City of Richmond

Report to Committee

To General Purposes - May 20, 2003

To:	General Purposes Committee	**Date:**	May 2, 2003
From:	Terry Crowe Manager, Policy Planning	**File:**	0153-04
Re:	**NOISE MANAGEMENT PLAN UPDATE - VANCOUVER INTERNATIONAL AIRPORT AUTHORITY (VIAA)**		

Staff Recommendation

That the attached report, dated April 21, 2003, from the Manager, Policy Planning, be sent to the Vancouver International Airport Authority (VIAA) for information and input into the update of VIAA's Five-Year Noise Management Plan.

Terry Crowe
Manager, Policy Planning

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1002015

Staff Report

Origin

The Vancouver International Airport Authority (VIAA) is currently updating its Five-Year Noise Management Plan and is seeking community stakeholder input on issues and initiatives for consideration in the updated plan.

This report provides:

- information on current City policies which help to manage the impact of airport related noise;
- information on VIAA's current Noise Management program and plan, and
- summarizes airport-related noise issues and initiatives which have been raised by City staff and which should be considered by VIAA in its updated Noise Management Plan: 2004-2009.

Findings Of Fact

Official Community Plan Policy

The City's Official Community Plan (OCP) recognizes the impact of aircraft noise on the overall liveability and quality of life for Richmond residents and businesses. While recognizing the jurisdiction of the VIAA in managing aircraft noise associated with YVR, the OCP states the increasing importance that noise issues be addressed as volume of activity and the number of people affected increases and that the City and VIAA must work together towards aircraft noise management through a variety of measures. OCP policies address:

- the need to coordinate land use planning to provide for orderly development based on noise and safety considerations in areas under the flight path;
- the requirement for noise abatement covenants for sites being rezoned or subdivided for new residential development in areas requiring noise insulation;
- the need to continue to seek ways to reduce noise at the source, where feasible, through review and implementation of the VIAA's Noise Management Plan; and
- the need for community input through participation in the VIAA Noise Management Committee.

Noise Covenant Areas

The City's Airport Noise Policy adopted by Council on September 15, 1995 and incorporated into the OCP seeks to lessen the exposure to aircraft noise on the indoor living environment of new housing by way of noise insulation within specific areas of the City **(See Attachment 1).** The policy applies to properties requiring a rezoning and /or subdivision within identified areas and requires property owners:

- to sign a restrictive covenant agreeing to have residential buildings designed to incorporate adequate sound measures against aircraft noise, as a condition of rezoning/subdivision approval, and;
- retain a professional qualified in acoustics to determine the aircraft noise affecting the property and to determine the measures needed to satisfy CMHC noise insulation standards prior to submitting a building permit application.

VIAA Aeronautical Noise Management Program

VIAA manages airport related noise through its Noise Management Program which is aimed at minimizing the level of disturbance to those people living in communities in the vicinity of the airport while recognizing the legitimate need for continued aircraft operations. Key components of this program include:

- Published noise abatement procedures covering pilot take-off and landing procedures, preferential runway, hours of operation and aircraft type procedures;
- Airside operations directives (ground and maintenance operations);
- Ongoing noise monitoring and flight tracking systems;
- Participation and support of international efforts in developing new standards and technologies for noise mitigation;
- Receiving, reporting and responding to public questions and concerns;
- Enforcement by Transport Canada of published procedures;
- Managing and implementing initiatives in VIAA's Noise Management Plan; and
- Regular consultation with the VIAA Aeronautical Noise Management Committee.

VIAA Noise Management Plan: 1999-2003

An executive summary to the current VIAA Noise Management Plan is included as **Attachment 2** to this report. VIAA's Noise Management Plans must be updated and approved every five years and requires the approval of Transport Canada. The current plan was approved by Transport Canada in 1999 and includes 22 initiatives which were to be undertaken between 1999 and 2003. VIAA's Noise Management Annual Report for 2001 includes a summary of progress on addressing the initiatives and is included in **Attachment 3.**

VIAA Noise Management Committee

The VIAA Aeronautical Noise Management Committee includes citizen representatives from Vancouver, Richmond and Delta, municipal and provincial governments, industry associations, airport users, Transport Canada, NAV Canada and VIAA. Council appoints two citizen representatives to the Committee. A Policy Planning Department staff member also participates on the committee on behalf of the administration. The committee meets quarterly and provides a forum for the discussion and consideration of all airport-related noise management issues.

Noise Management Plan Update Process and Timelines

VIAA has proposed the following plan update process and timelines:

- March 3, 2003 - Presentations to General Purposes Committee
- March-June 2003 - Issue/Initiative Identification with community stakeholders
- August 2003 - Draft Plan prepared
- September 2003 - Draft Plan review by stakeholders
- October, 2003 - Final Draft Plan prepared
- December 2003 - Plan presented to YVRAA Executive and Board

Plan approval by Transport Canada would occur after December 2003.

Noise Exposure Forecasts

Noise Exposure Forecasts (NEF) are the official measurement used in Canada for aircraft noise assessment, and are used to delineate areas of high aircraft noise exposure, encourage compatible land use planning in the vicinity of airports, and predict annoyance caused by airport operations. NEF measure tolerance to aircraft noise and are based on the types of aircraft, the noise they make, their flight paths, frequency of flights and background (eg. ambient) noise levels. NEF provide the basis for Transport Canada's Land Use Planning Guidelines which are to be used by provincial and local governments in planning and development decision making in the vicinity of airports. NEF are also used for the purposes of providing recommended acoustic design criteria to obtain acceptable indoor noise levels for residential construction. **Attachment 4** provides a general interpretation of NEF contours.

Advisory Committee on the Environment (ACE) Input

At its regular meeting of March 19, 2003, ACE was provided with a presentation on the YVRAA Noise Management Plan update process by VIAA staff. Issues and questions raised by ACE at this session included:

- Effectiveness of noise mitigation measures at the Airport Fairmont Hotel and potential for other buildings such as a possible future trade and exhibition centre on Sea Island;
- Barriers to YVRAA making more progress on all of the initiatives including night flights and airport capacity;
- Impacts of projected growth and expansion at YVR;
- Consideration of noise berms in certain locations;
- Have other airports in the Lower Mainland (e.g. Boundary Bay and Abbotsford) been considered as alternatives to relieve congestion at YVR;
- Zoning and land use planning issues;
- Peak pricing policies to potentially ease traffic during the day (e.g. differential landing fees);

- Status of the current law suit with Bridgeport residents (YVRAA is now waiting on a decision by the Supreme Court of Canada if it will hear the case);
- Potential for surcharges for noisier aircraft; and
- Public Consultation and whether there will there be opportunities for broader, general public input into the process and to review the draft plan when it is produced?

ACE expressed an interest in reviewing the draft updated Noise Management Plan when it is prepared.

Analysis

Richmond's citizen representatives to the VIAA Noise Management Committee, identified the following key issues and initiatives which are recommended to VIAA for consideration and incorporation into the updated Five Year Noise Management Plan. The asterik denotes that this issue/initiative was included in the 1999-2003 Noise Management Plan.

1. Community implications of changing operating procedures regarding simultaneous, parallel runway departures;
2. Adequacy of current noise attenuation standards in building construction;
3. Community impacts on the future "engine run-up" area; *
4. Compatible Land Use Planning Guidelines;*
5. Update to 1998 Social Survey of Community Response to Noise Exposure*;
6. Need for community consultation regarding the airport's night operations;
7. Need for local Richmond Health Services representation on the VIAA Noise Management Committee, and;
8. Need for examination of financial implications of proposed initiatives.

1. *Community implications of proposed operating procedures for simultaneous, parallel runway departures.*

To date, VIAA has only been able to accommodate single, dependent departures from each runway because the distance between the two main parallel runways and the lateral aircraft separation provided by current departure procedures does not meet requirements in the Canadian Aviation Regulations in order to permit simultaneous departures.

During future peak periods however, use of both the north and south runways for simultaneous departures will be required to help improve operating capacity at the airport. In response, VIAA has been developing new simultaneous, independent and parallel departure procedures consistent with federal aviation safety regulations. These procedures will require pilots to initiate a divergence of their respective flight paths during departures to ensure adequate and safe aircraft separation.

City staff have stressed the importance of fully understanding the community impacts of new operating procedures at the airport. Research undertaken by VIAA to date in developing these new operating procedures, particularly as they relate to east bound departures over the City, suggest that additional areas of Richmond will be impacted by increased exposure to aircraft noise.

While VIAA has sought to minimize the total population affected by the new procedures as it considered various options, the new procedures will impact areas of Richmond which have not been influenced by aircraft noise in the past and have not been identified in current Council policy which require noise abatement measures in conjunction with new residential development.

Staff recommend that new Noise Exposure Forecast (NEF) contours which reflect the new operating procedures for simultaneous, parallel departures be prepared along with what their implications will be. Airport Authority and City staff will need to continue to work together to review the new NEF contours which reflect the new operating procedures to determine planning and development implications. For example, additional portions of the City may need to be added to those areas subject to Council's noise insulation policy.

2. *Adequacy of current noise attenuation standards in building construction.*

Staff are also interested in better understanding the adequacy of current noise attenuation standards in building construction. Richmond staff suggest that VIAA undertake "post occupancy" studies of residents living in recently constructed residential buildings in areas which have been subject to the requirements for noise abatement covenants and noise insulation standards to determine if these standards have been effective in minimizing noise impacts in indoor residential environments since Council adopted this policy in 1995. This type of research could possibly augment current research by the National Research Council of Canada (NRC) on behalf of Transport Canada and CMHC to produce updated design standards for insulating homes against aircraft noise.

3. *Implications of the future "engine run- up" area.*

An engine run-up is the operating of one or more aircraft engines as part of aircraft maintenance. A dedicated centralized engine "run-up" area will be built at the west end of the south runway in conjunction with the planned extension of that runway. The need for this facility was identified by the Noise Management Committee, and is part of the current Five-Year Noise Management Plan. This specific area of the airport was selected for the run up facility in order to minimize impacts on nearby residential and other noise sensitive areas, handle a wider range of aircrafts, allow 24 hour use without interfering with runway operations and accommodate more aircraft headings. It will be important for VIAA and the Noise Management Committee to monitor the effectiveness of the new facility once it is operational to ensure that noise impacts on residential areas in Richmond are minimized.

4. *Compatible Land Use Planning Guidelines.*

A major issue that Richmond staff suggest be recognized and addressed in the updated VIAA Noise Management Plan is the need to develop a more effective and consistent framework and set of guidelines which better co-ordinate City and VIAA land use planning and development interests in the vicinity of the airport.

The City has relied generally on Transport Canada's guidelines for land use in the vicinity of airports to assist in planning and development decisions in areas of Richmond which are affected by airport related noise. The guidelines which are based on NEF contours apply to all types of land uses and recommend that certain uses be permitted in specific NEF zones.

Use of the guidelines however have revealed challenges which need to be addressed by both the City and VIAA. These include the inconsistent application of the guidelines by both the City and VIAA and secondly, perceived inconsistencies within the guidelines in how certain uses are assessed in specific NEF zones.

Inconsistent application of the guidelines

The City has allowed residential development in some areas and discouraged it in other areas with similar NEF levels. This has occurred in areas of moderately high noise (eg. NEF 30-35) where Transport Canada recommends no new residential development but suggests the need for a noise impact assessment and special acoustic treatment if a local government chooses to permit such uses. For example, the core area of the City Centre experiences moderately high noise levels (NEF 30-35) and is the focus for high density residential development. The City has, on the other hand, discouraged residential development in the West Bridgeport and north City Centre areas (eg north of Cambie) which experience the same noise level as the City Centre core. This policy was initiated partly to avoid potential noise problems associated with the Bridgeport area. The lack of consistency in the City's approach makes it difficult for staff to respond to development enquiries by property owners and residents in the West Bridgeport and north City Centre area. The issue will likely have particular significance and urgency once commitments on the future rapid transit line are made and as the City moves to undertake detailed transit oriented station area land use plans for the transit corridor.

Perceived inconsistencies within the guidelines

Recent comments from VIAA in relation to a City Centre development proposal which included a day care use within the 30-35 NEF zone suggests further inconsistencies in the interpretation of the land use guidelines. Although VIAA supports an on site day care at the airport, it did not support the day care use as part of the development proposal suggesting that it was an incompatible use for the particular NEF zone. From a planning perspective, it is generally desirable to encourage day care at employment and business centres such as that which is emerging in north City Centre. The use categories appear to be overly-simplistic as they don't consider the wide range of factors that go into making a community. They don't, for example, consider the potential attraction of waterfront housing or transit access and the trade-offs that residents may wish to consider in making location decisions about their housing and or employment.

The City is also challenged further by apparent inconsistencies within the land use guidelines. It is interesting to note that since offices are considered a compatible use in all NEF Zones provided that they include special acoustic treatment, office workers may be exposed to prolonged exposure to aircraft noise over the course of a business day. However, certain uses such as churches, in which worshippers would be exposed to noise for relatively short periods of time, however are not considered compatible in high noise impact zones.

As development pressures in Richmond continue to increase, particularly in the City Centre and Bridgeport areas, the current approaches of referring OCP amendments and relying primarily on the interpretation of Transport Canada's land use guidelines on a case by case basis by VIAA and City of Richmond staff is proving to be ineffective.

A comprehensive planning framework which can better identify specific land uses supported by both VIAA and Richmond in specific NEF zones and which would provide more consistent and clear guidance to planning and development decisions is a high priority for the City. The above concern should be reflected in City/VIAA discussions and the updated 2004-2009 VIAA Noise Management Plan.

Richmond staff also recommend that meaningful public input is required into developing this planning framework. Existing property owners and residents who currently live in the north City Centre and adjacent areas should be consulted on their opinions and experiences in working and living in relatively high noise impact areas.

5. *Update to 1998 Social Survey of Community Response to Noise Exposure.*

The 1999-2003 Noise Management Plan also identified the need to conduct a follow-up study to the 1998 Social Survey of Community Response to Noise Exposure near YVR. The follow-up study was conducted in 1998 with 1,000 residents in the airport vicinity being surveyed to identify, understand and measure resident's opinions. As a useful tool to measure community response to airport related operations and which can guide future policy and program decisions, Richmond staff suggest that a follow-up social survey be included in the updated Noise Management Plan.

6. *Need for community consultation regarding the airport's night operations.*

Concern has recently been expressed by a Cambie area resident over the lack of consultation from VIAA regarding the airport's night time operations. The resident has become concerned specifically about the community impacts and disturbance resulting from late night departures over the City. At its meeting of April 22, 2003, Council's General Purposes Committee passed the following motion:

> *"That the report (dated March 20, 2003, from the Manager, Policy Plannnig), regarding the Vancouver International Airport Night Operations, be referred to staff with the request that a meeting be arranged with Cambie Road area residents, the YVR and staff on airport noise issues."*

7. *Need for Richmond Health Services representation on the Noise Management Committee.*

City and Health Services staff suggest that the VIAA Noise Management Committee include representation from Richmond Health Services (RHS). Although the Vancouver Coastal Health Authority is a member on the Committee, it represents the interests of the City of Vancouver. The committee would benefit from having RHS provide a local Richmond-based public health perspective and input on airport related noise.

8. *Financial Considerations*

No immediate cost implications related to these issues and initiatives are anticipated. It will be important however for the City and VIAA to carefully balance operational efficiency and risk management goals related to airport operations with the City's aspirations of continuing to build a vibrant and an economically and socially healthy City Centre. The City and VIAA must continue to co-operate with each other and recognize and respect these goals in an effort to seek balanced solutions to these issues. Longer term financial and economic impacts may include but not be limited to:

- lost business and development opportunities for the City which may result from further restrictions placed on development in the north City Centre and other areas influenced by the airport;
- external resources such as specialized consultant services which the City and VIAA may require to effectively analyze the implications of these initiatives;
- potential legal implications of placing overly restrictive land use controls and limits on private property.

The City and VIAA will need to carefully identify and assess the financial impacts of these initiatives as they are examined in more detail over the next five years

Financial Impact

None.

Conclusion

The presence of YVR in Richmond has resulted in both benefits and challenges for the VIAA, the City and its residents. YVR has clearly provided significant economic benefits for Richmond and will continue to play a strategic and critical role in the local and regional economy. Coupled with this however, is the challenge relating more to ensuring updated, consistent and compatible land use planning in the vicinity of the airport in the interest of building a liveable and healthy community.

The Vancouver International Airport Authority (VIAA) is currently updating its Five-Year Noise Management Plan and is seeking community stakeholder input on issues and initiatives for consideration in the updated plan. Key priority areas recommended by City staff, Richmond Health Services staff and a citizen representative to the VIAA Noise Management Committee for review as part of the updated plan process include:

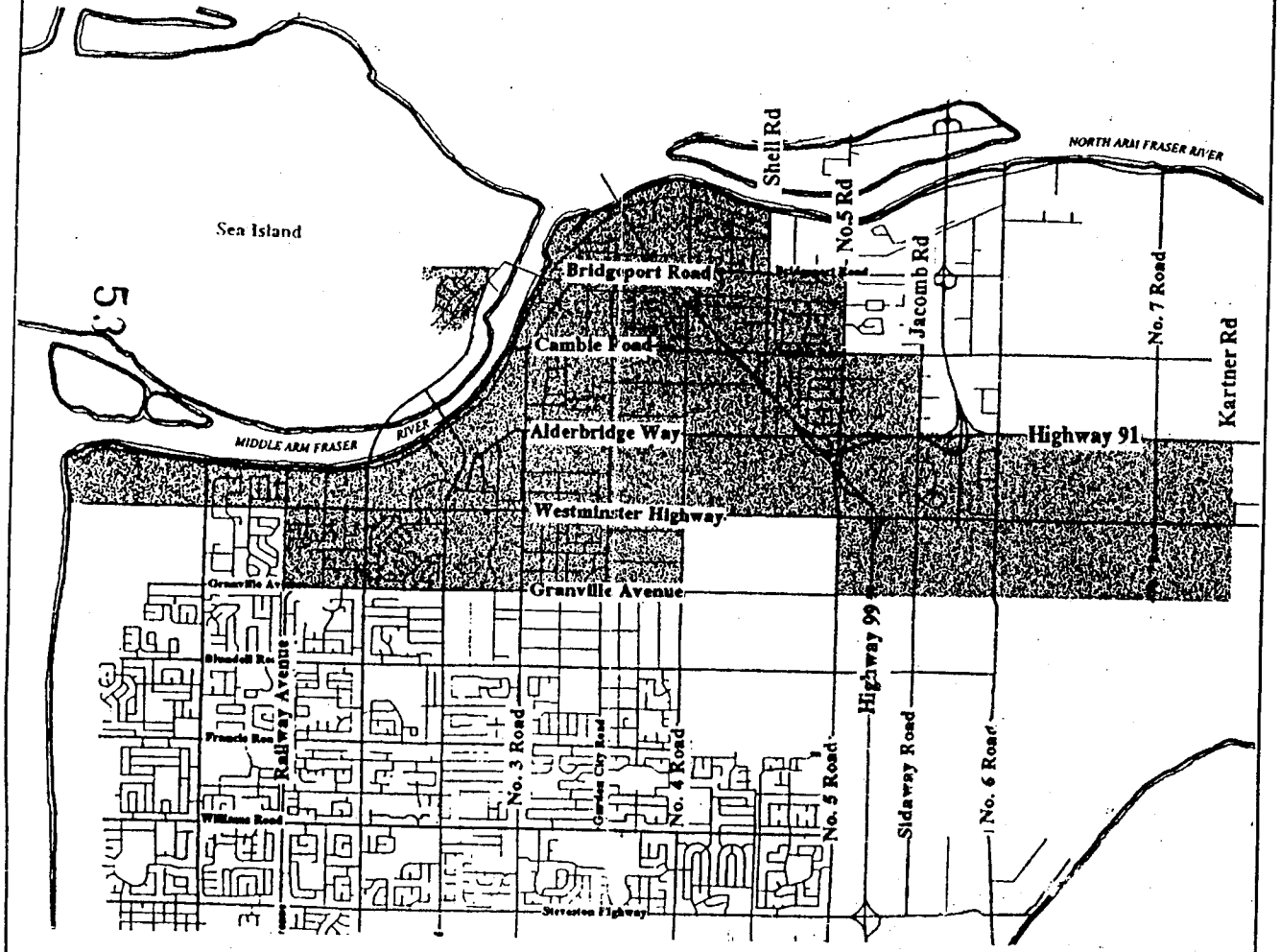
- Community implications of proposed operating procedures regarding simultaneous, parallel runway departures;
- Adequacy of current noise attenuation standards in building construction;
- Community impacts on the future "engine run-up" area;
- Development of more compatible VIAA/City of Richmond land use planning guidelines;
- An update to 1998 Social Survey of Community Response to Noise Exposure in 2004;
- The need for community consultation regarding the airport's night operations;

- The need for Richmond Health Services representation on the Noise Management Committee, and;
- The need to examine the financial implications of proposed initiatives.

Rob Innes
Planner

RI:cas

AREA WHERE A RESTRICTIVE COVENANT FOR NOISE INSULATION IS REQUIRED



Contact Richmond Urban Development at 276-4164 if unclear about whether or not your property is in the shaded area.

RICHMOND

AIRPORT NOISE INSULATION

City of Richmond
Urban Development Division
6911 No. 3 Road Richmond BC
Telephone: (604) 276-4000
www.cityofrichmond.bc.ca

ATTACHMENT 1

Airport Noise in Richmond

Richmond is home to the Vancouver International Airport. The airport is a major contributor to both the local and Provincial economies, employing thousands of workers directly and indirectly and generating millions of dollars in business and tax revenues. At the same time, parts of Richmond are exposed to aircraft overflights and the associated noises.

Richmond Council wishes to lessen the exposure to aircraft noise on the indoor living environmental of new housing, by way of noise insulation.

Richmond's Policy

Richmond Official Community Plan Bylaw No. 7100 has the following policy of Council:

"Manage indoor noise in homes built under the flight path; continue to require noise abatement covenants for sites being rezoned or subdivided for new residential development in areas identified as requiring noise insulation (see Aircraft Noise Insulation Map)."

Does this Policy Affect Me?

This policy does not apply to you if all you need is a Building Permit to demolish, renovate or construct your residential building.

If your property requires a rezoning and/or subdivision and is in the shaded area on the map on reverse side, then this policy applies to you.

What Does this Policy Mean for Me?

If you are in the shaded area and require rezoning and/or subdivision, you will have to:

1. Sign a Restrictive Covenant agreeing to have your building designed to incorporate adequate sound measures against aircraft noise, before getting rezoning or subdivision approval.

2. Retain a registered professional qualified in acoustics to determine the aircraft noise exposure affecting your property and to determine the measures needed, if any, to satisfy Canada Mortgage and Housing Corporation (CMHC) noise insulation standards, prior to submitting an application for a Building Permit and retain a registered professional to certify that any required noise insulation measures have been installed according to design, before obtaining final Building Permit approvals.

If you want to know for sure if your property is within the shaded area, check with the Urban Development Division.

What About Costs?

Adequate noise insulation may be provided by standard Building Code construction. However, in higher noise exposure zones, extra noise insulation may be needed which will add costs. Note that additional insulation will also lessen noise associated with traffic and other community noise, as well as contribute to reducing energy costs.

For More Information?

If you need information on how this policy affects a development application for rezoning and/or subdivision please phone Holger Burke at 276-4164.

May 3, 2000

EXECUTIVE SUMMARY

This document outlines the Aeronautical Noise Management Program at the Vancouver International Airport (YVR). It is intended to be a reference document that describes both the current program as well as future initiatives incorporated into a five year (1999-2003) action plan aimed at improving the noise environment around YVR.

This document consists of six sections. The first section provides an introduction to noise management at YVR. The second section provides a brief summary of the rules and regulations governing aeronautics in Canada. The third section describes the overall program at YVR. The fourth section describes the overall process of updating the Plan and consultations surrounding the initiatives included in the five year action plan. The fifth section describes the five year action plan and accompanying initiatives. The sixth section provides a summary of the comments received during the course of updating the Plan. The seventh section provides an index to these comments.

The initiatives listed in the five year action plan were determined through close consultation with the YVR Aeronautical Noise Management Committee and the through a consultation process involving the community, municipal councils, and local organizations. The initiatives have the full support of the Airport Authority's Senior Management and Board of Director's.

The 22 initiatives that were identified are:

- Noise & Technology
- Visual Barriers
- Acoustical Barriers
- Engine Run-ups
- Reverse Thrust
- Night-time Departures
- Noise Abatement Procedures (NAP)
- Capacity
- Education & Awareness
- Land Use Planning
- Social Survey
- General Airport Noise
- Noise Monitoring Terminal (NMT) in North Delta
- Landing Glide-slope
- Y2K Systems Upgrade
- Air Traffic Control Procedures
- Noise Surcharges
- International Civil Aviation Organization (ICAO) Noise Certification
- Chapter 2 Aircraft Phase-out
- Noise Budgets
- 2001 Noise Environment
- 5 Year Review

The implementation of some initiatives will require further consultation with affected parties including final approval by Transport Canada. Initiatives contained in this Plan are not exclusionary, and new opportunities for additional items will be considered on an ongoing basis and discussed fully with the YVR Aeronautical Noise Management Committee. In addition, there may be additional working groups established to explore specific action plan initiatives. Such working groups will report findings and recommendations to the Noise Management Committee. As an example (as of October 1998), a Reverse-Thrust Working Group has been exploring options to further minimize use of reverse thrust for landings on the North Runway (08L/26R).

On a quarterly basis, a status report will be prepared for the Committee with updates to the five year action plan. At the end of the five years, a Plan review will also be conducted to ensure that the Airport Authority remains proactive in its approach towards noise management.

ATTACHMENT 2

VIAA Noise Management Plan: Five-year Action Plan Initiatives

1. Noise and Technology

   - Investigate new noise mitigation technologies and examine potential applications at YVR possibly by means of funding support for relevant and appropriate research projects on an ongoing basis.

2. Visual Barriers

   - Plant trees on the north side of the North Runway to act as a visual barrier to airport operations.

3. Acoustic Barriers

   - Study options of using barriers/berms at various locations around YVR to mitigate noise from ground based operations.

4. Engine Run-Ups

   - Study options to further mitigate noise from maintenance engine run-ups, including the review of current practices and possibility of constructing a run-up enclosure.

5. Reverse Thrust

   - Continue with implementation of reverse thrust minimization program including periodic monitoring, relaying of information to airlines, examining technology available for permanent monitoring and installing when available, developing and implementing awareness program aimed at carriers and pilots.

6. Night Time Departures

   - Develop clear approval criteria for the midnight to 7:00 am departures and ensure noise issues explicitly integrated into new business and marketing criteria.

7. Noise Abatement Procedures

   - Initiate review of current Noise Abatement Procedures for clarity/effectiveness and implement changes when required.

8. Capacity

   - Define runway capacity in reference to environmental commitments. Develop a report outline operational plans for non-jet and Chapter 3 aircraft departures on the north runway "when traffic demand approaches capacity limits at YVR such as during peak times" and communicate plans to the community.

9. Education and Awareness

   - Develop and implement communication on an ongoing basis aimed at pilots, airlines, air traffic control, city staff and the community.

10. Land Use Planning

   - Work towards provincial legislation and recognition of noise compatible land use planning in Official Community Plans of municipalities adjacent to YVR.

11. Social Survey

   - Conduct a follow-up study to the 1995 Social Survey of Community Response to Noise Exposure near YVR.

12. General Airport Noise

   - Review all airport operations on an ongoing basis including but not limited to ground based operations (air taxiing, APU's GPU's) and wildlife control pyrotechnics with the objective of minimizing noise exposure on the community.

13. Noise Monitoring Terminal (NMT) in North Delta

   - Install additional NMT in North Delta, in an attempt to monitor aircraft noise from YVR operations. Options for site location will be reviewed in consultation with Delta.

14. Landing Glide-Slope

   - Investigate the possibility of increasing Runway 26s ILS glide slope from 3° to 4° thereby increasing the altitude of aircraft on approach to YVR from the east.

15. Y2K System Upgrades

   - Upgrade noise monitoring/flight tracking system and supporting systems to be compliant with all Year 2000 date/time issues.

16. Air Traffic Control (ATC) Procedures

   - Facilitate ongoing discussions with ATC, airlines and pilot groups regarding minimum noise routing and profiles, and use of new technologies.

17. Noise Surcharges

   - Investigate noise surcharges for possible application to encourage airlines to use quieter and cleaner aircraft at YVR. The types and extent of surcharges will be reviewed at other airports to determine their application and effectiveness.

18. International Civil Aviation Organization (ICAO) Noise Certification

- Actively advocate along with the community and other airports, increased stringency of ICAO noise certification standards for jet aircraft.

19. Chapter 2 Aircraft Phase Out

- Support phase out of Chapter 2 (older, noisier) jet aircraft from air carrier fleets in Canada by April 1, 2002.

20. Noise Budgets

- Investigate noise budgets for possible application to "cap" the noise generated by YVR operations. The types and extent of budgets at other airports will be reviewed to determine their application and effectiveness.

21. 2001 Noise Environment

- Evaluate allocation of current and future air traffic as described in Environmental Impact Statement (EIS) for year 2001 noise environment with mitigation.

22. Five-Year Review

- Conduct a review of noise management program and develop a new action plan and provide initiative updates in subsequent noise management annual reports.

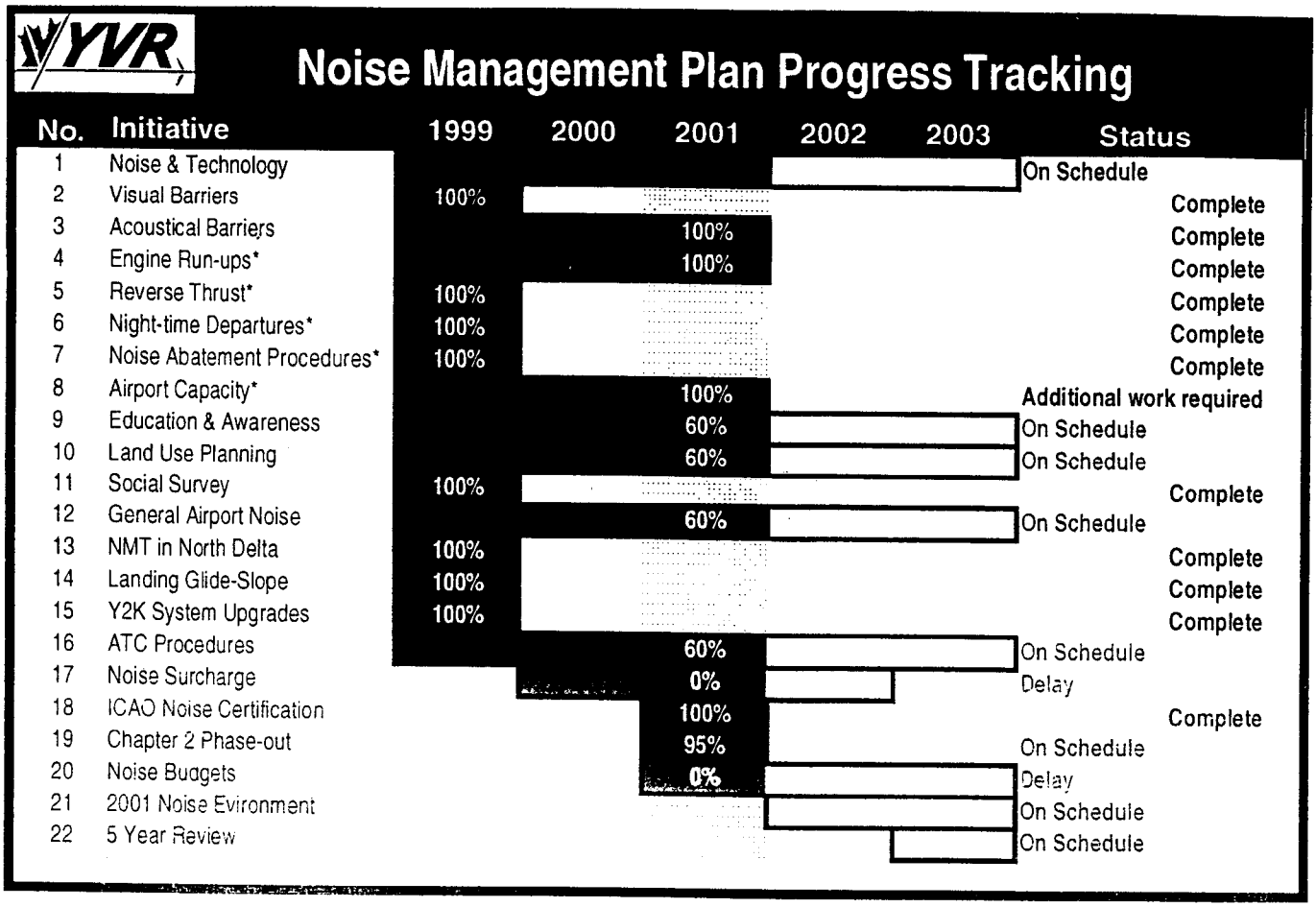


FIGURE 3

2.0 PROGRESS ON NOISE MANAGEMENT ISSUES

2.1 NOISE MANAGEMENT PLAN

In accordance with the Airport Authority's lease agreement with Transport Canada, Transport Canada must approve all noise management plans. In February 1999, Transport Canada approved the second Noise Management Plan for YVR. This plan was culmination of almost two-years of extensive consultation with the Committee and the surrounding communities to identify action-oriented initiatives to address issues of concern. In 2002, work will begin to identify noise management initiatives to be incorporated into the next 5-Year Noise Management Plan, scheduled to be ready for approval by the end of 2003.

A chart identifying progress on each initiative is illustrated in Figure 3. While some initiatives address non-controversial tasks, others address highly contentious issues for which further work is required before a decision can be made on how best to proceed. Decisions are made with input from the Committee.

2.1.1 NOISE MANAGEMENT PLAN INITIATIVES - SUMMARY

Many initiatives are multi-year items, and within this section is provided a summary of work completed in 2001 as well as information related to relevant past work. As each initiative is completed per the defined plan requirements, the results and further developments relating to each initiative are continuously reviewed, updated and incorporated into the ongoing program activities. Examples of such activities are identified by an asterix (*) in the above figure. More detailed information related to past work can be found in previous annual reports.

INITIATIVE #1 NOISE & TECHNOLOGY

Active Noise Control: Engine Run-ups

In 1997, the Airport Authority began collaborating with the University of British Columbia on a multi-phase study to assess the feasibility of using active noise control to reduce noise from propeller aircraft run-ups. Work was done by a graduate student jointly sponsored by the University of British Columbia, the Airport Authority, and the National Science and Engineering Research Council. A report covering the first phase of work was completed in May 2000.

In 2001, a new graduate student was selected to continue the next phase of research. Phase II of the research started in Fall 2001 and is scheduled to be complete by Fall 2003. Work will focus on: predicting outdoor sound propagation; laboratory tests using an experimental active noise control system; actual aircraft noise measurements; computer simulations; and, preparation of a final report.

What do the NEF Contours mean?

Inside NEF 40

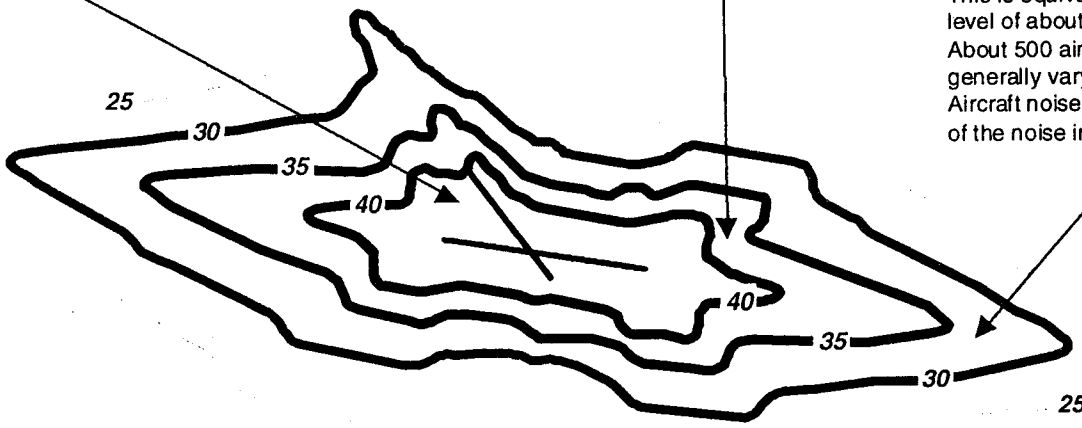
This is equivalent to a daily average noise level of about 70 decibels from aircraft. About 1,200 aircraft a day may be heard, generally varying from 50 to 110 decibels. Aircraft noise makes-up most of the noise in the community.

Inside NEF 35

This is equivalent to a daily average noise level of about 65 decibels from aircraft. About 800 aircraft a day may be heard, generally varying from 50 to 100 decibels. Aircraft noise makes-up most of the noise in the community.

Inside NEF 30

This is equivalent to a daily average noise level of about 60 decibels from aircraft. About 500 aircraft a day may be heard, generally varying from 50 to 90 decibels. Aircraft noise may or may not make-up most of the noise in the community.



All other areas (less than NEF 25)

The daily average noise level is less than 55 decibels from aircraft. Up to 250 aircraft a day may be heard, generally varying from 50 to 80 decibels. Aircraft noise generally does not make-up most of the noise in the community.

Inside NEF 25

This is equivalent to a daily average noise level of about 55 decibels from aircraft. About 400 aircraft a day may be heard, generally varying from 50 to 80 decibels. Aircraft noise may or may not make-up most of the noise in the community.

NEF contours do not illustrate flight paths - they simply illustrate where most of the aircraft noise is. The number of aircraft heard and the noise level on any given day will depend on which runway is used, weather, flight schedules and community background noise. Aircraft altitudes will depend upon the type of aircraft and the destination or origin. Larger and heavier jet aircraft will typically fly lower than smaller and lighter jet aircraft.

YVR Noise Management

December 1995

FIGURE 36