Kuwait Civil Aviation Safety Regulations

KCASR 16 – ENVIRONMENTAL PROTECTION

VOLUME - III

Amendment Record

Amendment No	Date of Issue	Remarks
1	Feb 2018	NSRA 2018-105 Implemented
2	June 2018	Part Rename
3	Sep 2020	NPA 2020-16 Updated to ICAO Annex 16 – Vol III (Amendment 1)
4	Jun 2023	Updated to ICAO Annex 16 – Vol III (Amendment 2)

CHAPTER 2

1.—SUBSONIC JET AEROPLANES OVER 5 700 kg

2.—PROPELLER-DRIVEN AEROPLANES OVER 8 618 kg

2.1 Applicability

Note.— See also Chapter 1, 1.4, 1.5, 1.6, 1.7, 1.8 and 1.11.

a) subsonic jet aeroplanes, including their derived versions, of greater than 5 700 kg maximum take-off mass for which the application for a type certificate was submitted on or after 1 January 2020, except for those aeroplanes of less than or equal to 60 000 kg maximum take-off mass with a maximum passenger seating capacity of 19 seats or less;

b) subsonic jet aeroplanes, including their derived versions, of greater than 5 700 kg and less than or equal to 60 000 kg maximum take-off mass with a maximum passenger seating capacity of 19 seats or less, for which the application for a type certificate was submitted on or after 1 January 2023;c) all propeller-driven aeroplanes, including their derived versions, of greater than 8 618 kg maximum take- off mass, for which the application for a type certificate was submitted on or after 1 January 2020;

d) derived versions of non-CO_2-certified subsonic jet aeroplanes, including their subsequent CO_2-certified derived versions, of greater than 5 700 kg maximum certificated take-off mass for which the application for certification of the change in type design was submitted on or after 1 January 2023;

e) derived versions of non-~~CO_2~~-CO_2-certified propeller-driven aeroplanes, including their subsequent CO_2-certified derived versions, of greater than 8 618 kg maximum certificated take-off mass for which the application for certification of the change in type design was submitted on or after 1 January 2023;

f) individual non-CO_2-certified subsonic jet aeroplanes of greater than 5 700 kg maximum certificated take- off mass for which a certificate of airworthiness was first issued on or after 1 January 2028; and

g) individual non-CO_2-certified propeller-driven aeroplanes of greater than 8 618 kg maximum certificated take-off mass for which a certificate of airworthiness was first issued on or after 1 January 2028.

Note. – Aeroplanes initially designed or modified and used for specialized operational requirements refer to

h) Fuel lower heating value;

i) Fuel specific gravity and kinematic viscosity if volumetric fuel flow meters are used (see 3.2.1d);

j) The cumulative error (RSS) of the overall measurement system (see 4.1.6);

k) Heading, track and latitude;

l) adherence to the required ~~Stability~~ stability criteria (see 3.2.3.1);

m) Description of the instruments and devices used to acquire the parameters necessary for the determination of SAR, and their individual accuracies in terms of their effect on SAR (see 4.1.5 and 4.1.6);

8.4 Calculations and corrections of SAR test data to reference conditions

The measured SAR values, corrections to the reference conditions (see 5.2), and corrected SAR values shall be provided for each of the test measurement points.

8.5 Derived data

The following derived information shall be provided for each aeroplane tested for certification purposes:

a) The specific air range (km/kg) for each reference aeroplane mass and the associated 90 per cent confidence interval (see 6);

b) The average of the inverse of the three reference mass specific air range values;

c) The reference geometric factor ; and

d) The CO_2 emissions evaluation metric value, including its percentage of the maximum permitted CO2 emissions evaluation metric value as defined in Part II, Chapter 2, 2.4.

APPENDIX 2. REFERENCE GEOMETRIC FACTOR

1. The reference geometric factor (RGF) is a non-dimensional parameter used to adjust (1/SAR)AVG. RGF is based on a measure of fuselage size ~~normalised~~normalized with respect to 1 m2, and is derived as follows:

   a) For aeroplanes with a single deck, determine the area of a surface (expressed in m2) bounded by the maximum width of the fuselage outer mould line (OML) projected orthogonally to a flat plane parallel with the main deck floor; ~~and~~or

   b) For aeroplanes with an upper deck, determine the sum of the area of a surface (expressed in m2) bounded by the maximum width of the fuselage outer mould line (OML) projected orthogonally to a flat plane parallel with the main deck floor, and the area of a surface bounded by the maximum width of the fuselage OML at or above the upper deck floor projected orthogonally ~~–~~ to a flat plane parallel with the upper deck floor ~~is determined~~; and

   c) determine the non-dimensional RGF by dividing the areas defined in 1(a)

2. The RGF includes all ~~pressurised~~pressurized space on the main or upper deck including aisles, assist spaces galleys, lavatories, passage ways, stairwells and areas that can accept ~~cargo~~passengers, cargo ~~and~~ or auxiliary fuel containers. It does not include unpressurized space, permanent integrated fuel tanks within the cabin or space which is not~~or any unpressurized fairings, nor crew rest/work areas or cargo areas that are not~~ on the main or upper deck such as~~(e.g. 'loft' or~~ under floor cargo bay or a crew rest loft areas~~)~~. RGF does not include the cockpit crew zone.

3. The aft boundary to be used for calculating RGF is the aft surface of the aft pressure bulkhead skin. The forward boundary is the forward surface of the forward pressure bulkhead skin except for the cockpit crew zone. The width boundary as defined in 1 a) or b) may vary along the length of the fuselage between the forward and aft boundaries.

4. Areas that are accessible to both crew and passengers are excluded from the definition of the cockpit crew zone. For aeroplanes with a cockpit door, the aft boundary of the cockpit crew zone is the plane of the forward face of the cockpit door. For aeroplanes having optional interior configurations that include different locations of the cockpit door, or no cockpit door, the boundary shall be determined by the configuration that provides the smallest cockpit crew zone. For aeroplanes certified for single-pilot operation, the cockpit crew zone shall extend half the width of the cockpit, even if a cockpit door is fitted. For aeroplanes with an upper deck, it is permissible for the RGF for one deck to extend forward, above or below the cockpit crew zone.~~.~~

5. Figures A2-1 and A2-2 provide a notional view of the RGF boundary conditions.

***Note**. Guidance material on the determination of RGF is provided in the* Environmental Technical Manual *(Doc 9501), Volume III —* Procedures for the CO2 Emissions Certification of Aeroplanes

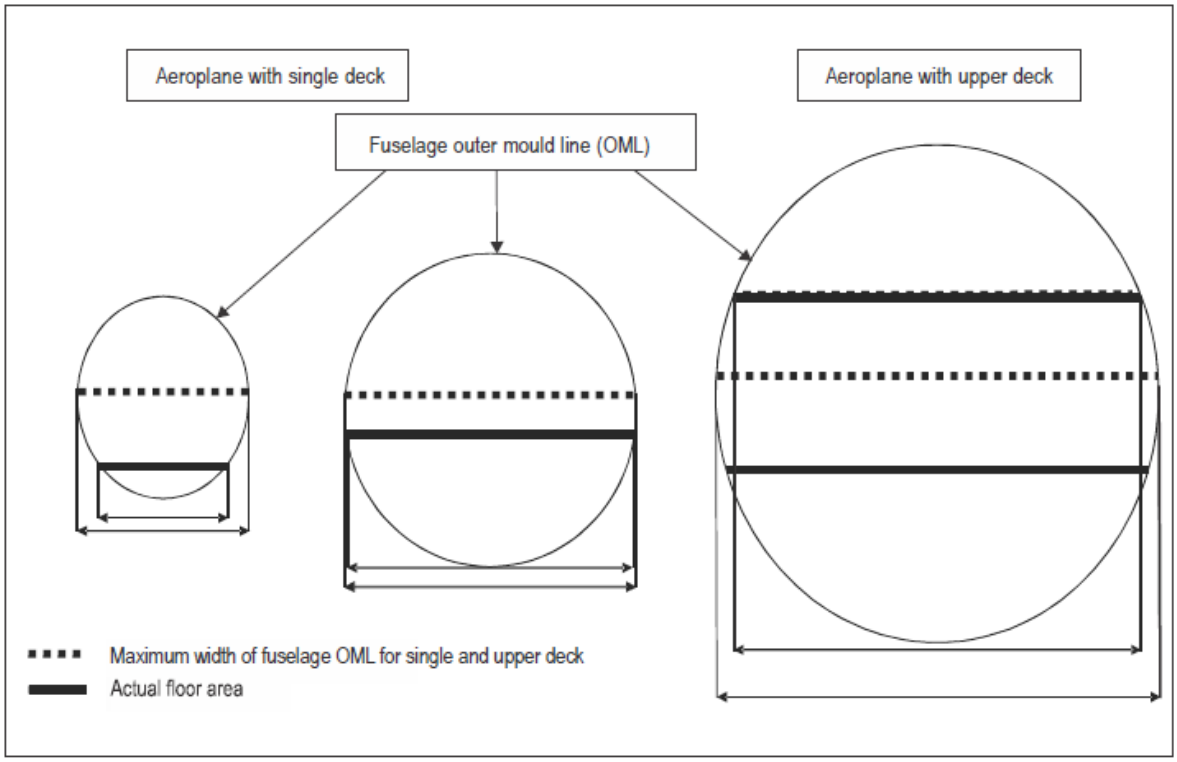
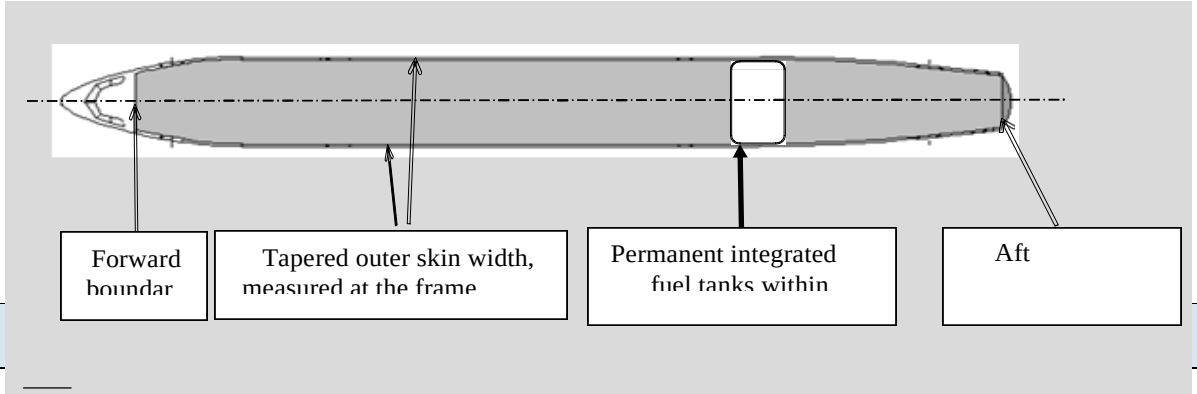


Figure A2-1. Cross-sectional view

~~5.~~

Figure A2-1. Cross-sectional View



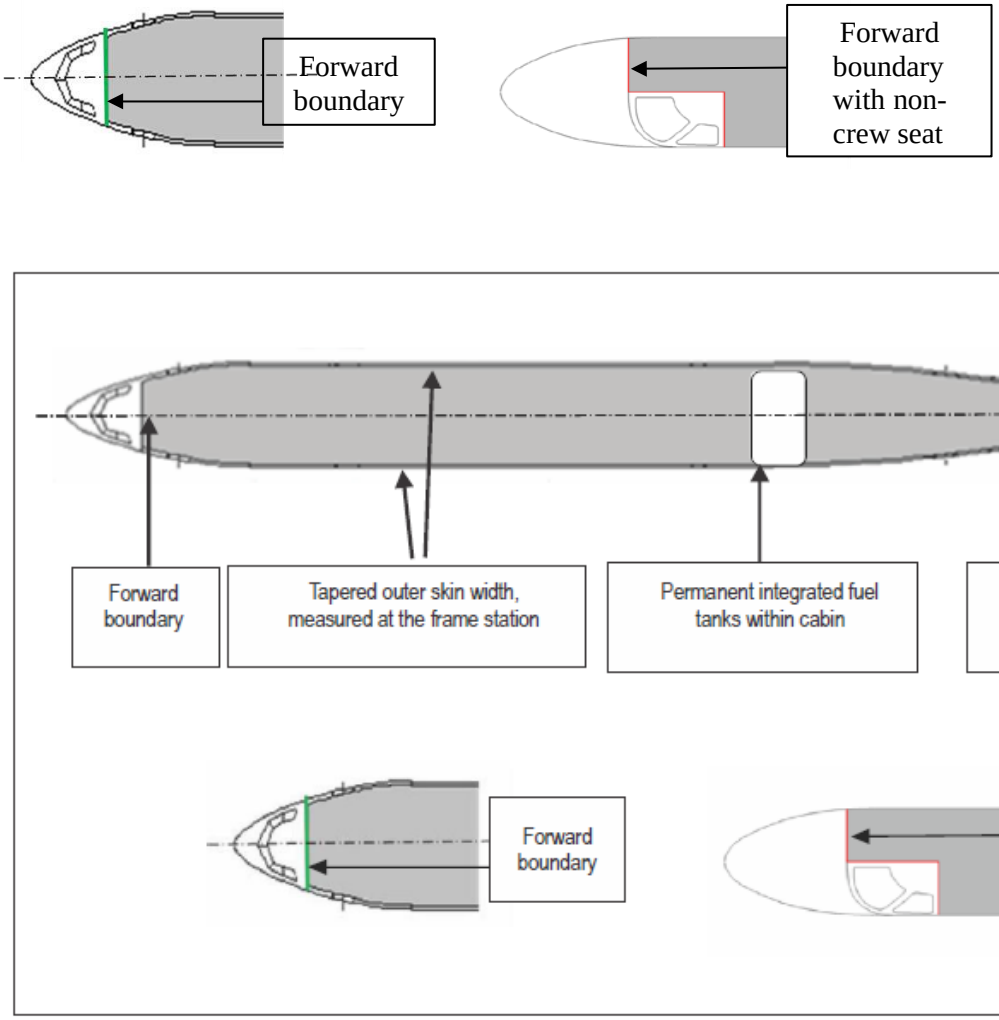


Figure A2-2. ~~Longitudinal~~ Plan View

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