

Schedule 1 to the Minutes of the General Purposes Committee meeting held on Monday, January 18, 2010.

MR. MAYOR AND MEMBERS OF THE GENERAL PURPOSE COMMITTEE;

IT IS WITH DEEP REGRET I APPEAR BEFORE THIS COMMITTEE WITH BITTERNESS AND DISAPPOINTMENT IN THIS TASK FORCE COMMITTEE.

I UNDERSTOOD WHEN YOU APPOINTED THIS COMMITTEE, CERTAIN GUIDELINES WERE TO BE FOLLOWED AND THEY WERE SUPPOSED TO REPRESENT ALL CITIZENS OF RICHMOND AND NOT JUST A FEW SELECTED AREAS.

THIS COMMITTEE DECIDED TO PLAY GOD AND COME TO THE RESCUE FOR THOSE AREAS IN RICHMOND, AFFECTED BY FLIGHT PATH CHANGES AND FLOAT PLANES. RESIDENTS OF EAST RICHMOND WHO TOOK THE TIME TO ATTEND THE PUBLIC MEETINGS OR SENT IN COMMENT FORMS ON SLEEP DISTURBANCE WERE GIVEN THE COLD SHOULDER BY THIS TASK FORCE. THEY DECIDED SLEEP DISRUPTION WAS NOT SUFFICIENT REASON TO BAN ARRIVALS AND DEPARTURES AFTER MIDNIGHT BECAUSE THEY DIDN'T WANT TO LOSE CREDIBILITY WITH YVR, AND BECAUSE WE ARE NOTHING MORE THEN GRUMPY OLD PEOPLE LIVING IN EAST RICHMOND, AND WE WERE ONLY 50 GRUMPY OLD PEOPLE OUT OF 150,000 WHO SPOKE OUT ON THIS ISSUE.

LET ME EXPLAIN THOSE PREVIOUS COMMENTS MADE IN MY LAST PARAGRAPH. AT THE LAST TASK FORCE MEETING, ONE MEMBER SUGGESTED WE WERE JUST 50 GRUMPY OLD PEOPLE WHO ATTENDED PUBLIC MEETINGS OR SENT IN COMMENTS FORMS. ANOTHER MEMBER STATED, 50 RESIDENTS FROM EAST RICHMOND OUT OF 150,000 WAS NOT SUFFICIENT REASON TO BAN NIGHT FLIGHTS. AT A PREVIOUS MEETING ONE MEMBER COMMENTED THEY WOULD LOSE CREDIBILITY WITH YVR. THESE COMMENTS MADE BY THESE MEMBERS INFURIATED ME AND PERSUADED ME OF A HIDDEN AGENDA.

THEY DECIDED TO FULFILL THEIR OWN WISHES AND ABANDON THE EAST RICHMOND RESIDENTS, BECAUSE THEY DIDN'T WANT TO LOSE CREDIBILITY WITH YVR. CREDIBILITY! YVR LOST ALL CREDIBILITY WHEN THEY STARTED TO ALLOW AIRCRAFT TO DEPART AND ARRIVE AFTER MIDNIGHT. YVR BOARD OF DIRECTORS WERE NOT THINKING OF THE RESIDENTS IN ANY COMMUNITY WHEN THEY DECIDED TO IMPLEMENT THEIR DRACONIAN CHANGES AFFECTING OUR QUALITY OF LIFE. IT WAS ONLY THE BOTTOM-LINE THEY WERE INTERESTED IN.

WHILE I WAS NOT PRESENT AT THE TWO PUBLIC MEETINGS HELD IN JANUARY AND FEBRUARY OF LAST YEAR, I WAS PRESENT FOR THE LAST MEETING HELD IN NOVEMBER 2009. ONLY ONE PERSON OUT OF NINE SPOKE ABOUT FLOAT PLANES BEING DISRUPTIVE, WHILE THE OTHER EIGHT SPOKE ABOUT NIGHT TIME DISRUPTION AND SLEEP DISTURBANCE. IN ADDITION, TO THE LAST PUBLIC MEETING, THE GENERAL PUBLIC FEED BACK CONTAINS THREE AND HALF PAGES OF RESIDENTS WANTING THE TASK FORCE TO BAN ALL ARRIVALS AND DEPARTURES AFTER MIDNIGHT AND BEFORE 7AM.

PERSONALLY, IF 1000 GRUMPY OLD MEN AND WOMEN IN EAST RICHMOND WOULD HAVE TURN OUT AT THOSE THREE PUBLIC MEETINGS, IT WOULD NOT HAVE MADE ANY DIFFERENCE. THEIR MINDS WERE MADE UP AND NOBODY ON THIS PLANET WAS GOING TO CHANGE IT. THERE IS MORE BEHIND THIS THAN MEETS THE EYE AND IT WILL BE HARD FOR THE COMMITTEE TO SET MY MIND AT REST.

I HAVE MY OWN REASONS FOR BELIEVING WHY THEY DECIDED NOT TO BAN ARRIVALS AND DEPARTURES AFTER MIDNIGHT, BUT WILL KEEP THOSE REASONS TO MYSELF.

THE QUESTION TO ASK YOURSELF, WHY BOTHER HOLDING PUBLIC MEETINGS OR ASK FOR COMMENT FORMS, IF YOU ARE NOT GOING TO LISTEN TO ALL THE RESIDENTS?

IN A LETTER I WROTE TO YOU DATED OCTOBER 25, 2009, I GAVE YOU THE FOLLOWING REASONS FOR BANNING NIGHT FLIGHTS:

- A) JUST AS MANY RESIDENTS COMPLAINED ABOUT SLEEP DISRUPTION OR DISTURBANCE OVER THE THREE PUBLIC MEETINGS HELD LAST YEAR. SEE APPENDIX 1 OF THE TASK FORCE REPORT AND THE FEED BACK FROM THE LAST PUBLIC MEETING IN OCTOBER 2009.
- B) IN 2004 COUNCIL WAS PRESENTED WITH A REPORT (AIRPORT NOISE REVIEW) PAID BY TAXPAYERS THAT 69.5% OF RESPONDENTS SAID AIRPORT NOISE HAS CAUSED THEM SLEEP DISRUPTION.
- C) YVR HELD A NOISE INFORMATION SESSION IN EAST RICHMOND IN 2004, 84% OF THE RESPONDENTS HAVE CONCERNS OVER NIGHT-TIME OPERATIONS AND SLEEP DISTURBANCE.
- D) IN 2006 OR 2007 YVR HELD ANOTHER PUBLIC MEETING ON THEIR PREMISES. A FEW HUNDRED PEOPLE TURN OUT AND AGAIN THE ATTENDEES WERE NOT HAPPY ABOUT NOISE AND SLEEP DISRUPTION.

FOR THESE REASONS I MENTIONED ABOVE, THE TASK FORCE SHOULD HAVE RECOMMENDED AN OUT RIGHT BAN ON ALL ARRIVALS AND DEPARTURES FROM MIDNIGHT TO 7:00AM. HOW CAN THEY IGNORE THE OVERWHELMING RESPONSES FROM TWO SURVEYS AND FROM HOMEOWNERS LIVING IN THE OLDER ESTABLISHED NEIGHBOURHOOD, SUCH AS EAST RICHMOND?

A MEMBER OF THE COMMITTEE WAS QUOTED IN AN E-MAIL TO OTHER MEMBERS OF THE TASK FORCE; "I THINK WE SHOULD HAVE AN OPERATIONAL BAN FROM MIDNIGHT TO 7AM, CHAPTER 4 INCLUDED. A BAN IS A BAN. LET RICHMOND SLEEP." THE SAME MEMBER WAS QUOTED IN A NEWSPAPER ARTICLE. "VANCOUVER INTERNATIONAL AIRPORT IS A SOURCE OF IRRITATION. THE NOISE IS SOMETIMES UNBEARABLE. IT GOES ON FROM 10 AT NIGHT TILL SIX IN THE MORNING. MOST AIRPORTS IN CANADA HAVE CURFEWS."

FIRST HE WANTS TO BAN ALL FLIGHTS INCLUDING CHAPTER 4 FROM MIDNIGHT TO 7AM AND THEN HE TELLS THE MEDIA YVR IS A SOURCE OF IRRITATION AND THE NOISE IS UNBEARABLE AND THE AIRPORT SHOULD HAVE A CURFEW. THEN AT THE VERY LAST MEETING HE DECIDES TO TAKE THE LEAD ROLE TO OVERTURN WHAT THE COMMITTEE VOTED ON AT THE JUNE 18, 2009 MEETING, WHICH WAS FOR A COMPLETE BAN ON NIGHT FLIGHTS. YOU FIGURE IT OUT AND MAKE UP YOUR OWN MINDS WHAT IS GOING ON.

SO, IF THIS COMMITTEE IS GOING TO CHERRY PICK THE ISSUES IT FEELS LIKE SOLVING, BECAUSE IT IS AFRAID OF A CREDIBILITY GAP WITH YVR, AND BECAUSE ONLY 50 GRUMPY OLD PEOPLE IN EAST RICHMOND OUT OF A POPULATION OF 150,000 TURNED OUT TO VOICE THEIR CONCERNS ON SLEEP DISRUPTION, THEN THIS COMMITTEE HAS BEEN A WASTE OF TIME FOR THE RESIDENTS OF EAST RICHMOND.

I HOPE I CAN ELIMINATE ANY THOUGHTS YOU MAY HAVE ABOUT CHAPTER 4 AIRCRAFT. SOME MEMBERS WANT YOU TO BELIEVE THERE ARE NO CHAPTER 4 AIRCRAFT FLYING AT THIS PRESENT TIME.

AS I TOLD YOU IN MY LETTER DATED OCTOBER 25, 2009, THIS IS NOT TRUE. EVEN THE CONSULTANT HIRED BY THE CITY TO ASSIST THE TASK FORCE HAS CONFIRMED THERE ARE CHAPTER 4 AIRCRAFT FLYING TODAY. YOU MAY WANT TO ASK HIM WHY THE COMMITTEE DECIDED AGAINST BANNING OVER NIGHT FLIGHTS, OR DID HE SUGGEST IT WOULD NOT FLY WITH YVR.

SINCE THEY DECIDED NOT TO BAN ARRIVALS AND DEPARTURES AFTER MIDNIGHT BUT CONSIDERED FLIGHT PATH CHANGES AND FLOAT PLANES IN THE AREAS AFFECTED BY THEIR COMMUNITIES WITHIN RICHMOND, THE TASK FORCE HAS CREATED A NEIGHBOURHOOD DIVISION WITHIN OUR CITY.

EVEN IN THEIR OWN REPORT THEY CONSIDER WEST RICHMOND TO BE NOISE SENSITIVE AREA AND THOMPSON AND TERRA NOVA AREAS AS SIGNIFICANT SOURCE OF NOISE FOR THE RESIDENTS. SO WHY ARE THE RESIDENTS OF EAST RICHMOND BEING TREATED DIFFERENTLY BY THIS COMMITTEE?

IT IS BEYOND ME WHY WE WANT TO WAIT AND SEE IF THE NEW AIRCRAFT FROM BOEING ARE AS QUIET AS SOME MEMBERS OF THIS COMMITTEE ARE SUGGESTING. INSTEAD THEY ARE GIVING THE AIRLINE INDUSTRIES AND YVR CARTE BLANCHE FOR WHATEVER REASONS. I DON'T THINK IT HAS ANYTHING TO DO WITH A CREDIBILITY ISSUE. AS OF DEC 12, 2009 ON THE NATIONAL NEWS IT WAS CONFIRMED THE NEW DREAM-LINER BUILT AT BOEING AND SCHEDULED FOR RELEASE SOON, HAS OVER 900 ORDERS CONFIRMED. HOW MANY IS IN THE WORKS FOR AIR CANADA?

MR. MAYOR AND MEMBERS OF COUNCIL, WE WANT THE SAME TREATMENT THE REST OF RICHMOND WAS GIVEN BY THIS COMMITTEE. WE ARE ASKING YVR, NAV. CANADA AND DEPARTMENT OF TRANSPORT TO BE GOOD CORPORATE CITIZENS AND ALLOW THE RESIDENTS IN OLDER ESTABLISHED NEIGHBOURHOOD TO HAVE SEVEN HOURS OF SLEEP PER NIGHT - MIDNIGHT TO 7AM.

THAT IS NOT ASKING FOR VERY MUCH. LETS FACE IT, YVR EXECUTIVES HAVE THE PRIVILEGE OF WORKING IN SOUND PROOF ENVIRONMENT DURING THE DAY AND THEN GO HOME AT NIGHT TO GET A GOOD NIGHT REST WHILE WE SUFFER FROM AIRCRAFT NOISE DUE TO ARRIVALS AND DEPARTURES AFTER MIDNIGHT. THEY NEED TO THINK OF THE IMPACT ON THE COMMUNITIES CONCERNING NIGHT TIME ARRIVALS AND DEPARTURES AND NOT ONLY THE BOTTOM-LINE.

MR MAYOR ON DECEMBER 17, 2009, YOU RECEIVED A LETTER ADVISING THAT THE CITY OF SURREY COUNCIL ENDORSED A MOTION TO BAN ALL NIGHT TIME FLIGHTS AT YVR. THIS RECOMMENDATION ENDORSED BY SURREY WAS JUST WHAT THE COMMITTEE HAD AGREED TO IN JUNE 2009. IN AN EXCHANGE OF LETTERS BETWEEN YOU AND MAYOR WATTS IN JANUARY 2009, RE; MULTI-CITY CO-ORDINATION FOR AIRPORT NOISE MITIGATION - YOU WRITE "WITH A VIEW TO ENCOURAGING A JOINT EFFORT TO ACHIEVE MUTUALLY BENEFICIAL CHANGES TO AIRCRAFT AND AIRPORT OPERATIONS TO MINIMIZE NOISE IMPACTS, AND YOU LOOK FORWARD TO CONTINUING JOINT-DISCUSSION OF THIS IMPORTANT REGIONAL ISSUE"

THERE WAS AN ARTICLE IN THE VANCOUVER SUN IN DECEMBER ABOUT AIR CHINA TRYING TO HAVE ALL THEIR NEW FLIGHTS TO LEAVE AFTER MIDNIGHT SO THEIR BUSINESS TRAVELLERS CAN ARRIVE BACK IN CHINA FOR A MORNING CUP OF COFFEE. IF AIR CHINA GETS THIS ENDORSEMENT FROM YVR, YOU CAN EXPECT EVERY OTHER AIRLINE FLYING TO ASIA TO DO THE SAME. THIS KIND OF INSANITY MUST STOP. WHY DO THE CITIZENS HAVE TO SUFFER WITH NIGHT TIME FLIGHTS BECAUSE YVR WANTS TO IMPROVE THEIR BOTTOM-LINE ON OUR BACKS? LET RICHMOND SLEEP.

MR MAYOR AND COUNCILLORS, I WOULD RECOMMEND YOU SUPPORT THE FOLLOWING RECOMMENDATIONS TONIGHT AND GIVE YOUR STAFF CLEAR INSTRUCTION TO GO BACK TO THE TASK FORCE WITH THESE CHANGES OR JUST AMEND THE REPORT YOURSELVES.

RECOMMENDATIONS UNDER NIGHT OPERATION - PAGE 25

UNDER 9.C ADD CHAPTER 4 AFTER CHAPTER 3 AND CHANGE 6:30AM TO 7:00PM

DELETE 9.D

9. E NOW BECOMES 9. D

GOVERNANCE AND NOISE MANAGEMENT - PAGE 39

THIS WOULD BECOME THE NEW NUMBER 19

NAV.CANADA, DEPARTMENT OF TRANSPORT AND VANCOUVER INTERNATIONAL AIRPORT AUTHORITY SHALL BE REQUIRED TO BE MORE ACCOUNTABLE TO THE PUBLIC AND THE CITIES. THIS SHALL REQUIRE THE GOVERNMENT OF CANADA TO CHANGE LEGISLATION COVERING AIRPORT OPERATORS AND AERONAUTICAL OPERATORS.

THIS WOULD BECOME THE NEW NUMBER 20

YVR SHALL HOLD THEIR ANNUAL PUBLIC MEETING IN THE EVENING RATHER THAN THE EARLY AFTERNOON

DOUG LOUETH
4140 DALLYN ROAD
JANUARY 18, 2009

ATTACHMENTS

1. LETTER FROM MAYOR WATTS TO MAYOR BRODIE
2. LETTER FROM MAYOR BRODIE TO MAYOR WATTS
3. VIAA 2001 NOISE MANAGEMENT ANNUAL REPORT PAGE13 ONLY
4. REPRINT FROM AEF - PERSPECTIVE ON CHAPTER 4 NOISE STANDARDS
5. REPRINT FROM IATA - CHAPTER 4 STANDARDS - ONLY ONE-THIRD QUIETER
6. REPRINT FROM ICAO - RE-CERTIFICATION OF CHAPTER 3 TO CHAPTER TO 4
7. ARTICLE FROM RICHMOND REVIEW - NOISE BYLAW / NOISE EXPOSURE OVER 40DECIBELS LEAD TO SLEEP PROBLEMS
8. YVR WEB TRACK REGISTERING 89 DECIBELS OVER MY HOUSE AT 2:36AM
9. YVR WEB TRACK REGISTERING 76 DECIBELS OVER MY HOUSE AT 1:41AM
10. BOEING FINAL PRODUCTION OF A 757 IN 2005 IS A CHAPTER 4
11. E-MAILS FROM ED KAPLANIAN (BOEING SPEC. PROJ. MANAGER) CONFIRMING OTHER AIRCRAFT AS CHAPTER 4
12. REPRINT FROM NOISEBLOG CONFIRMING BOEING 737-600 & AIRBUS A380 CHAPTER 4



City of Richmond

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Malcolm D. Brodie
Mayor

February 2, 2009

Mayor Dianne L. Watts
City of Surrey
14245 56th Avenue
Surrey, BC V3X 3A2

MAYOR'S OFFICE
Received Feb 5/09
File No. 0480-0M

Dear Mayor Watts: *Dianne*

Re: Multi-City Co-ordination for Airport Noise Mitigation

Thank you for your correspondence of January 21, 2009 regarding aircraft and aircraft noise. As you were kind enough to update me on the City of Surrey's activities on this issue, I would like to inform you of our recent activities on this same topic.

The City of Richmond formed the Richmond Airport Noise Citizens Advisory Task Force, which has been meeting monthly since September 2008. Ms Hannah Newman from the Surrey Airspace Task Force attended the December 2008 Task Force meeting, at which it was mutually agreed that members of each Task Force would be welcome to attend each other's meetings and that the two Task Forces would share information to expand their knowledge base, avoid duplication of effort and co-ordinate activities.

The Task Force held its first public meeting on January 29, 2009 to hear the concerns of our community regarding airport noise. A common message expressed by attendees was frustration at the lack of any meaningful responses by the Vancouver Airport Authority, NAV Canada and Transport Canada to address their concerns, which primarily relate to night-time operations, engine run-ups, float plane operations, and over-flights by smaller commercial aircraft over residential areas.

The Task Force is expected to complete its mandate in June 2009, at which time it will present recommendations to Richmond City Council to address the identified concerns of our community. Upon Council endorsement of the recommendations, we would be happy to share them with all municipalities with a view to encouraging a joint effort to achieve mutually beneficial changes to aircraft and airport operations to minimize noise impacts.

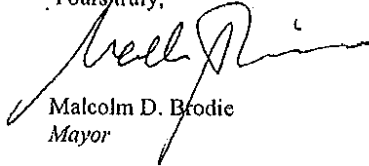
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I anticipate that a recommendation will be to seek the involvement of Metro Vancouver, as aircraft and airport noise is a regional issue that should involve all municipalities in order to achieve equitable outcomes. In particular, the City believes that the development of a regional airport strategy would be a key component of any solution.

In the interim, I look forward to continuing joint discussion of this important regional issue at your convenience.

Yours truly,



Malcolm D. Brodie
Mayor

cc: Russ Hiebert, MP
Nina Grewal, MP
Dona Cadman, MP
John Cummins, MP
Alice Wong, MP
Mayor Catherine Ferguson, City of White Rock
Mayor Lois Jackson, Corporation of Delta

Full text of UBCM (Union of BC Municipalities) 2008 resolution

B111 NAV CANADA CONSULTATION Surrey

WHEREAS the Aeronautical Study's changes implemented by Nav Canada on May 7, 2007 have negatively impacted many residents in the Lower Mainland;
AND WHEREAS the impacted communities and residents were not consulted during the Aeronautical Study;
AND WHEREAS Nav Canada's governance model does not require consultation with communities or affected municipalities where air traffic changes take place;
AND WHEREAS there is not currently a requirement for an environmental impact study to take place when considering airspace changes;
AND WHEREAS the Minister of Transportation will only exert authority on issues concerning air safety:

THEREFORE BE IT RESOLVED that the Union of BC Municipalities (UBCM) call upon the federal government to revisit the legislative framework of Nav Canada to ensure that proper consultation takes place with affected communities and residents;

AND BE IT FURTHER RESOLVED that the UBCM call upon the federal government to ensure that environmental impact studies take place prior to any airspace changes.

ENDORSED BY the Lower Mainland Local Government Association & Union of BC Municipalities



January 21, 2009

Mayor Malcolm Brodie
City of Richmond
Mayor's Office
6911 No. 3 Road
Richmond, BC V6Y 2C1

Dear Mayor Brodie,

I wanted to update you on the activities of the City of Surrey in relation to aircraft noise mitigation efforts and to solicit your support for concerted multi-city co-operation on this issue.

First, I would like to draw your attention to the endorsement of the UBCM Resolution B111 (full text below) in which the UBCM has asked the federal government to revise its Nav Canada legislation giving local governments and communities affected by flight path changes an opportunity to be consulted.

Second, I applaud the creation of the Richmond Airport Noise Citizens Advisory task force. As a result of the strong negative reaction from Surrey's residents to the new air routes imposed since May 2007, I created the Surrey Airspace Task Force (formerly the Nav Canada Working Group) to identify possible solutions. The city hired a consultant to investigate our options but we have not been able to persuade Nav Canada to implement any of the consultant's recommendations. The Task Force, composed of residents, city councillors and staff are continuing to meet to find other ways to bring about change with Nav Canada and the Vancouver Airport Authority.

I urge you to join forces with Surrey to wage a multi-city effort to investigate ways to improve the quality of life for those affected by aircraft noise. We all recognize that the airport is an important component of strong economic growth in the region. However, this has to be weighed against the effects it has on our local citizens. Other jurisdictions, notably Seattle (SeaTac), take a much more proactive approach to involving local concerns regarding health, social and environmental impacts.

I look forward to having the opportunity to discuss this issue with you. While lobbying efforts continue with some of the federal MPs from the Lower Mainland, I believe that we can move

towards finding solutions that are satisfactory to all of us together with the strong group of concerned residents of Surrey, Delta, Richmond and White Rock,

I will be in contact with you to discuss your thoughts and further action regarding a concerted multi-city co-operation.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Dianne L. Watts', written in a cursive style.

Dianne L. Watts
Mayor

cc. Russ Hiebert, MP
Nina Grewal, MP
Dona Cadman, MP
Mayor Catherine Ferguson, City of White Rock
Mayor Lois Jackson, Corp. of Delta

Ideally, an operator would retire a Chapter 2 aircraft and replace it with an original equipment manufacturer (OEM) Chapter 3 aircraft; however, there are a number of less-expensive after-market modifications to bring an OEM Chapter 2 aircraft into compliance with Chapter 3 requirements. These modifications include engine replacement, installation of hush-kits, or airframe/flight procedure modifications and have proved more economically viable for some operators.

While these modifications allow the aircraft to comply with minimum Chapter 3 certification requirements, they may not necessarily make the aircraft quieter to the human ear. The discrepancy between the noise performance of a Chapter 2 aircraft that has been modified to meet Chapter 3 certifications and an OEM Chapter 3 aircraft is a major dilemma for airport operators.

Therefore, while supportive of the existing Chapter 2 phase-out, the Airport Authority continues to support the adoption of more stringent noise certification along and a new phase-out schedule through its role in Airports Council International (ACI).

2.4 CIVIL AVIATION ENFORCEMENT (TRANSPORT CANADA)

While responsibility for noise management at YVR rests with the Airport Authority, enforcement of all published procedures is the responsibility of Transport Canada Civil Aviation Enforcement. Violations of published procedures can result in Transport Canada Civil Aviation Enforcement assessing fines of up to \$5,000 for individuals and \$25,000 for corporations. Suspected violations may be referred to Transport Canada through a variety of channels, including the Airport Authority, Air Traffic Control (ATC) and the general public.

The Airport Authority reviews daily aircraft operations to identify suspected deviations to the published NAP. Should an operator be suspected of deviating from the published NAP and if weather, mechanical, or ATC delays were not factors for the deviation, the details are reported to Transport Canada Civil Aviation Enforcement for further investigation and possible enforcement.

In 2001, there were no suspected violations of the published NAP. In fact only one fine was ever issued for operations at YVR. This occurred in 1998 after the Airport Authority found and reported an operator of violating the midnight to 6:00am departure restriction on Chapter 2 jet aircraft.

3.0 NOISE MONITORING AND FLIGHT TRACKING DATA

3.1 AIRPORT NOISE MONITORING AND FLIGHT TRACKING SYSTEM

The Airport Noise Monitoring and Flight Tracking system was installed in early 1995, and replaced an old Noise Monitoring System in operation since 1987. The Airport Noise Monitoring and Flight Tracking System is developed by Lochard Pty. Ltd. of Melbourne, Australia and similar Lochard systems are installed at other airports in Asia, Australia, Canada, Israel, Europe, and the United States.

The Airport Noise Monitoring and Flight Tracking System at YVR consists of 16 permanent noise monitoring terminals (NMTs), a Sun Enterprise 250 server, and a communications computer dedicated to handling modem interfaces to the NMTs and Nav Canada's radar. Users access the system from desktop computers using Exceed, an X-Windows emulator. Figure 10 illustrates the location of the 16 NMTs. Noise data collected by the system is used for:

- assessing the noise regime in the airport vicinity;
- identifying trends;
- periodically determining single event noise levels (SELs) for aircraft; and,
- consulting with airlines to minimize noise via noise abatement procedures (NAP).

The NMTs measure real-time noise levels and the data is transmitted to the main communications computer at the airport. By integrating radar flight track information, the system facilitates the determination of aircraft related noise at the NMT sites.

3.2 NEW NOISE MONITORING TERMINAL #16 - BURNABY

In anticipation of using the north runway for departures to reduce delays, a NMT was installed in Burnaby to assess the changes in noise exposure that may be caused by north runway departures.

In selecting this site for the NMT, consideration was given to: proximity to aircraft flight paths; proximity to noise sensitive land uses; measurement requirements; background noise levels; site access and security; land ownership; proximity to power and communication connections; licence agreements for land/services; and terrain and building interference.

ANNUAL AVERAGE NOISE LEVEL (dBA) AT EACH NMT																
YEAR	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16
1997	65	72	57	69	60	59	53	54	58	54	63	69	-	-	-	-
1998	67	71	57	68	60	62	53	57	57	54	62	68	-	-	-	-
1999	64	71	58	68	60	62	53	54	58	66	65	69	66	55	54	-
2000	62	69	56	68	60	60	53	53	69	64	62	67	62	55	53	-
2001	62	68	55	67	59	60	52	55	60	56	62	71	62	56	53	55

FIGURE 11

- Aviation Environment Federation - <http://www.aef.org.uk> -

An NGO Perspective on Chapter 4 Noise Standards

Posted By [admin](#) On June 30, 2004 @ 12:49 pm In [Briefing Sheets](#) | [Comments Disabled](#)

In 2001, ICAO agreed a new certification standard to be introduced for all new subsonic jet aircraft entering service from 1 January 2006 (to be known as Chapter 4). The new standard improves on the existing Chapter 3 standards by a cumulative margin of 10 dBA.

Background

In 2001, ICAO agreed a new certification standard to be introduced for all new subsonic jet aircraft entering service from 1 January 2006 (to be known as Chapter 4). The new standard improves on the existing Chapter 3 standards by a cumulative margin of 10 dBA. An NGO Perspective on Chapter 4 At face value, this may appear a significant step forward, and one that local communities should embrace. Yet closer examination reveals a different picture. Noise certification of aircraft requires three measurements: one measured on approach, one on take-off, and a third at a sideline measurement point. The new Chapter 4 standard is based on the sum of the improvements at these three measurement points. In other words, the average reduction at each of the three measurement points is a little over 3 dBA. Against average background noise levels, changes of this magnitude can be very difficult to perceive for the average person. By the time the new standard comes into force, it will have been nearly 30 years since the introduction of the current Chapter 3 standard. Is this really the best we can expect from an industry that prides itself on its rate of technological innovation? Quite simply, the answer is no. Many aircraft in service today already improve upon Chapter 3 standards by cumulative margins in excess of 20 dBA, while over 95% of the current in-production aircraft are already capable of meeting the new standard, and around 75% are capable of meeting an improvement of at least 14 dBA. Nevertheless, this recommendation may still have met with some acceptance from airport neighbours if it had been accompanied by a decision to phase-out the worst performing Chapter 3 aircraft. Recent experience, as noted above, has shown the benefits of phasing-out Chapter 2 aircraft, and a decision to extend this policy further to some, or all, Chapter 3 aircraft would have been extremely popular amongst local communities. A few disproportionately noisy movements are frequently responsible for the majority of noise complaints at airports. Hence, it is commonsense that removing some of the worst performing aircraft from the fleet would have brought a clear environmental benefit. Instead, CAEP's analysis failed to show any overall cost-effective benefit from a phase-out, and no agreement was forthcoming on implementing a phase-out strategy. As a result, Chapter 4 will do little to offset a growing aircraft noise problem in many regions: ICAO's own analysis highlighted, that without any action, the number of people affected by aircraft noise in the countries implementing the Chapter 2 phase-out will increase by 21% between 2002 and 2020. Yet not all regions will be impacted in the same way: this significant increase hides the fact that the number of people affected by noise in Europe and, in the Australia, New Zealand and Japan region, will increase by 42% and 169% respectively during this period, while the increase in the US and Canada will only be 3.5%. From the perspective of airport neighbours, this outcome was disappointing and totally unacceptable, and is likely to lead to increasing pressure for local airport restrictions, opposition to new developments, and a deterioration in the often fragile relationship between airports and their communities.

Article printed from Aviation Environment Federation: <http://www.aef.org.uk>

URL to article: <http://www.aef.org.uk/?p=118>



Aviation Environment

Aircraft Noise

Becoming Less Noisy

Thanks to technology, today's aircraft are 50% quieter than 10 years ago. Research initiatives target a further 50% reduction by 2020.

The number of people exposed to aircraft noise worldwide has gone down – by about 35% between 1998 and 2004.

Chapter 4 Standard - One Third Quieter

On 1 January 2006, a more stringent [noise certification standard](#) (pdf, 72kb) - Chapter 4 - was introduced, for new aircraft designs. Chapter 4 aircraft are at least one third quieter than those currently certified to the Chapter 3 standard.

Implementing a Balanced Approach to Aircraft Noise Management

ICAO's [Balanced Approach](#) (pdf, 110kb) provides a transparent process for identifying a specific noise problem at an airport and then evaluating four types of measures to reduce noise, to see how the maximum environmental benefit can be achieved, most cost effectively.

IATA worked closely with ICAO's Committee on Aviation Environmental Protection (CAEP) to develop guidance material on the [Balanced Approach](#), which ICAO has urged all regulators worldwide to implement.

IATA Policy on Night Time Operational Restrictions

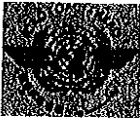
Night time operational restrictions are increasing, especially in Europe. At some airports, night flights are completely banned. These restrictions can have a serious impact on the economy, next-day delivery services, home-based charters, freight services and intercontinental flights. They can also increase daytime congestion.

IATA has developed a [policy on night flights](#) (pdf, 65.2kb). When appropriate, IATA assists its Member Airlines with lobbying efforts in response to proposed restrictions.

IATA Supports ICAO's Work

IATA and its Environment Committee ([ENCOM](#)) provide noise-related policy input to ICAO and CAEP, ensuring airline views are represented at meetings and in ICAO decisions.

See also [IATA Environmental Review 2004](#), part 1, "Towards a quieter future".



International Civil Aviation Organization Air Transport Bureau (ATB)

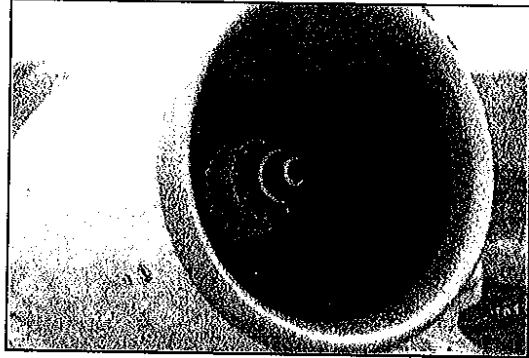
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ENVIRONMENT (ENV) SECTION

AIRCRAFT NOISE

Balanced Approach to Aircraft Noise Management

In 2001, the ICAO Assembly endorsed the concept of a "balanced approach" to aircraft noise management (Appendix C of Assembly Resolution A35-5 (pdf)). The Assembly in 2007, reaffirmed the "balanced approach" principle and called upon States to recognize ICAO's role in dealing with the problems of aircraft noise (Appendix C of Assembly Resolution A36-22 (pdf)). This consists of identifying the noise problem at an airport and then analysing the various measures available to reduce noise through the exploration of four principal elements, namely reduction at source (quieter aircraft), land-use planning and management, noise abatement operational procedures and operating restrictions, with the goal of addressing the noise problem in the most cost-effective manner. ICAO has developed policies on each of these elements, as well as on noise charges.



Reduction of Noise at Source

Much of ICAO's effort to address aircraft noise over the past 30 years has been aimed at reducing noise at source. Aeroplanes and helicopters built today are required to meet the noise certification standards adopted by the Council of ICAO. These are contained in Annex 16 — *Environmental Protection, Volume I — Aircraft Noise* to the Convention on International Civil Aviation, while practical guidance to certifying authorities on implementation of the technical procedures of Annex 16 is contained in the *Environmental Technical Manual on the use of Procedures in the Noise Certification of Aircraft* (Doc 9501).

The first generation of jet-powered aeroplanes was not covered by Annex 16 and these are consequently referred to as non-noise certificated (NNC) aeroplanes (e.g. Boeing 707 and Douglas DC-8). The initial standards for jet-powered aircraft designed before 1977 were included in Chapter 2 of Annex 16. The Boeing 727 and the Douglas DC-9 are examples of aircraft covered by Chapter 2. Subsequently, newer aircraft were required to meet the stricter standards contained in Chapter 3 of the Annex. The Boeing 737-300/400, Boeing 767 and Airbus A319 are examples of "Chapter 3" aircraft types. In June 2001, on the basis of recommendations made by the fifth meeting of the Committee on Aviation Environmental Protection (CAEP/5), the Council adopted a new Chapter 4 noise standard, more stringent than that contained in Chapter 3. Starting 1 January 2006, the new standard became applicable to newly certificated aeroplanes and to Chapter 3 aeroplanes for which re-certification to Chapter 4 is requested.

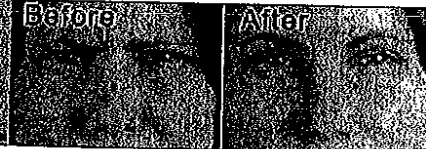
A Noise database Noise dB was developed in 2006 by the French DGCA under the aegis of the International Civil Aviation Organization (ICAO). The site is in its final experimental phase and data should be considered preliminary. The final Noise dB was made available in June 2006. The goal of this database is to provide certification noise levels for each aircraft type guaranteed by certification authorities. The Noise dB application is intended as a general source of information for the public.

Land-use Planning and Management

Land-use planning and management is an effective means to ensure that the activities nearby airports are compatible with aviation. Its main goal is to minimize the population affected by aircraft noise by introducing land-use zoning around airports. Compatible land-use planning and management is also a vital instrument in ensuring that the gains achieved by the reduced noise of the latest generation of aircraft are not offset by further residential development around airports. ICAO guidance on this subject is contained in Annex 16, Volume I, Part IV and in the *Airport Planning Manual, Part 2 — Land Use and Environmental Control* (Doc 9184). A revised edition of this manual is being produced. The manual provides guidance on the use of various tools for the minimization, control or prevention of the impact of aircraft noise in the vicinity of airports and describes the practices adopted for land-use planning and management by some States. In addition, with a view to promoting a

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RICHMOND REVIEW

Noise bylaw needs review, says councillor

By Martin van den Hemel - Richmond Review

Published: October 30, 2009 1:00 PM
Updated: October 30, 2009 1:22 PM

0 Comments

A veteran Richmond councillor believes a local bylaw may yet come to the aid of Riverwind residents, who for the past three months have been subjected to round-the-clock noise that's been more than simply an annoyance.

Exposed to noise levels that the World Health Organization, in a new report released earlier this month, says can "damage people's health", the No. 2 Road residents have been fighting for a return to the relatively tranquil times before True World Foods relocated in a warehouse adjacent to their homes in late July.

That's when True World installed five compressors to power refrigeration and freezer units, and the continuous unsettling noise began.

Coun. Greg Halsey-Brandt said he believes that the authors of the bylaw that limits noise levels to 45 decibels in Riverwind's light industrial zoned neighbourhood never intended that figure to be applied to the interior of a house, let alone a bedroom.

He believes that the city's health department—which has already signed off on the matter after confirming interior noise levels finally dipped below 45 decibels—misinterpreted the intent of the bylaw.

Halsey-Brandt said he'll ask staff, including the city's legal department, to review the bylaw, to ensure it is being properly applied.

In this case, chief public health inspector Steve Chong said the noise readings at the property line—where noise readings are normally taken to ensure bylaw compliance—between True World's warehouse and Riverwind were actually below the 45 decibel limit, which led to the testing being done in the bedrooms where the readings were initially much higher.

But Halsey-Brandt believes the wall and roof of the warehouse shielded much of the noise from the ground level readings, as the sound from True World's five compressors sits on the roof more than two storeys up and projects directly at the upper floors of the multi-family residential complex.

Halsey-Brandt would like to see the noise readings taken in direct line-of-sight between the compressors and the residents, at the property line, even if it's 30 feet up.

"These bylaws were probably crafted back when there was mostly single family homes, and nobody gave much thought to the juxtaposition of apartments or commercial to industrial or industrial to residential and that sort of stuff," he said.

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Richmond Review - Noise bylaw needs review, says councillor
Dr. Rokho Kim, project leader of the World Health Organization report Night Noise Guidelines for Europe, said scientific evidence indicates the levels of noise Riverwind residents have been continuously exposed to for the past three months can cause negative health effects.

"I think that's a really serious situation that should be resolved quickly. And I think there are many acoustic solutions. I don't understand why the situation was not resolved quickly because as far as I know there are many technical possibilities to reduce the noise spreading out from the machine."

Potential health impacts from exposure to noise levels of between 32 and 42 decibels range from sleep deprivation to learning difficulties to depression and cardiovascular problems, Kim said.

"If people are constantly exposed to noise levels in the bedroom above 40 (decibels), first of all sleep disturbance is a big problem. Chronic sleep disturbance can lead to mental illnesses, could lead to depression and anxiety, even though it may not be a major depression or a serious anxiety," he said.

Kim said children who don't sleep very well are more likely to "make some type of domestic accidents which could lead to injuries."

Outside noise levels of 55 to 60 decibels were "clearly linked to cardiovascular effects" the report found, Kim said.

Halsey-Brandt said perhaps it's time to update and modernize city noise bylaws to come in line with current scientific knowledge.

"I think it's really up to our staff to have a look at the bylaw to see what their interpretation of the property line is...if it is the airspace, measured up through there, then they have to go back and measure at that elevation. If it's not, if it is at the ground level...then we're going to have to amend the bylaw and it might be an opportune time to get a report on that span of noise from the low frequency to the high frequency as well, so we can be a little bit more specific in what the people should be reading with their machines."

North Vancouver acoustical engineer Doug Whicker said the true noise levels inside Riverwind homes may actually be higher than indicated if the sound from the compressors is of the low-frequency variety.

Noise meters factor out low-frequency booming types of noise, meaning a reading of 45 decibels in a bedroom may actually be closer to 60 decibels.

Dr. Kim said low frequency noises have actually been linked to more health problems and sleep disturbances than mid frequencies

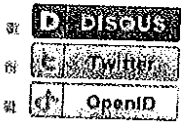
v2



COMMENTS

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turquoise1 A very nasty but easily imaginable variation of same scenario: just a slight change of costume /props. Picture a man looking just like your average seasonal duck hunter in the very same aluminum...

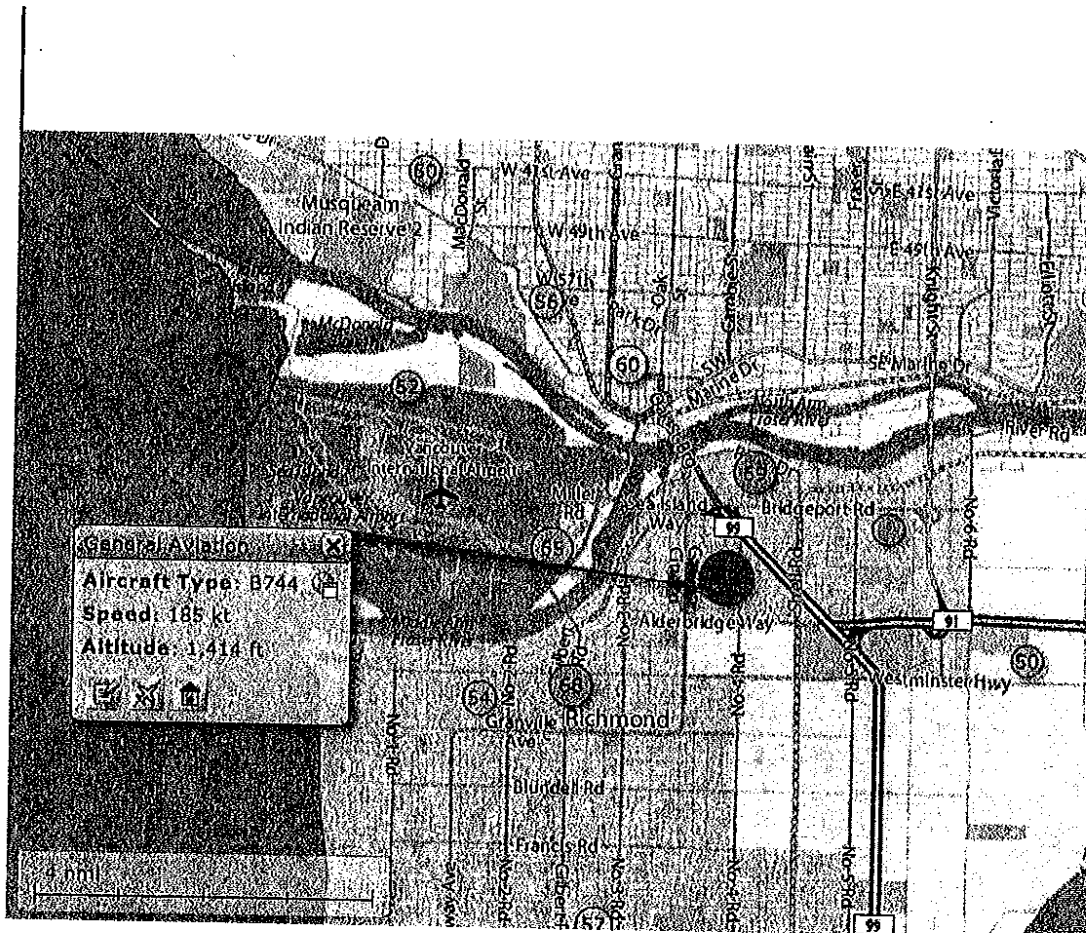
From: Doug Louth <dmlouth@shaw.ca>
Subject: Fwd: Your webtrak flight from 15Oct at 0236
Date: October 29, 2009 11:18:23 AM PDT
To: Glen Livingstone <2x2glen@telus.net>
▶ 1 Attachment, 400 KB



Glen,

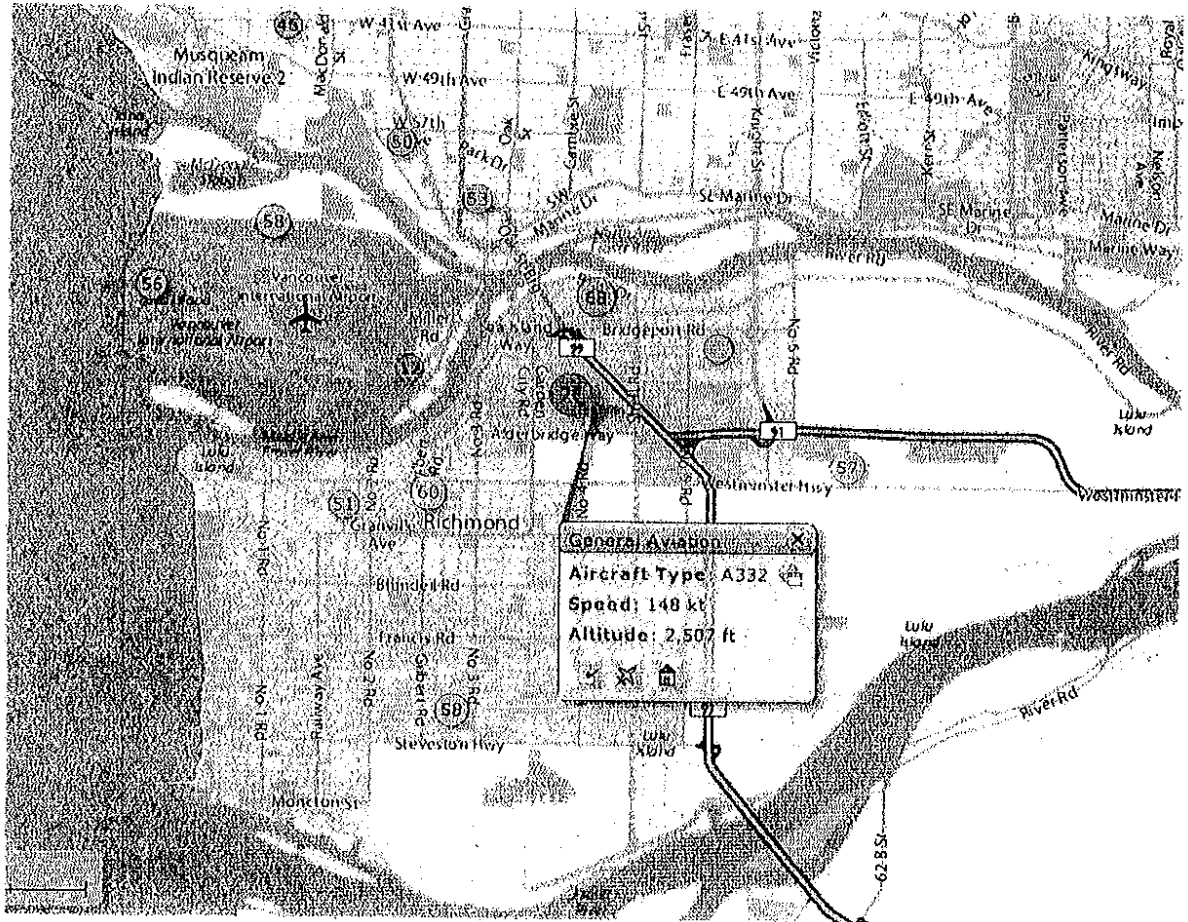
I'm sending you the info on how loud the flight was when it flew over my house. A picture is worth a million bucks. Can't imagine those chapter 3 to chapter 4 with a few modifications, flying after midnight. It will be very hard to convince me that the airline industries, supported by the IATA, will try and convince the T/F into allowing those modified chapter 3 into chapter 4 to fly after midnight. YVR and the industries have give us the shaft over the years, I JUST DON'T TRUST THEM.

Doug



13 Nov 2009

1:41 am





MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT

Manufacturer AIRBUS
 Commercial name
 Type A330 Version 201

ENGINE

Type CF6-80E 1A2
 Number of Engines 2
 Nacelle short duct
 Propeller
 Thrust (Sea Level Static) 300.25 kN
 ByPass Ratio(SLS) 5.1
 Maximum Take-Off Mass 230000 (Kg) Slats/Flaps 20/14
 Maximum Landing Mass 180000 (Kg) Slats/Flaps 23/32

NOISE CERTIFICATION STANDARD

Noise Regulation ICAO Annex 16 Volume I/FAA FAR Part 36/EASA
 Chapter or Stage 4

MODIFICATIONS

	Aircraft	Engine
Modification Number	55005	
Modification Description	Chapter 4/Stage 4 re-certification	

	Lateral/Full-Power	Approach	Flyover
Noise Level (EPNdB)	96.9	98.7	93.3
Noise Limit (EPNdB)	101	104.3	98
Margin (EPNdB)	4.1	5.6	4.7

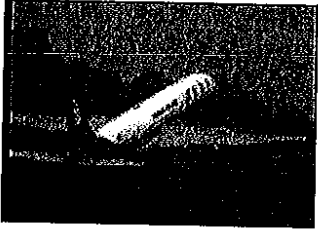
Cumulative Margin (EPNdB) 14.40

Remarks Weight variant n° 20. Dossier 00G 090 P4024/C22 issue 1, Chapter 4/Stage 4 re-certification (dossier 00F 090 P4016/C00 issue 1)

Date of Certification 24/03/06 Certification Authority EASA



Boeing Closes Chapter in Aviation History with Final 757 Delivery



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NOTE: BCA photo release images are available on boeingmedia for 12 months from their release date.

SEATTLE, April 28, 2005 -- Boeing [NYSE:BA] yesterday concluded the remarkable 23-year run of the 757 passenger airplane by delivering the final one to Shanghai Airlines.

The airplane is the 1,050th Boeing 757. The 757 is one of seven commercial models that have sold more than 1,000 airplanes, and more than 1,030 of the 757s are still in service.

"This is a special day for Boeing. The fact that more than 1,000 757s were selected by 55 customers and remain in service today is a great tribute to the imagination and skill of the Boeing employees who designed and built them," said Boeing Commercial Airplanes President and Chief Executive Alan Mulally. "The 757 holds a special place in aviation history for its efficiency and environmental responsibility, and we continue that heritage of innovation with our current family of airplanes."

Continuing the 757's legacy of innovation, the airplane delivered yesterday is the first 757 certified and delivered as a Chapter 4 airplane, meaning it meets noise limits scheduled to go into effect Jan. 1, 2006.

The airplane is the 13th 757-200 delivered to Shanghai Airlines, which took delivery of its first 757 in August 1989.

"With the delivery and addition of the last two Boeing 757-200s, these fuel-efficient airplanes will continue to be a mainstay within our fleet," said Captain Ding Xin Guo, senior vice president of Shanghai Airlines. "Shanghai Airlines is dedicated to becoming the most preferred airline in China. The 757 airplanes will provide our passengers with a safe and comfortable flight experience."

Established in 1985 in China's largest city, Shanghai Airlines operates 33 Boeing jetliners including 15 Next-Generation 737s, 12 757-200s, five 767-300s and one 737-300 Freighter. The carrier operates more than 100 domestic routes and six regional services to neighboring countries and areas in Asia.

Boeing in late 2003 decided to end 757 production because the increased capabilities of the newest 737s and the potential of the all-new Boeing 787 fulfill the 757 market's needs. The airplane delivered today rolled off the company's Renton, Wash., assembly line last October.

The 757 fleet worldwide has flown more than 35 million hours, which is equivalent to one airplane flying

From: "Kaplanian, Ed" <ed@futureofflight.org>
Subject: **RE: Your E-mail**
Date: November 2, 2009 9:11:51 AM PST
To: Doug Louth <dmlouth@shaw.ca>
Cc: Toni Olson <toni@futureofflight.org>

Good Morning Doug :

The Boeing aircraft mentioned are certified as chapter 4 from the get go. I do not know what press release you are referring to on the 757. To my knowledge the 757 does not meet chapter 4, as the last aircraft was phased out of production in 2003. I hope this helps,

Ed Kaplanian

From: Doug Louth [mailto:dmlouth@shaw.ca]
Sent: Saturday, October 31, 2009 6:58 AM
To: Kaplanian, Ed
Subject: Re: Your E-mail

Hi Ed,

Thank you for the following information. I am a little confused, but I'm sure you will clear it up for me. In checking: <http://noisedb.stac.aviation-civile.gouv.fr/find.php> under manufacturer Boeing and then I choose chapter 4, I get a list of Boeing aircraft listed as chapter 4. In your e-mail, you mention some of these products MEET THE CHAPTER 4 STANDARDS. What I would like to know, if those aircrafts are certified as chapter 4, or as you stated in your e-mail, they just meet the standards, but are still certified as chapter 3 under ICAO, but can be re certified to chapter 4 if you applied.

In addition to your e-mail, I discovered a press release stating Boeing closed a chapter in its history by making a final deliver of 757. In the press release it states, it is the **first** 757 certified as a chapter 4 and meets noise limits standards by ICAO scheduled for Jan 1/06. I'm assuming the press release is correct which is the **only 757** that meets chapter 4 standards. All others produced before the last one are chapter 3.

Once again, thank you for the info, and would very much appreciate your response to the above.

Doug

On 2009-10-30, at 9:24 AM, Kaplanian, Ed wrote:

Hi Doug:

Your e-mail was forwarded to me by Toni Olson to answer. The following is my response on the chapter 4 standards. You already know about the 787, the other Boeing products that meet the chapter 4 standards are the 777-200 LR models, the 777-300ER models both equipped with GE90 engines. The Next Generation 737 models equipped with the CFM56-7B engines. Sincerely,

Ed Kaplanian

Special Projects Manager
Future of Flight
425 438 - 8100 ext 229
ed@futureofflight.org

From: "Kaplanian, Ed" <ed@futureofflight.org>
Subject: **RE: Boeing: Boeing Closes Chapter in Aviation History with Final 757 Delivery**
Date: November 3, 2009 7:15:55 AM PST
To: Doug Louth <dmlouth@shaw.ca>

Hi Doug:

Thanks for the info, after I received your second email I did some digging on my own since I volunteer at the Boeing archives, and discovered that the first 757s produced only met chapter3 standards and the later produced met chapter4 standards.

All the best,
Ed

-----Original Message-----

From: Doug Louth [mailto:dmlouth@shaw.ca]
Sent: Monday, November 02, 2009 7:18 PM
To: Kaplanian, Ed
Subject: Boeing: Boeing Closes Chapter in Aviation History with Final 757 Delivery

Hi Ed,

Thanks again for the info. Below is the link where I found the final 757 as certified as chapter 4. See fourth para.

Doug

http://www.boeing.com/commercial/news/2005/q2/hr_050428g.html

NOISEblog

SUNDAY, 26 JULY 2009

Aircraft Noise at Source

The International Civil Aviation Organisation ([ICAO](#)) promotes a balanced approach to airport noise management consisting of four principle elements, namely: reduction of noise at source; land-use planning and management; noise abatement operational procedures; and aircraft operation restrictions. Each element represents a method of managing noise that, based on the particulars of a given airport, can be used in combination to manage or reduce aircraft noise. One of the most tangible of these four elements in managing aircraft noise levels is the *noise at source* (that produced by the aircraft itself). Over the last 30 years significant efforts have been aimed at producing quieter planes and, where other elements of the balanced approach have been exhausted or are not feasible, the continued advancement of aircraft technology, producing ever quieter planes, is often seen as a pre requisite to accommodating increased numbers of aircraft movements.

In the UK, like many other countries, the noise levels of civilian aircraft are classified based on the certification standards adopted by ICAO, the rules for which are set out in Annex 16 to the Convention of International Civil Aviation. So as not to inhibit safety or performance the ICAO standards do to themselves aim to drive legislation, but provide a classification of existing technology which airport operators or government regulators may adopt for implementation of their own environmental policies and practices. As technology has improved new certifications have been developed, such that Annex 16 consists of various chapters each corresponding to different stages of aircraft development. The first standard, Chapter 2, targets aircraft certificated prior to 6 October 1977, Chapter 3 aircraft certificated from 6 October 1977 and Chapter 4, the most recent, aircraft certified from 1 January 2006. The ICAO standards are applied when an aircraft design is first approved for operational use and do not prevent the use of existing designs, classified under a different standard, being used for the production of new aircraft. However, where an older aircraft (originally classified under, say, Chapter 3) meets the requirements of a later, more stringent, classification (say Chapter 4) manufactures may opt to re-certificate the aircraft designs.

As mentioned above, Annex 16 standards are not designed to correspond with restrictions on the use of a given aircraft *per se*; however, they do offer a bench mark where by noisier aircraft can be phased out or restricted - on 01 April 2002 European legislation banned the operation of 'Chapter 2' aircraft to/from all European airports.

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Although the different body/engine configurations and different series of the same design of aircraft can make it difficult to differentiate a Chapter 2 aircraft from a Chapter 3 or a Chapter 3 from a Chapter 4, for illustrative purposes below are some examples of aircraft belonging to different chapters:

Chapter 2 Aircraft (no longer in use within Europe): Boeing 737-200 (in production until 1988); 747-100 (the world's first 'jumbo jet', in production until 1986)

Chapter 3 Aircraft (characterised by more modern, quieter, jet aircraft): Boeing 737-300 (in production until 1999); Boeing 737-400 (in production until 2000); Boeing 747-400 (in service since 1989), Boeing 777 (in service since 1995); and Airbus A319 (in service since 1996).

Chapter 4 (at least one third quieter than those currently certified to the Chapter 3 standard, **IATA**): Airbus A380 (in service since 2007); Boeing 737-600 (in service since 1998).

The ICAO standards represent a useful means of categorizing aircraft (with regard to noise level); however, within each Chapter there is naturally going to be variation between aircraft - a 428 seat 747 'jumbo jet' is significantly more disruptive than an 80 seat Fokker 70, both of which are Chapter 3 aircraft. Indeed, Chapter 3 aircraft that exceed Chapter 3 noise standards but have not yet been reclassified as Chapter 4, may actually be quieter than a Chapter 4 aircraft.

Variation in noise level between different aircraft has important implications for the creation of a noise map based on ground observations. If a continuous series of measurements are taken at a given location, over time the average of those measurements will tend toward the true mean noise level experienced at that location; however, just a single measurement, which might observe a 'quiet' or 'noisy' aircraft, is prone to be unrepresentative of the typical level of noise.

When considering such a spatially distributed phenomenon as aircraft noise it is not practical to take a continuous series of measurements at all locations. This is especially true in the case with the *lhrnoisemap* project where data collection is opportunistic, based on volunteered geographical information (VGI). The accuracy of this method must therefore rely either on accommodating this uncertainty or assuming repeated sampling of the same location will occur over time - helping the sample become more representative of the true mean at that location. Although the latter is preferable, to achieve repeated samples comprehensively requires a very large number of observations (together with an according time span), and to a greater or lesser degree methods of accommodating the uncertainty will have to be given consideration.

Even if repeated sampling were comprehensively achieved this makes the additional assumption that these observations are random, namely that the

incidence of 'noisy' aircraft balances those of 'quiet'. Rather than aiming to achieve a random sample another approach might aim to sample only a selected class of the total population (i.e. only record the noisy aircraft). Doing so would mean that a resulting visualization would represent only that class of the population rather than the population itself; however, would result in more standardised samples, thus reducing the need for repeated sampling. To facilitate this approach in the final analysis of data volunteers are asked to include the type of aircraft in the description of their sample. Whilst it is not realistic to identify most aircraft types the Boeing 'jumbo' 747 represents one that, if visible, is recognisable to many people. In the analysis of the data being able to identify a particular type of aircraft, representative of a single class within the population, will provide a means of performing a more rigorous analysis and possibly a method of validating other results. (As mentioned above, although all 747s operating at Heathrow are classified as Chapter 3 aircraft, it must be acknowledged that different series' of the aircraft produce different levels of noise, relative though to the differences between small aircraft and large aircraft this might be considered negligible)

References

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<http://www.icao.int/env/noise.htm>

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Emissions Impossible, Aviation Environment Federation:

<http://www.hacan.org.uk/resources/reports/emissions.impossible.pdf>

Noise Certification Standards, IATA:

<http://www.iata.org/NR/rdonlyres/E57F6C76-4DB7-4A99-AC87-B2724AED97F9/0/Noisecertificationstandards.pdf>

Posted by IanT at 02:06

0 comments:

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