# Democratic Socialist Republic of Sri Lanka

## Civil Aviation Authority of Sri Lanka

## Implementing Standards

(Issued under Sec. 120, Civil Aviation Act No. 14 of 2010)

# Title: Continuing Airworthiness Requirements for EDTO

**Reference No.** : IS 6-(i)-4 **SLCAIS :** 062 **Date:** 21.03.2018

Pursuant to Sec.120 of the Civil Aviation Act No.14 of 2010 which is hereinafter referred to as the CA Act, Director General of Civil Aviation shall have the power to issue, whenever he considers it necessary or appropriate to do so, such Implementing Standards for the purpose of giving effect to any provision in the CA Act, Requirements or Rules made thereunder including the Articles of the Convention on International Civil Aviation specified in the Schedule to the CA Act.

Accordingly, I, being the Director General of Civil Aviation do hereby issue the Implementing Standards on **Continuing Airworthiness Requirements for EDTO** as mentioned in the Attachment hereto (Ref: Attachment No. IS-6-(i)-4-Att.), elaborating the requirements to be satisfied for the effective implementation of the International Standards and Recommended Practices on contained in Annex 6, Part I, Chapter 4 to the Convention and the Air Navigation Regulations of 1955.

This Implementing Standard shall be applicable to all Operators Approved by the Director General of Civil Aviation of Sri Lanka and shall come in to force with immediate effect and remain in force unless revoked

Attention is also drawn to Sec. 49 and Sec. 103 of the Act, which states inter alia that failure to comply with Implementing Standard is an offence.

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Enclosure: Attachment No : IS-6-(i)-4-Att.

# Implementing Standards

## SLCAIS – 062: Continuing Airworthiness Requirements for EDTO

### 1. ABBREVIATIONS

EDTO – Extended diversion time operations

IFSD - In flight shut down

CMP – Configuration , Maintenance and Procedures

MEL - Minimum equipment list

APU - Auxiliary Power Unit

PDSC - Pre departure service check

IS - Implementation Standard

The CAASL approves EDTO for various areas of operation in accordance with the requirements and limitations specified in SLACIS 013. This SLCAIS 062 addresses maintenance requirements necessary to support EDTO. For Guidance further reference may be made to FAA Advisory Circular 120-42, most recent published version.

The applicant for EDTO operations shall down load CAASL Application Form, which is in the SLCAP 4200 Operations Inspector Hand book from CAASL web site,
(Completion instructions are contained in the form), and submit to DGCA, CAASL. CAASL Airworthiness section and Operations section will carry out a joint evaluation of the application.

### 2. EDTO APPROVALS: AIRPLANES WITH TWO ENGINES.

**(a) Propulsion system reliability for EDTO.**

(1) Before the CAASL grants EDTO operational approval, the operator must be able to demonstrate the ability to achieve and maintain the level of propulsion system reliability, for the EDTO-approved airplane-engine combination to be used.

**World fleet IFSD rate for two-engine airplanes.**
The holder of a type certificate for an airplane approved for EDTO and the holder of a type certificate for an engine installed on an airplane approved for EDTO must issue service information to the operators of those airplanes and engines, as appropriate, to maintain the world fleet 12-month rolling average IFSD rate at or below the following levels:

(i) A rate of 0.05 per 1,000 world-fleet engine-hours for an airplane-engine combination approved for up to and including 120-minute EDTO. When all EDTO operators have complied with the corrective actions required in the configuration, maintenance and procedures (CMP) document as a condition for EDTO approval, the rate to be maintained is at or below 0.02 per 1,000 world-fleet engine-hours.

(ii) A rate of 0.02 per 1,000 world-fleet engine-hours for an airplane-engine combination approved for up to and including 180-minute EDTO, including airplane-engine combinations approved for 207-minute EDTO .

(2) Following EDTO operational approval, the operator must monitor the propulsion system reliability for the airplane-engine combination used in EDTO, and take action as required by Appendix A (i) for the specified IFSD rates.

**(b) 75 Minutes EDTO -**

(1). The CAASL grants approvals to conduct

EDTO with maximum diversion times up to 75 minutes as follows,

(i) The CAASL reviews the airplane-engine combination to ensure the absence of factors that could prevent safe operations. The airplane-engine combination need not be type-design-approved for EDTO; however, it must have sufficient favorable experience to demonstrate to the CAASL a level of reliability appropriate for 75-minute EDTO.

(ii) The Operator must comply with the requirements of Appendix B for time-limited system planning.

(iii) The Operator must comply with the maintenance program requirements of Appendix A

(iv) The Operator must comply with the MEL in its operations specifications for 120-minute EDTO.

**(c) 90-minutes EDTO.** The CAASL grants approvals to conduct EDTO with maximum diversion times up to 90 minutes as follows:

(i) The airplane-engine combination must be type-design approved for EDTO of at least 120-minutes, by the State of Design.

(ii) The Operator must comply with the maintenance program requirements of Appendix A

(iii) The Operator must comply with the MEL requirements in its operations specifications for 120-minute EDTO.

**(d) 120-minute EDTO.** The CAASL grants approvals to conduct EDTO with maximum diversion times up to 120 minutes as follows:

(i) The airplane-engine combination must be type-design-approved for EDTO of at least 120 minutes by the State of Design.

(ii) The Operator must comply with the maintenance program requirements of Appendix A.

(iii) The Operator must comply with the MEL requirements for 120-minute EDTO.

**(e) 138-Minute EDTO.** The CAASL grants approval to conduct EDTO with maximum diversion times up to 138 minutes as follows:

**(1) Operators with 120-minute EDTO approval.** The CAASL grants 138-minute EDTO approval as an extension of an existing 120-minute EDTO approval as follows:

(i) The authority may be exercised only for specific flights for which the 120-minute diversion time must be exceeded.
(ii) For these flight-by-flight exceptions, the airplane-engine combination must be type-design-approved for EDTO up to at least 120 minutes. The capability of the airplane's time-limited systems may not be less than 138 minutes calculated in accordance with Appendix B.
(iii) The Operator must comply with the maintenance program requirements of Appendix A.
(iv) The Operator must comply with minimum equipment list (MEL) requirements in its operations specifications for "beyond 120 minutes EDTO".
(v) The Operator must conduct training for maintenance personnel regarding differences between 138-minute EDTO authority and its previously-approved 120-minute EDTO authority.

**(2) Operators with existing 180-minute EDTO approval**. The CAASL grants approvals to conduct 138-minute EDTO (without the limitation in paragraph (e) (1) (i) of section I of this IS) to Operators with existing 180-minute EDTO approval as follows:

(i) The airplane-engine combination must be type-design-approved for EDTO of at least 180 minutes by the State of Design.
(ii) The Operator must comply with the maintenance program requirements of Appendix A.
(iii) The Operator must comply with the MEL requirements for "beyond 120 minutes EDTO."
(iv) The Operator must conduct training for maintenance personnel for differences between 138-minute EDTO diversion approval and its previously approved 180-minute EDTO diversion authority.

**(f) 180-minute EDTO.** The CAASL grants approval to conduct EDTO with diversion times up to 180 minutes as follows:

(i) For these operations the airplane-engine combination must be type-design-approved for EDTO of at least 180 minutes by the State of Design.
(ii) The Operator must comply with the maintenance program requirements of Appendix A.
(iii) The Operator must comply with the MEL requirements for "beyond 120 minutes EDTO."

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**Appendix A - Continuous airworthiness maintenance program (CAMP) for two-engine EDTO.**

In order to conduct an EDTO flight using a two-engine airplane, each approval holder must develop and comply with the EDTO continuous airworthiness maintenance program, as authorized in the approval holder's operations specifications, for each airplane-engine combination used in EDTO. The approval holder must develop this EDTO CAMP by supplementing the manufacturer's maintenance program or the AMP currently approved for the Operator. This EDTO CAMP must include the following elements:

**(a) EDTO maintenance document.** The Operator must have an EDTO maintenance document for use by each person involved in EDTO.

(1) The document must -
- (i) List each EDTO significant system,
- (ii) Refer to or include all of the EDTO maintenance elements in this section,
- (iii) Refer to or include all supportive programs and procedures,
- (iv) Refer to or include all duties and responsibilities, and
- (v) Clearly state where referenced material is located in the approval holder's document system.

**(b) EDTO pre-departure service check.** The approval holder must develop a pre-departure check tailored to their specific operation.

(1) The approval holder must complete a pre-departure service check immediately before each EDTO flight.

(2) At a minimum, this check must -
- (i) Verify the condition of all EDTO Significant Systems;
- (ii) Verify the overall status of the airplane by reviewing applicable maintenance records; and
- (iii) Include an interior and exterior inspection to include a determination of engine and APU oil levels and consumption rates.

(3) An appropriately trained maintenance person, who is EDTO qualified, must accomplish and certify by signature EDTO specific tasks. Before an EDTO flight may commence, an EDTO pre-departure service check (PDSC) Signatory Person, who has been authorized by the approval holder, must certify by signature, that the EDTO PDSC has been completed.

(4) For the purposes of this paragraph (b) only, the following definitions apply:
- (i) EDTO qualified person: A person is EDTO qualified when that person satisfactorily completes the operator's EDTO training program and is authorized by the approval holder.
- (ii) EDTO PDSC Signatory Person: A person is an EDTO PDSC Signatory Person when that person is EDTO qualified and that person:

(A) When certifying the completion of the EDTO PDSC in Sri Lanka
- (1) Works for an operator authorized to engage in Commercial Air Transport operation or works for a IS 145 repair station; and
- (2) Holds an IS 66 license with B1 ratings.

(B) When certifying the completion of the EDTO PDSC outside of Sri Lanka holds an authorization granted by Local Part 145 approved organization or equivalent, and holds Part 66 license with B1 ratings or equivalent

**(c) Limitations on dual maintenance.**

(1) Except as specified in paragraph (c) (2), the approval holder may not perform scheduled or unscheduled dual maintenance during the same maintenance visit on the same or a substantially similar EDTO Significant System listed in the EDTO maintenance document, if improper maintenance could result in failure of an EDTO Significant System.

(2) In the event dual maintenance as defined in paragraph (c) (1) of this section cannot be avoided, the approval holder may perform maintenance provided:

(i) The maintenance action on each affected EDTO Significant System is performed by a different technician, or

(ii) The maintenance action on each affected EDTO Significant System is performed by the same technician under the direct supervision of a second qualified individual; and

(iii) For either paragraph (c)(2)(i) or (ii) of this section, a qualified individual conducts a ground verification test and any in-flight verification test required under the program developed pursuant to paragraph (d) of this section.

**(d) Verification program.** The approval holder must develop and maintain a program for the resolution of discrepancies that will ensure the effectiveness of maintenance actions taken on EDTO Significant Systems. The verification program must identify potential problems and verify satisfactory corrective action. The verification program must include ground verification and in-flight verification policy and procedures. The Operator must establish procedures to indicate clearly who is going to initiate the verification action and what action is necessary. The verification action may be performed on an EDTO revenue flight provided the verification action is documented as satisfactorily completed upon reaching the EDTO Entry Point.

**(e) Task identification.** The approval holder must identify all EDTO-specific tasks. An appropriately trained technician who is EDTO qualified must accomplish and certify by signature that the EDTO-specific task has been completed.

**(f) Centralized maintenance control procedures.** The approval holder must develop and maintain procedures for centralized maintenance control for EDTO.

**(g) Parts control program.** The approval holder must develop an EDTO parts control program to ensure the proper identification of parts used to maintain the configuration of airplanes used inEDTO.

**(h) Reliability program.** The approval holder must have an EDTO reliability program. This program must be the approval holder's existing reliability program supplemented for EDTO. This program must be event-oriented and include procedures to report the events listed below, as follows:

(1) The approval holder must report the following events within 72 hours of the occurrence to CAASL AWS:

(i) IFSDs, except planned IFSDs performed for flight training.

(ii) Diversions and turn backs for failures, malfunctions, or defects associated with any airplane or engine system.

(iii) Uncommanded power or thrust changes or surges.

(iv) Inability to control the engine or obtain desired power or thrust.
(v) Inadvertent fuel loss or unavailability, or uncorrectable fuel imbalance in flight.
(vi) Failures, malfunctions or defects associated with EDTO Significant Systems.
(vii) Any event that would jeopardize the safe flight and landing of the airplane on an EDTO flight.

(2) The approval holder must investigate the cause of each event listed in paragraph (h)(1) of this section and submit findings and a description of corrective action to CAASL AWS .The report must include the information specified in SLCAD-014. The corrective action must be acceptable to its CAA SL.

**(i) Propulsion system monitoring.**

(1) If the IFSD rate (computed on a 12-month rolling average) for an engine installed as part of an airplane-engine combination exceeds the following values, the Operator must do a comprehensive review of its operations to identify any common cause effects and systemic errors. The IFSD rate must be computed using all engines of that type in the Operator's entire fleet of airplanes approved for EDTO.
(i) A rate of 0.05 per 1,000 engine hours for EDTO up to and including 120 minutes.
(ii) A rate of 0.03 per 1,000 engine hours for EDTO beyond 120-minutes and up to and including 180 minutes.
(iii) A rate of 0.02 per 1,000 engine hours for EDTO beyond 180 minutes.

(2) Within 30 days of exceeding the rates above, the Operator must submit a report of investigation and any necessary corrective action taken to CAASL AWS

**(j) Engine condition monitoring.**

(1) The Operator must have an engine condition monitoring program to detect deterioration at an early stage and to allow for corrective action before safe operation is affected.
(2) This program must describe the parameters to be monitored, the method of data collection, the method of analyzing data, and the process for taking corrective action.
(3) The program must ensure that engine-limit margins are maintained so that a prolonged engine-inoperative diversion may be conducted at approved power levels and in all expected environmental conditions without exceeding approved engine limits. This includes approved limits for items such as rotor speeds and exhaust gas temperatures.

**(k) Oil-consumption monitoring.** The Operator must have an engine oil consumption monitoring program to ensure that there is enough oil to complete each EDTO flight. APU oil consumption must be included if an APU is required for EDTO. The operator's oil consumption limit may not exceed the manufacturer's recommendation. Monitoring must be continuous and include oil added at each EDTO departure point. The program must compare the amount of oil added at each EDTO departure point with the running average consumption to identify sudden increases.

**(l) APU in-flight start program.** If the airplane type certificate requires an APU but does not require the APU to run during the EDTO portion of the flight, the Operator must develop and maintain a program acceptable to the CAA SL for cold soak in-flight start-and-run reliability.

**(m) Maintenance training.** For each airplane-engine combination, the Operator must develop a maintenance training program that provides training adequate to support EDTO. It must include EDTO specific training for all persons involved in EDTO maintenance that focuses on the

special nature of EDTO. This training must be in addition to the operator's maintenance training program used to qualify individuals to perform work on specific airplanes and engines.

**(n)** **Configuration, maintenance, and procedures (CMP) document.** If an airplane-engine combination has a CMP document, the Operator must use a system that ensures compliance with the applicable Type Operator approved document.

**(o)** **Procedural changes.** Each substantial change to the maintenance or training procedures that were used to qualify the Operator for EDTO, must be submitted to CAASL AWS for review. The Operator cannot implement a change until CAA SL AWS notifies the Operator that the review is complete.

## Appendix B : Considering time-limited systems in planning EDTO alternates.

**(a)** For EDTO up to and including 180 minutes, no person may list an airport as an EDTO Alternate Airport in a dispatch or flight release if the time needed to fly to that airport (at the approved one-engine inoperative cruise speed under standard conditions in still air) would exceed the approved time for the airplane's most limiting EDTO Significant System (including the airplane's most limiting fire suppression system time for those cargo and baggage compartments required by regulation to have fire-suppression systems) minus 15 minutes.

**(b)** For EDTO beyond 180 minutes, no person may list an airport as an EDTO Alternate Airport in a dispatch or flight release if the time needed to fly to that airport:

(1) At the all engine operating cruise speed, corrected for wind and temperature, exceeds the airplane's most limiting fire suppression system time minus 15 minutes for those cargo and baggage compartments required by regulation to have fire suppression systems (except as provided in paragraph (c) of this section), or

(2) At the one-engine-inoperative cruise speed, corrected for wind and temperature, exceeds the airplane's most limiting EDTO Significant System time (other than the airplane's most limiting fire suppression system time minus 15 minutes for those cargo and baggage compartments required by regulation to have fire-suppression systems).