International Aircraft Noise Certification

Troy A. Rolf
# INTERNATIONAL AIRCRAFT NOISE CERTIFICATION

Troy A. Rolf*

## TABLE OF CONTENTS

| I. | INTRODUCTION | 384 |
| II. | BACKGROUND AND HISTORICAL PERSPECTIVE | 387 |
| III. | AIRCRAFT CERTIFICATION AND ANNEX 16 | 393 |
| IV. | LEGAL FRAMEWORK OF INTERNATIONAL AIRCRAFT NOISE REGULATION | 399 |

### I. INTRODUCTION

| A. ICAO | 387 |
| B. AIRWORTHINESS STANDARDS—GENERAL | 389 |
| C. AIRWORTHINESS STANDARDS—NOISE | 391 |

### II. BACKGROUND AND HISTORICAL PERSPECTIVE

| A. ICAO | 387 |
| B. AIRWORTHINESS STANDARDS—GENERAL | 389 |
| C. AIRWORTHINESS STANDARDS—NOISE | 391 |

### III. AIRCRAFT CERTIFICATION AND ANNEX 16

| A. THE LATERAL NOISE MEASUREMENT POINT | 394 |
| B. THE FLYOVER NOISE MEASUREMENT POINT | 395 |
| C. THE APPROACH NOISE MEASUREMENT POINT | 395 |

### IV. LEGAL FRAMEWORK OF INTERNATIONAL AIRCRAFT NOISE REGULATION

| A. ARTICLES 33 AND 15 OF THE CHICAGO CONVENTION: THE NON-DISCRIMINATION PRINCIPLE AND INTERNATIONAL RECOGNITION OF AIRWORTHINESS CERTIFICATES | 399 |
| B. THE THREAT TO FUTURE ADVANCES IN AIRCRAFT AND AIRCRAFT ENGINE DESIGN | 404 |

---

* Troy A. Rolf received a B.S. in Aeronautical Studies, *Summa Cum Laude*, from the University of North Dakota, Center for Aerospace Studies in 1993, a J.D., *Cum Laude*, from the University of Minnesota School of Law in 1996, and expects to complete an LL.M. in taxation at Georgetown University Law Center in 2000. Prior to law school, Mr. Rolf worked as an air traffic control specialist in military and FAA facilities for more than twelve years, and earned a commercial pilot certificate with single-engine, multi-engine, and instrument ratings. Upon earning his law degree, Mr. Rolf returned to the Federal government where he participated in the Department of Transportation’s Honors Attorney program and worked as an FAA attorney for approximately 18 months before moving to the private sector. Mr. Rolf currently practices aviation and tax law, and specializes in aviation regulatory and tax planning for corporate aircraft transactions and operations.
ON NOVEMBER 16, 1998, the Council of the European Union (EU) adopted a common position\(^1\) proposing adoption of a Council regulation that would ban certain aircraft from registration in any EU member nation on or after April 1, 1999,\(^2\) and from operating within the EU on or after April 1, 2002.\(^3\) The regulation has ignited an international dispute that threatens future technological advances in aircraft and aircraft engine design, as well as US-EU trade relations.

If implemented, the regulation would ban EU member nations from registering many older aircraft that have been modified to meet present-day noise emissions standards either by installing newer, quieter engines, a process known as "re-engining," or by one of several other technological means collectively referred to as "hushkits."\(^4\) In addition, the regulation would ban the use of many re-engined or hushkitted aircraft within the EU after April 1, 2002.\(^5\)

The regulation does contain a number of exemptions. If the regulation is implemented, an aircraft registered in an EU member nation on the effective date of the registration ban would be exempt from the ban and could be transferred freely from the national registry of one EU member nation to the registry of another EU member nation, but upon any transfer of an aircraft to the registry of a non-EU member nation, the aircraft could not again be registered in an EU member nation.\(^6\) Aircraft registered in the EU on the effective date of the registration ban would also be exempt from the ban on the use of affected aircraft within the EU after April 1, 2002, provided only that the aircraft was actually operated within the EU prior to the effective date of the registration ban.\(^7\)

---

2. See id. art. 3.1.
3. See id. art. 3.4.
4. See id. art. 2.2.
5. See id. art. 3.4.
6. See id. art. 3.2.
7. See id. art. 3.4.
An aircraft registered outside the EU that was operated within the EU between April 1, 1995, and the effective date of the registration ban could also continue to be operated in the EU after April 1, 2002, but only for so long as it remains on the register of the nation where it was registered on the effective date of the registration ban.  

Reaction to the regulation outside the EU has been vociferous, emotionally charged, and nearly unanimous in opposition. The general consensus appears to be that the regulation is industrial protectionism masquerading under the guise of environmentalism. Many in the aviation industry have charged that the proposed regulation is an eleventh-hour attempt to rewrite decades-old internationally agreed-upon aircraft noise certification standards in such a manner as to benefit the EU's airlines and aerospace industry, at the expense of airlines and aerospace firms in the United States and the rest of the world.

Critics of the regulation point out that it would establish specific design standards rather than performance standards, which are the preferred method of aircraft certification regulation. The critics further charge that the design standards incorporated into the regulation would draw the line between permitted and prohibited aircraft at a point that excludes many U.S. manufactured products, and includes EU manufactured products, and in any event, probably would not result in any noise reduction benefits in the areas around EU airports. For example, a re-engined aircraft would be subject to the restrictions of the regulation only if the newly installed engines have a "by-pass ratio" of less than 3 to 1. The regulation, if implemented, would effectively punish aircraft operators that have re-engined their aircraft, at great expense, with engines manufactured in the United States. One of the most popular engines for re-engineing is the Pratt & Whitney JT8D. Manufactured in the

---

8 See id. art. 3.3.
9 The "by-pass ratio" of a jet engine is the ratio of the air mass flow through the by-pass ducts of the engine, to the air mass flow through the combustion chamber of the engine. See ICAO, INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES, ENVIRONMENTAL PROTECTION, ANNEX 16 TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION, Vol. I Part I, (3d ed. 1993).
10 Common Position, supra note 1 art. 2.2. Although increasing an engine's by-pass ratio is one of several methods by which a manufacturer may reduce the noise emissions of its engines, it is merely one of a host of criteria considered in the design of an aircraft engine. To date, the European Commission does not appear to have produced any data that indicates that existing engines having by-pass ratios above 3 to 1 are quieter than those with by-pass ratios less than 3 to 1.
United States and Canada, the JT8D has a by-pass ratio of 1.74 to 1; consequently, aircraft re-engined with the JT8D would be affected by the regulation. Conversely, aircraft re-engined with another popular engine, the Rolls-Royce Tay 651, manufactured in the United Kingdom, would not be affected by the regulation; the Rolls-Royce Tay 651 has a by-pass ration of 3.1 to 1.

Some have suggested that the ban on hushkitted aircraft may actually result in unintended, adverse environmental noise effects around Europe's airports. The aircraft most affected by the regulation would be the smaller, mostly U.S.-built jet transports such as the Boeing 727 and the DC-9 that can only meet current noise emissions standards by being fitted with hushkits or new engines. The maximum level of noise emissions permitted by modern standards is, however, determined by the weight of the aircraft; larger aircraft are permitted to emit greater levels of noise, and therefore often can meet modern noise standards without hushkits. By banning hushkitted aircraft, the EU may very likely find that air carriers will be forced to operate larger, noisier aircraft in markets that currently may be served by smaller, quieter, hushkitted aircraft.

In response to the proposed regulation, on January 15, 1999, Northwest Airlines, Inc., filed a complaint under 49 U.S.C. § 41310 with the United States Department of Transportation against the Council of the EU and its fifteen member nations. In its complaint, Northwest Airlines alleged that the regulation, if adopted would cause the violation by each of the EU's member nations of a number of international treaties and agreements including the Chicago Convention, dozens of bilateral air services agreements to which individual EU member nations are a party, and several international trade agreements.

On April 29, 1999, the EU adopted the regulation; however, in response to strenuous U.S. diplomatic objections, triggered at least in part by the Complaint of Northwest Airlines, the EU delayed implementation of the registration ban for approxi-
mately one year. The delay in the implementation of the registration ban provides additional time for the United States and the EU to resolve the issue. Both the United States and the EU appear to be taking hard-line positions on the matter. The EU appears to be unwilling to repeal the regulation under any circumstance, but may be willing to negotiate delays or modifications to the regulation on the condition that the United States commit itself to work towards accelerating the establishment of the next generation of aircraft noise certification standards through the International Civil Aviation Organization (ICAO). The United States Government, on the other hand, appears to be willing to accelerate work towards the development of a more stringent international noise certification standard, but only if the EU repeals its regulation.

Although Northwest Airline’s complaint provides the framework for the current international dispute concerning the EU’s proposed rule, this article does not intend to evaluate all the issues presented by Northwest Airlines. The purpose, rather, of this article is to review the current state of international aircraft certification under the Chicago Convention as related to aircraft noise regulation, and to evaluate the legality of the EU’s regulation in light of the Chicago Convention. This leaves the legality of the regulation under international treaties, agreements, and rules related to trade and commerce to other commentators.

II. BACKGROUND AND HISTORICAL PERSPECTIVE

A. ICAO

The international body responsible for developing aircraft noise certification standards is the International Civil Aviation Organization. ICAO was established near the end of World War II pursuant to the Chicago Convention. Signed on December 7, 1944, the Chicago Convention was an international treaty resulting from the International Civil Aviation Conference held in Chicago, Illinois, in late fall of 1944. The conferees, led by the United States and Great Britain, sought to establish economic and technical standards to govern the anticipated post-war growth in international civil aviation. However, political differences between the United States and many of the allied powers resulted in a document that addressed primarily the technical aspects of international civil aviation and lacked any substance regarding most economic issues.
The governing body of ICAO is the Assembly, which is comprised of representatives from every contracting State. Each contracting State is entitled to equal representation in the Assembly on a one State, one vote basis. The Assembly meets once every three years. The permanent body of ICAO is the Council, which reports to the Assembly, and is comprised of thirty-three members selected for three year terms from those States that are of chief importance in air transport, those that are the largest contributors to the provision of facilities for international air navigation, and any other State whose inclusion will ensure that all major geographical areas of the world are represented on the Council. Several lesser bodies and committees provide technical assistance and expertise to the Council.

Possibly the single most important concept embodied in the Chicago Convention is the recognition of the "complete and exclusive sovereignty of each state over the airspace above its territory." The conferees, although recognizing that each State must have an unqualified right to control its skies, also recognized that a high degree of uniformity and predictability in regulatory and technical standards would be necessary in order to foster post-war growth of international civil air transportation systems. Chapter VI of the Chicago Convention, encompassing Articles 37 through 42, was intended to provide the desired degree of uniformity and predictability.

The Chicago Convention requires that parties "collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures, and organization in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation." In order to achieve the desired level of uniformity, the Chicago Convention further provides that ICAO adopt and amend, as necessary, International Standards and Recommended Practices and Procedures (SARPs) regarding:

(a) Communications systems and air navigation aids, including ground marking;
(b) Characteristics of airports and landing areas;
(c) Rules of the air and air traffic control practices;

15 See Chicago Convention, supra note 13, art. 48(b).
16 See Chicago Convention, supra note 13, art. 48(b).
17 See Chicago Convention, supra note 13, art. 50(a), as amended.
18 See Chicago Convention, supra note 13, art. 50(b).
19 Chicago Convention, supra note 13, art. 1.
20 Id. art. 37.
(d) Licensing of operating and mechanical personnel;
(e) Airworthiness of aircraft;
(f) Registration and identification of aircraft;
(g) Collection and exchange of meteorological information;
(h) Logbooks;
(i) Aeronautical maps and charts;
(j) Customs and immigration procedures;
(k) Aircraft in distress and investigation of accidents; and such other matters concerned with the safety, regularity, and efficiency of air navigation as may from time to time appear appropriate.\textsuperscript{21}

ICAO fulfills its obligation of providing SARPs by adopting technical annexes.

If any state finds it impracticable to comply with, or conform its regulations to the SARPs, or if any state finds it necessary to adopt regulations or practices differing from the SARPs, it must immediately notify ICAO of the differences between its regulation or practice and that adopted by ICAO.\textsuperscript{22}

B. AIRWORTHINESS STANDARDS—GENERAL

With respect to airworthiness standards, Articles 31, 33, 39 and 40 of the Chicago Convention combine to provide a distinct disincentive for the filing of notices under Article 38. Article 31 requires that any aircraft used in international air navigation obtain “a certificate of airworthiness issued or rendered valid by the State in which it is registered.”\textsuperscript{23} Article 33 requires that all contracting states recognize as valid a certificate of airworthiness issued or rendered valid by the state in which the aircraft is registered, provided the standards pursuant to which the certificate was issued meet or exceed the minimum standards adopted by ICAO.\textsuperscript{24} If a certificate of airworthiness fails to meet any standard adopted by ICAO, Article 39 requires that the certificate shall contain an endorsement or attachment identifying the details of the non-compliance.\textsuperscript{25} Article 40 prohibits the operation of any aircraft in international navigation, that is subject to an endorsement under Article 39, unless permitted by the state or states into which the plane flies.\textsuperscript{26}

\textsuperscript{21} Id. art. 37.
\textsuperscript{22} See id. art. 38.
\textsuperscript{23} Id. art. 31.
\textsuperscript{24} See id. art. 33.
\textsuperscript{25} See id. art. 39.
\textsuperscript{26} See id. art. 40.
The Chicago Convention does not require that all states adopt identical airworthiness standards. Although the Convention strongly urges a high degree of uniformity, it is expected that states will adopt their own airworthiness standards. However, because any state can ban use within its airspace of any aircraft that does not meet minimum ICAO standards, states that wish to use aircraft in international air transportation are forced to adopt standards meeting or exceeding those of the ICAO. Because states are required to recognize certificates of any state whose standards meet or exceed ICAO standards, a state is assured its aircraft will be permitted to operate in any other contracting state if its standards meet or exceed those of ICAO.

ICAO's first attempt at establishing an international minimum airworthiness standard, designated as Annex 8, was adopted on March 1, 1949.\footnote{\textit{International Standards Airworthiness of Aircraft, Annex 8 to the Convention on International Civil Aviation} L. at vii (ICAO, 8th ed. 1988) [hereinafter Annex 8]; \textit{see also Resolution of Adoption for Annex 8}, ICAO Doc. 6957 (1950).} Annex 8 contained (i) general airworthiness procedures applicable to all aircraft, and (ii) comprehensive minimum airworthiness characteristics applicable to aircraft for which an Article 31 certificate of airworthiness would be issued. However, these standards were applicable to only a single category of aircraft.\footnote{\textit{See Annex 8, supra note} 27, at vii.} Rather than develop comprehensive standards for each category of aircraft, ICAO subsequently decided to abandon altogether the approach of setting comprehensive standards for various categories. Instead, ICAO elected to adopt an airworthiness policy containing general performance objectives applicable to all aircraft. ICAO also required each state to develop its own comprehensive standards for each category of aircraft, or to adopt comprehensive standards developed by another contracting state. Annex 8 requires that:

\begin{quote}
A Contracting State shall not issue or render valid a Certificate of Airworthiness for which it intends to claim recognition pursuant to Article 33 of the Convention on International Civil Aviation, unless the aircraft complies with a comprehensive and detailed national airworthiness code established for that class of aircraft by the State of Registry or by any other Contracting State. This national code shall be such that compliance with it will ensure
\end{quote}
compliance with [the general performance criteria contained in Annex 8].

By setting minimum performance criteria and leaving development and adoption of more comprehensive national codes to the states, ICAO incorporated the respective national codes into Annex 8 by reference, and thereby raised each national code to the status of an international regulation.

C. Airworthiness Standards—Noise

Aircraft noise emissions and its effect on populations surrounding airports first became a serious problem in 1952 with the advent of jet propulsion for civil airliners. ICAO noise and environmental standards have their genesis in the 1966 International Conference on the Reduction of Noise and Disturbance caused by Civil Aircraft, fourteen years after the introduction of the first jet transport, the ill-fated de Havilland Comet, and a mere eight years after the introduction of the first American built jet transport, the Boeing 707. Two years later, ICAO adopted Assembly Resolution 16-3, Aircraft Noise in the Vicinity of Airports, and thereby resolved, inter alia, to convene an international ICAO conference to consider the problem of aircraft noise in the vicinity of airports, and to establish standards for measuring and limiting aircraft noise. As a result of Assembly Resolution 16-3, the Special Meeting on Aircraft Noise in the Vicinity of Aerodromes convened in Montreal late in 1969.

The Special Meeting on Aircraft Noise in the Vicinity of Aerodromes established of the Committee on Aircraft Noise. The purpose of the committee was to assist ICAO in developing noise certification standards for aircraft. Based on recommendations of the committee, and pursuant to Article 37 of the Chicago Convention, ICAO adopted Annex 16 to the Chicago Convention in April of 1971. In 1981, ICAO expanded the

29 Annex 8, supra note 27, § 2.2.
33 See id.
34 See Goh, supra note 30, at 284.
35 See Annex 16, Volume 1, supra note 32, at v; Goh, supra note 30, at 284.
The scope of Annex 16 beyond noise certification standards to include certification standards regarding gaseous emissions, and changed the title of Annex 16 to “Environmental Protection.” Similarly, in 1983 the Committee on Aircraft Noise changed to the “Committee on Aviation Environmental Protection” (CAEP) to reflect a widening scope of environmental concerns. CAEP is staffed by experts in aviation and environmental fields, and provides recommendations and advice to the ICAO Council and the ICAO Assembly. Aircraft noise certification standards are now in Volume I of Annex 16. Volume II of Annex 16 contains aircraft engine emissions certification standards.

From the beginning, Annex 16 was intended to establish performance standards for aircraft design and certification. As in Annex 8, ICAO established minimum standards that aircraft must meet in order to be certified as airworthy. The standards' purpose is to ensure that future aircraft are quieter. In other words, Annex 16 was intended to force advances in quiet-engine technology; it was not intended to eliminate older aircraft from service. Economics and normal fleet replacement cycles were expected to result in a phasing out over time of noisier aircraft in favor of newer, quieter aircraft.

Chapter 2 of Annex 16, Volume 1 (Chapter 2) contains noise emission standards for most “subsonic jet-aeroplanes for which . . . [a] certificate of airworthiness for the prototype [aircraft] was accepted . . . by the certificating authority before ‘October 1977’ . . . .” Chapter 2 does not apply to certain jet-powered aircraft built prior to October 6, 1977; specifically, (i) aircraft “powered by engines with a by-pass ratio of 2 or more” that received its certificate of airworthiness on or after March 1, 1972, and (ii) “aircraft powered by engines with a by-pass ratio of less than 2” that received its individual certificate of airworthiness on or after January 1, 1976, but only if the application for the certificate of airworthiness for the prototype version was accepted on or after January 1, 1976.

---

37 See Annex 16, Volume 1, supra note 32.
39 Annex 16, Volume 1, supra note 32, § 2.1.1.
40 Annex 16, Volume 1, supra note 32, § 2.1.1(b).
41 Annex 16, Volume 1, supra note 32, § 2.1.1(c).
Chapter 3 of Annex 16, Volume 1 (Chapter 3) contains the standards applicable to subsonic jet-powered airplanes for which a certificate of airworthiness for the prototype aircraft was received and accepted by the certificating authority on or after October 6, 1977. As one might expect, Chapter 3 standards are more stringent than Chapter 2 standards.

Although noise regulation in many jurisdictions is targeted at subsonic, jet-powered, transport category aircraft, Annex 16, Volume 1 is not limited to such aircraft. In various chapters, Annex 16 contains standards applicable to supersonic airplanes, propeller-driven airplanes, short takeoff and landing (STOL) airplanes, helicopters, and auxiliary power units. At the time Annex 16 was adopted, many of the aircraft in the world's commercial civil air transportation fleets could not meet the standards imposed by Annex 16. These aircraft are referred to as Non Noise Certificated (NNC) Aircraft. NNC Aircraft are also commonly referred to as Chapter 1 Aircraft, although such reference is somewhat misleading as Annex 16 does not specify any standards for NNC Aircraft, nor are they addressed in Chapter 1 of Annex 16, Volume 2.

III. AIRCRAFT NOISE CERTIFICATION AND ANNEX 16

ICAO does not certify aircraft as meeting the requirements specified in Annex 16. Noise certification is the responsibility of the State in which an aircraft is registered. The registering state may grant or validate noise certification based on satisfactory evidence that the aircraft meets noise standards at least equal to the standards provided in Annex 16. Noise certification may be documented by a Noise Certificate or other document issued by the state of registry, and may be required to be carried on-board the aircraft during international operations. Documents evidencing noise certification must contain at least the following information:

(a) State of Registry; nationality and registration marks;
(b) manufacturer's serial number;

---

42 See Annex 16, Volume 1, supra note 32, § 3.1.1(a).
43 See Annex 16, Volume 1, supra note 32, at ch. 4.
44 See Annex 16, Volume 1, supra note 32, at chs. 3, 5, 6, 10.
45 See Annex 16, Volume 1, supra note 32, at ch. 7.
46 See Annex 16, Volume 1, supra note 32, at chs. 8, 11.
47 See Annex 16, Volume 1, supra note 32, at ch. 9.
48 See Annex 16, Volume 1, supra note 32, § 1.2.
(c) manufacturer's type and model designation; engine type and model designations; propeller type/model (if applicable) designations;
(d) statement of any additional modifications incorporated for the purpose of compliance with the applicable noise certification Standards [i.e., hushkits];
(e) the maximum mass at which compliance with the applicable noise certification standards has been demonstrated;
(f) for aeroplanes for which application for certification of the prototype is submitted on or after 6 October 1977, and for helicopters for which application for certification of the prototype was submitted on or after 1 January 1985: the average noise level(s) at the reference point(s) for which compliance with the applicable standard has been demonstrated to the satisfaction of the certificating authority; [and]
(g) the chapter of Annex 16, Volume 1, according to which the aircraft was certificated.49

Chapter 2 contains noise emission standards for most subsonic jet-powered airplanes for which a certificate of airworthiness for the prototype aircraft was received and accepted by the certificating authority before October 6, 1977, and for certain other jet-powered aircraft built prior to October 6, 1977.50 Noise certification of aircraft to which Chapter 2 applies requires noise measurements at three different points: the Lateral Noise Measurement Point; the Flyover Noise Measurement Point; and the Approach Noise Measurement Point.51

A. THE LATERAL NOISE MEASUREMENT POINT

The measurement at the Lateral Noise Measurement Point, also referred to as the Sideline Measurement Point, is taken during takeoff at the point on a line parallel to, and 650 meters (approximately 709 yards) from, the centerline of the takeoff runway, and extending beyond the departure end of the runway along the flight path of the aircraft, at which the noise level is the greatest.52 Because the point on the line at which the noise level is greatest may vary among different aircraft types, several different measurements along the line of measurement may be required merely to identify the precise Lateral Noise Measurement Point for a specific aircraft type.

49 Annex 16, Volume 1, supra note 32, § 1.3.
50 See Annex 16, Volume 1, supra note 32, § 2.1.1.
51 See Annex 16, Volume 1, supra note 32, § 2.3.1.
52 See Annex 16, Volume 1, supra note 32, § 2.3.1(a).
B. THE FLYOVER NOISE MEASUREMENT POINT

The measurement at the Flyover Noise Measurement Point, also referred to as the Takeoff Measurement Point, is also taken during takeoff, and is taken at a point that is directly below the flight path of the aircraft, on the extended centerline of the takeoff runway, and 6.5 kilometers (approximately 3.9 miles) from the point at which the aircraft started its takeoff roll.\(^53\) The Flyover Noise Measurement Point is a more precisely defined point than the Lateral Noise Measurement Point in that it does not vary from aircraft type to aircraft type. All else being equal, an aircraft that is capable of a steeper climb gradient should produce a lower noise level measurement at the Flyover Noise Measurement Point than an aircraft that has a shallower climb gradient because the aircraft that has the steeper gradient would pass the Flyover Noise Measurement Point at a higher altitude (i.e. at a greater vertical distance from the measuring device).

C. THE APPROACH NOISE MEASUREMENT POINT

As its name suggests, the measurement at the Approach Noise Measurement Point is taken during the final approach phase of flight mere moments prior to landing. The measurement is taken at a point that is directly below the flight path of the aircraft, on the extended centerline of the landing runway, and at the point where the aircraft is 120 meters (approximately 395 feet) above the ground.\(^54\) Unlike the Flyover Noise Measurement Point, the Approach Noise Measurement Point does not necessarily favor aircraft that have superior performance characteristics because the measurement assumes a standard three degree (\(3^\circ\)) approach gradient/glide slope, and consequently, all aircraft would descend through 120 meters at the same distance from the landing runway. Assuming level terrain, aircraft on a \(3^\circ\) glide slope would descend through 120 meters at a point 2 kilometers (approximately 1.2 miles) from the runway threshold.

Annex 16 provides for the measurement of aircraft noise emissions, and the Effective Perceived Noise Level (EPNL) produced by such emissions, in units of “EPNdB.” A detailed explanation concerning the physics, engineering, and human psychological factors accounted for by the EPNdB scale is beyond the scope of this article (as well as the comprehension of

\(^{53}\) See Annex 16, Volume 1, supra note 32, § 2.3.1(b).

\(^{54}\) See Annex 16, Volume 1, supra note 32, § 2.3.1(c).
this author). For purposes of this article, it is sufficient to note only that the EPNdB scale is a single number evaluator of the subjective effects of aircraft noise on human beings.\(^5\)

The level of noise that a particular aircraft is permitted to produce is dependent on the weight of the aircraft. Subsonic jet-powered airplanes weighing 34,000 kilograms (approximately 74,800 lbs.) or less and certificated under Chapter 2 are limited to 102 EPNdB of noise emissions as measured at the *Lateral Noise Measurement Point* and the *Approach Noise Measurement Point*,\(^6\) and 93 EPNdB of noise emissions as measured at the *Flyover Noise Measurement Point*.\(^7\) The level of permitted noise emissions increases linearly with the logarithm of the weight of the aircraft at the rate of 2 EPNdB per doubling of the weight as measured at the *Lateral Noise Measurement Point* and the *Approach Noise Measurement Point*, and 5 EPNdB per doubling of the weight as measured at the *Flyover Noise Measurement Point*, up to a maximum noise emission level for aircraft weighing 272,000 kilograms (approximately 598,400 lbs.) of 108 EPNdB of noise emissions as measured at any point.\(^8\)/

### Table 1.

<table>
<thead>
<tr>
<th>Aircraft Weight</th>
<th>Lateral and Approach Noise Measurement Point Limits</th>
<th>Flyover Noise Measurement Point Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>34,000 kg. (74,800 lbs.) or less</td>
<td>102 EPNdB</td>
<td>93 EPNdB</td>
</tr>
<tr>
<td>68,000 kg. (149,600 lbs.)</td>
<td>104 EPNdB</td>
<td>98 EPNdB</td>
</tr>
<tr>
<td>136,000 kg. (299,200 lbs.)</td>
<td>106 EPNdB</td>
<td>103 EPNdB</td>
</tr>
<tr>
<td>272,000 kg. (598,400 lbs.) or more</td>
<td>108 EPNdB</td>
<td>108 EPNdB</td>
</tr>
</tbody>
</table>

Chapter 2 provides allowances for aircraft that meet the required standards at one or two, but not all of the measuring points. An aircraft that is not within the standards at all three measuring points may still meet Chapter 2 requirements if: (i) the excess emissions are no more than 3 EPNdB outside the lim-

---

55 *See Annex 16, Volume 1, supra note 32, at appendix 1, sec. 4.1.1.*
56 *See Annex 16, Volume 1, supra note 32, § 2.4.1(a).*
57 *See Annex 16, Volume 1, supra note 32 § 2.4.1(b).*
58 *See Annex 16, Volume 1, supra note 32, § 2.4.1(a); see also Annex 16, Volume 1, supra note 32, § 2.4.1(b).*
its at any single measuring point, (ii) if it is outside the limits at
two measuring points, the sum of the excess emissions at both
points is no more than 4 EPNdB, and (iii) the excess emissions
are completely offset by reductions in emissions at other mea-
suring points.\footnote{See Annex 16, Volume 1, supra note 32, § 2.5.}
Thus, for example, an aircraft that exceeds the
noise emissions standards by 1 EPNdB at two of the measuring
points may still qualify for certification under Chapter 2 only if
the noise emissions as measured at the third measuring point
are 2 EPNdB below the limit for such point.

Noise certification procedures under Chapter 3 are similar to
those under Chapter 2, albeit somewhat more complicated.
The level of noise that a particular aircraft may produce is de-
pendent not only on the weight of the aircraft, but also on the
number of engines. The Approach Noise Measurement Point and
the Flyover Noise Measurement Point, are defined in Chapter 3 sub-
stantially in the same manner as in Chapter 2.\footnote{See generally
Annex 16, Volume 1, supra note 32, § 3.3.}
The Lateral Noise Measurement Point, however, is taken on a line parallel to,
and 450 meters (approximately 491 yards) from, the centerline
of the takeoff runway, as opposed to 650 meters from the center-
line as required by Chapter 2.\footnote{See Annex 16, Volume 1, supra note 32, § 3.3.1(a.)}

Aircraft weighing 35,000 kg (approximately 77,000 lbs.) or
less and certificated under Chapter 3 are limited to 94 EPNdB
of noise emissions as measured at the Lateral Noise
Measurement Point.\footnote{See Annex 16, Volume 1, supra note 32, § 3.4.1.1.}
The level of permitted noise emissions increases linearly
with the logarithm of the weight of the aircraft up to 103 EPNdB
for aircraft weighing 400,000 kilograms (approximately 880,000
lbs.) or more.

Table 2.

<table>
<thead>
<tr>
<th>Aircraft Weight</th>
<th>Lateral Noise Measurement Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>35,000 kg. (77,000 lbs.)</td>
<td>94 EPNdB</td>
</tr>
<tr>
<td>or less</td>
<td></td>
</tr>
<tr>
<td>400,000 kg. (880,000 lbs.)</td>
<td>103 EPNdB</td>
</tr>
<tr>
<td>or more</td>
<td></td>
</tr>
</tbody>
</table>

Aircraft weighing 35,000 kg (approximately 77,000 lbs.) or
less are limited to 98 EPNdB of noise emissions as measured at

\footnote{See Annex 16, Volume 1, supra note 32, § 2.5.}
\footnote{See generally Annex 16, Volume 1, supra note 32, § 3.3.}
\footnote{See Annex 16, Volume 1, supra note 32, § 3.3.1(a.)}
\footnote{See Annex 16, Volume 1, supra note 32, § 3.4.1.1.}
the Approach Noise Measurement Point.63 The level of permitted noise emissions increases linearly with the logarithm of the weight of the aircraft up to 105 EPNdB for aircraft weighing 280,000 kilograms (approximately 616,000 lbs.) or more.

Table 3.

<table>
<thead>
<tr>
<th>Aircraft Weight</th>
<th>Approach Noise Measurement Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>35,000 kg.</td>
<td>98 EPNdB</td>
</tr>
<tr>
<td>(77,000 lbs.)</td>
<td></td>
</tr>
<tr>
<td>or less</td>
<td></td>
</tr>
<tr>
<td>280,000 kg.</td>
<td>105 EPNdB</td>
</tr>
<tr>
<td>(616,000 lbs.)</td>
<td></td>
</tr>
<tr>
<td>or more</td>
<td></td>
</tr>
</tbody>
</table>

Aircraft weighing 385,000 kg (approximately 847,000 lbs.) or more and having (i) one or two engines, (ii) three engines, or (iii) four or more engines, are limited to 101 EPNdB, 104 EPNdB, or 106 EPNdB, of noise emissions, respectively, as measured at the Flyover Noise Measurement Point.64 The level of permitted noise emissions in each case decreases linearly with the logarithm of the weight of the aircraft by 4 EPNdB per halving of weight down to 89 EPNdB.

As in Chapter 2, Chapter 3 provides allowances for aircraft that meet the required standards at one or two, but not all of the measuring points. However, Chapter 3 is not quite as generous as Chapter 2. An aircraft that is not within the standards at all three measuring points may still meet Chapter 3 requirements if: (i) the excess emissions are no more than 2 EPNdB outside the limits at any single measuring point, (ii) if it is outside the limits at two measuring points, the sum of the excess emissions at the points is no more than 3 EPNdB, and (iii) the excess emissions are completely offset by reductions in emissions at other measuring points.65

63 See Annex 16, Volume 1, supra note 32, § 3.4.1.3.
64 See Annex 16, Volume 1, supra note 32, § 3.4.1.2.
65 See Annex 16, Volume 1, supra note 32, § 3.5.1.
Table 4.

<table>
<thead>
<tr>
<th>Aircraft Weight</th>
<th>1 or 2 engines</th>
<th>3 engines</th>
<th>4 or more engines</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 20,200 kg. (44,440 lbs.) or less</td>
<td>89 EPNdB</td>
<td>89 EPNdB</td>
<td>89 EPNdB</td>
</tr>
<tr>
<td>approx. 28,600 kg. (62,920 lbs.)</td>
<td>89 EPNdB</td>
<td>89 EPNdB</td>
<td>90 EPNdB</td>
</tr>
<tr>
<td>48,125 kg. (105,875 lbs.)</td>
<td>89 EPNdB</td>
<td>92 EPNdB</td>
<td>94 EPNdB</td>
</tr>
<tr>
<td>96,250 kg. (211,750 lbs.)</td>
<td>93 EPNdB</td>
<td>96 EPNdB</td>
<td>98 EPNdB</td>
</tr>
<tr>
<td>192,500 kg. (423,500 lbs.)</td>
<td>97 EPNdB</td>
<td>100 EPNdB</td>
<td>102 EPNdB</td>
</tr>
<tr>
<td>385,000 kg. (847,000 lbs.) or more</td>
<td>101 EPNdB</td>
<td>104 EPNdB</td>
<td>106 EPNdB</td>
</tr>
</tbody>
</table>

IV. LEGAL FRAMEWORK OF INTERNATIONAL AIRCRAFT NOISE REGULATION.

A. ARTICLES 33 AND 15 OF THE CHICAGO CONVENTION: THE NON-DISCRIMINATION PRINCIPLE AND INTERNATIONAL RECOGNITION OF AIRWORTHINESS CERTIFICATES.

The EU's regulation, if implemented, would not only establish a regime that requires EU member nations to treat aircraft registered on their own respective registries differently from aircraft registered in non-EU member nations, but would also require each EU member nation to discriminate between foreign aircraft registered in other EU member nations, and foreign aircraft registered outside the EU.

The Chicago Convention provides that aircraft shall have the nationality of the State in which they are registered.66 The Chicago Convention further states:

Certificates of airworthiness and certificates of competency and licenses issued or rendered valid by the contracting State in which the aircraft is registered, shall be recognized as valid by the other contracting States, provided that the requirements under

66 See Chicago Convention, supra note 13, art. 17.
which such certificates or licenses were issued or rendered valid are equal to or above the minimum standards which may be estab-
lished from time to time pursuant to this Convention.67

In 1981, the United States Court of Appeals, for the District of Columbia Circuit took the opportunity in *British Caledonian Airways Limited v. Bond*68 to interpret Article 33 of the Chicago Convention. The case was based on the FAA Administrator’s refusal to recognize the airworthiness certificates of foreign registered DC-10 aircraft in the aftermath of the crash of an American Airlines DC-10 in Chicago in 1979.

On May 25, 1979, American Airlines Flight 191 crashed on takeoff. All 271 persons on board the aircraft were killed. Almost immediately, the investigation revealed that the cause of the crash had been a faulty engine pylon, i.e., the assembly that attaches the engine to the wing. The faulty pylon caused the engine to separate from the aircraft severing electrical and hydraulic lines in the process, which caused the retraction of the wing slats on the effected wing, and the subsequent loss of control. Within three days of the crash, the Administrator of the Federal Aviation Administration, following the recommendation of the National Transportation Safety Board, ordered inspections of all engine pylons on DC-10 aircraft registered in the United States, and suggested that foreign operators of DC-10s do so as well.

Shortly thereafter, the inspections revealed serious problems with other DC-10 aircraft related to the engine pylon. It was determined that the problems were related to a procedure in use by some maintenance facilities to reinstall engines that had been removed for maintenance. The procedure could result in the engine being improperly mounted, and stresses resulting from the improper mounting resulted in metal fatigue, and eventually failure of the pylon. As a result of the discoveries, on June 5, 1979, the Administrator suspended the type certificate for the DC-10 model, revoked the individual airworthiness certificates of all DC-10s registered in the United States, and issued on an emergency basis Special Federal Aviation Regulation 40 (SFAR 40), prohibiting foreign registered DC-10s from operating within the United States. Ten days later, European aviation officials and European DC-10 operators met to establish a special program for the inspection, maintenance, and recertifica-

67 Chicago Convention, *supra* note 13, art. 33.
tion of Europe's DC-10 fleet. Another ten days later, Europe requested rescission of SFAR 40 and insisted that the airworthiness certificates issued by the European authorities be recognized under Article 33 of the Chicago Convention. The Administrator, however, refused to rescind SFAR 40 at that time, and consequently, British Caledonian Airways and several other European carriers filed suit on June 27, 1979.

The court held that the Administrator was not entitled to refuse to recognize the plaintiffs' certificates of airworthiness.\(^{69}\) According to the Court, Article 33 of the Chicago Convention is a self-executing provision, and the Chicago Convention requires that one contracting State may refuse to respect the judgment of another contracting State that an aircraft is airworthy only where the latter does not apply standards at least equivalent to those established pursuant to the Chicago Convention. Consequently, the Chicago Convention prohibits the Administrator from refusing to recognize the certificates of airworthiness of an aircraft registered in a foreign state absent a showing that such State does not apply standards at least equivalent to those established by ICAO.\(^{70}\)

The Chicago Convention establishes a non-discrimination principle that requires each contracting State to permit access to its airports to aircraft registered in foreign contracting States under the same conditions as those applied to aircraft on their own registries.\(^{71}\) As previously stated, the regulation contains a number of exemptions. Two such exemptions provide that (i) aircraft registered in the EU on April 1, 1999, would be exempt from the ban on use within the EU after April 1, 2002, provided only that the aircraft was actually operated within the EU prior to April 1, 1999,\(^{72}\) and (ii) aircraft registered outside the EU would be exempt from the ban on use within the EU after April 1, 2002, provided that the aircraft was operated within the EU between April 1, 1995, and April 1, 1999, but the exemption would apply only for so long as the aircraft remains on the register of the nation where it was registered on April 1, 1999.\(^{73}\) The European Council, in a statement that accompanies the Common Position, asserts that the exemptions are intended to ensure non-discriminatory treatment between aircraft registered

---

\(^{69}\) See id. at 1165.

\(^{70}\) See id. at 1164, 65.

\(^{71}\) See Chicago Convention, supra note 13, art. 15.

\(^{72}\) See Common Position, supra note 1, art. 3.4.

\(^{73}\) See Common Position, supra note 1, art. 3.3.
in member nations and those registered in non-member nations.\textsuperscript{74} The regulations do not, however, achieve non-discrimination.

If an aircraft is registered in an EU member state on April 1, 1999, and is operated by an entity within the EU, it is a near certainty that such an aircraft will have been operated somewhere within the EU at some time prior to April 1, 1999, and would therefore be permitted to operate in any EU member nation after April 1, 2002. Conversely, aircraft registered outside the EU are not as likely to have been operated in an EU member nation within the four year time frame provided, and are therefore far more likely to be prohibited from operating within the EU after April 1, 2002. Further, aircraft registered outside the EU would lose their grandfathered status upon any change in the State of Registry. The result of such a regime would be to require two types of discrimination. First, EU member nations would be required to discriminate in the recognition of airworthiness certificates between otherwise identical aircraft based on whether the aircraft registration is foreign or domestic. Second, EU member nations would also be required to discriminate in the recognition of airworthiness certificates between otherwise identical foreign aircraft based on whether the foreign registry is an EU member nation or a non-EU member nation. Such a situation clearly violates the international recognition principles provided by Article 33 and the non-discrimination principles embodied in Article 15.

Ms. Benedicte Claes suggests that the discriminatory provisions of the regulation are "justified in light of the single European aviation market."\textsuperscript{75} Ms. Claes asserts that the EU's progress toward the creation of a single European market without internal borders justifies EU member nations in discriminating in favor of air carriers from other EU member nations over air carriers from non-member nations. Ms. Claes makes the point that the EU should be treated as a single entity for purposes of Article 15 of the Chicago Convention, and that the fact that each EU member nation maintains its own civil aircraft registry should be ignored and treated as something of an historical anomaly currently maintained for convenience sake. She also

\textsuperscript{74} See generally Common Position, supra note 1, at Statement of Council's Reasons.

points out that the EU's fifteen civil aviation registries should be treated as a single EU registry for purposes of the regulation.\footnote{See id.}

Arguments based on a single European aviation market are initially compelling. The United States itself serves as an obvious analogy. The United States is a single entity comprised of fifty autonomous states, i.e., a single market comprised of several states. Although the United States does not share the EU's problem of having numerous civil aviation registries, aircraft can move across internal boarders freely. Thus analogizing the European aviation market to the United States aviation market, the obvious corollary is that aircraft owned by Europeans should be capable of being bought, sold, and transferred within the European market as freely as aircraft owned by Americans can be bought, sold, and transferred within the United States market.

Such arguments, however, have two serious flaws. First, the arguments do not address the first type of improper discrimination discussed above, i.e., as between foreign and domestic aircraft. Second, while the arguments do attempt to address the second type of improper discrimination, i.e., as between foreign aircraft registered in EU member nations and foreign aircraft registered in non-EU member nations, the arguments ignore the fact that the EU is neither a member of ICAO, nor a party to any of the bilateral air services agreements that bind its various member nations. The EU, through the collective rights of its fifteen member nations, currently enjoys fifteen votes in the ICAO Assembly, six of the thirty-three votes in the ICAO Council,\footnote{See International Civil Aviation Organization, \textit{Frequently Asked Questions}, (visited Feb. 6, 2000) <http://www.icao.org/icao/en/trivia/conc_mem.htm>.} and holds seven of the sixteen seats on the Committee of Aviation Environmental Protection. Claims by the EU that it should be treated as a single market for purposes of ICAO are disingenuous in the absence of a move towards single nation status in ICAO. Acceptance of any claim that the EU should be treated as a single market must be coupled with a requirement that each individual EU member nation withdraw its membership in ICAO and that the EU itself become a signatory to the Chicago Convention. Similarly, if the EU desires to be treated as a single aviation market by the rest of the world, each individual EU member nation should renounce all bilateral air services agreements to which it is a party, and the EU itself should negotiate bilateral air services agreements with non-EU member na-
tions that would uniformly bind all its member nations. The foregoing actions would place the EU and its single aviation market on equal footing with other single-nation markets, such as the United States, throughout the world, i.e., one State and one vote in the ICAO Assembly. The EU, however, is not likely to accept such a drastic reduction in the collective power of its member nations in ICAO any time soon, and each EU member nation can be expected to insist in the strongest possible terms that it has an individual right to ICAO membership. Thus, it appears that the single European aviation market argument is little more than an attempt by the EU to have its proverbial cake and eat it too. That is, the EU appears prepared to argue for single entity status when it benefits the EU, e.g., that the EU should be treated as a single aviation market for purposes of Article 15 of the Chicago Convention, and to insist that each member nation is an autonomous state when single entity status would be a detriment to the EU, e.g., with respect to voting power in ICAO.

B. THE THREAT TO FUTURE ADVANCES IN AIRCRAFT AND AIRCRAFT ENGINE DESIGN

Each EU member nation is a signatory to the Chicago Convention. As signatories to the Chicago Convention, each of the EU member nations is obligated to recognize the certificates issued by the United States and other contracting states. If adopted, the regulation would directly conflict with that obligation, and may seriously undermine future technological advances in aircraft and aircraft engine design technology by undermining confidence that standards adopted by ICAO will be recognized worldwide.

No EU member nation has asserted that hushkitted or re-engined aircraft certified by the United States or other ICAO contracting states do not meet Chapter 3 standards. Rather, the EU’s regulation would ban some hushkitted and re-engined aircraft based on an apparent assertion that such aircraft do not have a great enough margin of compliance to satisfy special interests within the EU. As signatories to the Chicago Convention, each EU member nation participates in the establishment of international aircraft certification standards, and has agreed to the standards set forth in Annex 16. However, the EU now proposes to superimpose a design standard on top of the existing standards set forth in Chapter 3 and agreed to by each member nation of the EU at a point in time when most of the world’s
airlines have already completed the process of planning for total Chapter 3 compliance, and have invested hundreds of millions of dollars in technologies designed to meet Chapter 3 standards. If adopted, the EU's regulation would result in a situation in which foreign registered aircraft that meet the most stringent standards established by international consensus would no longer necessarily be welcome within the EU. By adopting the regulation, and the design standards contained therein, the EU would, in essence, be forcing its member nations to reject their obligations under Article 33 of the Chicago Convention and require them to recognize as valid only those certificates that not only meet the minimum ICAO standards, but also the additional standards established by the EU. In doing so, the confidence in a regime of uniform international standard setting is undermined, and the likelihood that other states will elect to superimpose additional standards suited to their own particular interests on top of Chapter 3 standards increases. With each diverging set of standards adopted by individual states, international confidence in the ICAO standards setting process may be further eroded, with the consequence that the aviation industry and many of the world's nations may become unwilling to pursue further advances in aircraft and aircraft engine technology.


In their joint response to the complaint filed by Northwest Airlines, British Airways, PLC (British Airways), and Virgin Atlantic Airways, Limited (Virgin Atlantic), assert that the United States will be in violation of Article 33 of the Chicago Convention as of January 1, 2000, when the United States' ban on Chapter 2 aircraft takes effect, because the phase out date is more than two years ahead of the final phase out date recommended by ICAO. Lufthansa German Airlines (Lufthansa) makes a similar assertion. The United States Chapter 2 phase-out date of January 1, 2000, was set by the Airport Noise and Capacity Act

78 See Joint Answer of British Airways PLC and Virgin Atlantic Airways Limited, Docket No. OST-99-5011-4 at 5, (Feb. 5, 1999) [hereinafter Joint Answer].
79 See Answer of Lufthansa German Airlines, Docket No. OST-99-5011-5 at 3 (Feb. 5, 1999).
of 1990 (ANCA), § 9308. The assertions of British Airways, Virgin Atlantic, and Lufthansa are incorrect.

As previously stated, Annex 16 was originally conceived as a certification standard and was not intended to be used for the purpose of establishing operational limitations. However, recognizing the concerns of many ICAO contracting states regarding aircraft noise near major airports, ICAO adopted a policy addressing operational restrictions on aircraft that do not meet Chapter 3 Standards. This policy, currently embodied in ICAO Assembly Resolution 31-11, Appendix D, implicitly recognizes the right of contracting states to put in place operating restrictions which effectively phase-out use of aircraft that do not meet Chapter 3 standards. Appendix D of Assembly Resolution 31-11 represents a compromise balancing the interests of airlines, aircraft manufacturers, and developing countries, against the environmental concerns of States that have serious airport noise problems. The compromise contained in Assembly Resolution 31-11 recognizes the rights of states to phase out Chapter 2 aircraft, and provides recommended, non-binding time parameters for implementing any phase-out of Chapter 2 aircraft. Assembly Resolution 31-11 does not address or contemplate any restrictions whatsoever on aircraft that comply with the standards set forth in Chapter 3. Although § 9308 of ANCA requires completion of the phase out of Chapter 2 aircraft more than two years ahead of the ICAO guidelines contained in Assembly Resolution 31-11, it also provided for a ten year phase out period, which is three years greater than the seven year period recommended by ICAO in Assembly Resolution 31-11. Section 9308 of ANCA therefore does not violate any operational standard. Consequently, it is a disingenuous argument to assert that the United States Chapter 2 phase-out date constitutes a violation of Article 33 of the Chicago Convention.

British Airways’ and Virgin Atlantic’s assertion that 14 C.F.R. § 91.873 violates the Chicago Convention is more credible, however. Section 91.873, which substantively mirrors ANCA § 9308(b)(1), provides that United States air carriers may apply


\[81\] Originally adopted as ICAO Assembly Resolution 28-3.


\[83\] See Joint Answer, supra note 78, at 6.
for a waiver to operate Chapter 2 aircraft in the United States on and after January 1, 2000, under certain limited circumstances.\textsuperscript{84} The waiver provisions appear to facially discriminate between United States and foreign air carriers in that the foreign air carriers are not afforded the same opportunity to apply for a waiver. Northwest Airlines responded to British Airways' and Virgin Atlantic's assertion by stating that "ANCA's legislative history reveals that the omission of foreign carriers in the statute was nothing more than a technical drafting error. In fact, on January 19, 1999, legislation was introduced to correct this error."\textsuperscript{85} Northwest may be overstating its case.

The legislative history of ANCA indicates neither a specific intention on the part of Congress to exclude, nor to include, foreign air carriers from the applicability of the waiver provisions. The absence of an affirmatively stated intention to exclude foreign air carriers is not sufficient to assume that no such intention existed. Northwest's technical drafting error theory is, however, plausible. Various speakers quoted in the Congressional Record appear to use the terms "airline(s)" and "air carrier(s)" generically and interchangeably, without specific reference to foreign or United States flags,\textsuperscript{86} and, in fact, ANCA refers to "air carriers" without specific reference to whether the air carriers are foreign or domestic.\textsuperscript{87} The technical drafting error, if Northwest Airline's assertion is to be accepted, arises from the fact that ANCA specifies that the term "air carrier" shall have the same meaning given to the term under § 101 of the Federal Aviation Act of 1958.\textsuperscript{88} The Federal Aviation Act defines an "air carrier" as "a citizen of the United States undertaking by any means, directly or indirectly, to provide air transportation."\textsuperscript{89} A common legal maxim holds that Congress is presumed to have intended what it enacted, and thus we must assume that Congress was conscious of the fact that the term "air carrier" adopted by it in ANCA excluded foreign flag carriers when it enacted ANCA. However, legal presumptions aside, it is at least plausible that

\begin{itemize}
\item \textsuperscript{84} 14 C.F.R. § 91.873 (1999).
\item \textsuperscript{85} Reply of Northwest Airlines, Inc., Docket No. OST-99-5011-25 at 9 (Feb. 12, 1999); see also S. 82, 106th Cong. § 302 (1999) (enacted). Section 302 was deleted from S. 82 during markup on February 11, 1999, in response to adoption by the EU of the Common Position.
\item \textsuperscript{88} Id. § 9308(h)(2).
\item \textsuperscript{89} 49 U.S.C. § 40102(a)(2) (1994) (emphasis added).
\end{itemize}
Congress erred and was not actually aware that it had discriminated between United States and foreign air carriers when it enacted ANCA. In any event, it is not relevant whether Congress intended to discriminate. The fact remains that ANCA facially discriminates against foreign air carriers in a manner that potentially violates the non-discrimination provisions of the Chicago Convention.

V. CONCLUSION

The EU regulation, if ultimately given effect, would unilaterally establish design-based aircraft certification standards in a technical area best suited to internationally developed performance-based standards. The EU asserts that the regulation is a necessary and proper means of protecting the environment around Europe’s airports. Yet the EU has proffered no data supporting its contentions that the regulation would achieve environmental benefits, and, in fact, the contrary may prove true; the regulation, if adopted, may result in a greater noise problem for Europe’s airports. The EU’s claims that the regulation is necessary to protect the environment around Europe’s airports is disingenuous, and appears to be little more than a thinly disguised effort at industrial protectionism. ICAO is the proper forum for establishing international aircraft noise certification standards; if the EU is truly interested in establishing a more stringent noise standard, working through the ICAO system would be the most productive means of achieving greater environmental protection over the long term. Implementation of the regulation could threaten the integrity of the present system of international aircraft certification recognition, and non-discriminatory access to airports, established by the Chicago Convention, as well as the ability of the international community to achieve further advances in aircraft and aircraft engine design.