STATUTORY INSTRUMENTS

1988 No. 1994

CIVIL AVIATION

The Air Navigation (Aeroplane and Aeroplane Engine Emission of Unburned Hydrocarbons) Order 1988

Made - - - -	*14th November 1988*
Laid before Parliament	*23rd November 1988*
Coming into force - -	*1st January 1989*

At the Court at Buckingham Palace, the 14th day of November 1988

Present,

The Queen's Most Excellent Majesty in Council

Her Majesty, in exercise of the powers conferred on Her by sections 60, 61, 101 and 102 of the Civil Aviation Act 1982(**1**) and of all other powers enabling Her in that behalf, is pleased, by and with the advice of Her Privy Council, to order, and it is hereby ordered, as follows—

Citation and commencement

1. This Order may be cited as the Air Navigation (Aeroplane and Aeroplane Engine Emission of Unburned Hydrocarbons) Order 1988 and shall come into force on 1st January 1989.

Interpretation

2.—(1) In this Order—

"An International Standard Atmosphere at sea level" has the meaning specified in Schedule 1 to this Order;

"Authorised person" means any constable and any person authorised by the CAA (whether by name or by class or description) either generally or in relation to a particular case or class of cases;

"BCAR" means British Civil Airworthiness Requirements Section M Emissions Certification —Issue 1 dated 1st May 1986 to be amended by CAA Blue Paper M 847 to be issued on 1st January 1989 with any modifications which may be prescribed;

"the CAA" means the Civil Aviation Authority;

(**1**) 1982 c. 16.

"Contracting State" means any state including the United Kingdom which is party to the Convention;

"the Convention" means the Convention on International Civil Aviation signed on behalf of the United Kingdom at Chicago on 7th December 1944;

"kN" means kilonewton, being the expression of force (thrust) using the International System of Units;

"prescribed" means prescribed by Regulations made by the Secretary of State under this Order;

"subsonic" means a level flight speed below Flight Mach 1.0;

"supersonic" means a level flight speed in excess of Flight Mach 1.0;

(2) Expressions used in this Order shall, unless the context otherwise requires, have the same respective meanings as in the Air Navigation Order 1985(**2**).

(3) A power to make Regulations under this Order shall include the power to make different provisions with respect to different classes of aeroplane or aeroplane engine and with respect to different circumstances and to make such incidental and supplementary provisions as are necessary or expedient for carrying out the purposes of the Order.

Application of Order

3. This Order shall apply to—

(a) every aeroplane which is powered by turbojet or turbofan engines to which this Order applies;

(b) every turbojet and turbofan engine the rated output of which is greater than 26.7 kN and the date of manufacture of which was on or after 1st January 1989 intended for propulsion of aeroplanes only at subsonic speeds;

(c) every turbojet and turbofan engine the date of manufacture of which was on or after 1st January 1989 intended for propulsion of aeroplanes at supersonic speeds.

Unburned hydrocarbons emission requirements

4.—(1) Subject to paragraph (2) of this article an aeroplane powered by turbojet or turbofan engines to which this Order applies shall not land or take-off in the United Kingdom unless those engines are of a type which have been certified as complying with the requirements relating to the emission of unburned hydrocarbons—

(a) by the CAA in accordance with article 5(1); or

(b) by the competent authority of a Contracting State other than the United Kingdom in pursuance of the Convention; or

(c) by the competent authority of a country being a country prescribed as one which applies standards which in the opinion of the Secretary of State are substantially equivalent to those required for a certification by the CAA in accordance with article 5(1).

(2) The foregoing prohibition shall not apply to—

(a) an aeroplane flying in accordance with the "A Conditions" or the "B Conditions" set forth in Schedule 2 to the Air Navigation Order 1985;

(b) an aeroplane landing or taking off at a prescribed place.

(**2**) S.I.1985/1643, to which there are amendments not relevant to this Order.

Certification by the Civil Aviation Authority

5.—(1) The CAA shall certify a type of turbojet or turbofan engine as complying with requirements relating to the emission of unburned hydrocarbons if it is of the opinion that it complies with the applicable standards specified in paragraphs (3) and (4) of this article.

(2) For the purpose of certification under this article the applicant for certification shall furnish such evidence and subject engines of a type in respect of which the application for certification has been made to such trials and other tests as the CAA may require.

(3) The standards applicable to turbojet or turbofan engines intended for propulsion of aeroplanes only at subsonic speeds shall be those specified in Part I of Schedule 2 to this Order.

(4) The standards applicable to turbojet or turbofan engines intended for propulsion of aeroplanes at supersonic speeds shall be those specified in Part II of Schedule 2 to this Order.

(5) The certification by the CAA of a type of engine shall be evidenced by a declaration to that effect in the Official Record of the CAA.

(6) For the purposes of this article the CAA may accept reports furnished to it by a person whom it may approve, either absolutely or subject to such conditions as it thinks fit, as qualified to furnish such reports.

Revocation, suspension and variation of certification

6.—(1) The CAA may, if it thinks fit, provisionally suspend any certification, approval, exemption or other document issued under this Order pending inquiry into or consideration of the case. The CAA may, after sufficient ground being shown to its satisfaction after due inquiry, revoke, suspend or vary any such certification, approval, exemption or other document.

(2) The provisional suspension and the revocation, suspension or variation of any certification, approval, exemption or other document issued under this Order shall be evidenced by a declaration to that effect in the Official Record of the CAA.

(3) The holder or any person having the possession or custody of any approval, exemption or other document which has been revoked, suspended or varied under this Order shall surrender it to the CAA within a reasonable time after being required to do so by it.

(4) The breach of any condition subject to which any certification, approval, exemption or other document has been issued under this Order shall render the certification, approval, exemption or other document invalid during the continuance of the breach.

Power to prevent aeroplanes flying

7.—(1) If it appears to the CAA or an authorised person that any aeroplane is intended or likely to be flown in such circumstances that article 4 of this Order would be contravened in relation to the flight, the CAA or that authorised person may direct the operator or the commander of the aeroplane that he is not to permit the aeroplane to make the flight or any other flight of such description as may be specified in the direction, until the direction has been revoked by the CAA or by an authorised person, and the CAA or that authorised person may take such steps as are necessary to detain the aeroplane.

(2) If the operator or commander of an aeroplane fails without reasonable excuse to comply with a direction given to him pursuant to paragraph (1) of this article, he shall be guilty of an offence.

(3) For the purposes of pargraph (1) of this article, the CAA or any authorised person may enter upon and inspect any aeroplane.

Right of access to aerodromes and other places

8. The CAA and any authorised person shall have, for the purpose of ascertaining whether the provisions of this Order are being complied with, the right of access at all reasonable times—

(a) to any aerodrome for the purpose of inspecting any aeroplane on the aerodrome and for the purpose of detaining any aeroplane under this Order, and

(b) to any place where an aeroplane has landed, for the purpose of inspecting the aeroplane and for the purpose of detaining the aeroplane under this Order:

Provided that access to a Government aerodrome shall only be obtained with the permission of the person in charge of the aerodrome.

Obstructing of persons

9. A person shall not intentionally obstruct or impede any person acting in the exercise of his powers or the performance of his duties under this Order.

Penalties

10.—(1) If any provision of this Order or of any Regulations made thereunder is contravened in relation to an aeroplane, the operator of the aeroplane and the commander thereof shall (without prejudice to the liability of any other person under this Order for that contravention) be deemed for the purposes of the following provisions of this article to have contravened that provision unless he proves that the contravention occurred without his consent or connivance and that he exercised all due diligence to prevent the contravention.

(2) If it is proved that an act or omission of any person which would otherwise have been a contravention by that person of a provision of this Order or any Regulations made thereunder was due to any cause not avoidable by the exercise of reasonable care by that person, the act or omission shall be deemed not to be a contravention by that person of that provision.

(3) If any person contravenes any provision of this Order, he shall be liable on summary conviction to a fine not exceeding £1000.

Application of Order to the Crown and visiting forces etc.

11.—(1) Subject to the following provisions of this article, the provisions of this Order shall apply to or in relation to aeroplanes together with the engines fitted thereto, belonging to or exclusively employed in the service of Her Majesty, as they apply to or in relation to other aeroplanes, and for the purposes of such application the Department or other authority for the time being responsible on behalf of Her Majesty for the management of the aeroplane shall be deemed to be the operator of the aeroplane and in the case of an aeroplane belonging to Her Majesty, to be the owner of the interest of Her Majesty in the aeroplane:

Provided that nothing in this article shall render liable to any penalty any Department or other authority responsible on behalf of Her Majesty for the management of any aeroplane.

(2) The naval, military and air force authorities and members of any visiting force and any international headquarters and the members thereof and property held or used for the purpose of such a force or headquarters shall be exempt from the provisions of this Order and of any Regulations made thereunder to the same extent as if that force or headquarters formed part of the forces of Her Majesty raised in the United Kingdom and for the time being serving there.

(3) Nothing in this Order shall apply to or in relation to any military aeroplane.

Exemption

12. The CAA may exempt from any of the provisions of this Order or any Regulations made thereunder any aeroplane, aeroplane engine or person or classes of aeroplane, aeroplane engines or persons either absolutely or subject to such conditions as it thinks fit.

G. I. de Deney
Clerk of the Privy Council

SCHEDULE 1

Article 2

"An International Standard Atmosphere at sea level" means an atmosphere having the following characteristics—

(a) the air is a perfect dry gas:

(b) the physical constants are:

(i) sea level mean molecular weight:

M_o=28.9644

(ii) sea level atmospheric pressure:

P=	1013.250 millibars
	1.013250×10^5 newtons m^{-2}

(iii) sea level temperature:

t_o=15°C

T_o=288.15°K

(iv) sea level atmospheric density:

p_o=1.2250 Kg/M^3

(v) temperature of the ice point:

T_i=273.15°K

(vi) universal gas constant:

R=8.31432 joules $(°K)^{-1}$ mol^{-1}.

SCHEDULE 2

Article 5

PART I

Standards required in respect of the emission of unburned hydrocarbons from turbojet or turbofan engines intended for propulsion of aeroplanes only at subsonic speeds

The level of emission of hydrocarbons from an engine type intended for propulsion of aeroplanes only at subsonic speeds shall not exceed the level determined by the following expression—

$$\text{Hydrocarbons (HC):}\ \frac{Dp}{Foo}=19.6$$

where

"Dp" is the mass as expressed in grams of any unburned hydrocarbon pollutant emitted during a reference emission landing and take-off cycle, as specified in BCAR, and

"Foo" is the rated output which, for the purposes of this Schedule is the maximum thrust expressed in kilonewtons of the engine available for take-off under normal operating conditions at an International Standard Atmosphere at sea level, without the use of water injection, as approved by the CAA in BCAR.

PART II

Standards required in respect of the emission of unburned hydrocarbons from turbojet or turbofan engines intended for propulsion of aeroplanes at supersonic speeds

The level of emission of hydrocarbons from an engine type intended for propulsion of aeroplanes at supersonic speeds shall not exceed the level determined by the following expression—

$$\text{Hydrocarbons (HC):}\ \frac{Dp}{F{*}oo} = 140\ (0.92)^{\Pi oo}$$

where

"Dp" is the mass as expressed in grams of any unburned hydrocarbon pollutant emitted during a reference emission landing and take-off cycle, as specified in BCAR, and

"F*oo" is the rated output with afterburning applied which, for the purposes of this Schedule, is the maximum thrust expressed in kilonewtons of the engine available for take-off under normal operating conditions at an International Standard Atmosphere at sea level, without the use of water injection, as approved by the CAA in BCAR, and

"Πoo" is the reference pressure ratio of the engines as specified in BCAR.

EXPLANATORY NOTE

(This note is not part of the Order)

The Order applies to subsonic and supersonic aeroplanes, wherever registered, which are propelled by turbojet or turbofan engines manufactured after 1st January 1989 and which in the case of subsonic aeroplanes are powered by such engines which have a rated output greater than 26.7 kN. It prohibits such aeroplanes from landing or taking-off in the United Kingdom unless their engines are of a type which has been certified as complying with the requirements for the emission of unburned hydrocarbons (article 4).

The CAA are to certify a type of engine if it is of the opinion that it complies with the Standards set out in Schedule 2 to the Order. Certification by the CAA shall be evidenced by a declaration to that effect in the Official Record of the CAA.

The competent authority of a Contracting State to the Chicago Convention or of another country which in the opinion of the Secretary of State applies standards equivalent to those applied by the CAA may certify engines for the purposes of the Order.

The Official Record of the CAA and the publication British Civil Airworthiness Requirements Section M Emissions Certification—Issue 1 dated 1st May 1986, as amended by CAA Blue Paper M 847 to be issued on 1st January 1989, referred to in article 2, can be purchased from the Civil Aviation Authority, Greville House, 37 Gratton Road, Cheltenham, Glos GL50 2BN.