

AIRCRAFT NOISE –A LEGAL PERSPECTIVE

INTRODUCTION

One hundred years after the first commercial flight, aviation is still very much a growing industry. The projections for air traffic are evaluated to increase from 5 billion passengers today to 11 billion by 2030.¹ In 2013, airlines carried 5.1% more passengers on scheduled services compared to 2012.² Airports are expanding, new air routes are created, and existing routes are getting busier. In that context, noise is more than ever before a significant concern to the industry. Yet, aircraft are 50% quieter today than they were ten years ago, and 75% quieter than the first generation of jet aircraft.³

In this article, we will briefly go over the applicable ICAO noise standards as well as the corresponding regulatory regimes in Canada and in the United States. Before we begin though, let's first address what is meant by "aircraft noise".

I. What is Aircraft Noise?

Noise is a type of environmental pollution. It can cause hearing impairment as well as psychological problems such as stress, fatigue and distraction⁴ (see "*Noise making Montrealers sick, study shows*", in *The Gazette*, 20 June 2014⁵) Aircraft generates noise from its engines and airframe and mostly impacts the communities living within the vicinity of an airport. But when does a mere sound become a noise? The Merriam-Webster dictionary describes "noise" as a "loud or unpleasant sound; any sound that is undesired or interferes with one's hearing of something".⁶ "Noise pollution" itself is defined as a "loud

¹ Air Transport Action Group (ATAG) - <http://www.atag.org/>

² World Air Transport Statistics - <http://www.iata.org/pressroom/pr/Pages/2014-08-12-01.aspx> on August 12, 2014

³ <http://aviationbenefits.org/environmental-efficiency/noise/>

⁴ Canadian Centre for Occupational Health and Safety - http://www.ccohs.ca/oshanswers/phys_agents/noise_auditory.html

⁵ <http://www.montrealgazette.com/health/Noise+making+Montrealers+sick+study+shows/9955919/story.html>

⁶ <http://www.merriam-webster.com/dictionary/noise>

or unpleasant noise that is caused by automobiles, airplanes, etc., and that is harmful or annoying to the people who can hear it.”⁷ Thus, regulating and addressing issues relating to airport noise is a challenge as noise is primarily a matter of individual perception: what is considered disturbing for one person may not be disturbing at all for another one. Yet, sound is measured objectively in decibels, a logarithmic scale. As an example, a normal conversation is rated at 60 decibels (db) whereas noise from heavy city traffic (much louder) is at 85 db,⁸ the latter being similar to the sound of an Airbus A380 at take off.⁹ In an attempt to address this dichotomy, the ICAO aircraft noise standards use the “effective perceived noise level”, expressed in units of EPNdb, to evaluate the subjective effects of aircraft noise on human beings and set the maximum noise emissions levels.

II. ICAO Aircraft Noise Standards

ICAO adopted a set of aircraft noise standards that are embedded into the Annex 16 (vol.1) of the Convention on International Civil Aviation (the “Chicago Convention”). Aircraft are classified in 13 Chapters according to their year of design, type and weight. For each type and for each corresponding weight, a maximum noise emission level is set (expressed in units of EPNdb). These noise emission levels are calculated on the basis of the following criteria: level, frequency, distribution and variation over time of aircraft noise.¹⁰ Basically, for the same category of aircraft, the more recent and light it is, the quieter the aircraft will be. ICAO adopted its first aircraft noise standard in 1972 for subsonic jet aeroplanes¹¹ with type certificate¹² submitted before 6 October 1977 and it was included in Chapter 2 of

⁷ <http://www.merriam-webster.com/dictionary/noise+pollution?show=0&t=1408223256>

⁸ U.S. National Institute of Deafness and Other Communication Disorders - <http://www.nidcd.nih.gov/health/hearing/pages/noise.aspx#4>

⁹ An Airbus A380 takes off at 82 decibels - <http://www.atag.org/facts-and-figures.html>

¹⁰ Appendix II to Annex 16 (vol. 1) of the Chicago Convention

¹¹ A subsonic aeroplane is described as “an aeroplane incapable of sustaining level flight at speeds exceeding flight Mach number of 1” in the Annex 16 (vol. 1), Part I - Definitions of the Chicago Convention.

¹² A type certificate is a “document issued by a State to define the design of an aircraft type and to certify that this design meets the appropriate airworthiness requirements of that State” as defined in the Annex 16 (vol. 1), Part I - Definitions of the Chicago Convention.

the Annex 16 (vol. 1) of the Chicago Convention. The Boeing 727 and the Douglas DC-9 are examples of aircraft covered by Chapter 2. Chapter 3 was adopted in 1977 with more stringent noise standards for subsonic jet and propeller-driven aeroplanes with type certificates submitted on or after 6 October 1977 and before 1 January 2006.¹³ Chapter 2 aircraft were then phased-out beginning of 1995 with an objective of being completed by 2002. Today, with the exception of smaller jets, Chapter 2 aircraft are only allowed in certain developing countries.¹⁴

In 2001, as the phasing out of Chapter 2 aircraft was progressing worldwide, ICAO adopted the so-called “balanced approach” with a view to assist airports from around the world in developing noise reduction measures, while at the same time minimizing the negative impacts on traffic and on airlines fleet. The approach rests on four main pillars to be used in the most cost-effective and proportionate manner¹⁵: (i) reduction at source¹⁶, (ii) land-use planning and management, (iii) noise abatement operational procedures and, finally, as a last resort, (iv) operating restrictions. At about the same time, a new Chapter 4 was also adopted under the auspices of ICAO, with more stringent noise standards for aircraft with type certificates submitted on or after 1 January 2006. Also, starting 1 January 2006, re-certification to Chapter 4 was requested to all Chapter 3 aircraft. Finally, on 7 February 2013, at the Ninth Meeting of the ICAO’s Committee on Aviation Environmental Protection (CAEP), new even more stringent standards were agreed upon, which are set to become the new Chapter 14 of the Annex 16 (vol. 1) to the Chicago Convention.

¹³ Boeing 737-300/400, Boeing 767 and Airbus A319 are examples of Chapter 3 aircraft types.

¹⁴ See Irina G. Ionescu, *Aircraft Noise Regulation* (LL.M. Thesis, Institute of Air and Space Law, McGill University, 2004) at 33.

¹⁵ See Part V of Annex 16 (vol. 1) to the Chicago Convention

¹⁶ This element is addressed through the adoption of the 13 Chapters of the Annex 16 (vol.1) of the Chicago Convention.

III. Aircraft Noise Regulation in Canada and the United States

Both Canada and the U.S. have their own national legislation on aircraft noise, mostly based on ICAO standards discussed above. Both countries substantially adopted the balanced approach to noise management discussed above.¹⁷

a. Canada

Under the authority of the *Aeronautics Act*¹⁸ the Canadian Federal Government has adopted the *Canadian Aviation Regulations (CARs)*¹⁹, which is in essence a complete code regulating the operations of aircraft and airports across the country. Amongst others, the CARs provide the regulatory requirements for the certification of aircraft and airports, operational standards and the application in Canada of the Chicago Convention. The CARs are overseen and enforced by Transport Canada. Aircraft noise in Canada is also regulated by the CARs.²⁰ Penalties for violating the CARs can reach CND\$5,000 for an individual and CND\$25,000 for a corporation, per violation.²¹

Under the CARs, some Canadian airports have noise-restricted runways where aircraft operators of subsonic turbo-jet aeroplanes of a certain maximum take-off weight (often called MTOW) cannot operate, unless they meet certain criteria.²² There are currently no restrictions on Chapter 3 aircraft in Canada, and it is fair to say that ICAO's recommendation of proceeding with the re-certification to Chapter 4 of all Chapter 3 aircraft, as mentioned above, has not yet been followed by Canada. Furthermore, although Canada has announced publicly²³ that it has forbidden the Chapter 2 aircraft from the Canadian skies, the Government order for the withdrawal of Chapter 2 aircraft, adopted in 1996 and

¹⁷ See the respective websites of FAA and Transport Canada at:

http://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/airport_aircraft_noise_issues; and <http://www.tc.gc.ca/eng/civilaviation/standards/aerodromeairnav-standards-noise-menu-923.htm>

¹⁸ RSC 1985, c. A-2

¹⁹ SOR/96-433

²⁰ CARs 602.105 on Noise Operating Criteria, CAR 602.106 on Noise-restricted runways and CAR 602.150 on Noise Emission Levels for Subsonic Turbo-Jet Aeroplanes

²¹ <http://www.tc.gc.ca/eng/civilaviation/standards/aerodromeairnav-standards-noise-menu-923.htm>

²² CARs 602.106

²³ http://legacy.icao.int/icao/en/ro/nacc/acilac/25_lowrey_tc_presentation_miami2.pdf

which provided for the complete withdrawal for 2002, was designed to cover for the aircraft with a MTOW of over 34,000 kg only.²⁴ Consequently, Chapter 2 aircraft with a MTOW of less than 34,000kg are technically still allowed to fly over Canada. The aircraft types fulfilling these conditions, however, are not very common today. They are, for the most part, older business jets.²⁵

b. United States

In the United States, aviation is regulated on one hand by the Department of Transportation (“DOT”), the Federal Aviation Administration (“FAA”), an agency of the DOT, and on the other hand, by the Transportation Security Administration (“TSA”) and Custom and Border Protection (“CBP”), which are both agencies of the Department of Homeland Security. The FAA regulates, amongst others, the air safety, the certification of aircraft and airports, as well as airport development and air traffic management. It acts as the aircraft noise regulatory body in the United States.

The first aircraft noise regulation enacted by the FAA was the *Title 14, Code of Federal Regulations (14 CFR part 36)*, in 1969. The corresponding terminology for “Chapter” in the FAA regulation is “Stage”. Such first regulation was aimed at limiting noise emission levels for Chapter 2 aircraft, referred to in the US regime as Stage 2 aircraft. ICAO Chapter 3 aircraft standard was adopted in 1977 and referred to as Stage 3 aircraft standard. In 1990, the US Congress enacted the *Airport Noise and Capacity Act* (“ANCA”) that provided the FAA regulations with a prevailing status over local and municipal regulations relating to airport noise. It also provided a Stage 3 transition rule which consisted of a progressive approach to the phasing out of Stage 2 aircraft by 31 December 1999. At the time though, unlike the European Union, United States did not ban the device used to retrofit Stage 2 aircrafts to meet

²⁴ The CARs 602.150 mentioned above, enacted in 2008 to replace this order, covers also aircraft with a MTOW of over 34,000 kg.

²⁵ Such as the H25A, Learjet 24/25, Gulfstream 2 and Fokker 28 -

http://www.torontopearson.com/uploadedFiles/Pearson/Content/Your_Airport/Noise_Management/Noise%20Booklet.pdf

(although allegedly barely) the Stage 3 certification level (called hushkits).²⁶ This led to an EU-US trade dispute before the ICAO at the turn of the century, known as the “hushkit trade war” which was resolved on 25 October 2001 in Montreal with the adoption by the ICAO members of the balanced approach mentioned above, as well as the new ICAO Chapter 4, which led to the withdrawal by the EU of its anti-hushkits Regulations.²⁷

In July 2005, the FAA adopted the ICAO Chapter 4 standard as the new U.S. Stage 4 standard. Under such Stage 4, aircraft with new type certificates submitted on or after 1 January 2006 have to be 10 decibels quieter than the previous Stage 3 noise standard required. As it applies to new aircraft type designs only, this certification standard does not apply to pre-existing aircraft or to the continued production of aircraft types previously certified. Hence, like Canada, the U.S. has not yet followed ICAO’s recommendation of proceeding with the re-certification to Chapter 4 of all Chapter 3 aircraft. In fact, currently within the contiguous states, civil jet aircraft over 75,000 pounds MTOW must meet Stage 3 and Stage 4 to fly, but by 31 December 2015, all civil jet aircraft, regardless of their MTOW must meet Stage 3 or Stage 4 to fly within the contiguous states.²⁸ This, in effect, will ban Stage 2 lighter airplanes from U.S. skies. Note that the FAA participated to the recent ICAO meetings held in February 2013 concerning aircraft noise regulation and supports the new ICAO Chapter 14 standard²⁹ discussed above, which will be referred as Stage 5 in the FAA regulation.³⁰

²⁶ The EU Regulation 925/1999 banned the registration and operation of hushkitted aircraft within the EU but it was subsequently repealed by EU Directive 2002/30/EEC – See Ionescu, *supra* note 13 at 47-76.

²⁷ <http://2001-2009.state.gov/r/pa/prs/ps/2002/9006.htm>

²⁸ http://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/airport_aircraft_noise_issues/

²⁹ *Ibid.*

³⁰ http://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/airport_aircraft_noise_issues/levels/

CONCLUSION

Noise management is a very complex matter with many variables. Air traffic has become a fundamental component of the economy, and communities from around the world want their local air traffic to grow. Passengers want shorter flights. Air carriers want easier access to airports and fewer route limitations, and they seek to reduce fuel consumption and carbon emissions. Developing countries also need time to bring national fleets up to international aircraft noise standards.³¹

At the same time, there is growing awareness and mobilization on the part citizens, and quite a few actions or class actions in Canada and in the United States for nuisance or “neighbourhood disturbance” were initiated over the last few years.³² Today, airports in the U.S and in Canada are making real efforts to take into account the noise associated with their operations (see for instance Aéroports de Montreal’s Soundscape measures³³) and there is no doubt that the ICAO balanced approach and the ever quieter aircraft types are helping a lot. There is no one size fits all solution though, and when problems do arise, airports are always better off when they can demonstrate that efforts have been made to balance the conflicting interests at stake, including minimizing when possible the impact on neighboring communities.

³¹ <http://www.tc.gc.ca/eng/civilaviation/standards/aerodromeairnav-standards-noise-menu-923.htm>

³² Canada : *Citoyens pour une qualité de vie/Citizens for a Quality of Life c. Aéroports de Montréal*, 2007 QCCA 1274; *Coalition contre le bruit v. Shawinigan (Ville de)* 2012 QCCS 5574 (*CanLII*) ; U.S. : *Kenneth D. Paskar and Friends of LaGuardia Airport, Inc., Petitioners, v. United States Department Of Transportation*, 714 F.3d 90 United States Court of Appeals, Second Circuit (Docket No. 10–4612–ag. Argued: Jan. 6, 2012. Decided: April 9, 2013. Corrected: April 10, 2013. Corrected: April 12, 2013. Corrected: April 22, 2013; *Scott Powellet al., Plaintiffs and Appellants, v County Of Humboldt*, Defendant and Respondent., Court of Appeal, First District, Division 1, California., A137238, Filed January 16, 2014.

³³ <http://www.admtl.com/en/adm/communities/soundscape>