Metropolitan Airports Commission

Noise Oversight Committee

Regular Meeting Agenda

Wednesday, May 26, 2010

1:30 pm

Minneapolis/St. Paul International Airport (MSP)
Noise Oversight Committee (NOC)
Meeting Agenda
May 26, 2010
1:30 P.M.
Lindbergh Conference Room
MAC General Office Building
6040 28th Avenue South
Minneapolis, MN 55450
(Mary Loeffelholz, Delta Airlines & NOC Co-Chair, will be the acting Chairperson for the meeting)

***Note:** 1:00 to 1:30 – Committee Agenda Review Session (NOC members only in the Coleman Conference Room)

1. 1:30 to 1:45 – Public Comment Period

2. 1:45 to 1:50 – Review and Approval of March 17, 2010 NOC Meeting Minutes

3. 1:50 to 2:05 – Multilateration (MLAT) System Installation and Real-Time Flight Tracker Development Update

4. 2:05 to 2:20 – Runway 35 Continuous Descent Approach (CDA) Procedure Development/Test

5. 2:20 to 2:30 – FAA Review of Runways 12L, 12R and 17 RNAV Departure Procedures

6. 2:30 to 2:40 – Second Quarter 2010 Public Input Meeting Comments

7. 2:40 – Adjourn

ITEM 3

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Chad E. Leqve, Manager – Aviation Noise and Satellite Programs

SUBJECT: **MULTILATERATION (MLAT) SYSTEM INSTALLATION AND REAL-TIME FLIGHT TRACKER DEVELOPMENT UPDATE**

DATE: May 12, 2010

Background

In 1992, the Metropolitan Airports Commission (MAC) Noise and Satellite Programs Office installed one of the most sophisticated and comprehensive Airport Noise and Operations Monitoring Systems (ANOMS) of its kind in the United States. At an initial cost of approximately $1 million, ANOMS became the central element of an evolving noise and airspace analysis program that has been used extensively by MAC staff to aid in the process of reporting and analyzing aircraft operations and related noise levels around Minneapolis-St. Paul International Airport (MSP).

One of the key components of ANOMS is the flight track data acquisition system. Currently, the ASR-9 radar located at MSP provides the aircraft position and aircraft-specific information for each flight track. This information is essential in noise program management and is used for airspace analysis, community reporting, data requests, developing environmental planning documentation (e.g. Environmental Assessments, Part 150, etc.), Airport Long-Term Comprehensive Planning, identifying possible trends or irregularities that need to be addressed and maintaining information that community residents, representatives and government officials have come to rely upon.

The last flight track data acquisition upgrade occurred in 2001 when the FAA upgraded its radar system, which required the MAC to upgrade the method used to acquire radar flight tracks. The MAC is completely dependent on the ASR-9 radar and FAA Air Traffic Control (ATC) personnel for flight track and aircraft-specific information. Several variables exist that are outside of the MAC's control that limit the amount of flight track data received. Several restrictions and conditions are also placed on the data's use via a Letter of Agreement with the FAA that limits the MAC's reporting and analysis capabilities. Staff conducted a comprehensive analysis of the ANOMS radar flight track and aircraft-specific information acquired from the ASR-9 radar, and found that over an 82-hour period, approximately 4.1% of the flight track data were not received due to data unavailability from the FAA ATC.

Effective flight track data collection within the MAC Noise Office is critical to the continued success of the cost-effective noise reduction and outreach initiatives performed in the Noise Office. In addition, provisions were outlined in the Consent Decree (for the settlement of the noise lawsuit between the City of Minneapolis, et al., and the MAC), for maintaining a flight tracking and noise monitoring system and to develop annual noise contours and reports based on actual flight track data received from that system.

The Consent Decree states that "by March 1 of each year, MAC shall develop and make available to the public a noise contour report using the FAA's Integrated Noise Model to reflect noise conditions from the prior calendar year, using actual MSP operations data derived from the Airport Noise and Operations Monitoring System or a functionally equivalent flight tracking and noise monitoring system ("Monitoring System")."

As a result, it was determined that an upgrade investment in the flight track and noise monitoring system at MSP was necessary. The system upgrade is needed to provide a stable and expandable platform for airspace and noise analysis, as well as to provide a flight track data acquisition solution that is more accurate than the current system, and to eliminate data unavailability to the greatest extent possible.

The 2008 MAC Capital Improvement Program included $500,000 to upgrade the Airport Noise and Operations Monitoring Systems (ANOMS) technology at MSP. The upgraded system consists of three main components: new analysis system software; upgraded analysis system hardware; and a multilateration flight track data acquisition system.

Staff evaluated the available flight track data acquisition technologies, data integrity requirements and other airports' experiences with these technologies and determined that a multilateration flight track data acquisition architecture is the best option for addressing flight track data needs in the Noise Office well into the future at MSP. A multilateration[1] flight track data acquisition system is essential to the continuation of enhanced flight track and noise monitoring capabilities at MSP and to provide successful noise and airspace analysis into the future. This new system will provide, with a high degree of confidence, more accurate data, greater update rates, better coverage and improved reliability to the noise and operations monitoring system.

Additionally, multilateration technology is completely expandable and can be configured to add radar flight track coverage to the outlying reliever airports in the future, thus improving flight tracking, operations reporting and analysis at those airports. This is significant due to the fact that communities around the reliever airports rely heavily on the limited flight track data and the reporting capabilities that are presently provided by the existing system at MSP.

The components of a multilateration flight track data acquisition system include the installation of remote sensors that will provide precise, real-time aircraft flight tracking and positional information. The sensors scan the airspace for transponder and collision avoidance signals (TCAS) given off by other aircraft and triangulates an aircraft's exact position.

Multilateration System Installation

Throughout the second half of 2008 and early 2009 MAC Noise Office staff was engaged in extensive contract negotiations with the ERA Corporation for the installation of a multilateration flight tracking system at MSP. Due to the acquisition of ERA Corporation by SRA Corporation the contract negotiation and finalization process was

[1] Multilateration is the process of locating an aircraft based on the Time Difference of Arrival (TDOA) of a signal emitted from that aircraft to three or more sensors. When a signal is transmitted from the aircraft, it will be received by two spatially separate sensors at different times. The time difference is then used to calculate the aircraft's position. By using three or more sensors, a precise position can be obtained.

complicated and prolonged. Additionally, MAC staff was in the process of negotiating leases with various government and private communication tower owners to locate multilateration sensors on eight communication towers in the metropolitan area.

On June 1, 2009 the multilateration sensor installation process began and by June 5, 2009 the installations were complete on all eight communication towers. The attached map provides the tower locations of the eight sensors around the metro area.

The multilateration system installation is complete and the system is performing well. The data stream is presently being integrated into the new MAC Noise and Operations Monitoring System (MACNOMS). By June 30, 2010 the integration will be complete, providing flight track data with a one-day delay on the macnoise.com website.

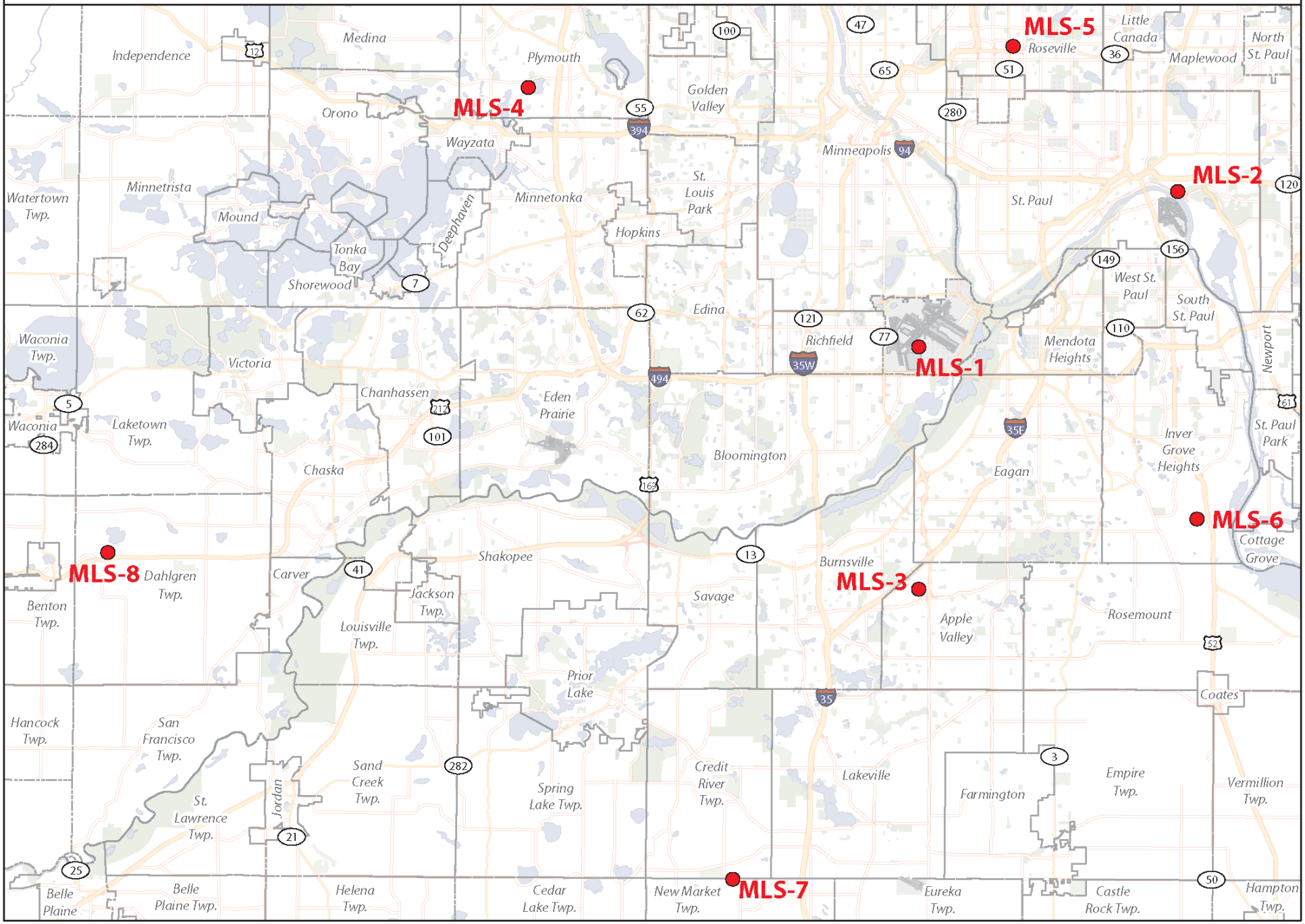
Additionally, development and integration of Harris, Miller, Miller and Hanson (HMMH) In-Flight flight track and noise data processing system is complete and operating as a central part of the MACNOMS and MAC staff has completed the development of the MACNOMS noise and flight track data analysis and mapping applications.

Real-Time Flight Tracker Development

As part of the system development process MAC staff is working with HMMH on the development of a real-time flight tracking application for the macnoise.com website. The real-time flight tracker will utilize the MACNOMS multilateration data feed to provide the ability to view an animated aircraft operations map with only a 10-minute delay in the flight track data feed. It is anticipated that this application will be available on the macnoise.com website by August 31, 2010.

At the May 26, 2010 NOC meeting MAC staff will provide an update on this significant development effort.

Multilateration Site Locations



ITEM 4

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Chad E. Leqve, Manager – Aviation Noise and Satellite Programs

SUBJECT: **RUNWAY 35 CONTINUOUS DESCENT APPROACH (CDA) PROCEDURE DEVELOPMENT/TEST**

DATE: May 12, 2010

Background

Continuous Descent Approach (CDA), now commonly referred to as Optimized Profile Descent (OPD), is an aircraft approach procedure that reduces noise, engine emissions, and fuel consumption during the landing phase of flight. As part of the research conducted to date it has been proven that modification of descent paths and procedures can greatly reduce noise. Traditional approach practices entail aircraft beginning their approach descent several miles from the airport and spending significant amounts of time at lower altitudes while "stepping" their way down to the airport. This process requires engine thrust applications at each point along the descent where the aircraft levels out and waits for the descent to the next lower altitude in the procession down to the runway. When describing CDA/OPD, Dr. John-Paul Clark, Associate Professor, MIT Aeronautics and Astronautics, writes:

"The new procedure, called a Continuous Descent Approach (CDA), keeps the aircraft at cruise altitude until they are relatively close to an airport. At this point, the aircraft make an even, continuous, descent to the runway. The result is an average noise reduction of four to six decibels. A three-decibel difference is appreciably noticeable to the human ear while a ten-decibel reduction equates to a 50% less noise. Side benefits include reduced fuel burn and emissions, and slightly shorter flights, as aircraft operate at lower power settings, stay at higher altitudes, maintain higher speeds, and take more direct (and thus shorter) paths to the runway."

In September 2003 the Center of Excellence for Aircraft Noise and Aviation Emissions Mitigation and the Partnership for AiR Transportation Noise and Emissions Reduction (PARTNER) were established to foster innovative and breakthrough approaches to address technical, operational, and workforce capabilities for quieter and cleaner aircraft operations. The FAA, NASA and Transport Canada are co-sponsoring this effort to further understand aerospace environmental issues.

PARTNER provides resources from academia, industry and government in an effort to identify solutions for present and future noise and emission issues. The group will conduct research and develop prototype solutions for addressing these issues.

Several efforts have been established as PARTNER projects, including: a low-frequency noise study; measurements, metrics and health effects of noise; valuations and trade-offs of policy options; continuous descent approach; aircraft operations and air traffic control; quiet rotorcraft and short-field operations; supersonic transport; emissions

measurements; NoiseQuest; emissions health effects; emissions atmospheric impacts; lateral alignment in complex systems; and environmental design space.

PARTNER Project 4 is the Continuous Descent Approach (CDA) initiative. This effort is being headed by the Noise Abatement Procedures Working Group (NAPWG), which consists of MIT, Boeing, the FAA, NASA, the Louisville Regional Airport Authority, and UPS.

The CDA/OPD project began in 2002 with objectives to design a CDA procedure for Louisville International Airport-Standiford Field (SDF), determine/measure the benefits of this CDA/OPD procedure, and identify Flight Management System (FMS) issues that need to be addressed related to CDA. In 2004 data were gathered on over 100 UPS flights, to be incorporated into a report of findings.

As part of the evaluation process, the NAPWG expanded testing on certain UPS flights. In mid-2005 the Metropolitan Airports Commission (MAC), at the request of the NOC, submitted a request to the FAA to be included in the expanded airport test sample of airports. However, MSP was not selected as a test facility. The final PARNTER report is available online at: http://web.mit.edu/aeroastro/partner/reports/cda_rpt.pdf

Given the noise reduction and operational benefits of CDA/OPD, the NOC determined that further evaluation of the procedure, possibly in the form of an MSP procedure test plan (developed in consultation with Delta Air Lines and the FAA) could help provide a plan for possible future implementation of the procedure at MSP. As such, the NOC included conducting a CDA/OPD test at MSP on the 2010 NOC Work Plan.

Possible OPD Test at MSP

On May 3, 2010 MAC staff held a meeting with FAA representatives from Farmington Center, MSP Tower and TRACON and Delta Air Lines representatives, initiating discussion on a possible OPD test at MSP. It was determined that Runway 35 is the best OPD test candidate at MSP. The next step in this process is to design an OPD procedure that will overlay an existing arrival procedure to Runway 35 (the TWOLF Standard Terminal Arrival Route – STAR). Presently it is anticipated the specifics of the test procedure will be provided for review at the July 21, 2010 NOC meeting with a test trial to follow.

Staff will provide a briefing on this topic at the May 26, 2010 NOC meeting.

ITEM 5

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Chad E. Leqve, Manager – Aviation Noise and Satellite Programs

SUBJECT: **FAA REVIEW OF RUNWAYS 12L, 12R AND 17 RNAV DEPARTURE PROCEDURES**

DATE: May 12, 2010

In 2009 the MSP NOC developed, and the MAC submitted to the FAA, Runway 12L, 12R and 17 Area Navigation (RNAV) departure procedures to aid in noise reduction efforts at MSP. In recent discussions with FAA officials it was indicated that their review and approval process could last as long as 16 to 18 months.

Based on the unique circumstances surrounding these procedures, and the fact that in certain cases the FAA has completed such reviews at other airports in much shorter periods of time, staff feels that a request to expedite the review of the procedure is in order.

Staff will provide a briefing on this topic at the May 26, 2010 NOC meeting.

COMMITTEE ACTION

NOC CO-CHAIRS SEND A LETTER TO THE FAA EXPLAINING THE UNIQUE CIRCUMSTANCES SURROUNDING THE RUNWAYS 12L, 12R AND 17 RNAV DEPARTURE PROCEDURES, AND REQUESTING THE FAA'S EXPEDITED REVIEW AND APPROVAL OF THE PROCEDURES; AND REQUEST THAT THE MAC SEND A SIMILAR LETTER TO THE FAA.

ITEM 6

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Chad E. Leqve, Manager – Aviation Noise and Satellite Programs

SUBJECT: **SECOND QUARTER 2010 PUBLIC INPUT MEETING COMMENTS**

DATE: May 12, 2010

One of the elements of the Metropolitan Airports Commission's (MAC) approved framework for the MSP Airport Noise Oversight Committee (NOC) requires MAC staff to conduct quarterly public input meetings. The intent is to ensure residents' concerns are considered as part of the ongoing effort by the MAC and the NOC to address noise issues around MSP. This memorandum provides a summary of the comments received at the last public input meeting. The NOC may also review these topics as possible future action items if the members so desire.

On April 27, 2010 MAC Aviation Noise and Satellite Program staff conducted the second quarter 2010 public input meeting; six people attended the meeting and two individuals made comments. MAC staff responded to questions at the meeting and is also providing a written response to the questions. The comments and associated responses can be found on the MAC Noise Program's website accessible on the Internet at www.macnoise.com.

In summary, questions raised at the meeting focused on ground noise before 6:00 A.M. and after midnight in Highland Park, impacts from Runway 17/35 in Eagan and Apple Valley and possible operational options for reducing noise impacts in those areas, and the considerations given in the noise contour development process for these areas.

The above topics are provided to MAC Commissioners for informational purposes and to NOC members for consideration as possible future discussion items if the Committee members so desire.

The next quarterly public input meeting is planned for July 27, 2010.