

Meeting: **NSG (Noise SubGroup)** at N-ALM/58 (Nordisk Arbetsgrupp för Luftfartens Miljöfrågor)  
Date: 30<sup>th</sup> – 31<sup>st</sup> May 2017 and N-ALM Noise subgroup 29<sup>th</sup>-30<sup>th</sup> May 2017  
Venue: Reykjavik, Flugróst, Nauthólsvegur 99

## **Draft minutes**

### **Participants:**

<b>Anna Margret BJORNSDOTTIR</b>	Samgongustofa / Icelandic Transport Authority (CAA)
<b>Christer HEED (Chair)</b>	Swedavia AB
<b>Eva NIELSEN</b>	Trafik- og Byggestyrelsen
<b>Hilde HØIEM</b>	Civil Aviation Authority / Luftfartstilsynet
<b>Ingrid VORNO</b>	Tallinn Airport
<b>Jan Anders MARHEIM</b>	Avinor AS, Norway and Oslo Lufthavn A/S
<b>Janis BRIZS</b>	Riga Airport
<b>Jens Erik DITLEVSEN</b>	Trafik- og Byggestyrelsen
<b>Jens RASMUSSEN</b>	Københavns Lufthavne A/S
<b>Johanna KARA</b>	Finavia
<b>Kea TOI</b>	Estonian CAA
<b>Maria KJARTANSDOTTIR</b>	Isavia
<b>Marie HANKANEN</b>	Swedish Transport Agency / Transportstyrelsen
<b>Mikael LILJERGREN</b>	Swedavia AB
<b>Mike NEWMAN</b>	Avinor AS, Norway and Oslo Lufthavn A/S
<b>Outi AMPUJA</b>	Transport Safety Agency (Trafi)
<b>Outi MERILÄ</b>	Finnair Oy
<b>Pall S. PALSSON</b>	Samgongustofa / Icelandic Transport Authority (CAA)
<b>Peer BORGLUND</b>	Københavns Lufthavne A/S
<b>Sigurdur M HARDARSON</b>	Icelandair
<b>Valur KLEMENSSON</b>	Isavia

### **Date and time: Monday 29<sup>th</sup> May 13:00 – Tuesday 30<sup>th</sup> May 12:00**

#### **1. OPENING OF THE MEETING**

Welcoming address and practicalities by the host

#### **2. ADMINISTRATION (*chair*)**

- a. Adoption of the Agenda  
The agenda was adopted.
- b. Approval of the Minutes from the last NSG-meeting  
The minutes from the last meeting was approved without further changes.  
The final minutes will be available on the N-ALM web portal.

#### **3. STRUCTURE AND WORK OF N-ALM Noise Subgroup (*chair*)**

- a. N-ALM Noise Subgroup ToR 2017-2019

Terms of reference was suggested to be the same as for the previous period, see attachment B (Attachment B - Terms of Reference for N-ALM noise group 2017-2018.pdf)

- b. N-ALM Noise Subgroup Work Programme 2017-2019  
Chair suggested to not having an official programme which was approved.
- c. Reporting to N-ALM  
Chair will report a summary of the Noise Sub Group meeting at the N-ALM meeting.
- d. Update of the list of contact persons (Experts) and their e-mail addresses  
All participants were asked to provide info to the survey on background document. Information should be sent to Christer Heed that will update the document.
- e. Update list of National goals/limits for aviation noise  
Each member is asked to provide information regarding national goals and limits. Christer Heed will send out the document on a review. The document will be published on the portal site.
- f. Update list with information about noise calculation methods  
The information is included within the survey on background document. Contacts are asked to provide information regarding noise calculation methods.

#### **4. INFORMATION AND ISSUES FROM MEMBER ORGANIZATIONS (all)**

- a. Mike NEWMAN – HELICOPTER NOISE M.J. Newman & J.A. Marheim, Avinor.  
Helicopter aircrafts S92 and EC225 are in operations which are noisier than previous generation, particular at lower frequencies. Sound insulation data has previously only been available down to 100 Hz. Noise action limit specified to  $L_{Aeq,24h}$  42 dB indoors but there is no limits regarding vibrations. When frequency range is extended to include 50 Hz there is typically a 2 dB exceedance of the limit. Graph showing that S92 on 200 meters distance 50 m above the ground exceeds the hearing threshold above 17,6 and 22,1 Hz. Even if the lowest frequencies are not heard they contribute to vibrations indoors, due to resonances in the building itself. There is an ongoing project to test out techniques for attenuation of low frequency noise. Techniques are to be tested to a house owned by Avinor. Measurements of reduction are performed with real helicopters as noise source. NGI have suggested an improvement of a standard wall which increases the attenuation in low frequencies with some 10 dB. Clad are removed and stiffeners are applied. Stiffening of structure and neutralizers increase cost of noise control measures by factor 2 (Standard treatment are typically 500 000 NKR). Costs are mainly due to installation and tuning of the neutralizers. About 35 houses might need these types of noise reduction in the city of Bergen. Avinor ask the meeting for other methods regarding reduction of low frequency noise.

Copenhagen Airports offers to supply contact information to their insulation specialists on low frequency noise from wind turbines. It was also mentioned that EMPA has test facilities for this type of measurements.

b. Hilde HØIEM – Visual flights

There is two different ways of handling visuals in Norway, concerning jet aircrafts. On Gardermoen (OSL) there are specific corridors that should be followed. Visuals are allowed at all other airports. Pilots do occasionally ask for visual approaches which are accepted whenever possible. Complaints have been reported due to visual flights. Question to the group, how are the visual flights handled at other airports? At OSL visual approaches are performed with GPS guidance which minimizes the dispersion, but this is not possible during peak hours. The general view in the group was that visual flights typically are allowed, as long as the permitted noise contours are not exceeded, with some exceptions. It was notes that low speed aircrafts often are treated differently compared to jet aircrafts.

c. Jens RASMUSSEN – PBN ICANA/ACI - REPORT

PBN has been implemented and tested in several airports and will also be a part of SESAR 2020. Jens presented some cases with experience of using PBN. At Frankfurt, Lufthansa has successfully tested curved approach with RNP (a type of PBN), to avoid urban areas with A380/B748. A study at Frankfurt airport has showed that the noise increases with curved approaches compared to ILS. Brisbane Airport changed the “River bank approach” from VFR to RNP. Noise was estimated to impact less people but it in the reality the RNP increased the number complaints. Conclusions, community don't care about technology, but they react on changes. ATC at CPH is ready to start a project about PBN to keep the capacity with future growth in the air traffic. There is an ongoing task within CAEP to gather information regarding experiences with PBN implementation.

At Helsinki PBN is difficult to use due to highly density populated areas around the airport.

d. Johanna KARA – Oulu Airport – Medical helicopters (EC145).

The calculated noise contours for the helicopters have been compared with contours for Landscape Plan  $L_{DEN} 55$  dB(A). The calculation shows that the helicopters contribute to the total noise in a small amount.

Border control in Helsinki has moved their operation from Malmi to Vantaa. Border control operates A119, AS332 and B412. The contours for the helicopter movement have been calculated separately and compared to the outcome of year 2014 and a forecast. Noise contours for the helicopters regarding  $L_{DEN} 55$  are outside the outcome in some extent. The helicopter traffic may be included in future land use planning. Some complaints have been received since the operations moved to Vantaa. The community has been invited to the airport.

Helsinki Airport New **G**round **R**un-up **E**nclosure, GRE

A New run-up enclosure built which can host an A350. Attenuation has been measured as a part of the SAT. The measurements were carried out in respect to ISO 10847. Measurements at the nearby hotel shows that engine test are noticeable during full power test. More measurements are planned to be carried out. There are no restrictions of run-ups. The site is financed thru the regular fees.

Measurements of Finnair A359 shows decreased arrival noise compared to B788 and A320. The measurements shows that departure noise is slightly louder from A359 compared to the other two aircrafts.

- e. Christer HEED - Frequency spectrum for noise insulation – improved method  
Comparison of Turboprop and Jet aircraft spectrum shows that turboprop typically has peaks in 50-250 Hz third octave bands. Previously standard spectrum NBI C1, C4 and Nordtest A6 and A7 have been used as estimation for the source spectrum. These spectrums are either jet or prop. Spectrum for different aircrafts has been collected thru measurements performed at Bromma Stockholm Airport. A new method of defining different spectrum around the airport was developed during the last years. Typically low frequency content contributes to the total noise close to the runway in a greater extend. The method takes into account A/C, operation, distance source/receiver and the geographic position of the receiver area. The optimized method decreases the margins, but fits to the actual scenario. In the case the fleet or runway usage changes it may result in further actions. Further development are planned in order to take into account maximum levels which are common in Sweden. The new method has saved almost 10 million SEK due to less expensive noise insulation.
- f. Peer BORGLUND - Reporting from Brussel's meeting 24<sup>th</sup> April WHO Noise and Health  
Summary of the conference held in Brussels during 24<sup>th</sup> April. The Conference is an EU conference on noise exposure from transport. The focus during the meeting was to raise awareness of noise pollution and its health effects. Noise fact sheets 2017 for all member states has been published on site [www.eea.eu](http://www.eea.eu) The fact sheet shows that Road traffic noise still affects the most number of people. Approximately 40 % of the population in Copenhagen and Oslo are inside  $L_{night} 50$ . A lot of facts, sometimes with a lack of background information were presented from the speakers, some of them were:  
"Noise causes 10 000 cases of premature death in Europe each year.",  
"If you invest in noise reduction it pays back 30 times" and  
"Noise from airports still consider more annoying and disruptive to sleep than road and rail noise".

The WHO report is delayed but it is expected later this year.

## 5. ECAC – ANCAT-AIRMOD (Finavia/Københavns Lufthavne/Swedavia/Avinor)

- a. A fourth edition of the ECAC document 29 was released in December 2016. The new edition includes a new model for air propagation. The latest model (SAE ARP5534) is recommended to be used although the old ARP866A may be used by the user. The new propagation model is expected to results in slightly larger contours. There are also some minor changes in the definitions and geometry, changes in segmentation calculation (formulas). There is a new volume 3 in the fourth edition including reference cases and validation of computer model, the volume is aimed to developers. An Aircraft substitution list is suggested in the 4th edition and it is available in the ANP database. FAA has replaced INM with AEDT. INM does fulfil 3rd edition but no further development are expected. AEDT fulfils the 4th edition. AEDT have a different way of handling data which makes it necessary to review the pre- and post-processing. Sweden (Swedavia) and Finland (Finavia) is evaluating

the AEDT and expects it to be up and running in a couple of years. Denmark (Copenhagen Airports) is not allowed to use the 4th edition due to an old regulation but is using AEDT in order to calculate emissions within LTO. Norway (Avinor) has already a working solution within Nortim and the 4th edition doesn't cause any further development. Latvia is using the second edition. It was unclear which noise model Iceland and Estonia is using.

- b. Last AIRMOD meeting was held in Zurich during March 14-16. Current task within the group includes guidance on how to use radar tracks in modelling, how to use substitution aircraft in noise modelling and how to use noise measurements in modelling aircraft noise. Other tasks is about taking aerodynamic noise at approach into account and validating noise source data (ANP). Time schedule for publish could be 2020-2025. Next AIRMOD meeting will be held in Rome during September 27-28.
- c. Ongoing Helicopter study within AIRMOD. It is an EU project which is expected to result in a tool for noise calculations of helicopters. SINTEF and ANOTEC are involved performing measurements of approximately 10 different common helicopters. Currently there are no heavy helicopters included. The model is expected to be described in a document separate to doc 29.
- d. There was a discussion of the END and what is different from document 29. Noise mapping according to END shall be implemented late 2018.

#### **6. Preparation for the Special focus on Noise at the N-ALM:**

Noise subgroup to discuss relative issues from a technical point of view as input to policy makers.

- a. Outi AMPUJA - EU regulation 598/2014  
The Finnish transport safety agency (TRAFI) made a decision concerning noise related operating restriction at Helsinki airport. A Partnership Group for noise management at Helsinki Airport was created in order to get the big picture. Members of the group consist of Ministry of Transport and communication, Ministry of environment, Ministry of social affairs and health, environmental authorities, Helsinki-Uusimaa Regional council, all municipalities located nearby the airport, Finnavia, The Finnish Armed Forces, airlines and ANS. A proposal of the action plan has been published. Annual follow up on the noise mitigation actions, the number of residents living in noise areas etc. Follow up by indicators, the change of aircraft fleet etc. There has been a slight increase in the Noise contour last year compared to 2015. Indicator two consists of data regarding number of areas with complementary construction information provided by the municipalities. Within  $L_{DEN}$  50-55 (buffer zone) there are 103 buildings planned, 55 dB and above 39 buildings (mostly small houses) are planned. A number of new buildings are expected to be built inside 50 dB each year. The municipality specifies requirements on sound insulation for building inside the buffer zone. The local municipalities are responsible to check if noise goals inside are fulfilled.

TRAFIS's synthesis will be published in November 2017.

- b. Other (15+5 minutes)

Quite areas were discussed. Riga airport informed about goals for air traffic noise in quiet areas, resulting in more noise over populated areas.

There was a discussion of noise from new aircrafts, and whether new aircraft always should be considered to be less noisy. . There is not yet available noise source data for the Bombardier CS-serie. There is however a suggested proxy A/C in the ANP-substitution list on the web. Measurements of these new aircrafts have been carried out at Riga International Airport but no official results are available.

The Danish Transport Authority informed about a planned update of the guidance material from Miljøstyrelsen - 1994, containing goals, limits and guidelines for calculation of noise from aerodromes.

## **7. ANY OTHER BUSINESS**

### **a. Outi MERILÄ – LHR - Finnair – Fly Quiet Programme**

Finnair was published on London Heathrow (LHR) “names and shames” noisiest airlines during November 2013. Project was initiated in order to find the reasons and increase performance. LHR follow up 6 different parameters. The main reason for the appearance on the black list was due to CDA violation. The compliance rate has increased since the project was initiated. Ranking increased from 44th to 5 th. Finnair has Fleet allocation prioritizing A321 with hush-kits on LHR route, (chapter 4 complainant), A350. Changes in flight crews decent SOP (only LHR) to support CDO approaches. LHR CDO performance is followed up on weekly basis communicated to pilots. LHR has encouraged airlines to use reduced-engine taxiing. Linking landing fees to an aircraft’s NOx emission. In the 2017 fees at LHR increased by 100 %.

Finnair encouraged airports to cooperate with airliners. They did not consider airport charges to be the determining factor for fleet investment at the time being, but foreseen the importance in the future.

## **8. DATES AND VENUE OF THE NEXT MEETING**

Next Noise sub group meeting (During N-ALM 60) will be held in Sweden, probably during March or April. Members are asked to check calendars for suitable dates. It was highlighted that there are a lot of holidays in the Nordic countries during that period

## **9. Reporting to N-ALM (*Chair*)**

The noise subgroup meeting was summarized during the N-ALM meeting.

## **10. CLOSING OF THE MEETING**

The meeting was closed.