations Inspector during this process.

31.6.2 AWO Airworthiness Approval Status

31.6.2.1. For an individual aircraft, compliance with AWO airworthiness requirements will be confirmed during the C of A issue process . Most aircraft to which the requirement applies either satisfy the requirement by type design, or by compliance with a service b ulletin(s) from the TC holder (e.g. Airbus, Boeing).

Some older aircraft types that have been out of production for many years may show compliance through the application of a Supplemental Type Certificate (STC).

31.6.2.2. Statements regarding the status of AWO compliance status should be stated in the Limitations section of the AFM and in the aircraft TCDS .The AFM should refer to the applicable AWO Categories (e.g. Cat II). The AFM may refer to one or more of these (see Section 2 for a listing of the various standards).

The AFM should be the first place the Airworthiness Inspector looks to assess the AWO capability status.

Where the CAAT Airworthiness Inspector is in doubt the TC or STC holder should be consulted.

31.6.3 AFM

The airworthiness inspector should check that the AFM has AWO limitations and, normal and abnormal procedures.

31.6.4 MEL

An AWO MEL supplement or section should also be produced to show the required equipment for each type of operation, together with downgrade and upgrade procedures i.e. how to downgrade the aircraft from Cat III to Cat II, or Cat I following equipment failures.

31.6.5 GMM and Maintenance Programme

The operators/owners GMM and maintenance programme should contain the AWO recommendations from the OEMs Maintenance Planning Document (MPD) together with any specific requirements related to the operations.

Ensure that the existing maintenance/inspection program has procedures for the following:

31.6.5.1. Identifying chronic discrepancies and corrective action follow up.

31.6.5.2. Keeping aircraft with chronic and/or repetitive discrepancies out of a lower minimum status until positive corrective action is taken (Downgrading).

31.6.5.3. Training maintenance personnel assigned to reliability analysis.

31.6.5.4. Initial evaluation checks for existing aircraft and for new aircraft to the fleet before inclusion in the operator's lower minimum operations.

31.6.5.5. Identification of all components used in the systems in the existing parts pool, parts borrowing procedure, and control of spare parts.

31.6.5.6. Procedure for identifying the mod status of equipment fitted to the required systems which are deemed AWO Sensitive

31.6.5.7. Ensuring that calibration standards for all test equipment used for maintaining lower minimum systems and equipment are met.

31.6.5.8. Ensuring that each flight crew and persons with operational dispatch authority are aware of any equipment malfunction that may restrict lower minimum operations.

31.6.6 Reliability Program

The operator should also have a AWO monitoring programme within the Reliability monitoring report to record the pass/fail status for each AWO Cat II/Cat III approach carried out. The operator shall identify suitable alert levels in conjunction with the OEM.

31.6.7 Maintenance Organisation and Operators Airworthiness Department

31.6.7.1. Confirm the operator has AWO procedures addressed within the GMM document.

31.6.7.2. Confirm the AMO/MRO's RSM contains AWO procedures.

31.6.7.3. If Maintenance is contracted by the operator to another AMO/ MRO confirm that the AWO requirements are addressed in the Maintenance contract.

31.7. Tooling

The AW inspector should check that the AMO/ MRO has the tools and equipment together with access to any specific maintenance requirements required to ensure that AWO systems are maintained. These AW) Requirements should be included in the Maintenance Programme(s) and approved by the CAAT (see paragraph 6.5).

31.8. Training

Review the Personnel Training Requirements and ensure there are procedures for the following:

31.8.1.1. Ensuring personnel contracted to perform Category II/ III related maintenance are qualified and the program requirements are made available to these persons.

31.8.1.2. Training and/ or recurrent training for the maintenance personnel . Personnel not qualified to perform maintenance on Category II/ III systems and equipment, including flight crew and dispatch, should be trained in the airworthiness release requirements of the lower minimums program.

31.9. Procedure non-AOC aircraft

For non-commercial air transport aircraft, the owner/operator will need to be able to demonstrate how they have addressed/organized a maintenance programme amendment, which includes the equipment installed in accordance with the manufacturers approved data, to enable the AWO operation.

31.10. Liaison with flight operations

Prior to approving or rejecting the AWO for the operator or owner, the Airworthiness inspector shall coordinate with Flight Operations department to review all items with airworthiness and Flight Operation aspect. After all the rectifications are made and satisfactory, recommendation should be made and provided in Coordination Form: ENG/AW/FO.

31.11. Record keeping

The CAAT Airworthiness Inspectors shall retain the following records:

31.11.1 Copies of correspondence between Flt Operations and AW Department.

31.11.2 Copies of Recommendations of AW acceptance of the AWO capability of the aircraft or fleet.

31.11.3 Statements from TC holder or STC holders. Information gathered during the AWO assessment at the Operator and AMO.

31.12. Performance measure

An Inspector to complete the audit reports for the operator and AMO/MRO, within 20 days of performing the AWO assessment.

31.13. Documentation and references

Copies of all documents/records created as part of this process are to be saved to operators and or AMO/MRO files.

31.14. Records

All records from the reviews shall be kept in the operator's files and/or AMO/MRO files as appropriate as per Chapter 23 of AW Handbook.

31.15. Responsibilities

Inspector – ensure compliance with the requirements for Approval.

31.16. CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the AWO – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (AIR-OPS A8-MNPS). The use of Centrik software facilitates the coordination between OPS and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process. Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

Note: For AWO approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will done by FOI.

32. CHAPTER 32 ELECTRONIC FLIGHT BAGS (EFB)

32.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIA	ASSOCIATED FORMS
EASA AMC 20-25	Checklist ENG A11 – EFB Approval Checklist
FAA AC 120-76C	CENTRIK CHECKLIST 78 EFB – OPS/AIR
AMC 20-25 (replacing JAA TGL 36)	Coordination Form: ENG/AW/FO
FAA AC 120-76()	
DCA GM for Electronic Flight Bag	

Table Title: Related Material and Associated Forms

32.2. Introduction

This procedure describes the airworthiness process for assessing an Electronic Flight Bag. The procedure requires the Airworthiness inspector to liaise and assist the assigned Flight operations inspector.

The procedure should be read in conjunction with EASA document AMC20-25.

32.3. Policy or policy reference

AOCR Chapter 2, Section 26A

32.4. Purpose and scope

To provide guidance to CAAT Inspectors on assessing the airworthiness aspects of an operator's EFB system.

32.5. Definitions

EFB: Electronic Flight Bag.

32.6. Information and scope

An Electronic Flight Bag (EFB) is a system for flight deck crew members which allows storing, updating, delivering, displaying, and/or computing digital data to support flight operations or duties.

Traditionally, the documentation and information available to flight crew for use on the flight crew compartment has been in paper format (e.g. Maps, charts, paper manuals).

Much of this information is now available in electronic format. In addition, many non-required information services, data, and company procedures may also be made

available to flight or cabin crew electronically. Operators have long recognised the benefit of hosting these materials on the flight crew's EFBs.

Ultimately the operator remains responsible for ensuring the accuracy of the information used and that it is derived from verifiable sources. The use of EFBs was initially intended to cover an alternative method of storing, retrieving, and using the manuals and information required to be on board by the applicable operational requirements.

Subsequent technical development has led to potentially hosting on EFBs even applications using computational software (e.g. for performances), databases (e.g. digital navigation data) or real-time data coming from the avionics (e.g. Airport Moving Map Display).

The evaluation of an EFB may have both an airworthiness impact and an operational impact depending on the category/type of EFB/application used and, therefore, where necessary, to make a complete evaluation of an EFB system, there is a need for close coordination between the two disciplines.

32.7. Description

In accordance with EASA AMC 20-25 there are two types of EFB, these are "Portable" and "Installed".These replace the previous terms Class 1 (portable with no resources), Class 2 (portable but with installed resources) and Class 3 (fully integrated and installed).The Class 1 to Class 3 EFBs were covered by now obsolete JAA TGL 36 and FAA AC120-76B and inspectors may come across these terms in the aircraft documentation of aircraft whose EFBs have been utilised up to Jan 2014.

32.7.1 Portable EFB

32.7.1.1. Portable EFB is a portable EFB host platform, used on the flight deck, which is not part of the certified aircraft configuration.

A portable EFB:

i. Can be operated inside and outside the aircraft.

ii. May host type A and/ or type B EFB software applications (see 5.3). In addition, it may host miscellaneous (non-EFB) software applications.

iii. Is a portable electronic device (PED).

iv. Its mass, dimensions, shape, and position of the portable EFB should not compromise flight safety.

v. May be provided with aircraft power through a certified power source (see 6.1.1.1.3 of AMC20-25).

32.7.1.2. If mounted, a portable EFB should be easily removable from its mounting device or attached to it, without the use of tools by the flight crew .If mounted, the attach mentor removal of the EFB does not constitute a maintenance action.

32.7.1.3. In the past a portable EFB was considered as a Class 1 EFB (completely portable but not installed) or a Class 2 EFB (portable but with aircraft mounting).

32.7.1.4. Any mounting provisions for a portable EFB require an Airworthiness modification approval . These may include Mounting brackets, installed power supplies and leads (see 6.3.2).

32.7.2 Installed EFB

32.7.2.1. An installed EFB is an EFB host platform installed in the aircraft and considered as an aircraft part, covered by the aircraft airworthiness approval (Type certification and/or STC process).

32.7.2.2. An installed EFB is managed under the aircraft type design configuration.

In addition to hosting Type A and B applications (see 5.3), an installed EFB may host certified applications, provided the EFB meets the certification requirements for hosting such applications, including assurance that the non-certified software applications do not adversely affect the certified application(s). For example, a robust partitioning mechanism is one possible means to ensure the independence between certified applications and the other types of applications.

32.7.2.3. In the past an installed EFB was referred to as a Class3 EFB.

32.7.3 Software applications for EFB systems

The functionality associated with the EFB system depends, in part, upon the applications loaded on the host platform. The classification of the applications,

based on respective safety effects, is intended to provide clear divisions among such applications and, therefore, the assessment process applied to each.

Appendices A and B of EASA AMC 20-25 provide support regarding the classification of traditional EFB software applications. They may be used for justifying a classification provided that the application does not feature design or functional novelties introducing new ways of interaction or unusual procedures.

If an application is not listed in the appendices or presents a high degree of novelty, the classification should be established using the definitions provided hereafter and the guidance in Appendix C of AMC 20-25.

There are two types of Software applications, these are Type A and Type B.

32.7.3.1. Type A

Type A applications are EFB applications whose malfunction or misuse have "no safety effect".

32.7.3.2. Type A applications:

- may be hosted on either portable or installed EFBs;
- do not require any approval; and
- should follow guidance provided in Appendix D, paragraph D.2 of AMC 20-25.

32.7.3.3. Examples of Type A applications include:

- A browser displaying:
  - the certificates and other documents required to be carried by the applicable operatioal regulations and where copies are acceptable such as:

i. the noise certificate, and its English translation if applicable;

ii. the air operator certificate (AOC);

- the operations specifications relevant to the aircraft type, issued with the AOC; and
- the Third-Party Liability Insurance Certificate(s);
  - some manuals and additional information and forms required to be carried by the applicable operational regulations such as:

iii. notification of special categories of passenger (SCPs) and special loads; and

iv. passenger and cargo manifests, if applicable; and

v. other information within the operator's aircraft library such as:

vi. airport diversion policy guidance, including a list of special designated airports and/or approved airports with emergency medical service (EMS) support facilities;

vii. maintenance manuals;

viii. Emergency response guidance for aircraft incidents involving dangerous goods (ICAO Doc 9481-AN/928);

ix. aircraft parts manuals;

x. service bulletins/published Airworthiness Directives, etc;

xi. current fuel prices at various airports;

xii. trip scheduling and bid lists;

xiii. passenger information requests;

xiv. check airman and flight instructor records; and

xv. Flight crew currency requirements.

interactive applications for crew rest calculation in the framework of flight time limitation;

interactive forms to comply with the reporting requirements of CAAT and the operator.

32.7.3.4. Type B

32.7.3.5. Type B applications are applications:

whose malfunction or misuse are limited to a minor failure condition; and

which do neither substitute nor duplicate any system or functionality required by airworthiness regulations, airspace requirements, or operational rules.

32.7.3.6. Type B applications:

may be hosted on either portable or installed EFBs;

require an operational assessment; and

do not require an airworthiness approval.

32.7.3.7. Examples of Type B applications include:

Document Browser displaying the following documents, interactive or not, or not in pre-composed format, and not driven by sensed aircraft parameters:

The manuals and additional information and forms required to be carried by Regulations such as:

i. The Operations Manual (including the MEL and CDL);

ii. The Aircraft Flight Manual;

iii. The Operational Flight Plan;

iv. The aircraft continuing airworthiness records, including the technical Log;

v. Meteorological information including with graphical interpretation;

vi. ATS Flight Plan;

vii. notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation:

- Electronic aeronautical chart applications including en route, area, approach, and airport surface maps; these applications may offer features such as panning, zooming, scrolling, and rotation, centring and page turning, but without display of aircraft/own-ship position.
- Use of Airport Moving Map Displays (AMMD) applications that are compliant with the means set forth in Appendix H paragraph of AMC 20-25, in particular with the ETSO-C165a approval.

- Applications that make use of the internet and/or other aircraft operational communications (AAC) or company maintenance-specific data links to collect, process, and then disseminate data for uses such as spare parts and budget management, spares/inventory control, unscheduled maintenance scheduling, etc.
- Cabin-mounted video and aircraft exterior surveillance camera displays;
- Aircraft performance calculation application that uses algorithmic data or calculates using software algorithms to provide:

- take-off, en route, approach and landing, missed approach, etc. performance calculations providing limiting masses, distances, times and/or speeds;
- power settings, including reduced take-off thrust settings;
- mass and balance calculation application used to establish the mass and centre of gravity of the aircraft and to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded:
  - Airport Moving Map Displays (AMMD) applications not covered by a separate ETSO-C165a approval.

32.8. Procedure

32.8.1 Notification

When an operator wishes to operate an EFB System, they shall notify the CAAT Flight Ops Inspectorate.

32.8.2 Checklist

When the airworthiness inspector performs his assessment, he should use Checklist ENG A11.

32.8.3 Portable EFBs

32.8.3.1. If the EFB is portable with no installed mounts there is no airworthiness investigation necessary . It is for the flight operations inspector to approve the use including the operators EMC assessment, battery assessment, and any electrical power connection.

32.8.3.2. If the EFB is portable but has mounting devices and installed resources, their installation requires to have an airworthiness approval either via the TC holder or by STC.

The airworthiness assessment should consider the aspects of para 6.1.1.1 of AMC20-25, These include:

i. Mounting and structural aspects

ii. Mounting with display installed and display not installed:

iii. Is the display viewable.

iv. Can it obscure the view of instruments and primary displays.

v. Fouling on flight control column.

vi. Foul on oxygen mask pipes.

vii. Impact on external view in all phases of flight.

viii. Routing of electrical power cables.

32.8.4 Installed EFBs

If the EFB is installed, its design should be addressed by an approved design change by the TC holder or an appropriate STC (EASA, Transport Canada or FAA Approval).

The operator should ensure he has the appropriate documents including ICA, Ops manual supplement and Software applications development documents.

The installed EFB will also require an operational approval by the Flight Operations inspector.

32.8.5 Software application development

The control and development of the EFB hardware, and its applications is under the responsibility of the operators EFB Administrator (AMC 20-25 refers). The acceptability of the operators EFB administrator is via the CAAT Flight Operations section.

32.8.6 Aircraft Flight Manual

For installed EFB and certified installed resources, the AFM section or an Aircraft Flight Manual Supplement (AFMS) should contain:

32.8.6.1. a statement of the limited scope of the airworthiness approval of EFBs provisions (e.g. these EFB provisions are only intended for Type A and Type B applications in accordance with this AMC 20-25 or AC 120-76C. The airworthiness approval does not replace the operational assessment for the use of the EFB system).

32.8.6.2. identification of the installed equipment which may include a very brief description of the installed system or resources; and

32.8.6.3. appropriate amendments or supplements to cover any limitations concerning:

i. the use of the EFB host platform for installed EFB system; and

ii. the use of the installed EFB provisions/resources for portable EFB system.

For this purpose, the AFM(S) should make reference to any guidelines (relevant to the Airworthiness approval), intended primarily for EFB software application developers or EFB system suppliers.

Completion of Assessment

Prior to approving or rejecting the EFB for the operator or owner, the Airworthiness inspector shall coordinate with Flight Operations department to review all items with airworthiness and Flight Operation aspect. After all the rectifications are made and satisfactory, recommendation should be made and provided in Coordination Form: ENG/AW/FO.

32.9. Performance measure

An Inspector to complete the audit reports for the operator and AMO/MRO, within 20 days of performing the EFB assessment.

32.10. Documentation and references

ERM – Copies of all documents/ records created as part of this process are to be saved to ERM.

32.11. Records

All records from the reviews shall be kept in the operator's files and/or AMO/MRO files as appropriate as per Chapter 23 of AW Handbook.

32.11.1 Responsibilities

Inspector – ensure compliance with the requirements for Approval.

32.12. CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the EFB – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (78 EFB – OPS/AIR). The use of Centrik software facilitates the coordination between OPS and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process. Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

Note: For EFB approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will done by FOI.

33. CHAPTER 33 AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B)

33.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6, Parts 1 and 2	Form ENG A13 – ADS-B Approval Checklist
AOCR, Chapter 2, Para 3.7	CENTRIK CHECKLIST 76 ADSB-OPS/AW
ICAO ADS-B Implementation and Operations Guidance Document	Coordination Form: ENG/AW/FO
FAA AC20-138 ( ) The installation and airworthiness approval of. Automatic Dependent Surveillance - Broadcast (ADS-B)	
EASA AMC 20-24	

Table Title: Related Material and Associated Forms

33.2. Introduction

This procedure gives guidance to Airworthiness Inspectors on the approval of ADS-B maintenance support arrangements. The FOI responsible for the operator will normally undertake the overall ADS-B approval investigation.

MNPS and the procedures governing their application are published in the Regional Supplementary Procedures, ICAO Doc 7030, as well as in national AIPs.

33.3. Policy or policy reference

AOCR Chapter 2. Para 3.7

33.4. Purpose and scope

To provide guidance to CAAT inspectors on assessing an Operator's ADS-B maintenance support arrangements.

33.5. Definitions

33.5.1 AMO: Approved Maintenance Organisation

33.5.2 LRNS: Long Range Navigation System

33.5.3 ADS-B : AUTOMATIC DEPENDENT SURVEILLANCE BROADCAST

33.5.4 RNAV: Area Navigation

33.5.5 RVSM: Reduced Vertical Separation Minima

33.6. What is ADS-B ?

Automatic Dependent Surveillance - Broadcast (ADS-B) is a surveillance application that periodically transmits aircraft parameters, such as aircraft identification, pressure altitude and position integrity, via a broadcast datalink protocol to any airborne or ground-based receivers within its range. As an automatic system, ADS-B requires no flight crew or controller action for the information to be transmitted and this surveillance- type information broadcast is dependent on the aircraft's navigation system and the broadcast capability of the source transmitter.

Taking cognizance of proven potential and benefits of ADS-B, ADS-B can be used to support the application of 5NM separation minimum by ATC for enroute and terminal operations similar to radar, the ICAO Asia-Pacific Regional Group has decided to use the 1090MHz (Mode S) Extended Squitter datalink as the globally interoperable link for ADS-B operations and urged States intending to implement ADS-B based surveillance service for a defined airspace to promulgate their mandating rules for ADS-B Avionics Equipage Requirements. It can be anticipated that aircraft does not have ADS-B operational approval from its State of Registry, when flying inside an ADS-B defined airspace, will be subject to Air Traffic Service Provider 's discretion to have a lower priority to its optimum level, or will be assigned a flight level below FL290.

33.7. Definitions

33.7.1 Automatic Dependent Surveillance-Broadcast (ADS-B)

A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link. The

functionalities of transmitting and/or receiving data in ADS-B are further expressed as ADS-B "Out" and ADS-B "In", of which:

33.7.2 ADS-B "Out" is defined as the capability necessary to transmit ADS-B messages;

33.7.3 ADS-B "In" refers to the ability to receive and display ADS-B messages and broadcast services.

For the purpose of this chapter, unless otherwise specified, the system performances required onboard the aircraft refer to ADS-B "Out" capability.

33.7.4 ADS-B-NRA

Enhanced air traffic services in Non-Radar Areas using ADS-B surveillance; the ADS-B- NRA application is intended to support ATS in the en-route and terminal phases of flight as where radar surveillance does not exist.

33.8. Aircraft operations in ADS-B Prescribed Airspace

For flights in defined portions of airspace where ADS-B based surveillance is applied:

33.8.1 the aircraft shall carry serviceable ADS-B transmitting equipment that has been certified as meeting EASA AMC 20-24, or meets the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia; and

33.8.2 the aircraft operator must have relevant operational approval from its State of Registry.

33.8.3 Acceptance Criteria

33.8.3.1. EASA AMC 20-24" Certification Considerations for the Enhanced ATS in Non-Radar Areas using ADS-B Surveillance (ADS-B-NRA) Application via 1090 MHZ Extended Squitter " and Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia are the endorsed documents which address the acceptance criteria for the approval of ADS-B operations.

33.8.3.2. Operators desiring the approval for ADS-B operations shall refer to aforesaid documents and submit a formal application to CAAT, with all supporting documents at least 3 months prior to the commencement of ADS-B operations, to demonstrate that it has the competence to safely conduct the intended operations and fulfilled the requirements and considerations in particular to the following areas:

i. Aircraft Eligibility

Operator shall demonstrate that aircraft equipment and installations meet:

- the certification considerations of EASA AMC 20-24; or
- the equipment configuration standards in Appendix XI of Civil Aviation Order 20. 18 of the Civil Aviation Safety Authority of Australia.

ii. Minimum Equipment List

The Minimum Equipment List needs to reflect the functional requirements of the ADS-B system.

- Operational Safety Aspects (FOI)
- Operations Manual (FOI)
- Training Program
- Maintenance

The continuing airworthiness of ADS-B system must be assured . As part of the operational approval process, existing established maintenance practices and maintenance program for the aircraft needs to be reviewed to ensure that it meets relevant requirements .

- Misleading ADS-B Transmissions

If an aircraft carries ADS-B transmitting equipment which does not comply with an approved equipment configuration as stated in paragraph 8.2.1, the aircraft must not fly unless the equipment is :

iii. deactivated; or

iv. set to transmit only a value of zero for the Navigation Uncertainty Category (NUCp) or Navigation Integrity Category (NIC).

33.9. Procedure

33.9.1 An application for an ADS-B approval should be made to the Flight Operations Inspectorate. The FOI should then notify the AW Inspectorate by Memo or email to investigate the AW Aspects of the approval.

In the case of an AOC operator, the application will be processed as part of the AOC issue procedure.

For non-commercial operators, an independent ADS-B approval document will be issued by the Flight Operations Section.

The airworthiness inspector performing the airworthiness approval investigation should liaise with the assigned Flight Operations Inspector during this process.

33.9.2 For an individual aircraft, compliance with ADS-B airworthiness requirements will be confirmed during the CofA issue process. Most aircraft to which the requirement applies either satisfy the requirement by type design, STC or by compliance with a service bulletin(s) from the TC or STC holder.

Some older aircraft types that have been out of production for many years may show compliance through the application of a Supplemental Type Certificate (STC).

33.9.3 Statements regarding the status of ADS-B capability and compliance status should be stated in the Limitations section of the AFM. The AFM should refer to the applicable standards. The AFM may refer to one or more of these and it may also specify particular software version that has to be loaded in the LRNS.

The AFM should be the first place the AW inspector looks to assess the approval status. Statements may also be provided in the TCDS or by an OEM letter.

Where the AW inspector is in doubt the TC or STC holder (OEM) should be consulted.

33.9.4 The AW inspector should check that the ADS-B equipment installed in the aircraft and its software version are those reflected in the AFM or AFM supplement.

33.9.5 For AOC aircraft the MEL should address the ADS-B system, and the navigation database should it have expired.

33.9.6 Any specific maintenance requirements required to ensure that ADS-B operational criteria are maintained must be included in the Maintenance Programme(s) and approved by the CAAT.

33.10. Procedure non-AOC aircraft

For non-commercial air transport aircraft, the owner/operator will need to be able to demonstrate how they have addressed/organized a maintenance programme amendment, which includes the equipment installed in accordance with the manufacturers approved data, to enable the MNPS operation.

33.11. Liaison with flight operations

Prior to approving or rejecting the ADS-B for the operator or owner, the Airworthiness inspector shall coordinate with Flight Operations department to review all items with airworthiness and Flight Operation aspect. After all the rectifications are made and satisfactory, recommendation should be made and provided in Coordination Form: ENG/AW/FO.

33.12. Performance measure

Inspector to complete the Audit reports for the Operator and AMO within 20 days of performing the ADS-B assessment.

33.13. Documentation and references

Copies of all documents/ records created as part of this process are to be saved to the operator and or AMO file.

33.14. Records

All records from the reviews shall be kept in the operators files and/ or AMO/MRO files as appropriate as per Chapter 23 of AW Handbook.

33.15. Responsibilities

Inspector – ensure compliance with the requirements for Approval.

33.16. CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the ADS-B – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (76 ADSB-OPS/AW). The use of Centrik software facilitates the coordination between OPS and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process. Every AIR staff involved

in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

> ***Centrik Software:***
>
> *Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.*
>
> *Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.*

Note: For ADS-B approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will done by FOI.

34. CHAPTER 34 CONTROLLER PILOT DATA LINK COMMUNICATION (CPDLC) AND AUTOMATIC DEPENDENT SURVEILLANCE – CONTRACT (ADS-C)

34.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
ICAO Annex 6, Parts 1 and 2	Form ENG A13 – **CPDLC and ADS-C** Approval Checklist
AOCR, Chapter 2, Para 21	CHECKLIST 97 CPDLC-OPS/AIR
FAA AC 20-140A and AC 20-70A	Coordination Form: ENG/AW/FO
DCA GM FOR FAN1	

Table 34.1: CONTROLLER PILOT DATA LINK COMMUNICATION (CPDLC) AND AUTOMATIC DEPENDENT SURVEILLANCE – CONTRACT (ADS-C)

34.2. Introduction

This procedure gives guidance to Airworthiness Inspectors on the approval of CPDLC and ADS-C maintenance support arrangements. The FOI responsible for the operator will normally undertake the overall CPDLC and ADS-C approval investigation.

MNPS and the procedures governing their application are published in the Regional Supplementary Procedures, ICAO Doc 7030, as well as in national AIPs.

34.3. Policy or policy reference

FAA AC 20-140A, AC 20-70A and DCA GM FOR FAN1

34.4. PURPOSE AND SCOPE

To provide guidance to CAAT inspectors on assessing an Operator's CPDLC and ADS-C. maintenance support arrangements.

34.5. Definitions

34.5.1 Future air navigation system (FANS 1/A) (DCA GM ON FAN1) is the common industry name for the communication / surveillance system that incorporates CPDLC and ADS-C..

34.5.2 Controller-pilot data link communications (CPDLC) is a means of communication between controller and pilot, using data link for ATC communications.

34.5.3 Automatic dependent surveillance – contract (ADS-C) is a means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under the conditions ADS-C reports would be initiated, and what data would be contained in the report

34.6. Introduction

CPDLC and ADS-C are widely implemented in the Pacific, Alaska and NAT MNPS airspaces as part of the ICAO CNS/ATM programme. CPDLC is also being implemented in the European ECAC as well as the Indian Oceanic region.

Together with ADS-B (broadcast) and other data link systems such as PDC (pre-departure clearance), FIS (flight information services), TIS (traffic information services) and D-ATIS, to name a few, CPDLC / ADS-C and ADS-B would feature prominently in the NEXTGEN and/or SESAR airspace management.

34.7. Airworthiness Approval for CPDLC and ADS-C

Installation of data link equipage requires airworthiness certification. The operator needs to furnish to the Authority documents such as AFM entry or amendment to the aircraft TC or STC attesting to compliance with the standards set out in FAA AC 20-140A.

34.8. Procedure

34.8.1 An application for CPDLC and ADS-C approval should be made to the Flight Operations Inspectorate. The FOI should then notify the AW Inspectorate by Memo or email to investigate the AW Aspects of the approval.

In the case of an AOC operator, the application will be processed as part of the AOC issue procedure.

For non-commercial operators, an independent CPDLC and ADS-C approval document will be issued by the Flight Operations Section.

The airworthiness inspector performing the airworthiness approval investigation should liaise with the assigned Flight Operations Inspector during this process.

34.8.2 For an individual aircraft, compliance with CPDLC and ADS-C airworthiness requirements will be confirmed during the C of A issue process. Most aircraft to which the requirement applies either satisfy the requirement by type design, STC or by compliance with a service bulletin(s) from the TC or STC holder.

34.8.3 Some older aircraft types that have been out of production for many years may show compliance through the application of a Supplemental Type Certificate (STC).

34.8.4 Statements regarding the status of CPDLC and ADS-C capability and compliance status should be stated in the Limitations section of the AFM. The AFM should refer to the applicable standards. The AFM may refer to one or more of these and it may also specify particular software version that has to be loaded in the LRNS.

The AFM should be the first place the AW inspector looks to assess the approval status. Statements may also be provided in the TCDS or by an OEM letter.

Where the AW inspector is in doubt the TC or STC holder (OEM) should be consulted.

34.8.5 The AW inspector should check that the LRNS equipment installed in the aircraft and its software version (usually obtained from the power up screen of the FMS controller) are those reflected in the AFM or AFM supplement

34.8.6 For AOC aircraft the MEL should address the LRNS system, and the navigation database should it have expired

34.8.7 Any specific maintenance requirements required to ensure that MNPS operational criteria are maintained must be included in the Maintenance Programme(s) and approved by the CAAT.

34.9. Procedure non-AOC aircraft

For non-commercial air transport aircraft, the owner/operator will need to be able to demonstrate how they have addressed/organized a maintenance programme amendment, which includes the equipment installed in accordance with the manufacturers approved data, to enable the CPDLC and ADS-C operation.

34.10. Liaison with flight operations

Prior to approving or rejecting the CPDLC and ADS-C for the operator or owner, the Airworthiness inspector shall coordinate with Flight Operations department to review all items with airworthiness and Flight Operation aspect. After all the rectifications are made and satisfactory, recommendation should be made and provided in Coordination Form: ENG/AW/FO.

34.11. Performance measure

Inspector to complete the Audit reports for the Operator within 20 days of performing the CPDLC and ADS-C assessment.

34.12. Documentation and references

Copies of all documents/records created as part of this process are to be saved to the operator file.

34.13. Records

All records from the reviews shall be kept in the operators files and/or AMO/MRO files as appropriate as per Chapter 23 of AW Handbook.

34.14. Responsibilities

Inspector – ensure compliance with the requirements for Approval.

34.15. CERTIFICATION VIA CENTRIK

When the CAAT inspector perform the certification of AOC via the Centrik software, they should follow the Centrik instruction.

For the CPDLC and ADS-C – Flight Operation Department and Airworthiness Department via Centrik, the Airworthiness Checklist and OPS Checklist are combined in one checklist (97 CPDLC- OPS/ AIR). The use of Centrik software facilitates the coordination between OPS and the Airworthiness departments involved in certification as every action is traced in the software from the performance of the verifications to the closure of potential non-compliances detected by CAAT during the certification process.

Every AIR staff involved in Certification has to enter in Centrik system the verifications he made as well as the results of these verifications.

Centrik Software:

Each inspector has its own user name and password to access the software to enable traceability of actions. The system enables to manage the documentation provided by the applicants so that everyone works with the same versions of the documents.

Centrik software enables to enter customized checklists for every document to be verified and for every audit or inspection to be performed during the certification. Each item of a checklist is allocated to a department (AIR, OPS, DG…). Thus, when a department has performed the verification he has been assigned and has entered the results in the software, the other departments involved can see the results of the verifications made (Documents evaluation, Audits and Inspections). Once the verifications performed, the software enables to trace and monitor the actions performed by the applicants in response to non-compliances.

Note: For CPDLC and ADS-C approval via centric the AWI or FOI will responsible of your deficiencies however the overall process for close inspection, audit and checklist will be done by FOI.

35. CHAPTER 35 INCIDENT AND ACCIDENT INVESTIGATE PROCEDURE

35.1. RELATED MATERIAL AND ASSOCATED FORMS

RELATED MATERIAL	ASSOCIATED FORMS
Crisis Response Management Manual, Issue 01, Rev. 00, Date October 2019	
Annex 13: Aircraft Accident and Incident Investigation (Eleventh Edition, July 2016)	

35.2. Introduction

This procedure describes the process used to perform Non- Routine Inspections for the critical aviation occurrence on the Incident or Accident event. The concept of this procedure is to ensure there are an appropriate response, a coordination within/between AIR, OPS, SMD Department, and Airlines/Operators.

35.3. Purpose and Scope

To provide a framework and guidance for assigned Airworthiness Inspectors by AIR head to manage the Investigation;

- On the Critical Aviation Occurrence by AIR Manager, act as a Key Personnel on Crisis Response Team (CRT) during activate the CRT. Or

- On the Incident Occurrence, not activate the CRT. In this case Airworthiness Inspector shall assigned by AIR Manager or Head of AO by accepted to AIR Manager.

35.4. Definitions

Accident. An occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:

a) a person is fatally or seriously injured as a result of:

- being in the aircraft, or
- direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
- direct exposure to jet blast,

except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

b) the aircraft sustains damage or structural failure which:

- adversely affects the structural strength, performance or flight characteristics of the aircraft, and

- would normally require major repair or replacement of the affected component,

except for engine failure or damage, when the damage is limited to a single engine (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or

c) the aircraft is missing or is completely inaccessible.

Incident. An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

Aircraft. Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Causes. Actions, omissions, events, conditions, or a combination thereof, which led to the accident or incident. The identification of causes does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

Contributing factors. Actions, omissions, events, conditions, or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident or incident occurring, or mitigated the severity of the consequences of the accident or incident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

Investigation. A process conducted for the purpose of accident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of causes and/or contributing factors and, when appropriate, the making of safety recommendations.

Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Preliminary Report. The communication used for the prompt dissemination of data obtained during the early stages of the Occurrence. Any accident or incident associated with the operation of an aircraft.

35.5. Abbreviation

AAIC	Aircraft Accident Investigation Committee
AD	Airworthiness Directive
AGA	Aerodrome Standards Department
AIA	Accident Investigation Authority
AIR	Airworthiness and Aircraft Engineering Department
ANS	Air Navigation Services Standards Department
AO	Chief, AIR Operator Division
ATM	Air Traffic Management
CAA	Civil Aviation Authority
CAAT	Civil Aviation Authority of Thailand
CAB	Civil Aviation Board
CM	Corporate Communications Division
CRT	Crisis Response Team
CSD	Corporate Strategy Department
DDG	Deputy Director General
DG	Director General
ITD	Information and Communication Technology Department
LEG	Legal Department
MOT	Minister of Transport

MOU Memorandum of Understanding

OPS Flight Operations Standards Department

OD Operational Directive

PEL Personnel Licensing Department

RCC Rescue Co-ordination Centre

SDCPS Safety Data Collection and Processing System

SFD Aviation Security and Facilitation Standards Department

SMD Safety Management Department

QAD Quality Assurance Department

35.6. General

Objective of The Investigation The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability. Any judicial or administrative proceedings to apportion blame or liability shall be separate from any investigation

- An aircraft accident or incident provides evidence of hazards or deficiencies within the aviation system. A well-conducted investigation should identify all immediate and underlying systemic causes and/or contributing factors of the accident or incident.
- The investigation may also reveal other hazards or deficiencies within the aviation system not directly connected with the causes of the accident.
- The emphasis of an aircraft accident or incident investigation shall be on determining why the accident or incident happened and on recommending appropriate safety actions aimed at avoiding the hazards or eliminating the deficiencies.
- A properly conducted accident investigation is an important method of accident prevention.

An investigation shall also determine the facts, conditions and circumstances pertaining to the survival or non-survival of the occupants of the aircraft. Recommendations for improvements to the crashworthiness of the aircraft are aimed at preventing or minimizing injuries

to aircraft occupants in future accidents.

The Final Report, which is produced at the completion of an investigation, constitutes the official conclusions and record of the accident or incident.

35.7. Investigation

The investigation for the accident or incident, Airworthiness Inspector shall be assigned for duty as follow;

35.7.1 be a member for Crisis Respond Team (CRT), assigned by AIR Manager in case of the Crisis Respond Team is decide to activate the CRT by DG or his designated replacement. Note: AIR Manager is a Key Person the Crisis Respond Management. (Refer Crisis Response Management Manual)

35.7.2 be an assigned inspector for investigation the incident other than activated by CRT.

35.8. Execution

The duty responds on the investigation for incident other than activated by CRT shall responsibility for;

- manage media communications;
- establish communications with the AIA and regulatory authorities if required;
- conduct investigation of occurrences, without obstructing any AIA investigation. Such investigation continues independently and in parallel with AIA's investigation, but as much as possible in coordination with the AIA to avoid duplication;
- address any other identified concerns as part of normal oversight activities to prevent recurrence (i.e. implementation of corrective action);
- bring to the attention of the responsible department any recommendations for improvement of the safety regulations and oversight processes

- Report to head function

Note: Refer Item 35.7.1 as assigned to be a member in Crisis Respond Team (CRT), the CRT has to refer the Crisis Response Management Manual item 3.1 for Responsibility of the CRT.

35.9. Reporting

Investigation Report shall be on determining why the accident or incident happened and on recommending appropriate safety actions aimed at avoiding the hazards or eliminating the deficiencies.

35.9.1 Preliminary Report

The data obtained during the early stages of the Occurrence. Any accident or incident associated with the operation of an aircraft. (If required)

35.9.2 Final Report

The completion of an investigation, constitutes the official conclusions and record of the accident or incident.

35.9.3 Official Letter to Operator and/or Concerns

The conclusion on the event to Operator and/ or Concerns for recommending appropriate safety actions aimed at avoiding the hazards or eliminating the deficiencies.

35.10. Data Recording

Shall collect the data in AIR Share System. (on process)

35.11. Incident and Accident Investigate process: