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GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT
DIRECTOR GENERAL OF CIVIL AVIATION

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OPERATIONS CIRCULAR

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Subject: Single Engine Turbine (SET) Aircraft – Schedule Commuter Air Transport Operations.

1. INTRODUCTION

This operations circular (OC) lays down the requirements for operation of Single Engine Turbine (SET) aircraft for scheduled Commuter services, assessment of routes of intended operations and Training and Check requirements.

2. APPLICABILITY

This OC is applicable to scheduled Commuter Air Transport Operations with Single Engine Turbine Aeroplane having all-up-weight of not more than 5700 Kg. and Single Engine Turbine Helicopter having all-up-weight of not more than 3175 Kg.

3. DEFINITIONS:

Assessment of route: The methodology established by operator and accepted by DGCA for each route of intended operations.

Landing site: Landing site is an aerodrome or an area where a safe forced landing can be executed.

Risk period (aeroplane): Risk period is the time in air for the airplane when there is no landing site available with-in gliding range.

4. OPERATOR PLANNING

The operations manual shall include all necessary information relevant to operations by single-engine turbine-powered aircraft. This shall include all the additional equipment, procedures, training required, route and/or area of operation and aerodrome information (including planning and operating minima) for such operations.

4.1 Flight Planning

(a) The operator shall establish flight planning procedures to ensure that the routes and cruising altitudes are selected so as to have a landing site within gliding range for aeroplane and autorotative range for helicopter operations.

(b) Notwithstanding (a) above, whenever a landing site is not within gliding range of aeroplane, one or more risk periods may be used as described in para 4 of the this Ops Circular.

4.2 Route Assessment

(1) The assessment of route shall be carried out at least once a year, based upon the performance capability of type, continued suitability of landing sites (obstacles, dimensions of the landing area, type of the surface, slope, etc.) along the route when no aerodrome is available.

(2) The assessment may be performed using publicly available information or by conducting on-site surveys.

(3) En route specific weather conditions that could affect the capability of the aircraft to reach the selected forced landing area following loss of power

(4) Consideration of prevailing weather conditions at landing sites to the extent that such information is available from local or other sources, to be evaluated taking into account a combination of the following information:

(i) Local observations;
(ii) Regional weather information (e.g. significant weather charts); and
(iii) Terminal area forecast (TAF)/meteorological aerodrome report (METAR) of the nearest aerodromes; and

(5) At the flight planning phase, any selected landing site shall have been assessed by the operator as acceptable for carrying out a safe forced landing

with a reasonable expectation of no injuries to persons in the aircraft or on the ground. Landing sites suitable for a diversion or forced landing shall be programmed into the navigation system so that track and distance to the landing sites are immediately and continuously available. None of these pre-programmed positions shall be altered during flight.

4.3 Route and Instrument Procedure Selection

The following should be considered by the operator, as appropriate, depending on the use of a risk period:

(a) Departure: The operator should ensure, to the extent possible, that the departure procedures (IFR/VFR) to be followed are those assuring a flight path, and in the event of power loss, a safe landing.

(b) Arrival: The operator should ensure, to the extent possible, that the arrival procedures to be followed are those assuring that the flight path allows, in the event of power loss, the aircraft to land on a landing site.

(c) En route: The operator should ensure that any planned or diversionary route should be selected and be flown at an altitude such that, in the event of power loss, the pilot is able to make a safe landing on a landing site.

4.4 Identification of a Landing Site

The landing site shall allow the aircraft to completely stop within the available area, taking into account the slope and the type of the surface. The slope of the landing site shall be assessed by the operator in order to determine its acceptability and possible landing directions. Both ends of the landing area, or only the zone in front of the landing area for one-way landing areas, should be clear of any obstacle which may be a hazardous during the landing phase.

When assessing the suitability of a landing site which is not an aerodrome, it is recommended to consider the following:

- Landing site criteria
- Size and shape of the landing area
- In case of aeroplane landing sites with a circular shape providing multiple approach paths depending on the wind; and for other cases, landing sites

with a minimum width of 45 m and type of surface, to be appropriately selected.

5. SAFETY RISK ASSESSMENT FOR INTENDED ROUTES

The risk assessment methodology should aim at estimating for a specific route the likelihood of having fatalities due to emergency landing caused by an engine failure. Based upon the outcome of the risk assessment, the operator shall establish the feasibility of operation, keeping in view the following:

(a) To ensure that the routes and cruising altitudes are selected so as to have a landing site within gliding range.

(b) Notwithstanding (a) above, whenever a landing site is not within gliding range, one or more risk periods may be used for the following operations:

(1) Over water;
(2) Over hostile environment; or
(3) Over congested areas.

Except for the take-off and landing phase, the operator shall ensure that when a risk period is planned, there is a possibility to glide to a non-congested area.

NOTE: The total duration of the risk period shall not exceed 15 minutes per flight.

5.1 Methodology

The methodology aims at estimating the likelihood of failing to achieve a safe forced landing in case of engine failure, a safe forced landing being defined as a landing on an area for which it is reasonably expected that no serious injury or fatalities will occur due to the landing even though the aircraft may suffer extensive damage.

This methodology consists of creating a risk profile for a specific route, including departure, en route and arrival airfield and runway, by splitting the proposed flight into appropriate segments (based on the flight phase or the landing site selected), and by estimating the risk for each segment should the engine fail in one of these segments. This risk profile is considered to be an estimation of the probability of an unsuccessful forced landing if the engine fails during one of the identified segments.

When assessing the risk for each segment, the height of the aeroplane at which the engine failure occurs, the position relative to the departure or destination

airfield or to an emergency landing site en route, and the likely ambient conditions (ceiling, visibility, wind and light) should be taken into account, as well as the standard procedures of the operator (e.g. descent path angle for standard descent from cruising altitude, etc.).

5.2 Contingency Procedures

When a risk period is used during the take-off or landing phase, the contingency procedures shall include appropriate information for the crew on the path to be followed after an engine failure in order to minimize to the greatest extent possible the risk to people on the ground.

6. Certification Procedure

For SET Schedule commuter operations or where the operator is adding an SET aeroplane type to an existing AOC, Certification will be as per procedures laid down in CAP 3300 for aeroplane and CAP 3400 for Helicopters.

Sd/-
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Annexure 1

REQUIREMENTS RELATED TO OPERATION OF SINGLE ENGINE TURBINE AEROPLANE FOR SCHEDULED COMMUTER OPERATIONS

1. TRAINING & CHECKING

1.1 Conversion Training and Checking

Minimum requirements for endorsement and recurrent training programme are as laid down in CAR Section 7, Series B, Part XVIII and CAR Section 8, Series F, Part VII.

1.2 Training Programme

The operator's flight crew training and checking, established in accordance with above applicable CARs, should incorporate the following elements:

(a) Conversion training: Conversion training should be conducted in accordance with a syllabus devised for SET-IMC.

(b) Conversion checking: The following items should be checked following completion of the SET-IMC operations conversion training as part of the proficiency check (PPC):

(1) conduct of the forced landing procedure until touchdown in simulated IMC, with zero thrust set, and operating with simulated emergency electrical power;
(2) engine restart procedures;
(3) depressurisation following engine failure; and
(4) engine-out descent in simulated IMC.

(c) Use of simulator (conversion training and checking)

Where a suitable full flight simulator (FFS) or a suitable flight simulation training device (FSTD) is available, it should be used to carry out training on the items described IMC operations conversion training and checking.

1.3 RECURRENT TRAINING

Recurrent training for SET- IMC operations should be included in the Recurrent Training required by CAR Section 8, Series F, Part VII.

For requirements pertaining to Helicopters refer to CAR Section 8, Series H Part II.

NOTE 1: Special emphasis during training to include:

A) Upset prevention and recovery training.

B) Pilot incapacitation.

***NOTE 2*:** Guidance for Approved Operations by Single-Engine Turbine-Powered aeroplane in Instrument Meteorological Conditions (IMC) is provided in Chapter 5, para 5.4, Appendix 3 and Attachment G of ICAO ANNEX 6 Part I, and CAR Section 8 Series O Part II, Appendix B.

2. NIGHT OPERATIONS

Night operations are not allowed.

3. ROUTE LIMITATIONS OVER WATER

Operators of single-engine turbine-powered aeroplane carrying out operations at and/or in IMC should make an assessment of route limitations over water. The distance that the aeroplane may be operated from a land mass suitable for a safe forced landing should be determined. This equates to the glide distance from the cruise altitude to the safe forced landing area following engine failure, assuming still air conditions. Any additional distance allowed beyond the glide distance should not exceed a distance equivalent to Risk period as defined above.

Annexure 2

REQUIREMENTS RELATED TO OPERATION OF SINGLE ENGINE TURBINE HELICOPTERS FOR SCHEDULED COMMUTER OPERATIONS

1. The various requirements for operation of helicopter scheduled commuter air transport operations are enumerated in the following sub-paras:-

   a) Flight Crew Experience, Training and Recurrent Checks. All the requirements placed at CAR Section 8 Series H Part II for flight crew experience, training and recurrent checks shall be applicable for helicopter operations for scheduled commuter air transport operations in RCS (Regional Connectivity Scheme). The proforma placed in the ibid CAR shall be utilized for conduct of all recurrent checks / training.

   b) Night Operations. Night and/or IFR operations are not permitted for single engine turbine helicopters in scheduled commuter air transport operations.

   c) Operations over Water. Operations over large bodies of water beyond auto-rotational distance from land are not permitted for single engine turbine helicopters in scheduled commuter air transport operations.

   d) Operational Requirements. All the operational requirements shall be as mentioned in CAR Section 8 Series O Part IV. Additional / reiterated operational requirements are as follows :-

      i. All operations to helipads shall be in Out of Ground Effect (OGE) configuration.

      ii. Actual weight of passengers / baggage shall be taken for all calculations of AUW.

      iii. Permissible AUW calculations (as per RFM) for Hill Operations shall be calculated for origin / destination helipad as per actual surface temperature (when available with adequate accuracy) or ISA+15^{0}C, whichever is higher. PIC may take an even higher temperature figure for calculations, if in his opinion the actual temperature is not available with adequate accuracy / to achieve adequate margins of safety.

      iv. No cross utilization of pilots shall be permitted for scheduled commercial air transportation operations in RCS.

      v. The PIC shall undertake a familiarisation flight on the route at least once, prior to undertaking regular commercial operations, as per provisions of Para 7.4.2.5 of CAR Section 8 Series O Part IV.

vi. Prior to undertaking the familiarisation flight as mentioned above, the operator shall ensure that the PIC undergoes route briefing, briefing on forced landing sites and expected weather en-route.

vii. Adequate force landing fields shall be identified by the operator, and reviewed on an annual basis along the route of operation, so as to ensure compliance with Para 3.1.2 of CAR Section 8 Series O Part IV.