



Beyond, Every Day.

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MINUTES OF REGULAR MEETING

Aeronautical Noise Management Committee (ANMC)
Thursday 1 December 2016 - 1:00PM Vancouver International Airport, Link Boardroom 1

Those in attendance were:

Chairperson:	Marion Town	Director Environment, YVRAA
Secretariat:	Rachel Min	Environmental Analyst, YVRAA
Admin Support:	Catherine Alderson	Administrative Assistant, YVRAA
Participants:	Gary Abrams	City of Richmond (citizen representative)
	Margot Spronk	City of Richmond (citizen representative)
	Joan Caravan	City of Richmond (staff)
	Ron Sorensen	City of Surrey (citizen representative)
	Meg Brown	City of Vancouver (citizen representative)
	Jonathan Parker	City of Vancouver (citizen representative)
	Hayley Rowlands	City of Vancouver (staff)
	Paula Kolisnek	Corporation of Delta (staff)
	Michael Makowy	Airline Operators Committee (AOC)
	Terry Hiebert	Float Plane Operators Associate
	Don McLeay	National Airlines Council of Canada (NACC)
	Greg Dansereau	NAV CANADA – Vancouver Area Control Centre
	Mark Cheng	Supervisor, Noise Abatement & Air Quality, YVRAA

Next ANMC Meeting: 22 February 2017	
Rachel Min	11 January 2017
_____ Secretariat Signature	_____ Date

1.0 INTRODUCTIONS AND ADOPTION OF AGENDA

Marion Town welcomed members and reviewed the meeting agenda.

Committee members were informed of the following organizational changes at the Airport Authority:

- Brett Patterson has moved from his role as Director, Airside Operations into a new position in the YVR Engineering Department as Director, Engineering Projects. Brett will oversee airside capital projects in his new role.
- Geert Bos has moved into the position of Director, Airside Operations from his former position of Director, Maintenance. Geert will attend future meetings of the Committee.

Marion advised the meeting minutes from 14 June 2016 were finalized and posted on the YVR website (www.yvr.ca).

2.0 COMMUNITY DESIGN PRINCIPLES

Mark Cheng advised that airspace and flight procedures are designed and developed according to the standards set by Transport Canada and International Civil Aviation Organization (ICAO) to ensure a high level of safety. These standards often leave very little flexibility when designing a new procedure; however, community issues should be considered whenever there is flexibility. To assist with this, the Community Design Principles are meant to help airspace designers evaluate options whenever flexibility exists in the design to minimize disturbance on communities without compromising safety.

The Community Design Principles were discussed at the 2015 Q4 meeting, and members were asked for input following that meeting. Input received was incorporated where possible; however, some of the input received did not fit into the document as they related to vectoring of aircraft, which does not apply to the work and responsibilities of the airspace designers.

Based on the discussions, the Airport Authority will work to add wording to address the following before finalizing the document:

- Assessing the impacts of vectoring off published routes; and,
- Accounting for the type of ground surface (water, forest, etc.) that will be overflown.

3.0 GLIDESLOPE REPORT

Rachel Min provided the Committee a summary on her research into the use of increased glideslope for noise abatement.

As background, the Instrument Landing System (ILS) is a ground-based instrument approach system that provides critical navigational information to arriving aircraft. It is the most widely used instrument approach system at airports. The glideslope is one of the components of ILS that provides vertical guidance to the aircraft landing.

The International Civil Aviation Organization (ICAO) standard for the approach angle at airports is 3.0° with the exception of airports that require a steeper approach for obstacle clearance. While the use on an increased approach angle may help reduce noise by placing arriving aircraft at a higher altitude, ICAO currently precludes the use of steeper approaches for reasons other than to meet the obstacle clearance requirements.

Recently, Frankfurt Airport (“Frankfurt”) and London Heathrow Airport (“Heathrow”) trialed the use of an approach angle of 3.2° for noise reduction. For comparison, the use of a 3.2° approach would place aircraft approximately 170 feet higher than if using a standard 3.0° approach at a distance of 8 nautical miles (nm) away from the airport.

The Airport Authority conducted research to investigate the trials at Frankfurt and Heathrow using the following methodology:

- Literature review;
- Discussions with ANMC and industry partners; and
- Teleconference with staff at Frankfurt and Heathrow.

The table below summarizes the details of trials at Frankfurt and Heathrow.

	Frankfurt	Heathrow
Trial Period	<ul style="list-style-type: none"> • 18 October 2012 – 19 December 2014 	<ul style="list-style-type: none"> • 17 September 2015 – 16 March 2016
Runway	<ul style="list-style-type: none"> • Runway Northwest (07L/25R) 	<ul style="list-style-type: none"> • All four runways
Restriction	<ul style="list-style-type: none"> • Used in CAT I conditions only 	<ul style="list-style-type: none"> • Used in CAT I conditions only
Ground Equipment Change	<ul style="list-style-type: none"> • CAT I ILS glideslope increased to 3.2° • CAT III ILS glideslope kept at 3° 	<ul style="list-style-type: none"> • No changes to the ground equipment: <ul style="list-style-type: none"> – ILS Glideslope kept at 3° – RNAV approaches amended to 3.2°
Trial Participation	<ul style="list-style-type: none"> • Voluntary between October 2012 and May 2013 - pilots could either accept or decline the use of 3.2° glideslope • Mandatory during CAT I conditions on Runway 07L/26R after May 2013 	<ul style="list-style-type: none"> • The use of RNAV 3.2° was optional
Data Collection	<ul style="list-style-type: none"> • 8 noise monitoring points set up along the approach path for Runway 07L/26R • Visual checks on landing gear deployment 	<ul style="list-style-type: none"> • 3 noise monitoring points set up along the approach for Runway 27L • Gear down data provided by British Airways

Because the majority of aircraft operating today are not certified to fly steeper approaches in CAT III conditions, the increased approach angle was only offered during CAT I conditions. As a result, the airports had to offer both 3.0° and 3.2° approach angles to prevent operational disruptions in low visibility conditions during their trial periods. To accommodate both approach angles, Frankfurt used their dual ILS capability on Runway 07L/25R and increased the CAT I ILS to 3.2°. Because Heathrow does not have dual ILS capability, they amended their RNAV approaches to 3.2° and maintained the ILS glideslope at 3.0°.

Frankfurt and Heathrow reported the following results from their trials:

	Frankfurt	Heathrow
Usage	<ul style="list-style-type: none"> • Approx. 64,000 aircraft used the 3.2° glideslope during the trial period 	<ul style="list-style-type: none"> • Approx. 2,500 aircraft used the RNAV 3.2° procedure during the trial period
Impact on operations	<ul style="list-style-type: none"> • No adverse impact • No increase in missed approaches 	<ul style="list-style-type: none"> • No adverse impact on the aircraft and airport operations • Height benefit reduced by weather impacts on RNAV
Measured noise reduction	<ul style="list-style-type: none"> • Between -0.5 and -1.5 dBA 	<ul style="list-style-type: none"> • Between +0.1 and -1.4 dBA (average -0.5 dBA)

Based on the results of their trial, Frankfurt received the approval to permanently implement the 3.2° glideslope on their Runway 07L/25R. Frankfurt also plans to expand the use of 3.2° approach to all of their runways. Because their other runways are not equipped with dual ILS system, Frankfurt will implement the 3.2° approach on these runways using Ground Based Augmentation System (GBAS).

Heathrow also plans to implement the 3.2° approach RNAV permanently. However, the UK Civil Aviation Authority has requested that Heathrow collect additional data to assess operational impact during warm summer days. To collect additional data requested by the UK Civil Aviation Authority, Heathrow will re-trial the use of 3.2° RNAV in summer 2017.

The trials at Frankfurt and Heathrow demonstrated that the 3.2° approach can be adopted without negative impacts on the operations and noise reduction benefits up to -1.5 dBA may be achieved. While a 1.5 dBA reduction in noise level is not perceptible to the average human ear, it may provide opportunities to reduce the overall noise exposure under the approach path.

Because the 3.2° can only be flown during CAT I conditions, the airport must maintain the standard 3.0° approach to prevent any disruptions during low visibility. Therefore, a dual ILS capability is required to offer an increased glideslope for noise reduction. However, the installation and maintenance of an additional ILS can be costly, and some airports may not have sufficient area on their airfield for ground equipment required for dual ILS capability.

As a result of this research, the Airport Authority has concluded that using an increased glideslope for noise abatement is not recommended for YVR at this time due to the high cost of a dual ILS and the small amount of noise reduction achieved. However, the Airport Authority will continue to monitor changes to ICAO standards and use of increased approach slopes at other airports.

A report summarizing the research will be prepared and distributed to the Committee.

4.0 NEF CONTOUR UPDATE

Mark provided a short update on the Noise Exposure Forecast (NEF) project.

The NEF is the official metric prescribed by Transport Canada for airport noise assessment in Canada. While the NEF is not a good tool for communicating the impacts of aircraft noise, it serves to assist with compatible land use planning by defining high noise areas around the airport.

The current NEF contour for YVR was created in 1994 with the forecasted traffic projections for the year 2015. As part of work on the 2017-2037 YVR Master Plan, the current contour is being reviewed and reassessed with more up-to-date forecast information and data.

Mark advised that work on this project is still ongoing. The Committee will receive further updates on this project in 2017.

5.0 2016 SUMMER RUNWAY OPERATIONS AND PROJECTS

Rachel reviewed runway operations and airfield projects from Summer 2016.

South Airfield Runway End Safety Area (RESA)

The Airport Authority completed the second year of a three-year project to construct RESAs on the south and crosswind runways. The construction work commenced on 8 May and was carried out six nights a week (Sunday-Friday) between the hours of 10 PM and 7 AM. During this time period, the south runway was closed, and all operations occurred on the north runway.

While the construction was originally scheduled to be completed on 3 September, the construction period was extended by two weeks and concluded on the morning of 17 September due to delays associated with poor weather experienced in June and early July.

North Runway Departures to Reduce Delays

At the 2016 Q1 ANMC meeting, the Airport Authority presented plans to use the north runway for departures during peak hours to reduce delays in the summer.

As background, when the federal Minister of Transport approved the construction of north runway in 1992, its operation was subject to several operating commitments, including the use of north runway primarily for arrivals until such time as demand approaches capacity.

The use of north runway departures to reduce delays began on 21 June and continued until the end of August. Due to a number of airfield projects and having an unserviceable ILS on the south runway, the use of the north runway for departures was very selective due to the complexity of ground taxi operations.

Overall, a total of 599 aircraft departed on the north runway on 14 days out of 71 days between 21 June and end of August. Of these 599 aircraft, 77% (n=462) were domestic flights operating within British Columbia. As a result, propeller aircraft were the most common aircraft type assigned to depart on the north runway, accounting for 74% (n=443). There were 12 departures on the north runway by wide-body jet aircraft during this time period, which accounted for 2% of the total number of departures on the north runway.

The operational plan for summer 2017 will be determined based on the amount of airfield projects, an assessment of forecasted demands, and staffing levels at NAV CANADA.

6.0 2017 AIRSIDE PROJECTS

Mark provided an overview of the following airside projects planned for 2017:

- Taxiway Mike and Juliet rebuild;
- Taxiway Lima reconstruction;
- South runway overlay; and
- South airfield RESA (26L, 13, and 31) completion.

The schedule for all this work has not been finalized as planning for these projects is currently on going. The final schedule will be posted on the YVR website, and all effort to minimize the impact on communities will be undertaken.

In addition to the work described above, the Airport Authority will start the work on defining the scope of work for the north runway Runway End Safety Area (RESA) project and will seek project and budget approval in Fall 2017. Further information on this project will be provided to the ANMC at the 2017 Q1 meeting.

7.0 YVR MASTER PLAN UPDATE

Marion reviewed Phase 2 of consultations on the YVR Master Plan.

The consultations in Phase 2 focused on the theme of “Building a World Class Sustainable Airport” and addressed six key focus areas including: terminals; airside/airspace; ground access; environment; amenities; and, land use.

In addition to a joint workshop with the ANMC and YVR Environmental Advisory Committee (EAC), three public workshops were hosted. Other activities included stakeholder meetings, an open house and staffed public displays in various communities between 5 September and 15 November. Online engagement was also provided through social media and the YVR Master Plan website (www.yvr2037.ca).

During the course of the Phase 2 consultations, the YVR Master Plan team engaged with over 700 people in person and received over 160 completed surveys. Great feedback was received through in-person and online engagement.

A summary of the feedback received through the various levels of engagement is currently being compiled into a report, which will be made available online once finalized. Key findings will be shared with the ANMC in the new year.

Phase 3 consultations will begin on 18 January 2017, and will focus around the draft YVR Master Plan. The final draft will be delivered to the Minister for approval in Fall 2017 (Phase 4).

To help communicate the possible impacts from noise and aircraft operations associated with future traffic growth, the YVR Master Plan team is assessing the use of the following supplementary communication metrics:

- Map illustrating the number of events above 70 dBA (N70); and
- Runway movement charts with flight tracks; and
- Day/night distribution runway movement charts.

It was acknowledged that there are challenges and risks with presenting materials predicting future scenarios as they are projections based on currently available information on forecasts and technologies; however, they may be interpreted as fact rather than predictions.

The materials developed are intended to serve as information only to supplement discussions during the Master Plan consultation, and discussions continue on how this information fits within the YVR Master Plan 2017-2037 document.

N70 MAP

The Committee discussed the potential value of a map that illustrates the number of aircraft events greater than 70 dBA over a 24-hour period. N70 maps could be created for the following scenarios to compare the change in impact associated with current versus future operations:

- 2015 busy day, Runway 08 flow;
- 2037 peak planning day, Runway 08 flow;
- 2015 busy day, Runway 26 flow; and
- 2037 peak planning day, Runway 26 flow.

RUNWAY MOVEMENT CHART WITH FLIGHT TRACKS

Some airports have materials that illustrate the number of movements on each runway and flight corridor. Such runway movement charts could be created for the same scenarios listed above to compare the changes associated with current and future operations.

However, because it is not possible to predict future changes to the airspace over a long term planning horizon, the flight corridors for the 2037 scenarios would assume that there are no major changes to the airspace around YVR.

Some members cautioned against presenting the 2037 scenarios and recommended future changes to airspace should somehow be incorporated. This presents a challenge given that no decisions have been made on future airspace changes, and the flight maps can only be based on known information. One suggestion was for YVR to continuously revise 2037 maps on a regular basis when information on upcoming changes is confirmed. This issue is to be discussed further with the YVR Master Plan team.

DAY/NIGHT MOVEMENT CHARTS

Such charts could be developed to illustrate the number of aircraft take-offs and landings and the runway allocations by day and night. The four scenarios previously listed could be used for these charts, and would provide context on the expected trend for night operations.

Members were asked for any further suggestions on alternative metrics to consider. Suggestions could be provided by mid- December.

8.0 Q4 – 2016 UPDATE

Rachel reviewed the Q4-2016 report and provided an overview of noise complaints received between 1 January and 26 November 2016. During this time period, the Airport Authority received 1,702 noise concerns from 287 individuals. Of the 1,702 complaints, 72% (n=1,232) was registered by three individuals. One individuals submitted 69% (n=1,117) of the total complaints.

9.0 OTHER BUSINESS

2017 MEETING DATES

Marion advised the proposed meeting dates in 2017:

- 22 February 2017
- 15 June 2017
- 7 December 2017

PORTABLE NOISE MONITORING REPORT

Mark advised that the report summarizing the deployment of the portable noise monitoring equipment at the Museum of Vancouver between 5 March and 24 April is now available online. In summary, aircraft noise was determined not to be a main contributor to the noise environment at

this location, and the majority of aircraft related noise events were associated with helicopter and float planes operating from other airports. The analysis and findings will be presented at the Committee meeting in 2017.

ONLINE FILE SHARING AND STORAGE

Members discussed online file sharing and storage options and issues with privacy and cyber security.

CITY OF RICHMOND CITIZEN REPRESENTATIVE

Joan Caravan (City of Richmond staff) advised that Margot Spronk has completed her term as a City of Richmond citizen representative for the ANMC and acknowledged her years of service and contributions. A new citizen representative will be appointed by the City of Richmond for a 2-year term.

MEETING ADJOURNMENT

Marion thanked members for attending and adjourned the meeting at 3:30 PM.