

**CIVIL AVIATION AUTHORITY OF BANGLADESH
AIR NAVIGATION ORDERS
(Flight Operations Requirements)**

PART – B - GENERAL OPERATIONS PROCEDURES

SUB-PART OPS. B.3	ESTABLISHMENT OF FUEL AND OIL POLICY BY OPERATORS ENGAGED IN COMMERCIAL AIR TRANSPORT (AEROPLANES) OPERATION
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1. GENERAL

- 1.1 ICAO Standard and Recommended Practices for Operation of all aeroplanes require that a flight shall not be commenced unless, taking account of both the meteorological conditions and any delays that are expected in flight, the aeroplane carries sufficient fuel and oil to ensure that it can safely complete the flight. In addition, a reserve shall be carried to provide for contingencies.
- 1.2 The Rule 142 of the CARs' 1984 mandates that an aircraft shall not commence a flight within Bangladesh or to or from Bangladesh if the quantity of fuel and oil on board is less than the quantity which the Chairman, having regard to the circumstances of the proposed flight and the safety of the aircraft, considers necessary. `

2. DEFINITIONS

- 2.1 For the purpose of this Order, the definitions as mentioned under the Rules 2 and 183 of the Civil Aviation Rules, 1984 shall apply. Where a particular definition is not given under the Rule, the under mentioned definitions shall apply:

- (a) “Adequate Alternate Aerodrome” means, an aerodrome at which the landing performance requirements can be met and which is expected to be available, if required, and which has the necessary facilities and services, such as air traffic control, lighting, communications, meteorological services, navigation aids, rescue and fire-fighting services and one suitable instrument approach procedure.
- (b) “Alternate fuel” means, a quantity of fuel required to fly from the aerodrome to which the flight is planned, to the alternate aerodrome specified in the operational flight plan, based on “planned operating conditions”.
- (c) “Commercial air transport operation” means, an aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire or reward.
- (d) “Contingency fuel” means, a quantity of fuel to cover deviations from the “planned operating conditions”.
- (e) “Decision Altitude (DA)/Decision Height (DH)” means, a specified altitude or height in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.
- (f) “Destination alternate” means, an adequate alternate aerodrome to which an aircraft may proceed should it become either impossible or inadvisable to land at the aerodrome of intended landing.
- (g) “Extended Twin-Engine Operations (ETOPS)” means, any flight by an aeroplane with two turbine power-units where the flight time at the one power-unit inoperative cruise speed (in ISA and still air conditions), from a point on the route to an adequate alternate aerodrome, is greater than 60 (sixty) minutes.
- (h) “Minimum Descent Altitude (MDA)/Minimum Descent Height (MDH)” means, a specified altitude or height in a non-precision approach or circling approach below which descent must not be made without the required visual reference.
- (i) “Operations manual” means, a manual approved by the Chairman under the Rule 124 of the Civil Aviation Rules, 1984 containing procedures, instruction and guidance for use by operational personnel in the execution of there duties.

- (j) “Planned operating conditions” means, among other things: anticipated meteorological conditions, weights, routings, delays, and ATS procedures specified in the operating documents.
- (k) “Trip fuel” means, quantity of fuel required to fly from the aerodrome of departure to the aerodrome to which the flight is planned, based on “planned operating conditions”.

3. FUEL AND OIL SUPPLY

- 3.1 A Pilot in-command shall not commence a flight unless he is satisfied that the aeroplane carries at least the planned amount of fuel and oil to complete the flight safely, taking into account expected operating conditions.

4. FUEL AND OIL POLICY

- 4.1 An operator must establish a fuel policy for the purpose of flight planning and in-flight re-planning to ensure that every flight carries sufficient fuel and oil for the planned operation and reserves to cover deviations from the planned operation.
- 4.2 An operator shall ensure that the planning of flight is only based upon procedures and data contained in or derived from the Operations Manual or current aeroplane specific data; and
 - (a) The operating conditions under which the flight is to be conducted including;
 - (i) Realistic aeroplane fuel consumption data;
 - (ii) Expected meteorological conditions;
 - (iii) Expected air traffic control routings, traffic delays and restrictions;
 - (iv) For IFR flight, one instrument approach at the destination aerodrome, including a missed approach;
 - (v) Anticipated masses of the aircraft for the flight
 - (vi) The procedures prescribed in the operations manual for loss of pressurization, where applicable, or failure of one power unit while en route; and
 - (vii) Any other conditions that may delay the landing of the aeroplane or increase fuel and/or oil consumption.

4.3 An Operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes (sub-paragraphs 4.3.1 to 4.3.4):

4.3.1 Taxi fuel : Not less than the amount, expected to be used prior to take-off, Local conditions at the departure aerodrome and APU consumption should be taken into account.

4.3.2 Trip fuel: To include:

- (a) Fuel for take-off and climb from aerodrome elevation to initial cruising level/altitude, taking into account the expected departure routing.
- (b) Fuel from top of climb to top of descent, including any step climb/descent;
- (c) Fuel from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure; and
- (d) Fuel for approach and landing at the destination aerodrome.

4.3.3 Reserve fuel consisting of :

4.3.3.1 Contingency fuel, which shall be the higher of (a) or (b) below:

- (a) Either :
 - (i) 5% of the planned trip fuel or, in the event of in-flight re-planning, 5% of the trip fuel for the remainder of the flight; or
 - (ii) Not less than 3% of the planned trip fuel or, in the event of in-flight re-planning, 3% of the trip fuel for the remainder of the flight provided that an en-route alternate is available. The en-route alternate should be located within a circle having a radius equal to 20% of the total flight plan distance, the center of which lies on the planned route at a distance from the destination of 25% of the total flight plan distance, or at 20% of the total flight plan distance plus 50nm, whichever is greater (refer appendix-1 of this order); or

- (iii) An amount of fuel sufficient for 20 minutes flying time based upon the planned trip fuel consumption provided that the operator has established a fuel consumption monitoring programme for individual aeroplanes and uses valid data determined by means of such a programme for fuel calculation; or
 - (iv) An amount of fuel not less than that which would be required to fly 15 minutes at holding speed at 1500 ft (450m) above the destination aerodrome in standard conditions, when an operator has established a programme, approved by the Authority, to monitor the fuel consumption on each individual route/aeroplane combination and uses this Data for a statistical analysis to calculate contingency fuel for that route/aeroplane combination; or
- (b) An amount of fuel to fly for 5 minutes at holding speed at 1500 ft (450 m) above the destination aerodrome in Standard Conditions.

Note: At the planning stage, not all factors which could have an influence on the fuel consumption to the destination aerodrome can be foreseen. Therefore, contingency fuel is to be carried to compensate for deviation:

- (a) of an individual aeroplane from the expected fuel consumption data;
- (b) from forecast meteorological conditions; and
- (c) from planned routings and/or cruising levels/altitudes.

4.3.3.2 **Alternate fuel**, if a destination alternate is required. (This does not preclude selection of the departure aerodrome as the destination alternate): The fuel shall be sufficient for:

- (a) A missed approach from the applicable MDA/DH at the destination aerodrome missed approach altitude taking into account the complete missed approach procedure;
- (b) A climb from missed approach altitude to cruising level/altitude;

- (c) The cruise from top of climb to top of descent;
- (d) Descent form top of descent to the point where the approach is initiated taking into account the expected arrival procedure; and
- (e) Executing an approach and landing at the destination alternate aerodrome.
- (f) If two destination alternate aerodromes are required, alternate fuel should be sufficient to proceed to the alternate which requires the greater amount of alternate fuel.

4.3.3.3 **Final reserve fuel:** The fuel shall be sufficient for:

- (a) For aeroplanes with reciprocating engine, fuel to fly for 45 minutes; or
- (b) For aeroplanes with turbine power units, fuel to fly for 30 minutes at holding speed at 1500 ft (450 m) above aerodrome elevation in standard conditions, calculated with the estimated mass on arrival at the alternate or the destination, when no alternate is required; and

4.3.3.4 **Additional fuel,** if required by types of operation (e.g. ETOPS);

- (a) The minimum additional fuel shall permit:
 - (i) Holding for 15 minutes at 1500 ft (450 m) above aerodrome elevation in standard conditions, when a flight is operated under IFR without a destination alternate; and
- (b) Following the possible failure of a power unit or loss of pressurisation, based on the assumption that such a failure occurs at the most critical point along the route, the aeroplane to:
 - (i) Descend as necessary and proceed to an adequate aerodrome; and

- (ii) Hold there for 15 minutes at 1500 ft (450 m) above aerodrome elevation in standard conditions; and
- (iii) Make an approach and landing except that additional fuel is only required, if the minimum amount of fuel calculated in accordance with sub-paragraphs 4.3.2 to 4.3.3.3 above is not sufficient for such an event.

Note: For SST aircraft operations, reference should be made to the ICAO Circular 126, titled “Guidance Material on SST Aircraft Operations”.

4.3.4 Extra fuel: Which should be at the discretion of the Pilot-in-Command.

4.4 An operator shall ensure that in-flight re-planning procedures for calculating usable fuel required when a flight has to proceed along a route or to a destination other than originally planned includes:

- (a) Trip fuel for the remainder of the flight;
- (b) Reserve fuel consisting of:
 - (i) Contingency fuel;
 - (ii) Alternate fuel, if a destination alternate is required. (This does not preclude selection of the departure aerodrome as the destination alternate);
 - (iii) Final reserve fuel; and
 - (iv) Additional fuel, if required by the type of operation (E.g. ETOPS); and
- (c) Extra fuel if required by the Pilot-in-Command.

5. DECISION POINT PROCEDURE

5.1 If an operator intends to plan a flight to a destination aerodrome via a decision point along the route, the amount of fuel shall be the greater of 5.1.1 or 5.1.2 below:

5.1.1 The sum of:

- (a) Taxi fuel;
- (b) Trip fuel to the destination aerodrome, via the decision point;
- (c) Contingency fuel equal to not less than 5% of the estimated fuel consumption form the decision point to the destination aerodrome;
- (d) Alternate fuel, if a destination alternate is required;
- (e) Final reserve fuel;
- (f) Additional fuel; and
- (g) Extra fuel if required by the Pilot-in-Command; or,

5.1.2 The sum of:

- (a) Taxi fuel;
- (b) The estimated fuel consumption form departure aerodrome to a suitable en-route alternate, via the decision point;
- (c) Contingency fuel equal to not less than 3% of the estimated fuel consumption form the departure aerodrome to the en-route alternate;
- (d) Final reserve fuel;
- (e) Additional fuel; and
- (f) Extra fuel if required by the Pilot-in-Command.

6. ISOLATED AERODROME PROCEDURE

6.1 Where the aerodrome of intended landing is isolated and no suitable destination alternate is available, a flight may be planned without alternate, provided this has been specifically authorized by the Chairman for the aerodrome concerned and the route to be followed. In such case, the amount of fuel at departure shall include:

6.1.1 Taxi fuel;

6.1.2 Trip Fuel;

- 6.1.3 Contingency Fuel calculated in accordance with sub-paragraph 4.3.3.1 above;
- 6.1.4 Additional fuel, if required, but not less than:
 - (a) For aeroplanes with reciprocating engine, fuel to fly for 45 minutes plus 15% of the flight time planned to be spent at cruising level, or two hours, whichever is less; or
 - (b) For aeroplanes with turbine engines, fuel to fly for two hours at normal cruise consumption after arriving overhead the destination aerodrome including final reserve fuel; and
- 6.1.5 Extra Fuel if required by the Pilot-in-Command.

7. PRE-DETERMINED POINT PROCEDURE

- 7.1 If an operator intends to plan a flight to a destination alternate where the distance between the destination aerodrome and the destination alternate is such that a flight can only be routed via a predetermined point to one of these aerodrome the amount of fuel shall be the greater of 7.1.1 or 7.1.2 below:
 - 7.1.1 The sum of:
 - (a) Taxi fuel;
 - (b) Trip Fuel from the departure aerodrome to the destination aerodrome via the predetermined point;
 - (c) Contingency Fuel calculated in accordance with sub-paragraph 4.3.3.1 above;
 - (d) Additional fuel, if required, but not less than:
 - (i) For aeroplanes with reciprocating engine, fuel to fly for 45 minutes plus 15% of the flight time planned to be spent at cruising level, or two hours, whichever is less; or
 - (ii) For aeroplanes with turbine engines, fuel to fly for two hours at normal cruise consumption after arriving overhead the destination aerodrome including Final Reserve fuel; and
 - (e) Extra Fuel if required by the Pilot-in-Command; or

7.1.2 The sum of:

- (a) Taxi fuel;
- (b) Trip Fuel from the departure aerodrome to the alternate aerodrome via the predetermined point;
- (c) Contingency Fuel calculated in accordance with subparagraph 4.3.3.1 above;
- (d) Additional fuel, if required, but not less than:
 - (i) For aeroplanes with reciprocating engine, fuel to fly for 45 (forty five) minutes; or
 - (ii) For aeroplanes with turbine engines, fuel to fly for 30 (thirty) minutes at holding speed at 1500 ft (450 m) above aerodrome elevation in standard conditions including Final Reserve fuel; and
- (e) Extra Fuel if required by the Pilot-in-Command

8. FUEL AND OIL RECORDS

8.1 An operator shall retain fuel and oil records of each aircraft for at least 3 (three) months to enable the CAAB to ascertain that, for each flight the requirements of this ANO have been complied with.

This Order is issued in pursuance to the Rules 4, 130 and 140 of the Civil Aviation Rules, 1984.

Sd/-

Air Cdre Lutfur Rahman ndu, psc
Chairman
Civil Aviation Authority, Bangladesh

APPENDIX-1

LOCATION OF A FUEL EN-ROUTE ALTERNATE

