



U. S. Department
of Transportation

**Federal Aviation
Administration**

Great Lakes Region
Illinois, Indiana, Michigan,
Minnesota, North Dakota
Ohio, South Dakota, and
Wisconsin

2300 E Devon Avenue
Des Plaines, Illinois 60018

November 23, 2004

Ms. Rosemarie Andolino
Executive Director, O'Hare Modernization Program
Department of Aviation
8755 West Higgins Road
Chicago, Illinois 60631

Re: Draft Jet Blast Study for OMP – Phase 1

Ms. Andolino:

The Federal Aviation Administration has completed a review of the draft Jet Blast Study for O'Hare Modernization Program (OMP) – Phase 1 submitted by the City of Chicago on August 25, 2004. Our review focused on the areas identified as Phase 1 in the June 9, 2004 Work scope submitted to the City of Chicago and guidance provided in Advisory Circular 150/5300-13, Airport Design.

Attached you will find a document containing comments compiled during our review process. These comments will need to be adequately addressed to the satisfaction of the FAA for the FAA to be able to complete its review of the Airport Layout Plan (ALP). In addition, as you are aware, approval of the ALP by the FAA cannot occur until:

- ✦ The technical issues contained in the FAA's O'Hare International Airspace Case No. 2003-AGL-0878-NRA letter (submitted under separate cover to the City dated July 22, 2004) are adequately addressed to the satisfaction of the FAA, and
- ✦ a Final Environmental Impact Statement is completed, and a favorable Record of Decision is issued by the FAA.

We recognize that the City is in the process of preparing Phase 2 of this analysis that is due to the FAA no later than November 30, 2004. We are available to meet with representatives of your office to discuss the items noted in the attached document and develop a plan for responding to our comments. If you have any questions or need further clarification, please contact Richard Kula of my office at (847) 294-7507 or contact me at (847) 294-7812.

Sincerely,

Barry D. Cooper
Manager, Chicago Area Modernization Program Office

Attachment

Chicago O'Hare International Airport
Jet Blast Study for the O'Hare Modernization Program Office – Phase 1
FAA Comments on City of Chicago Draft Report

1. The draft report indicates that the McDonnell Douglas MD-11 aircraft are not used at O'Hare. However, although not observed in significant numbers, this aircraft is utilized at O'Hare primarily by Eva Airlines and Federal Express. Please include this aircraft type in your analysis.
2. To develop the draft Jet Blast Study for OMP – Phase 1, the OMP simulation computer model, "Total Airspace and Airport Modeller (TAAM) Simulation 2009 With Project Weighted Annualized Taxiway Movement" was utilized. While the use of the 2009 With Project TAAM data gives an indication of some of the operational conditions, it does not demonstrate the conditions each facility will be subjected to under the traffic configuration and density shown in the full-build airfield with the forecast 2018 activity level data. The draft Jet Blast Study should be amended to show the impacts to the Proposed Phase I NAVAID facilities utilizing the traffic levels and configurations depicted in the TAAM 2018 With Project data.
3. The work scope for the draft Jet Blast Study is outlined on page one of the draft Jet Blast Study. The fourth item on the list, under the work scope incorrectly identifies the "Runway 14L Temporary Localizer" as a facility addressed within the study. This statement should be amended to identify that the Runway 14R Temporary Localizer has been included in the study, not Runway 14L. Please revise accordingly.
4. The draft Jet Blast Study omitted the future Precision Approach Path Indicators (PAPIs) from the analysis. The PAPI facilities proposed under OMP are in most cases, less than 300 feet from the source of jet blast, and in some cases, may experience direct jet blast. Please include the analysis of the jet blast impacts to the future and existing Phase I PAPIs, using the full-build forecast 2018 activity level data.
5. If the Runway 14R Localizer (LOC) is relocated to the location proposed on the Airport Layout Plan (ALP) during Phase I, a blast fence may be needed to protect the antenna array from the predicted jet blast level produced at Taxiway "M" and Taxiway "T". This will be evaluated during the Engineering Design Review to determine appropriate protection.
6. Throughout the draft Jet Blast Study, under the analysis of intersections, a statement is made "there is no operating configuration in Phase I". Each of these intersections should also be analyzed under the traffic levels and configurations expected in Phase II of the proposed OMP development. The full-build airfield with the forecast 2018 activity level data should be used to analyze the impacts to those Phase I facilities affected by traffic using these intersections.

7. Throughout the draft report, assumptions are made that the jet blast contours are limited to aircraft breakaway speeds of 35 miles-per-hour (mph) and 50 mph. In most cases, this is the minimum air speed that will impact the future NAVAIDs. Based on these initial results, the siting of the NAVAIDs will have to take into account the best location to protect the facility from jet blast while still attaining full functionality. It is expected that additional engineering and construction will have to be done to protect the facilities and their occupants from any associated jet blast.
8. The draft study defines the intersections at which jet blast will impact NAVAIDs, however, the jet blast velocities appear to be too low. It appears that the velocities are under-reported because the breakaway blast curves from manufacturers give only 35 mph and 50 mph curves. For instance, the Boeing 744 Breakaway Jet Blast profiles in Exhibits 7 and 8 are nearly identical to curves of the Boeing 747 Airplane Characteristics for Airport Planning:D-6-58326-1, Revision C, October 1994. Boeing's D6-58326-1 profile shows only the 35 mph and 50 mph envelopes. It does not show envelopes of higher jet blast velocities that occur closer to the airplane.

The draft jet blast study may mislead the reader into concluding that the 35 mph and 50 mph velocities are the only velocities that the NAVAIDs would experience. This may be misleading. For the Boeing 747-400, the breakaway velocity should be estimated from the breakaway thrust line of Figure 8-3 of AC150/5300-13. By that thrust line, the velocities at the Glide Slope shelters in Exhibits 7 and 8 would be between 75 and 80 mph. The draft report should be revised to give more realistic estimates of the breakaway velocities expected at the NAVAIDs.

9. In accordance with FAA Advisory Circular 150/5300-13, Airport Design, states in Chapter 6 – Site Requirement for NAVAID and Air Traffic Control (ATC) Facilities, paragraph 600 –d, Jet Blast/Exhaust. “The location of future NAVAIDs should be located at least 300 feet behind the source of jet blast”. It is the intent of the FAA to evaluate each area that violates the criteria on a case-by-case basis, and apply engineering principles to provide a non-destructive environment.
10. The assumption that Air Traffic controlled restrictions on certain aircraft movements is the mitigating solution is unacceptable. Restricting numerous aircraft types in numerous operating configurations and scenarios (unusual circumstances) creates unnecessary workload for both the pilot and the controller creates runway safety concerns. Any potential siting of NAVAIDs that could impose operational restrictions will need to be evaluated by the FAA.
11. The location of future NAVAIDs is critical in maintaining a safe and efficient environment not only for aircraft, but also for persons and equipment on the ground. The 50 mph wind velocity profiles occur generally at a height of 15 feet above ground at the proposed NAVAID locations. To include potential harm to maintenance personnel and equipment at the NAVAID location, the wind velocity at a height of 4 to 6 feet above ground should also be evaluated.