Aircraft Noise: Addressing a Potential Barrier to Global Growth

by Gerald L. Baliles

More than a half-century of efforts to expand global commerce have combined with the post-Cold War spread of democratic capitalism to spawn an age of astounding global economic growth. This growth has led to demand for air transportation that fifteen years ago could scarcely have been imagined.

Taken together with the spread of airline deregulation from the United States to Europe and Asia, all this has led to impressive growth in demand for international air transportation. U.S. passenger traffic, currently more than 650 million enplanements annually, is forecast by the FAA to grow to one billion by 2011. European traffic is growing at an even faster rate. Global demand is nearing two billion passengers annually. While the current economic slowdown might make a dent in that demand growth, that dent is likely to be small. This is true for both passenger and cargo services.

Indeed, if there were no barriers to the aviation industry's growth —if airlines could schedule, and passengers could board, any flight they wanted to any destination, the system's growth would be impossible to predict, in fact it would be limitless. But, there are always barriers to growth in any business, and aviation is no exception. The future of international aviation, and all the contributions it makes to global growth, will depend, in large measure, on how effectively those barriers are overcome.

What are those barriers? I put them into three basic categories:

1. A system of more than a thousand bilateral air service agreements between, and among, the countries of the world that govern basic rights of access to markets. Many of these bilaterals restrict much more than they permit.

2. Restrictions on system capacity due to outdated air traffic control systems in many parts of the world, combined with a simple lack of adequate physical infrastructure in far too many key airports around the globe.

3. Concern about the environmental impacts of aviation, particularly about noise. These concerns limit the ability of airports to provide new runways and other facilities, and can also result in restrictions on schedules the airlines can fly into noise-sensitive airports.

Because noise has such important ramifications for the supply of air transportation facilities and services in so many parts of the world, that is the issue upon which this article will focus.

Concern about noise is certainly one of the reasons why there have been so few new airport and runway projects approved in the United States in the past 20 years. In Europe, such concerns have delayed or stopped many important aviation projects, such as a new runway at Frankfurt. Indeed, concern about noise in The Netherlands had reached such a point that there were plans drawn up, and later withdrawn, to build a replacement for Amsterdam's Schipol Airport on the North Sea. These noise concerns have also made it more difficult for officials at Tokyo Narita to expand oper-

ations at its critical airport and are a constant fact of life for officials in Australian cities such as Sydney and Brisbane. These issues of noise are not limited to people living on the periphery of airports. Airport officials in London report complaints from people living 15 miles away. Their counterparts in Washington report a similar pattern.

Concern about noise has even begun to enter heavily into decisions airlines make about which aircraft to fly on certain routes and which to order for the future.

Indeed, a major issue now surrounding the Airbus project, to develop the new super jumbo A380 that will carry more than 600 passengers, is how to insure that it will be quiet enough to operate in and out of London's Heathrow Airport, where operations are constrained by a stringent noise budget. One of the things I hear from both airlines and manufacturers is that the airlines have begun asking aircraft builders for assurances that new planes will meet not just today's Chapter Three noise standard, which officially goes fully into effect around the globe next year, but also any noise standard that comes into place during the useful life of that aircraft, including a proposed Chapter Four standard now under consideration for implementation sometime in this decade. Given that commercial aircraft can usefully, and safely, operate for three decades or more, there could be two or more new standards in that time. So, such assurances will be as difficult for manufacturers to make as they will be for airlines to forego.

As a result, noise is not just a neighborhood issue anymore. It is not simply an environmental concern any longer. It is a matter of great economic importance to airlines, manufacturers and airports. (Not to mention their lawyers and financiers). It is also an issue of increasing importance to airline passengers because of the effect it can have on the ability of the aviation system to expand to meet demand for air travel, a demand that grows by 100,000 enplanements per day in this country alone.

Over the past three years, the International Civil Aviation Organization (ICAO), through its Committee on Aviation Environmental Protection (CAEP), has been considering adoption of a new noise standard. CAEP's expert members have commissioned the development of cost-benefit models to assess various scenarios and have followed a painstaking process of analysis, debate and decision. Their work has been done in a pressure-filled atmosphere, as noise problems have escalated around the world together with tightening capacity constraints on a growing system. In the middle of all of this, the United States and the European Union have engaged in a serious dispute over the EU's regulation banning hushkitted aircraft from European airports. The so-called hushkit dispute led the United States to file a complaint at ICAO against the EU's 15 member states under Article 84 of the Chicago Convention. This marked only the fourth time in the convention's 55-year history that Article 84 had been invoked.

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So, over most of the past three years it has not been at all clear that CAEP would be able to agree on a new standard or much of anything else. There were sharp, fundamental disagreements among governments, among industry officials and others over what the new standard should be, whether relatively quiet aircraft could be re-certificated to meet that standard, and whether a global phase-out of older marginally noise-compliant airplanes would be imposed on the airline industry. There were sharp differences of opinion over how to interpret the data emerging from the cost and benefit models that had been developed specifically on this issue for CAEP's use in making its decisions.

And while the political climate during CAEP's meeting was not as contentious as a year earlier when the U.S.-EU hushkit dispute was at its emotional peak, there were still questions in some minds about whether governments would be able, or willing, to make decisions on some of these issues.

At stake were questions about where airlines would be able to utilize their expensive assets, even which markets certain airlines would have access to. At stake were billions of dollars in manufacturers' investments in various aircraft types and engine designs. At stake were airports' plans to accommodate future traffic growth.

Most importantly, at stake was the very question of whether the most international of all industries would be governed by an international standard, or whether the system would disintegrate into a crazy patch-quilt of local noise requirements and operating restrictions.

So, the stakes were obvious. So were the risks. What was less obvious was whether the will existed within the industry to allow CAEP and ICAO to succeed.

What happened when CAEP met in Montreal in January?

With a lot of hard work and careful analysis, CAEP was able to reach agreement on a far-ranging list of issues that will produce additional aviation noise relief for communities:

A recommendation was made for a new noise certification standard for new production aircraft.

Agreement was reached on re-certification of aircraft and on global harmonization of national certification procedures.

Agreement was reached on noise abatement departure procedures, an issue of great importance to pilots.

Agreement was reached on how to move forward on a wide range of aircraft emissions issues.

Why is all this good news?

History teaches us many lessons, if we pay attention. One of the clearest lessons is that as a region grows economically, and as the standard of living improves, people become more concerned with matters of environmental quality. In today's growing economy, environmental issues, generally, are of serious public concern around the world and will increasingly affect the aviation system's ability to expand services, and thus its ability to respond to the demands of the global economy for fast, efficient delivery of people and goods. There is no evidence that today's slowdown in global growth has done anything to diminish the growing concern about the environment.

When roads become congested, it may be possible to find alternative modes of transportation, a train or a subway for example. But there really is no good substitute for air transportation. While the Internet permits us to communicate instantaneously around the globe, it is air transportation that gets the business executive from Europe to Asia for a critical meeting in less than a day. It is air transportation that gets the essential part for a critical machine to a factory in less than a day so that production may resume.

So, if the air transportation system cannot grow to meet demand, what will happen to the two billion passengers who use air travel every year, many of whom need to travel on short notice to business or personal engagements far away?

What about shippers? Forty percent of the world's international cargo, by value, now moves by air. Why? Because consumers—yes, even residents around airports—want quick deliveries. They want their fresh produce or flowers. They want electronic equipment delivered to their doors, or their offices, when they want them. Not next week, or next year, but tomorrow. Think of how different everything would be if this were made impossible by a rapid increase in restrictions on aircraft operations.

That's why, after all, cargo flights arrive or take off during the night, because the shippers at the point of origin want to ship during the last hour of the business day and the recipients want the goods to arrive at the first hour of their business day.

To all these travelers, shippers and others, the world's airlines and airports are vital; they are dependent upon an aviation system that is international in scope, and none of us could even contemplate being without it. That is why the ICAO noise standard process is so important and cannot be allowed to fail.

If the global system for setting aviation noise certification standards had collapsed in Montreal, aviation equipment manufacturers would have been forced to return to the rather expensive and time-consuming process of getting their equipment certified by multiple regulatory authorities.

Airlines might not have been able to cross-utilize their fleets in various markets, producing enormous economic penalties and higher prices for consumers.

Airports would have had an even tougher time gaining approval for projects to expand capacity, though I suppose the extra capacity wouldn't have been needed if the system crumbled.

Passengers could have found that the time they traveled would be chosen by the political dictates of their destination, not by their personal or business requirements.

And air freight customers would have needed to build and operate more warehouses to accommodate the vagaries of the airplane that could not land and deliver the goods because a weather delay halfway around the world caused the flight to miss the curfew at the destination airport.

Simply, the international air transportation system would have been stymied in its ability to meet the expected increases in demand for air transportation.

Fortunately, the results of CAEP and their expected adoption by the ICAO Assembly in September this year will help us avoid these dire consequences.

The new standard recommended by CAEP was set at a cumulative level of 10 decibels below the current Chapter 3 standard. (Chapter 3 of Annex 16 of the Chicago Convention of 1944). That is significantly quieter. This new standard will help produce long-run noise relief for people around airports.

Although the newly proposed Chapter Four standard does not come into effect until 2006, it will become the de facto standard for production aircraft as soon as the ICAO Assembly ratifies it in September. That is the way this game works. The last standard, set more than two decades ago, but not globally implemented fully until next year, has resulted in the production of new airplanes that already exceed it by 8 to 20 db. So, the public will not have to wait five more years to begin to see—or hear—these effects.

There is one more important point about the noise standard that we must consider. Some people have said that a new minus 10 Chapter Four standard does not go far enough because current production airplanes already meet minus 8 or better. Indeed, some, like the Boeing 777 are quieter by minus 20. Some say that going from the current Chapter 3 standard to a Chapter 4 minus 10 standard is nothing, especially when a few, very new, planes are now being produced at minus 20 or better. I would argue to the contrary.

The fact of the matter is that manufacturers design, and airlines buy, planes at a noise level well beyond the ICAO standard. Manufacturers do not have the luxury of designing and building exactly to the standard—nor can airlines afford to buy right at the standard. Airlines demand a plane that can meet the standard with plenty of margin so that they can use their large investments in the markets for which they were intended for years to come. Since a new airplane can cost well over $100 million, that only makes sense. In essence, most planes are produced at minus 8 or better today because the Chapter 3 standard was set where it was. Therefore, a new Chapter Four standard that is 10 decibels below Chapter 3 will really mean, as a practical matter, that new airplanes will be produced at minus 14 or better in actual performance.

And what of the planes currently being produced at minus 20 or better? The 777, as has already been noted, is the example most people point to. Why can't all airplanes be that quiet?

The problem is that the technology involved, including the large engine size, is not now applicable to the smaller "workhorse" planes, particularly the Boeing 737 and the Airbus A321. The engines that fit the 777 simply do not fit structurally under the wings of a 737 or an A321. I am confident, though, that the new standard will help push manufacturers to address the issue of improving the noise performance of these smaller planes, which account for a large percentage of the takeoffs and landings at airports and, thus, account for a large percentage of the airplane market. With new technology applied, neighbors of airports will hear a difference in the future, and pressure for operating restrictions can be reduced.

While this paints a hopeful picture from the manufacturing side of the noise equation, CAEP did not solve every issue. Indeed, members were unable to agree on the elements of a balanced program for noise abatement around airports or the ability for the most noise impacted airports to have the flexibility to take special action to contain any growth of noise contours.

The balanced program concept would require aviation noise abatement to be worked on not just at the source of the noise—the aircraft—but also on the ground using a wider variety of methods such as land use planning, appropriate zoning regulations, noise insulation of buildings and houses, airport land acquisition, placement of noise barriers, and changes in operating procedures, such as changing approach patterns or runway use during certain sensitive hours.

Flexibility for special actions to contain any growth of noise contours refers to whether, and under what circumstances, regions or local airport authorities would be able to apply operating restrictions to certain types of aircraft or during certain times of the day in different ways depending upon local circumstance.

Because different nations take very different approaches to these issues, there is a need for flexibility in how they are addressed. Because the global industry needs certainty, there must be an agreed-upon framework. These seemingly paradoxical imperatives have made these difficult issues to settle.

Because those issues were not resolved by CAEP in Montreal, airports in general are not completely satisfied with the results of CAEP. They believe, for the most part, that the proposed minus ten standard may provide enough noise relief in the longterm, but their short-term requirements to reduce noise were not addressed in any manner adequate enough to get community support for growth at their facilities. So, airports, and their associations, are applying pressure on governments around the world to reach a multilateral agreement within ICAO that would allow this short-term relief by placing operating restrictions on noisier aircraft at their facilities.

As the ICAO process moves toward its conclusion later this year, the question for the manufacturing and airline industries becomes whether they will be willing to submit to a patchwork of individual airport actions, unguided by any international standards or framework of basic elements, or whether they would prefer an ICAO-adopted international framework of basic standards for airports wishing to apply some of these additional measures.

The fact is that some of the busiest airports in Europe and elsewhere are already applying measures on an individual basis. They will continue to do so, with the support of their national governments so that they can continue to grow their businesses. Other airports have restrictions drafted and are waiting in the wings to spring into quick action if ICAO members fail to reach an agreement on regional flexibility in the context of a balanced program.

So, the story is not yet ended. That is why it is important that ICAO succeed in resolving these remaining issues, so that any additional actions taken on a regional or local level to reduce noise exposure—including operating restrictions—can be done within an internationally agreed-upon framework.

ICAO members will be reviewing ideas on how to address these issues between now and the ICAO Assembly in September of this year. In reality, the parties are not very far apart. But there are important differences in how words and concepts are interpreted in the different countries' legal systems. Negotiators will have to check every word in order to meet the challenge of finding the words that can bridge the gap between the short-term needs of certain severely noise-impacted airports and the need for long-term stability in the overall, global industry. This is a case in which each side must understand exactly how each word is understood by the other side.

A successful conclusion to the ICAO noise process can be an important step in the effort to provide growth in air system capacity. This is an issue to which increased attention is finally being paid in this country. As I have already stated, 100,000 new passengers are being added to the U.S. air transportation system every day. The reader can do the math: 700,000 per week, three million per month, maybe as many as 30 million per year. That's about twice the number of people handled by just one airport, Washington Reagan National Airport each year.

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This bears repeating: we are adding to the U.S. system twice the number of passengers handled by National Airport every year. Yet, during the past 30 years we've added just two new airports in this country. We have added precious few runways. Indeed, Seattle got

approval for a new runway in 1993, but has not yet been able to break ground. Memphis needed ten years to get its runway approved, and an additional six to actually finish it. There are many other such stories in this country and around the world.

There is a long list of reasons for this. It should be noted that airline resistance to some projects has been a factor over the years. But airline resistance is breaking down as the impact of congestion has begun to show up on the airlines' bottom line. What remains, though, are community concerns over noise and other environmental issues. And they cannot be ignored or dismissed.

These concerns must be addressed so that new runways can be built in the many places where needed, new terminals can be added to ease congestion, new airports can be built when required, and new road and rail links can be built to help get people and cargo into, and out of, airports more efficiently.

Air traffic control reform and advances in air navigation systems can help relieve some of this pressure. But infrastructure growth on the ground must also be part of the solution.

So, while we act to address concerns about noise and to bring noise relief to people around airports, the case must be made that as aviation gets quieter, the system must be allowed to expand. The agenda cannot be one of producing noise relief by shrinking the aviation system. To those who would advocate such a solution, they must be asked how they would defend the resulting limits on economic growth and opportunity. They must be asked to explain to people the reason for the adverse impact on their standard of living. For if we are not able to deliver people, goods and services to destinations and markets, we can neither compete nor prosper.

In the end, most people really do not want reduced aviation service to be the solution to the noise problem.

So, what is required? First, a successful conclusion to the work of ICAO in resolving the issues of balanced program and regional or local flexibility. Second, ratification of the new standard, so that new production planes become quieter. Third, more leaders who are willing to follow the example of airports in doing the hard work of getting together with people in communities near airports to address noise-related and other environmental concerns so that growing demands for aviation services can be met. This is a role leaders in the business and legal communities can help play.

If we do this, we can have a future that is both quieter and better —and an aviation system that is more responsive to the needs of people everywhere. ⚖

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