MEETING LOCATION NOTICE

The January 18, 2017 Noise Oversight Committee will begin at 1:30 p.m. at the Richfield Municipal Building, 6700 Portland Avenue South, Richfield, MN. (The Committee Pre-meeting will begin at 1:00 p.m. in the Bartholomew Meeting Room – NOC members only).

Due to limited parking, carpooling is greatly appreciated.

Metropolitan Airports Commission (MAC)

Minneapolis-St. Paul International Airport (MSP)
Noise Oversight Committee (NOC)
MAC General Office Building
Lindbergh Conference Room
6040 28th Avenue South
Minneapolis, MN 55450

NOC Committee Members
Jeffrey Hart – Co-Chair (Delta Air Lines)
John Bergman – At-Large Community Representative (Apple Valley City Council)
Pam Dmytrenko – City of Richfield Representative (Assistant City Manager)
Karen Erazo – Charter/Scheduled Operator Representative (Sun Country Airlines)
Gordon Goss – Chief Pilot Representative (Delta Air Lines)
Dianne Miller – City of Eagan Representative (Assistant City Administrator)
Angie Moos – Cargo Carrier Representative (United Parcel Service)
Doug Nelson – Minnesota Business Aviation Association Representative
Jon Oleson – City of Bloomington Representative (Bloomington City Council)
Jay Miller – City of Mendota Heights Representative (Mendota Heights City Council)
John Quincy – City of Minneapolis Representative (Minneapolis City Council)
Paulajean Vick – At-large Airport User Representative (Delta Global Services)

MEETING AGENDA

January 18, 2017 at 1:30 pm
Richfield Municipal Building
6700 Portland Avenue South
Richfield, MN
(Jeffrey Hart, Delta Air Lines, will be the acting Chairperson for the meeting)
***Note:** 1:00 to 1:30 – Committee Agenda Review Session
(NOC members only in the Bartholomew Conference Room)

1. 1:30 – 1:35 Review and Approval of the November 16, 2016 Meeting Minutes
2. 1:35 – 1:45 NOC Community Co-Chair Nomination and Election
3. 1:45 – 2:00 Review of Monthly Operations Reports: November and December, 2016
4. 2:00 – 2:30 Update on Converging Runway Operations – Kurt Mara, FAA Traffic Management Officer
5. 2:30 – 2:45 Noise Program Communication Enhancement Plan Update
6. 2:45 – 3:10 Evaluate Steeper Glide Slopes for Aircraft Arrivals
7. 3:10 – 3:20 Second Amendment to the Consent Decree Update
8. 3:20 Public Comment Period
9. Announcements
10. Adjourn

MSP NOISE OVERSIGHT COMMITTEE
MEETING MINUTES
Wednesday, 16th of November 2016 at 1:30pm

MAC General Offices Building –
Lindbergh Conference Room

Call to Order

A regularly-scheduled meeting of the MSP Noise Oversight Committee, having been duly called, was held Wednesday, 16th of November 2016, in the Lindbergh Conference Room at the MAC General Offices Building. Chair Fitzhenry called the meeting to order at 1:35pm. The following were in attendance:

Representatives:	P. Vick; K. Erazo; D. Miller; E. Petschel; J. Oleson; L. Olson; J. Hart; G. Goss; T. Foster; T. Fitzhenry; D. Nelson; A. Swenson
Staff:	D. Nelson; B. Juffer, L. Peilen; C. Leqve; A. Kolesar; G. Warren
Others:	A. Nemcek-Rosemount; G. Putnam-Mpls; J. Awl-Bloomington; S. Devich-City of Richfield; T. Link-City of Inver Grove Heights; M. McNeill-City of Mendota Heights; B. Hoffman-City of St Louis Park; L.Grotz-Edina; R. Owen-Met Council; T. Bathke-Sun Country Airlines; M. Park-City of Sunfish Lake; K. Goss-Edina; Anette Peterson-Apple Valley; S. Nienhaus-City of Burnsville; S. Murphey-City of Minneapolis; K. Danles- City of Minneapolis

1. **Review and Approval of the September 21, 2016 Meeting Minutes**
   Chair Fitzhenry, Richfield, requested a motion to approve the minutes from the September NOC meeting, **Representative Bergman, At-Large Representative,** made the motion with a second from **Chair Hart, Delta,** and was passed unanimously.

   Fitzhenry proposed the removal of Agenda item #6 due to the extensive agenda. **Representative Petschal, Mendota Heights**, moved to approve the proposal and it was seconded by **Representative Nelson, MBAA.**

2. **Review of Monthly Operations Reports: September and October 2016**
   Brad Juffer, Assistant Technical Advisor started out with noise complaints for September and October of 2016. There were 10,834 aircraft noise complaints in September followed by 9,985 aircraft noise complaints for October recorded for MSP. Complaints in September were down 11.4% from September 2015, while complaints in October were up 8% from October 2015. Year to date, complaints are up 3.1% For September, 496 locations filed a complaint,

dropping to 416 locations in October. This equates to an average of 22 complaints per location in September increasing to 24 complaints per location in October.

MSP saw its typical post-summer seasonal decrease in operations as 34,052 operations occurred in September while October experienced a boost associated with MEA week to 34,906 flights. Those totals were 3.5% and 2.8% higher than the same months of 2015. Year-to-date, the noise office has recorded 345,682 flights at MSP. This total is 2.2% above last year for the same time periods.

In total, 3.43 million people flew through MSP in August with 2.98 million in September. On average 100 people were on every airplane in August with that number dropping to 97 in September.

Collectively, September and October saw a 42/58% split between regional jets and mainline aircraft. This number is within tenths of a percentage point for the same time period in 2015.

During September and October, 65,386 operations occurred during the daytime hours between 6:00 AM and 10:30 PM. The remaining 3,572 aircraft operated during MSP nighttime resulting in a 5.2% rate. Last year for the same time period, 3,198 operated at night which equates to 4.8%.

Differences between scheduled and actual flights at night in September primarily occurred in the 10:30 PM, 12:00 AM, and 5:00 AM hours. 981 of the scheduled and 1,290 of the actual flights were arrivals, leaving 210 of the scheduled and 343 of the actual for departures.

Juffer went on to report that in October, most of the differences between scheduled to actual nighttime flights occurred in the 10:30 PM, 12:00 AM, and 5:00 AM hours. 1,025 of the scheduled and 1,304 of the actual flights were arrivals, leaving 243 of the scheduled and 406 of the actual for departures.

For the Runway 17 Noise Abatement Departure Procedure, 99.4% and 99.8% of all jets complied with the Runway 17 procedure in September and October.

Juffer then reported on the Eagan-Mendota Heights Departure Corridor 93.3% and 96.4% of all 12L/12R carrier jets remained in the corridor in September and October. The majority of the deviations were through the south gate and the majority of those occurred on 9/21 and 9/22. On those days the wind was out of the east and northeast with some thunderstorms.

Juffer reported that the Crossing-in-the-Corridor procedure was used 49% in September and 54% in October during the nighttime hours.

According to the Runway Use System (RUS), the high priority runways were used 52.8% in September and 52.6% in October.

3. Update on Turboprop Departures over Mendota Heights

Dana Nelson, Technical Advisor provided a summary of the memo in the meeting packet. The FAA has evaluated an option to keep turboprop aircraft in the corridor however they determined it was not feasible due to separation requirements. The FAA also evaluated if it was possible to depart turboprop aircraft and have them turn early over the river before they go over

the city of Mendota Heights. That too was determined to not be feasible because the aircraft would then point directly at the Saint Paul Downtown Airport and would conflict with its airspace.

4. **Runway Use System (RUS) Evaluation**
   Dana Nelson, Technical Advisor reported that the 2016 NOC Work Plan includes an FAA RUS evaluation. In May 2013 a monthly report started to assess the RUS and in 2016 that information was included in the operation reports. **Representative Miller** mentioned that she noticed the report references priority runways and asked how that information would look if only the top two runways were evaluated. **Representative Olson** added that the reports are appreciated but asked if the runway use statistics in the technical advisors report can be added to the RUS report. **Representative Hart** asked if the group could step away from RUS by runway and focus on RUS by flow. **Nelson** responded that revisiting the way the RUS is reported could be added to the 2017 Work Plan, as it will be finalized in an upcoming agenda item.

5. **Annual MSP Fleet Mix and Nighttime Operations Assessment**
   Brad Juffer, Assistant Technical Advisor noted that the annual fleet mix and nighttime operations report is in the meeting packet and included from 2011-September 2016. That information is then broken down by aircraft size; wide bodies, narrow bodies, and regional jets. There has been a steady increase in nighttime operations since 2012. **Representative Olson** mentioned that is seems as though regional aircraft are quieter than narrow bodied as well as while aircraft has gotten quieter in the last ten years or so, it doesn't seem they've gotten quieter in the last 5 years or so. **Juffer** responded that in general regional aircraft are quieter however there are many qualifiers to that statement. As Delta retired MD-80s the noise reduction will happen over all but for now that won't be in full effect until 2019.

6. **Consent Decree Amendment Update**
   Dana Nelson, Technical Advisor reported that the Consent Decree needed to be updated from the First Amendment to the Second Amendment. Clarification was needed in the document, inclusion of the Aviation Environmental Design Tool (AEDT), clarification on the opt-out provision. The Second Amendment provides a definition of the noise model to mean the most recently released version of AEDT or the most recently released version of any subsequent FAA modeling software that the FAA uses for evaluation in Part 150 studies. There will also be a one year INM safeguard so if there are homes that drop out of mitigation eligibility in the 2016 Actual Contour, an INM contour can be developed to see if those homes are included. If they are, they will be grandfathered in to eligibility for one year. Lastly, for homeowners who declined partial mitigation during the original Consent Decree, there was clarification that should they become eligible for the full 5 dB package, they will be able to opt in to the Full 5 dB Mitigation Package. Parties from Minneapolis, Eagan, and Richfield have signed off in support of the Second Amendment. Additionally, the MAC Board voted in support and FAA approval is pending. Once approved, it will be sent to the Hennepin County Court to be finalized.

7. **FAA Center of Excellence/Ascent, TRB, and FICAN Research Initiatives**
   Dana Nelson, Technical Advisor presented the annual report that is part of the work plan for 2016 and located in the agenda packet. There are 13 projects in the FAA Center of Excellence/Ascent and there are 20 projects in the Transportation Research Board. FICAN didn't have any projects initiated or completed in the last year but the information to access their

site is included in the packet. Recent studies concerning health related effects of aircraft noise are also in the report.

8. **Optimized Profile Descent (OPD) Evaluation and Fuel and Emissions Reduction Results**
   Brad Juffer, Assistant Technical Advisor presented the MSP NextGen implementation and benefits of OPD. FAA has spent many years upgrading the national air traffic control system to a satellite based system so aircraft can move more efficiently. **Juffer** reported that the implementation of NextGen procedures at MSP was largely guided by the NOC. Recognizing that there are substantive benefits from the OPDs, at the request of various local stakeholders, the MAC Noise Program Office staff began a process to quantify the benefits. Namely, MAC GIS Coordinator Matt Baker created an application to analyze flight data from the FAA, fuel data from the airlines and emissions data from the climate registry. **Juffer** reported the preliminary findings with just one third of the arrivals evaluated since April 2015. The application has determined 89.3% of all MSP arrivals have utilized an OPD descent profile and this has saved approximately 2,412,733 gallons of fuel for MSP carriers. As a result, this means OPD has reduced carbon emissions by 23,745 metric tons.

9. **MSP Airport Noise Basics Video Part 1**
   Dana Nelson, Technical Advisor reminded the Committee of the four tactics involved in the Noise Office Communication Enhancement Plan. One of the tactics is the production of a series of "Noise 101" style videos. The first video in the series "Who Makes the Decisions" is on the MAC Noise website and was played at the meeting. The remainder of the videos will be shown as they are created. The first video was already shown at a public input meeting and thus far the response has been positive.

10. **FAA Communication Materials for MSP Area Navigation (RNAV) Arrival Adjustments**
    Dana Nelson, Technical Advisor reported that the FAA NextGen Office has a new webpage to share information about small adjustments being made to RNAV arrival routes at MSP beginning in January 2017. The webpage hosts a video, fact sheets and environmental documentation. **Representative Olson** was acknowledged for playing a key role in this project, ensuring critical and clear information is being shared by the FAA.

11. **Review of October 26, 2016 Public Input Meeting**
    Dana Nelson, Technical Advisor reported that seven residents attended the 4th Quarter Public Input Meeting. The format changed slightly as questions were answered when they were asked. Topics of discussion included: CRO, environmental impacts to MN Valley National Wildlife Refuge, NOC Resolution regarding FAA environmental and capacity review from CRO, RNAV, and federal thresholds and metrics for determining significant impacts. The next meeting will be January 25th, 2017 at 7pm.

12. **Approval of 2017 NOC Work Plan, Meeting Dates and 2016 Accomplishments**
    Dana Nelson, Technical Advisor presented the 2017 NOC Work Plan and mentioned two changes since the draft was presented to the Committee in September: the addition of (n) Update on Converging Runway Operations at MSP and more clarification on letter (f) Update on the FAA's Survey to Re-Evaluate Noise Measurement Methods. The City of Minneapolis requested that (f) include an assessment on MSP-specific noise metrics. After a discussion at the NOC pre-meeting, it was discussed that another item (o) be added Runway 17 Departure

Evaluation to Study the Benefits and Draw-Backs of Increased Usage. **Nelson** then proposed that the NOC add item (p) Evaluate and Enhance the Reporting of the Runway Use System (RUS). **Chair Fitzhenry** requested a motion, **Representative Oleson** made the motion which was seconded by **Co-Chair Hart** and passed unanimously. **Nelson** continued by presenting the list of 2016 NOC accomplishments. The dates for the 2017 NOC Meetings were reviewed, they are the 3rd Wednesday of the odd numbered months. The time will remain the same and the location will remain the same except for the meeting on January 18th, 2017 which will be located at the Richfield Municipal Building at 6700 Portland Avenue South, Richfield.

13. Public Comment Period

No Public Comments

14. Announcements

Chair Fitzhenry thanked Elaine Buckner of the FAA and wished her luck on her move to the FAA in Washington, D.C. This thanks was echoed by **Representative Petschel** and **Representative Olson**.

Representative Park of Sunfish Lake announced that Sunfish Lake City Council member Dan O'Leary will be replacing her as the Sunfish Lake contact for the NOC Community At-Large membership.

Representative Swenson of Edina announced that Council Member Mary Brindle will replace her as the Edina contact for the NOC Community At-Large membership.

Chair Fitzhenry of Richfield announced that he did not seek re-election and his replacement on the NOC for the Richfield representative will be Pam Dmytrenko.

15. Adjourn

The meeting adjourned at 2:49 p.m.

The next meeting of the NOC is scheduled for Wednesday, 18 January 2017.

Respectfully Submitted,
Amie Kolesar, Recording Secretary

ITEM 2

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **NOC COMMUNITY CO-CHAIR NOMINATION AND ELECTION**

DATE: January 4, 2017

In light of Tom Fitzhenry's retirement from public office, the NOC community representatives will be conducting elections for an interim Co-Chair position to serve for a period of six months, after which all NOC membership terms expire (June 25, 2017). Once all NOC representatives are appointed, nominations and elections will be held for both the Community and User Co-Chairs to serve for a two-year term.

Article V of the NOC Bylaws outlines the process for the selection of Co-Chairs:

> *"The airport user and community segments of the Committee shall each select a Co-Chairperson who will serve at the pleasure of the appointing group. Each Co-Chairperson will serve for a two-(2) year term or until his/her representation on the Committee terminates, or until replaced by the appointing group, whichever occurs first.*
>
> *The powers and duties of the Co-Chairpersons are as follows:*
>
> *1. To review agendas.*
>
> *2. To preside over meetings - the presiding Chairperson will alternate every other meeting.*
>
> *3. By the mutual consent of the Co-Chairpersons, special meetings may be called, or upon request of a majority of the Committee, four (4) users and four (4) community representatives.*
>
> *4. To sign as Co-Chairpersons of this Committee, all instruments in writing that may require such signature, unless the membership shall otherwise direct, and to perform such other duties and tasks as these Bylaws or as the membership shall from time to time prescribe.*
>
> *5. Each segment of the Committee, by a majority vote, shall elect their respective Co-Chairperson."*

At the January 18, 2017 NOC meeting a nomination and vote will be conducted for the community representatives to select their interim Co-Chair to serve until the July 19, 2017 meeting at which nominations and elections will occur to appoint both Co-Chair positions for a two-year term.

COMMITTEE ACTION REQUESTED

CONDUCT COMMUNITY CO-CHAIR NOMINATION AND ELECTION TO ESTABLISH THE INTERIM COMMUNITY CO-CHAIR.

ITEM 3

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Bradley Juffer, Assistant Manager—Noise, Environment & Planning

SUBJECT: **REVIEW OF MONTHLY OPERATIONS REPORTS**

DATE: January 4, 2017

Each month the Metropolitan Airports Commission (MAC) produces a Technical Advisor's Report for the Noise Oversight Committee (NOC). This report provides information on the Minneapolis-St. Paul International Airport (MSP), such as aircraft noise complaints, aircraft operations and noise levels associated with MSP aircraft operations.

Additionally, the MAC produces four monthly reports assessing the compliance with established noise abatement procedures: the Runway 17 Departure Analysis Report, the Eagan-Mendota Heights Corridor Report, the Crossing-in-the-Corridor Analysis and the MSP Runway Use System (RUS) Report.

At the January 18, 2017 NOC meeting, MAC staff will provide a summary of these five monthly operations reports for the months of November and December, 2016, as well as a year-end summary for 2016.

ITEM 4

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **UPDATE ON CONVERGING RUNWAY OPERATIONS – KURT MARA, FAA TRAFFIC MANAGEMENT OFFICER**

DATE: January 4, 2017

At the January 8, 2017 NOC meeting, an update will be provided on the Federal Aviation Administration's efforts to mitigate the effects of Converging Runway Operations (CRO) at Minneapolis-St. Paul International Airport (MSP).

ITEM 5

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **NOISE PROGRAM COMMUNICATION ENHANCEMENT PLAN UPDATE**

DATE: January 4, 2017

In 2016, the MAC Environment and Public Affairs and Marketing (PAM) departments collectively developed a Noise Program Communication Enhancement Plan. This plan identifies four tactics to enhance community stakeholders' understanding of the complexities associated with aircraft operations and provide an evaluation of our current noise program engagement and communication techniques driven by stakeholder input and external consultation. MAC staff will provide an update on this plan at the January 18, 2017 NOC meeting.

Tactic 1
Produce a series of five videos and fact sheets to help communicate the basic facts about aircraft noise. In 2016, one video was completed and published on the MAC Noise Program Office website along with an accompanying fact sheet. The video was played for the MSP Noise Oversight Committee, the MAC Planning, Development and Environment Committee and at the Fourth Quarter Public Input Meeting. The remaining videos and fact sheets will be produced in 2017.

Tactic 2
With ongoing partnership between the Environment and PAM departments, identify developing trends in noise concerns and address them with easy-to-understand web articles explaining changes that have occurred, sharing valuable information or debunking misinformation regarding noise concerns. This effort is ongoing and has resulted in 22 news articles published in 2016. Since this tactic is ongoing, there will be no completion date.

Tactic 3
Develop and distribute informational brochures that would be shared with individuals calling the noise complaint hotline for the first time and for individuals entering a noise complaint through the website. In 2016, a brochure was developed to share information about MSP-specific noise topics. This brochure is being distributed to communities surrounding the airport, at public meetings and through the noise complaint website. An additional brochure was developed to share noise topics related to all MAC airports and distributed via the website and reliever airport commissions. This tactic is completed.

Tactic 4

Launch a Community Engagement Enhancement program in consultation with external convening and communication experts to enhance community engagement using stakeholder feedback. In 2016, a survey was conducted with 800 residents surrounding MSP and interviews were held with community stakeholders. Staff is in the process of evaluating and implementing improvements for creative collaboration and effective communication. Staff will provide regular updates to the NOC as these improvements are implemented throughout 2017.

ITEM 6

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **EVALUATE STEEPER GLIDE SLOPES FOR AIRCRAFT ARRIVALS**

DATE: January 4, 2017

The 2017 NOC Work Plan includes an evaluation of steeper glide slopes for aircraft arriving to Minneapolis-St. Paul International Airport (MSP).

A glide slope provides vertical guidance to arriving aircraft to make sure they stay clear of obstructions and that they reach the proper touchdown point at the end of the runway. The glide slope it is the vertical component of an Instrument Landing System (ILS), while the localizer provides aircraft lateral guidance. The ILS is known as a precision approach procedure and is essential for safe arrival operations particularly in bad weather.

Guidelines published by the International Civil Aviation Organization (ICAO) state that 3° is the optimum approach angle for precision approaches and that descent gradients steeper than the optimum should not be used unless all other means to avoid obstacles have been attempted. This is because these steeper approach angles may result in descent rates exceeding aircraft approach limits[1]. Therefore, the international glide slope standard is 3°. There is a small number of airports that have higher approach slopes for purposes of keeping aircraft clear of obstacles and/or terrain during the approach to the airport.

Two international airports have evaluated and/or implemented steeper glide slope angles solely for noise reduction purposes: Frankfurt Airport in Germany uses a 3.2° on its newest runway, which opened in 2011; and London Heathrow tested a 3.2° glide slope for a period of six months to better understand how an increased glide slope would affect operations and to measure the noise reduction benefit that could be achieved.

An evaluation of these airports was conducted by MAC Noise Program Staff and is detailed in this memo. Additional details on this topic will be provided to the NOC at its January 18, 2017 meeting.

Frankfurt Airport

In 2011, Frankfurt Airport began conducting flight simulator studies to investigate safety, operational aspects and pilot workload for 3.0°, 3.2° and 3.5° ILS glide slopes for the newest of its four runways[2].

[1]International Civil Aviation Organization; Aircraft Operations Volume II, 2006; code7700.com/pdfs/icao_doc_8168_vol2.pdf

[2]Fourteenth Australian International Aerospace Congress, *On the Influences of an Increased ILS Glide Slope on Noise Impact, Fuel Consumption and Landing Approach Operation*, R. Koenig and E. Schubert www.ff.tu-berlin.de/fileadmin/fg198/100929_AIAC14_Paper_6_00_Koenig_Schubert.pdf

They found that the 3.2° glide slope angle allowed aircraft to be up to 246 feet higher at the point they intercept the ILS. Glide slope angles at or above a 3.5° required a change in gear and flaps deployment further away from the airport, reducing or negating noise benefit gained from the slightly higher flight path. The study also found that the 3.2° glide path did not lead to safety problems or procedural changes, nor did it lead to an increased number of go-arounds.

In October 2012, Frankfurt Airport took action to begin operationally testing the 3.2° glide slope by installing two independent ILS systems for each end of the new northwest runway (25R/7L), making it one of the only runways worldwide equipped with a total of four ILS systems[3]. Two ILS systems, one on each end of the runway, have a 3.2° glide slope angle and are used only for Category I approaches, for high-visibility conditions. When there are low cloud ceilings or low visibility conditions, aircraft may need to fly Category II or III approaches needing a 3° glide slope. For Frankfurt Airport, this necessitated the installation of an additional ILS system on each end of the runway for 3° glide slope angles. The additional ILS and required relocation of the glide path transmitter cost $3.3 million.

The increased glide slope operations went through a two-year test period and by December 2014, the 3.2° glide slope angle became standard. During the test phase, seven noise measurement stations collected noise data measuring noise reductions between 0.5 and 1.5 A-weighted decibels (dBA), unlikely to be perceptible on the ground[4].

London Heathrow Airport

Heathrow Airport completed a six month trial of a 3.2° glide slope angle in August 2016. The purpose of the trial was to analyze and observe if operating a 3.2° approach would have an adverse impact on the operation of the airport and to measure the noise benefit under the approach paths[5].

To conduct the trial, Heathrow amended their existing Area Navigation (RNAV) approaches, which take arrivals all the way down to the runways. The descent angle of the RNAV approaches were changed to 3.2°, leaving the ILS unaffected. This allowed aircraft to continue flying a 3° approach slope during low visibility conditions (Category II and III). The reason Heathrow Airport studied a 3.2° approach slope and not a higher was is because the aircraft would not need modifications, nor would pilots require further training.

During the trial, there were 2,469 arrivals that flew the 3.2° approach slope and 112,229 approaches that flew the standard 3° approach[6]. It was the pilot's decision as to which type of approach would be flown. The approaches were available only during Category I conditions. The height improvement on final approach was found to be lower than mathematically expected from a 3.2° approach because of temperature effects on the RNAV approaches. Colder than standard temperatures (15° C/59° F) resulted in less than ideal altitude gains.

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[3]Frankfurt Airport pioneers active noise abatement; Volume 19, Issue 4, 2015
ec.europa.eu/transport/sites/transport/files/modes/air/ses/ses-award/projects/doc/internationalairportreview_2015_q4_frankfurtgbas.pdf

[4]A reduction in the order of 3 dBA is widely considered to be required in order to be perceptible.

[5]Slightly Steeper Approaches Trial, Community Noise Forum July 2015
www.heathrow.com/file_source/HeathrowNoise/Static/Steeper_Approach_trial.pdf

[6]London Heathrow Airport Limited 3.2° Slightly Steeper Approach Trial Report, August 2016
www.heathrow.com/file_source/HeathrowNoise/Static/Heathrow_Slightly_Steeper_Approach_Trial_Report.pdf

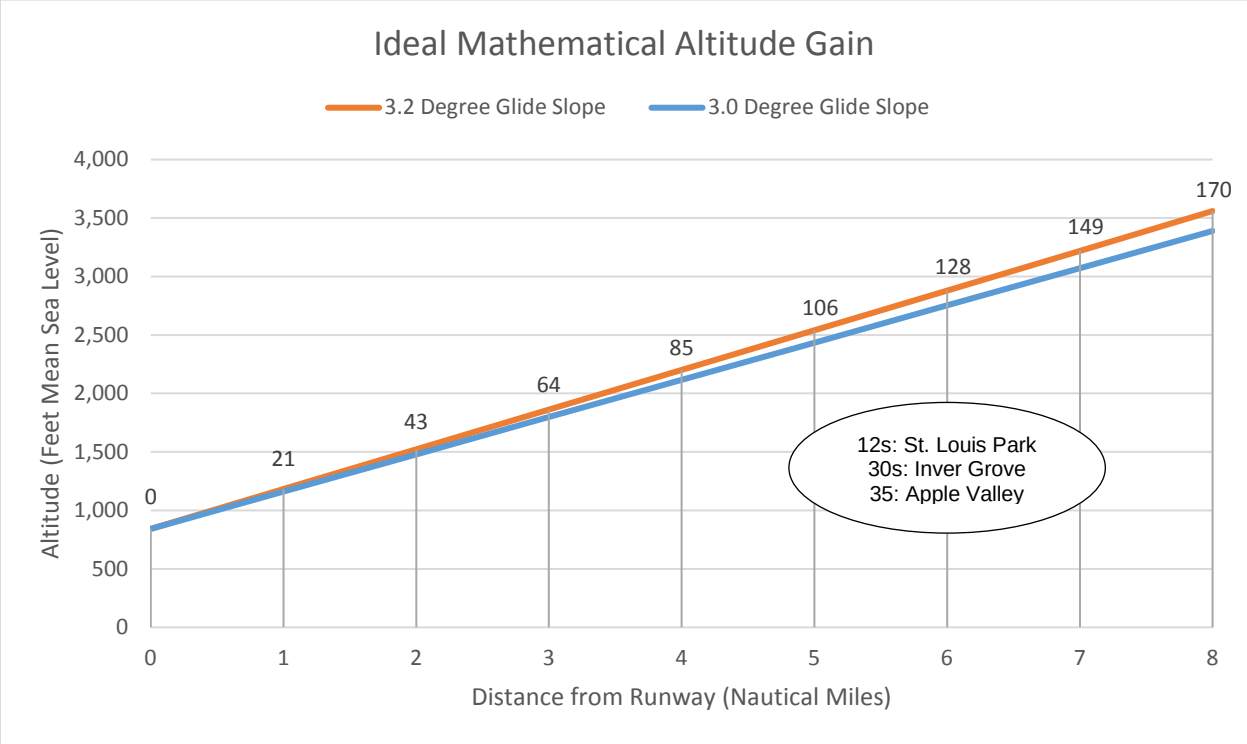
Post-trial workshops were held with Heathrow Airport airlines and the air traffic controllers. Air traffic controllers felt there was no noticeable operational difference between the 3° and 3.2° approaches. It was noted, however, that there was an increase in controller workload resulting from the change to a 3.2° RNAV approach. It was also noted that when there was a tailwind, controllers noticed a reduction in the number of requests for the 3.2° RNAV approaches, likely due to an uncertainty of the impacts to landing distance and speed from the steeper approach.

Heathrow Airport pilots do not believe that the 3.2° RNAV approach made a difference in their ability to manage the aircraft's speed, nor did it result in an increase in the number of go-arounds. It should be noted, however that the runways at Heathrow Airport are longer than those at MSP, therefore concerns with regard to increased speed and energy would likely have been alleviated by the large landing distance available. The pilots collectively agreed that an approach angle above 3.2° would start to create issues with speed management and landing distance.

Ideal trajectories under standard conditions were expected to provide noise reductions at receptors directly below the approach path of approximately -0.7 dBA. The actual noise event data at Heathrow Airport showed noise reductions short of this expectation in terms of consistency and magnitude. The noise reductions ranged between -1.4 dBA to +0.1 dBA with an average of -0.5 dBA, unlikely to be perceptible on the ground.

Heathrow Airport's long-term plan is to incorporate 3.2° glide slope angles in their proposals for redesigning the Heathrow airspace as part of the government's future airspace strategy.

The chart below shows what the ideal mathematical altitude gain would be for MSP between a 3.2° and a 3° glide slope. The altitude values do not go to 0 on the chart since MSP airport elevation is at 842 feet. The gain in altitude is noted by the chart labels.



ITEM 7

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **SECOND AMENDMENT TO THE CONSENT DECREE UPDATE**

DATE: January 4, 2017

The cities of Minneapolis, Richfield and Eagan (the Cities), the Minneapolis Public Housing Authority and the MAC entered into a Consent Decree on October 19, 2007, settling litigation involving expansion of the MSP noise mitigation program to the 60 Day-Night Average Sound Level (DNL) noise contour. On September 25, 2013, the Hennepin County District Court approved an amendment to the Consent Decree sought by the MAC, the Cities and the Minneapolis Public Housing Authority. The amendment addressed community concern that the MSP 2020 Improvements Environmental Assessment/Environmental Assessment Worksheet was inadequate because it failed to provide mitigation for future contours. The amendment resolved the dispute and provided a path forward to continuing the noise mitigation program to December 31, 2024. The amended program provides the same mitigation packages per noise impact thresholds (63+ DNL & 62-60 DNL) with eligibility determined by successive years of higher noise impact as compared to the 2007 noise contours. This analysis is conducted annually by the MAC based on actual noise contours. In 2017, the MAC will be providing mitigation to 138 single-family homes and 88 multi-family units – the first group of homes provided mitigation as part of the amended program.

In the time since the First Amendment to the Consent Decree, the Federal Aviation Administration (FAA) upgraded its Integrated Noise Model (INM) through integration into its new Aviation Environmental Design Tool (AEDT) software. The FAA now requires the use of AEDT for airport planning documents and federal environmental review under the National Environmental Policy Act (NEPA). Additionally, as the noise mitigation program has been implemented under the terms of the First Amendment to the Consent Decree, the parties determined that clarifications are required to the opt-out provision. The clarification would allow homeowners who declined a partial mitigation package under the original Consent Decree to reenter the program if they become eligible for the full 5 dB mitigation package under the terms of the First Amendment to the Consent Decree.

Staff has been collaborating with the Cities to develop specific amendment language addressing the use of AEDT and the opt-out provision. The amendment expressly allows MAC to use FAA's AEDT noise model to determine program eligibility going forward, with a one-year phase-in INM eligibility safeguard. The amendment also provides opt-out homeowners with the option to reenter the program if they become newly eligible for the full 5 dB mitigation package based on actual noise impacts.

In exchange, the Cities agreed to support the use of AEDT for determining program eligibility going forward. The MAC will also receive a waiver of all noise claims from homeowners who previously opted out of the partial noise mitigation program and now reenter the program to receive the full 5 dB noise mitigation package.

MAC staff will provide an update on this topic at the January 18, 2017 NOC meeting.