South Metro Airport Action Council

White Paper: Safety and Noise Issues Surrounding MSP Performance-Based Navigation (PBN)

http://quiettheskies.org
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U.S. Rep. Keith Ellison is holding tonight's Forum to discuss if and how RNAV/PBN routing, now required by Public Law 112–95 and various agreements,may be implemented at Minneapolis-Saint Paul International Airport. What are the safety, economic and environmental, issues? What actions ought citizens, local government, the Metropolitan Airports Commission, and the Congress take to improve the situation?

Background: A passenger jet and a cargo plane passed very close to each other in September 2010 after taking-off from Minneapolis-St. Paul International Airport (MSP) at about the same time. The Federal Aviation Agency (FAA) responded by revising departure procedures. The MSP Air Traffic Control Tower (ATCT) thereafter frequently had aircraft departing on the North Parallel Runway (R30R) turn to a due north heading.

Congressman Keith Ellison co-sponsored the SMAAC "Rates and Safety at MSP" Forum in December 2010. MSP ATCT Manager Carl Rydeen represented FAA and explained the MSP procedures in detail, including the *rate and safety needs for the changes*. At the time, FAA was operating under a continuing resolution because the FAA re-authorization and budget was being held up in Congress. Rydeen defended continued high rates at MSP as manageable and "efficient."

Elected officials seldom realize that more noise complaints, most times, are a clue that funding, safety, capacity, competition or other issues are closely related.

Minneapolis Council Members Quincy and Colvin-Roy, discouraged that a series of public meetings and discussions with the MSP Noise Oversight Committee (NOC) resulted in no changes, approached Carl Rydeen and he agreed to institute additional headings for R30R departures, alternating between the runway heading (300 degrees), 320 degrees, 340 degrees, and 360 degrees.

The result was a profound change in noise over Minneapolis neighborhoods north of MSP. The turns saved time for flights headed to destinations north and east, and R30R was used by about half of all departures in "westerly flow" by May 2012. Noise complaints soared.

New Airport Noise. We agree wholeheartedly that departure procedures put in place since 2011 —and most of the proposed Performance-Based Navigation (PBN) routes —at MSP ***expose more people to unhealthy noise and pollution, and should not be allowed***. We welcome a public discussion of the problem, but overflight noise exposure is most assuredly a national, not a state or local, problem.

Observations and FAA radar data show that the revised R30R departures increased *noise intensity and duration* near the airport. Departures turn soon after lift-off, dividing thrust between turning, accelerating, and climbing. Departing aircraft turned to the north off R30R resulting in a shorter path from the airport property into residential neighborhoods.

The ground noise intensity and duration from these departures is greater per flight than before. The current procedures also increase *noise exposure* because more people are flown over, but decrease *annual average noise exposure* (DNL) because fewer overflights *per day per track were modeled.*

So what can be done?

The NextGen developments and deployments are far behind schedule and many changes will be made in the next FAA Re-Authorization and an FAA budget is proposed. PBN schedules and other parts of the FAA Re-Authorization will of necessity be revised by the White House and the policy and budget debated in Congress.

To make the aviation policy changes that are fair for neighborhoods near busy airports, improve safety and affordability for air travelers, and supply enough air service to support economic growth will be nearly impossible for the Minnesota delegation. But there are about 150 U.S. House districts and more than 50 cities around the 35 Airports that are an Operational Evolution Partner (OEP) for NextGen development These cities and Members of Congress can organize and work together, as suggested by SMAAC years ago, to fix the FAA Re-Authorization,

Legislate: Several avenues are available to use to pursue funding or policy changes in Section 213:

- The air quality advantage, if any, of reducing fuel consumption *per flight* by PBN is not only questionable but contrary to EPA rules, if not proven, and to International limits on carbon emissions. With PBN, there is going to be, at least near the airport, more fuel burn with RNP/RNAV, not less. The Section 213 artifice evades NEPA and other federal policies and treaties.
- FAA policy is safety and efficiency, but the MSP PBN situation has many safety risks. How objectively are these risks assessed *with expedited deployments of NextGen and PBN a close second priority*?
- The FAA Modernization and Reform Act of 2012 also mandates a coincident regional airline safety program.

Negotiate:

- Hubs no longer offer that many advantages to the local economy. Instead of expanding the hub further for Sky Team's advantage, MAC should look for other ways to meet or exceed local passenger capacity needs *than supporting flight capacity for connecting passengers*. Safety first.
- MSP arrival "slots" could be auctioned by time of day. If airlines paid more to land at a desirable time, it is more likely they'd use a larger aircraft and reduce bank size.
- A smaller difference between the number of operations at peak hours and at the average hour has many advantages including less neighborhood noise and pollution. If the intervals between operations are longer, all routes would be *safer for the same level of automation*, which is a good thing.
- Another good thing about lower runway use rates -- pointed out in the July 1, 2013 NTSB warning --is that high rates are *dangerous with the MSP runway layout with or without PRN or NextGen deployment*. Safety reviews need to be very thorough due to hub congestion. Maybe MSP can withdraw as an OEP airport test site.
- More balanced airline schedules would lower operating costs and reduce facility and personnel investments by FAA, MAC and a passel of other government agencies and businesses

Litigate: It is axiomatic that government spending is based on **need** and **available funds**.

- The FAA apparently has the legal authority to direct ***non-PBN flights*** to use navigation aids to stay on certain courses for economy or safety or ***to reduce noise***.
- High rates and PBN are hub-driven, PBN is not required at MSP for the annual capacity needed for Minnesota economic growth as officially forecast for 2020.

Mitigate?

- Flights over more blocks, but fewer daily flights per block — with or without PBN —will "shrink" the 60 and 63 DNL contours. The actual routes will change every year and affect inputs into the Integrated Noise Model.
- The Integrated Noise Model is not useful for describing or predicting ***actual*** ground noise. Averages, forecasts and assumptions as inputs are easily manipulated and all proposals to draw more objective contour maps using qualified observers or technical consults have been rejected.

An "actual noise" contour map is an oxymoron. Describing "mitigation" as equivalent to "abatement" is sophistry.

More on Noise Reduction (Abatement)

Airlines want the FAA's authority to regulate air traffic under environmental protection laws to be limited.

However, the U.S. Court of Appeals for the District of Columbia ruled last month that the FAA could require flights to use a particular route *for the sole purpose of noise reduction in residential areas*. The FAA itself argued that limiting the flights to a given route was legal even if ground noise in the areas were modeled at less than FAA mitigation standards (65 DNL). The general authority under 49 U.S.C. 40103 to "prescribe air traffic regulations …(to) protect individuals and property on the ground." was affirmed.

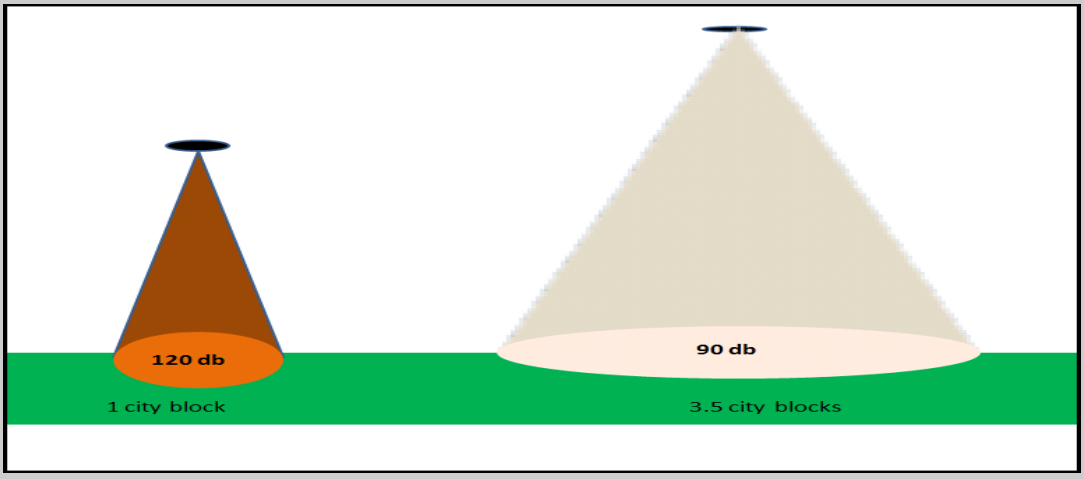
The FAA argument and the Court's holding is interesting because the FAA has long denied responsibility noise on the ground in and around airports due to overflights. SMAAC has known that redirecting flights to reduce noise exposure is legal per CFR 14 Part 150. However, when the Metropolitan Airports Commission pursued RNAV routes over less-sensitive areas and Northwest Airlines agreed to test the feasibility, FAA only agreed to allow such flights "when possible," meaning only at off-peak hours.

The story that noise intensity from repeated Standard Instrumented Departure (SID) overflights along fewer routes "concentrate" ground noise needs clarification.

First, compared to what? Louder flight noises are always concentrated near the airport and the runways.

Second, altitude. Every flight is lowest over a runway and higher further away. However, many different aircraft and conditions are involved. The height of an MSP departure varies as much as 2,500 feet over a given block in Minneapolis now. PBN routes would not *necessarily* be higher or lower.

Third, sound dissipates as the wave propagates spherically at over 600 mph. The power is reduced by $1/R^3$. "R" is the distance to the source (airplane). An overflight at 900 feet is 8 times as loud as one at 1,900 feet; the area of equal noise intensity under the 900 feet up plane is about five city block lengths, under the 1900, eleven.



Sound Intensity Footprints

(*Not shown on contour maps: there a year of flights, different wind heights and routes daily, is modeled from forecasts and averaged.)*

Sources and Comments

PUBLIC LAW 112–95, TITLE II –
The FAA Modernization and Reform Act of 2012

enacted April 14, 2012, requires the Federal Aviation Administration (FAA) to implement the Air Traffic Control Modernization (NextGen) program.

Before, the PBN development was separate from the Next Gen development.

The law requires the FAA to accelerate the use of NextGen technologies, specifically RNAV/RNP operations for the 35 *Operational Evolution Partnership (OEP)* airports by 2025, [Section 213(a)(2)(C)] 30% before August 13, 2013, and 60% before January 13, 2015 *ibid* (A, B). MSP was in the first group, but this part is the lowest priority of Title II, 18th of 18 programs.

The MSP status is at http://www.faa.gov/nextgen/implementation/pbn_initiatives/media/pbn.pdf page 5.

No airport is reported fully implemented, FAA is behind schedule. This and other parts of the FAA Re-Authorization will of necessity be revised in the White House/FAA budget documents and debated in Congress in the next few months.

http://www.faa.gov/nextgen/). The environmental part refers to fuel consumption: air pollution is assumed proportional to the pounds of fuel burned.

The FAA states: "NextGen enhances safety, reduces delays, saves fuel *and reduces aviation's environmental impact.*" FAA says the delay is due to "environmental and Safety Risk Management (SRM) impact analysis based on MAC's partial RNAV/PBN route SID implementation proposal"

MAC Director Jeff Hamiel's letter to FAA Headquarters February 1, 2013 "Respecting that FAA is the lead agency on PBN initiatives, I want to assure you that the MAC stands ready to provide assistance as needed,"

Last year (November 2012), Minneapolis citizens protested against MAC approval of FAA's proposed PBN routes over our city.. Due to insufficient information and unanswered questions, the Metropolitan Airports Commission asked FAA to develop a better plan for westerly departures on the main, parallel runways at MSP. The MSP Noise Oversight Committee recommended that some PBN routes be implemented in Easterly flow.

FOR MORE and MORE DETAILED INFORMATION,
visit www.quiettheskies.org/smaacforum

Read more about the U.S. Court of Appeals ruling that the FAA can require flights to follow a defined route *solely for the purpose of noise reduction in residential areas* and the
National Transportation Safety Board's *warning that operations at MSP are unsafe unless operations are slowed and better coordinated.*

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Your comments, and of course, your contributions, time or money, are needed and appreciated.