

Appendix Two

1991 RECORD OF APPROVAL



U.S. Department
of Transportation
Federal Aviation
Administration

RECEIVED

AUG 12 2002

Barnard Dunkelberg

Memorandum

F.A.A.; Mpls.
Airports Dist. Off

APR 11 1995

6/20/95
GLA

Subject: **ACTION:** Transmittal of the Approved Part 150 Program for General Mitchell International Airport, Milwaukee, WS

Date: MAR 24 1995

From: Manager, Community and Environmental Needs Division, APP-600

Reply to
Attn. of:

To: Manager, Airports Division, AGL-600

Attached is the approval package for the subject Noise Compatibility Program. Please send us a copy of your signed letter to the sponsor for our records.

Lynne Sparks Pickard
Lynne S. Pickard

Attachment

cc: AEE-300 (info)

*32 Proposed measures
in NCP
9 Noise Abatement measures
16 Land Use Mgmt measures
7 Contingency Program measures*

5 of 9 NA measures approved

*Installed DME Displaced
LL U VOL II*

*Based on 1997 Contour
1,600 homes identified
as Phase I Eligible*

checklist
*Based on 2000
Contour
2,081 U
in Phase II*



U.S. Department
of Transportation
Federal Aviation
Administration

Memorandum

Subject: **ACTION:** Transmittal of Noise
Compatibility Program for General
Mitchell International Airport,
Milwaukee, WS

Date: MAR 22 1995

From: Director, Office of Airport Planning
and Programming, APP-1

Reply to
Attn. of: Tom Bennett:
(202) 267-8769
FAX: (202) 267-5383

To: Associate Administrator for Airports

Attached for your action is the Noise Compatibility Program (NCP) for the General Mitchell International Airport, Milwaukee, Wisconsin (MKE) under FAR Part 150. The Great Lakes Region, in conjunction with Federal Aviation Administration (FAA) Headquarters, has evaluated the program and recommends action as set forth below.

On September 23, 1994, the FAA determined that the updated NCP for MKE conforms to the requirements of Part 150 and was acceptable for detailed review. Therefore, the formal 180-day review period for the MKE proposed program under the provisions of section 104(a) of ASNA and FAR Part 150 began on that date. The 180-day formal review period ends March 22, 1995. If the program is not acted on by the FAA by that date, it will automatically be approved by law, with the exception of flight procedures.

The MKE program describes the current and future noncompatible land uses. The NCP proposes several measures to remedy existing noise problems and prevent noncompatible land uses. Each measure is described in the attached Record of Approval.

The Assistant Administrator for Policy, Planning, and International Aviation and the Chief Counsel have concurred with the recommendations of the Great Lakes Region. If you agree with the recommended FAA determinations, you should sign the "approve" line on the attached signature page. I recommend your approval.

Paul L. Galis

Attachment

FEDERAL AVIATION ADMINISTRATION

RECORD OF APPROVAL

FAR PART 150 NOISE COMPATIBILITY

PROGRAM

General Mitchell International Airport

Milwaukee, Wisconsin

CONCUR NONCONCUR

Tomie Smalley

Assistant Administrator for
Policy, Planning, and
International Aviation, API-1

3-17-95

Date

X

for AUB

Chief Counsel, AGC-1

3/22/95

Date

APPROVED DISAPPROVED

for Quentin S. Taylor

Associate Administrator
for Airports, ARP-1

3/22/95

Date

✓

RECORD OF APPROVAL

GENERAL MITCHELL INTERNATIONAL AIRPORT

NOISE COMPATIBILITY PROGRAM

The Noise Compatibility Program (NCP) for General Mitchell International Airport in Milwaukee, Wisconsin, describes the current and future noncompatible land uses based on the parameters established in FAR Part 150, Airport Noise Compatibility Planning. Milwaukee County, as owner and operator of the Airport, recommends thirty-two (32) measures in its NCP to remedy existing noise problems and to prevent future noncompatible land uses. These measures are grouped into three categories: Noise Abatement (Measures NA-1 to NA-9), Land Use Management (Measures LU-1 to LU-16) and Continuing Program (Measure CP-1 to CP-7).

Each measure of the recommended Noise Compatibility Program includes a summary of the airport operator's recommendations and a cross reference to page numbers in the NCP where each measure can be found. The NCP, which is located in chapters 5 through 7 of the FAR Part 150 Noise Compatibility Study, contains additional summary information in Table 7E, pages 7-40 through 7-43. The official Noise Exposure Maps (NEM) are located after page xi of the same study.

The FAA notes that the NCP mentions a nighttime training restriction that was instituted in 1989, prior to passage of the Airport Noise and Capacity Act (ANCA). The airport operator has not requested FAA approval of this restriction in its Part 150 program, and the approvals below do not include this measure.

The summary of each measure follows as closely as possible the airport operator's recommendations in the NCP. The statements contained within the summarized recommendations and before the indicated FAA approval, disapproval, or other determination do not represent the opinions or decisions of the FAA.

The approvals listed herein include approvals of measures that the airport recommends be taken by the FAA. It should be noted that these approvals indicate only that the measures would, if implemented, be consistent with the purposes of FAR Part 150. These approvals do not constitute decisions to implement the measures. Later decisions concerning possible implementation of the measures may be subject to applicable environmental or other procedures or requirements.

NOISE ABATEMENT MEASURES

(2) NA-1. CONTINUE PROCEDURES DESCRIBED IN TOWER ORDER 7110.22K.
References: (NCP Pages 5-3:5-6, 5-17, 5-32, 7-3:7-4, 7-40, Appendix C)

With the exception of procedures specifically proposed for revision, as discussed below in measure NA-3, Milwaukee County proposes to continue the noise abatement provisions in Milwaukee Tower Order 7110.22K. The procedures have been developed over time in response to previous noise studies. Of course, the Tower should retain the flexibility to modify the Tower Order as needed to promote safety and the efficient use of the airfield where that can be done without increasing noise impacts and compromising the intent of the noise abatement element.

During the day, the runways at Milwaukee are used by the Air Traffic Control Tower to maximize capacity and minimize delays. Either of the main runways is long enough to handle all commercial aircraft at the airport and each is used regularly. At present the airport uses Runway 1L about 25 percent of the time; Runway 19R about 27 percent; Runway 7R about 15 percent; and Runway 25L for about 33 percent of the time.

Runway use restrictions include a prohibition of intersection departures by turbojets and the restricted use of Runway 13-31 by aircraft over 100,000 pounds and by turbojets when Runways 1L-19R and 7R-25L are available. Both measures are intended to promote noise abatement. Intersection departures would result in higher single-event noise levels off the departure ends of the runways. Incompatible development lies very close to the ends of Runway 13-31.

An informal nighttime preferential runway use program, effective from 10:00 p.m. to 6:00 a.m., is currently in effect at General Mitchell International Airport. It calls for a preferred contra-flow, or head-to-head, procedure to the south on Runway 1L-19R. Arrivals are preferred on Runway 1L while departures are preferred on Runway 19R. When traffic is too heavy to permit this mode of operation, a north flow is observed with departures and arrivals on Runway 1L. The other primary runway, Runway 7R-25L, remains available when dictated by operational necessity.

Other nighttime runway use restrictions are in force at the airport. When Runway 1L-19R is available, Runway 1R-19L is restricted to all but light, single-engine aircraft. The same restriction applies to Runway 7L-25R when Runway 7R-25L is available. Both of these restrictions enhance noise abatement by confining loud single events to the primary

runways. In general, because of the greater amount of land which the airport owns off the ends of the primary runways, there is less incompatible development close to the airport off the primary runways than off the short parallel runways. Also because noise from power backing caused complaints, the Airport implemented a restriction on power-backing between 10:00 p.m. and 6:00 a.m. While these procedures have little effect on the cumulative DNL noise exposure contours, they pose no inconvenience to airport users and, because of the very light traffic at night, cause no adverse impact on capacity.

The total population impacted by noise above DNL 65 decreases slightly in comparison with 1989 baseline conditions from 27,328 to 27,178, although the population impacted by noise above DNL 70 increases. The nighttime preferential runway use program appears to provide overall net benefits.

Since this is a continuation of existing procedures, no special implementation efforts are required and no additional costs will be incurred.

NAL APPROVED. ~~This is an existing measure.~~ It must be understood that Tower Order permits tower personnel to use runways and procedures not only to maximize capacity and minimize delays, but for safety considerations as well. Tower personnel may elect not to use the procedures when unsafe or inefficient to do so.

① NA-2. MAINTAIN ENGINE RUN-UP PROCEDURES CODIFIED IN AIRPORT OPERATIONS BULLETIN 89-1.

References: (NCP Pages 5-16, 7-4, 7-40, Appendix C)

Milwaukee County proposes to continue the established engine run-up procedures which are to be observed between 10:00 p.m. and 7:00 a.m. on weekdays and 10:00 p.m. to 8:00 a.m. on weekends. They require aircraft to be located at one of two sites: at the outer edge of the terminal apron between Concourses D and E or on Runway 7R-25L between Runway 1L-19R and Taxiway R.

Position number one is on the terminal apron between concourses D and E on the outer edge of the apron. Position number two is on Runway 7R-25L between Runway 1L-19R and Taxiway R. Position number one utilizes the terminal building as a buffer. Position number two is approximately mid-field and is as far from residential areas as possible. Assignment to a run-up location is based on the wind direction and requirement of the particular maintenance run-up.

Engine run-ups are a necessary and critical part of aircraft operation and maintenance. They tend to last longer than

overflights and often are the subject of noise complaints. The Airport conducted an engine run-up noise study which formed the basis of Airport Operations Bulletin 89-1.

202

APPROVED. Designation of engine run-up locations and limitations of hours are within the discretion of the airport operator and may be added to the airport rules and regulations and instituted at any time provided that they do not limit Stage 2 or Stage 3 operations so as to qualify as an airport noise and access restriction or create an undue burden on interstate commerce. Any such restriction would require compliance with the Airport noise and Capacity Act (ANCA)

NA-3. REVISE AIRPORT OPERATIONS BULLETIN 89-2 AND TOWER ORDER 7110.22K TO REORDER THE LIST OF RUNWAYS PROVIDING GREATEST NOISE ABATEMENT BENEFITS.

References: (NCP Pages 5-4:5-5, 5-31:5-32, 5-36:5-42, 7-4, 7-40, Appendix C)

Milwaukee County proposes to reorder the assignment of runways for the Runway Use Program (RUP) in the Milwaukee Tower Order 7110.22K and the Airport Operations Bulletin 89-2. The order should be revised by reversing the positions of Runways 1L and 7R (for takeoffs) and Runways 19R and 25L (for landings).

The revised order should be as follows:

<u>Takeoff</u>	<u>Landing</u>
19R	1L
7R	25L
25L	7R
1L	19R

The reordering of the runways is based on the location and density of housing off each runway end. It also takes into consideration land use management recommendations proposed in the Land Use Management Plan. General Mitchell International Airport is bordered by extensive residential development on all sides. More residential development is encroaching on the few undeveloped areas that remain. The areas with the smallest concentrations of noise-sensitive land use are south and east of the airport.

This runway use system, which is envisioned as an informal system, would be implemented by the Air Traffic Control Tower through a Tower Order.

Wind rose analysis indicated that the combination of Runways 25L and 19R could be used approximately 37 percent of the time. The combination of Runways 1L and 7R would be

available about 21 percent of the time. Stronger winds would dictate the use of Runway 19R alone about 12 percent of the time. Runway 25L would be used for both arrivals and departures 11 percent of the time; Runway 1L 16 percent; and Runway 7R about 3 percent.

This measure should be implemented by the Airport Director through issuance of a revised Operations Bulletin. The Airport Management also should encourage the Air Traffic Control Tower Manager to issue a revised Tower Order explaining the change.

The contour set for this alternative is presented in Exhibit 5H of the NCP. The DNL 65 contour is reduced from the baseline conditions over Milwaukee and Greenfield while it is increased over Franklin, Oak Creek, South Milwaukee and Cudahy. There are corresponding changes in the DNL 70 contour as well.

The total population impacted by this alternative increases to 27,449 compared with 27,328 in the baseline condition, although the population impacted by noise above DNL 70 decreases.

A careful review of Exhibit 5H shows that much of the increase in impacted area is in South Milwaukee under the departure track.

This measure, as well as NA-4, NA-5 and NA-7, requires an environmental finding by the FAA in accordance with the National Environmental Policy Act (NEPA) before being implemented.

NA-3
DISAPPROVED For purposes of Part 150. Based on NCP documentation, this measure fails to meet the Part 150 criteria of having an overall net reduction of persons affected by significant noise exposure. This disapproval does not prevent the airport operator from pursuing this proposal, with appropriate environmental review, as a matter of local preference for the distribution of noise.

NA-4. REQUIRE SOUTH AND EASTBOUND TURBOJET AND TURBOFAN AIRCRAFT DEPARTING FROM RUNWAY 25L TO TURN LEFT AS SOON AS SAFE AND PRACTICABLE.

References: (NCP Pages 5-6:5-7, 5-28:5-29, 5-35:5-42, 7-4:7-5, 7-40)

Milwaukee County proposes to request the Air Traffic Control Tower to implement the procedure requiring south and east bound jets departing runway 25L to turn left as soon as safe and practicable. A generally noise-compatible corridor extends south off the west end of Runway 7R-25L between the interstate and the railroad tracks. By directing south and

eastbound departures from Runway 25L to make a quick left turn, aircraft would overfly this area, avoiding the residential neighborhoods further west.

The turning of departing aircraft to avoid populated areas is an accepted method of noise abatement which has been implemented in numerous areas. At first glance at Milwaukee, with no predominant flow pattern and populated areas in all directions, noise abatement departure turns would not appear to be very beneficial for noise reduction. However, a closer inspection of the map indicates there are a few, very narrow, compatible corridors that might be used for noise abatement departure turns. These are shown on Exhibit 5B of the NCP.

Aircraft departing from Runway 25L tend to fly some distance out before turning. This is consistent with the BREW THREE SID which requires aircraft to fly straight-out to 2,000 feet MSL (1,300 AGL) before turning. Many of these aircraft are south or eastbound. If they could be turned to the left as soon as safe and practicable, they would tend to turn over the noise-compatible corridor along the interstate. This could conceivably reduce noise impacts in the area southwest of the airport.

This turn could be implemented through a Tower Order or, possibly, a Standard Instrument Departure procedure. All east and southbound aircraft should be directed to turn left as soon as practicable to a heading no greater than 190 until clearing 3,000 feet MSL (2,300 feet AGL).

The resulting contours are presented in Exhibit 5F. There is some reduction of the DNL 65 on the west side and some increase in the contour on the south side. The hole in the DNL 65 is much smaller in this alternative. The contours are unchanged off the other runways. The DNL 70 contour is reduced in its southwestern extent by about 1,000 feet and is brought back off a residential area west of the interstate.

This alternative results in a small reduction in the numbers of people impacted by noise above DNL 65. The population impacted in the base line conditions was 27,328. Under this alternative, the total population impacted is 26,812.

①
APPROVED AS A VOLUNTARY MEASURE. Although FAA realizes the importance of the departure procedures in providing noise relief, we can only approve them as voluntary measures. There may be times when meteorological conditions, operational conditions or individual pilot requirements preclude the departure procedures from being employed safely.

Implementation will require amendment to the BREW THREE standard instrument departure (SID) or implementation of a second SID. This is because north and westbound departures will still be required to maintain runway heading until 2,000 feet mean sea level (MSL).

NA-5. REQUIRE TURBOJET AND TURBOFAN AIRCRAFT DEPARTING FROM RUNWAY 7R TO HOLD RUNWAY HEADING THROUGH 4 NAUTICAL MILES FROM THE DME CO-LOCATED WITH THE RUNWAY 25L LOCALIZER. References: (NCP Pages 5-6, 5-29:5-30 (Table 5B), 5-35:5-42, 7-5:7-6, 7-40)

Milwaukee County proposes to request the Air Traffic Control Tower to implement the procedure requiring jets departing from runway 7R to fly straight-out until 4 nautical miles from the DME co-located with the Runway 25L localizer.

The Air Traffic Control Tower presently observes a straight-out departure procedure from Runways 1L, 7R, and 25L, and sometimes from the shorter general aviation runways. The procedure is described in the BREW THREE Standard Instrument Departure. Whenever the SID is assigned to departing aircraft, they are required to climb on runway heading through 2,000 feet MSL (1,300 feet above field elevation) before turning to assigned headings.

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NA 5
Table 5B of the NCP was prepared to isolate the impact of changes in departure turns off each runway end. This procedure would reduce slightly the population in Cudahy impacted by noise above DNL 65. Concentration of departures along the runway centerline would reduce single events over much of Cudahy without significantly increasing the DNL noise contours along the extended runway centerline.

APPROVED AS A VOLUNTARY MEASURE.

NA-6. ENCOURAGE CONTINUED USE OF NOISE ABATEMENT DEPARTURE PROCEDURES BY OPERATORS OF JET AIRCRAFT. References: (NCP Pages 5-18:5-19, 7-6, 7-40)

Milwaukee County proposes to encourage all airlines to use established noise abatement departure procedures. Numerous studies over the years have shown these procedures to be beneficial for noise abatement, tending to reduce the extent of the DNL 65 and 70 noise contours. (They have no effect on the DNL 75 contour.) Noise abatement departure procedures do tend to cause somewhat greater noise exposure than would otherwise be the case in areas outside the DNL 65 noise contour.

NA-7

Disapproved pending receipt of additional information. Subsequent to the preparation of this NCP, Advisory Circular 91-53A outlining Noise abatement procedures for large aircraft was issued. Since there has been a change in guidance not contemplated by the NCP, the measure suggesting use of specific departure procedures for large aircraft is disapproved pending receipt of additional data on the airport operators' proposal of either a close-in or distant procedure and the resulting noise benefits.

NA-7. INSTALL DME AT RUNWAY 1L LOCALIZER. DEFINE LEFT TURNS FROM RUNWAY 19R: TURN LEFT 15 DEGREES AFTER 2 DME; MAINTAIN HEADING TO 4 DME BEFORE TURNING TO COURSE HEADING. References: (NCP Pages 5-6:5-7, 5-27:5-28, 5-35:5-42, 7-6:7-7, 7-40)

After installation of distance measuring equipment (DME), Milwaukee County proposes to request the Air Traffic Control Tower to implement the procedure requiring eastbound jets departing from runway 19R to turn left 15 degrees as soon as practicable after reaching 2 DME. Aircraft shall be directed to maintain that heading until reaching 4 DME from the Runway 1L DME/LOC. This measure is also discussed in the NOTE in NA-3.

Because aircraft climb at different rates, and the DME defines line-of-sight distances, the downrange distances of aircraft will vary somewhat. Exhibit 7B in the NCP shows a band within which most aircraft operating at Milwaukee will be at 2 DME.

Standard departure profiles in the INM database were consulted to determine where all aircraft operating at the Airport would be at an altitude of at least 500 feet AGL. This was determined to be at 9,400 feet from the start of the takeoff roll. Therefore, the turn to a 175 heading was modeled to begin at 9,400 feet from the start of the takeoff roll in order to encompass the operating envelope for all aircraft at the Airport. (It is recognized that on very hot days, some very heavily loaded aircraft will not be able to initiate a turn by that point.) With the DME approximately 1,500 feet south of Whitnall Avenue off the extended runway centerline, this would correspond to 2 DME. Aircraft would be released to destination headings at 4 DME.

This procedure would best be implemented through a Standard Instrument Departure (SID), although it could also be implemented through a Tower Order. In order to allow for the occasional slow climbing aircraft that cannot make the turn at 2.0 DME, the procedure should note that turns shall be made as soon as practicable after reaching 2.0 DME.

Aircraft then should be directed to maintain the 175 heading until reaching 4.0 DME at which point they can be released to course headings.

It is important to realize that while the DME should tighten the cluster of aircraft departure tracks, aircraft will still be dispersed. This is due not only to wind drift and variations in pilot technique and aircraft performance. The DME itself is limited in defining a downrange distance. The DME can determine only line-of-sight distances. Thus, aircraft at a higher altitude will be a given distance from the DME at a nearer downrange distance than aircraft at a lower altitude. Exhibit 5E of the NCP shows the range at which aircraft will reach 2 and 4 DME.

The contours resulting from the track changes are presented in Exhibit 5E. Even with the defined turn, the contour extends over the new housing development just west of Pennsylvania Avenue. In addition, the DNL 70 contour extends into the neighborhood south of Rawson along the extended runway centerline.

Airport users will not incur any significant new costs as this is only a slight change from current procedures. It is possible that some eastbound departures will not be able to turn to destination headings quite as quickly as they now can. This would impose a small additional cost in fuel consumption and possibly increase flight times by a very small amount. In addition, pilot workload will be increased with the requirement that pilots monitor the DME receivers in the cockpit.

The population impacts are reduced in South Milwaukee and increased in Oak Creek, with net impacts decreasing in comparison with the 1989 baseline condition. The population impacted by noise above DNL 65 in this alternative is 25,789 compared to 27,328 in the 1989 baseline condition. The population impacted by noise above DNL 70, however, increases by almost 400 people in this alternative.

NA-7
DISAPPROVED. The required turn point of 2 DME from the proposed localizer DME antenna would create an unsafe operational condition. The additional pilot/controller workload necessary to complete a turn at a particular DME point in such close proximity to the ground while monitoring airspeed, acceleration, climb rate, engine performance, and flap and gear retracting sequences is not acceptable. NOTE: While use of the DME at this location is considered inappropriate for determining the start and end points of noise abatement tracks, the FAA as requested by the airport sponsor will consider modification of the existing tower order procedures to discourage early turns away from specific noise abatement heading clearances.

NA-8. INSTALL VOR. DEFINE LEFT TURNS FROM RUNWAY 19R: TURN LEFT TO INTERCEPT THE 170 RADIAL; MAINTAIN HEADING TO 4 DME BEFORE TURNING TO COURSE HEADING.
References: (NCP Pages 5-6, 7-7:7-9, 7-40)

Milwaukee County proposes to request the Air Traffic Control Tower to implement the procedure requiring eastbound jets departing from Runway 19R to intercept the 170 degree radial from the "NEW" VOR. Aircraft shall be directed to maintain that course until reaching 4 DME from the Runway 1L DME/LOC. At the Tower Manager's discretion, establishment of a Standard Instrument Departure to implement the turn could be considered. (Depending on the final location of the VOR, a different radial may need to be defined. The selected radial should intercept the extended runway centerline at College Avenue and be as closely aligned with the center of the compatible corridor as possible.)

OKS
DISAPPROVED, for purposes of Part 150. Installation of the "new" VOR has not been shown to have any noise benefit. With regard to the proposed procedure, the required turn point of 2 DME from the proposed localizer DME antenna to intercept the 170 degree radial from the proposed VOR would create an unsafe operational condition.

NA-9. PURCHASE ENGINE RUNUP NOISE SUPPRESSER.
References: (NCP Pages 5-22:5-26, 7-9, 7-40 and Addenda and Errata)

Milwaukee County proposes to purchase a noise suppresser, requiring all engine maintenance run-ups be done within it.

The airport currently restricts the location of aircraft engine maintenance run-ups and restricts run-ups during the hours of 10:00 p.m. to 7:00 a.m. without prior permission. Despite this, engine maintenance run-ups continue to be the cause of noise complaints. The airport contracted for a special study of run-up noise in 1988. The report, Engine Run-up Noise Study, February 1989, proposed the installation of noise suppression enclosure or hush house on the airport.

Airport Operations Bulletin 89-1 defines two run-up positions depending on the type of maintenance check and wind direction and velocity. Position Number 1 is on the outer edge of the terminal apron between Concourses "D" and "E". Position Number 2 is on Runway 7R/25L between Runway 1L/19R and Taxiway "R". Nine months of data had position information. Position Number 1 was used for 58 percent of the events and Position Number 2 was used for 42 percent.

Airport Operations Bulletin 89-1 also defines the circumstances which govern the use of a particular run-up position. Position Number 1 is used with wind at any

velocity and any direction and when engine test does not require aircraft to be nosed into the wind. For this situation, the aircraft is oriented at a 310 degree heading. This position is also used with wind at any velocity from 230 degrees to 50 degrees and engine test requires aircraft to be nosed into the wind. Position Number 2 is used with wind at any velocity from 51 degrees to 229 degrees and engine test requires aircraft to be nosed into wind.

One way to reduce the noise from engine run-ups is to build a noise suppression structure. The most flexible structure, a run-up pen, would reduce noise levels by approximately 20 decibels. That would be equivalent to reducing the DNL 65 run-up contour to the same size as the DNL 85 contour. (See Exhibit 5C-1.) At almost any location on the airport, the run-up pen could completely remove noise above DNL 65 from residential areas. The run-up pen is estimated to cost \$3,000,000. This includes \$1,700,000 to build the pen, \$800,000 for doors, and \$500,000 for access taxiways and ramp.

3
UAA
A manufacturer has recently introduced on the market a mobile engine runup noise suppresser. This noise suppresser is available at a cost of \$750,000 and will be able to provide the same or more noise reduction that a runup pen. This unit will also offer more flexibility and usability than a runup pen. It will be made available to all turbojet operators at the airport.

APPROVED.

LAND USE MANAGEMENT MEASURES

LU-1. MAINTAIN EXISTING COMPATIBLE ZONING IN AIRPORT VICINITY (CUDAHY, FRANKLIN, MILWAUKEE, OAK CREEK, ST. FRANCIS, SOUTH MILWAUKEE).

References: (NCP Pages 6-6:6-7, 6-37, 7-14:7-15, 7-41)

Milwaukee County proposes to maintain existing compatible zoning in the airport vicinity.

The cities of Cudahy, Franklin, Milwaukee, Oak Creek, and St. Francis have large areas within the DNL 65 contour zoned for compatible commercial or industrial use. While most of this land is already developed, some of it is vacant and parts of it, although currently built-up, may have the potential for redevelopment and reuse in the future. As Exhibit 6B in the NCP shows, most of the land within the DNL

65 contour is actually zoned for commercial and industrial use. The cities should adopt policies urging the retention of commercial and industrial zoning in these areas and strongly discouraging the rezoning of any of these areas for residential use.

LU1
APPROVED.

LU-2. CONSIDER AMENDING LAND USE PLAN AND ZONING MAP TO SHOW FUTURE COMMERCIAL/ INDUSTRIAL LAND USE FOR PARCELS A, C, D, AND F ON EXHIBIT 7D (OAK CREEK).

References: (NCP Pages 6-6:6-8, 6-37, 7-15, 7-41)

Milwaukee County proposes to consider amending the land use plan and zoning map to show future commercial/industrial land use for parcels A, C, D and F on Exhibit 7D in the NCP. These undeveloped parcels are all impacted, at least in part, by noise levels above DNL 65. All are now zoned for residential use but have some potential desirability for commercial or industrial development.

APPROVED.

LU-3. CONSIDER AMENDING LAND USE PLAN TO ENCOURAGE FUTURE "PLANNED DEVELOPMENT" OR LARGE LOT RESIDENTIAL DEVELOPMENT OF PARCELS E, J AND, IF NOT DESIGNATED FOR COMMERCIAL OR INDUSTRIAL USE, PARCELS A AND F ON EXHIBIT 7D (OAK CREEK).

References: (NCP Pages 6-8:6-10, 6-37, 7-15:7-16, 7-41)

Milwaukee County proposes to consider amending the land use plan to encourage future "planned development" or large lot residential development of parcels E, J and, if not designated for commercial or industrial use, parcels A and F on Exhibit 7D in the NCP. These parcels are all impacted, at least in part, by noise above DNL 65. All are currently zoned for residential use.

From a noise compatibility perspective, "planned residential" development using clustering and site design to minimize noise impacts is distinctly inferior to commercial or industrial development. It is better, however, than conventional single-family subdivision development. Parcels E and J have no realistic potential for commercial or industrial use, and parcels A and F are questionable. Thus, "planned residential development" is considered a second-best alternative.

On pages 6-9 and 6-10 in Chapter Six, potential ways of using the planned development process to encourage the development of each of these properties to reduce noise impacts were discussed. In general, residential development should be clustered on the parts of the tract furthest from

the extended runway centerlines and predominant aircraft flight tracks. Attached housing types could be encouraged as these tend to be better at attenuating aircraft noise than detached single-family housing.

If "planned residential development" is not acceptable, the City should consider keeping the areas designated for large lot residential development. This would limit the ultimate density of future development, thus limiting the number of residents who would be exposed to aircraft noise. The R-1 Suburban Residential District is the City's lowest density conventional zoning district, providing for minimum lot sizes of at least 15,000 square feet. These parcels are now zoned either R-2 or R-3, providing for minimum lot sizes of 10,000 and 8,000 square feet, respectively.

Based on current municipal law, Oak Creek cannot force a property owner to use the planned development process. It is recommended that the County encourage the City to amend its land use plan to show these areas as preferred for planned development (or large lot residential development). The City, in turn, could encourage affected property owners to use the planned development procedures when they show an interest in developing their property.

LU3 APPROVED. This measure is approved with the understanding that it will be implemented in conjunction with NOISE OVERLAY ZONING as described in measure LU-4. Establishment of new residential uses within the DNL 65dB contour without the addition of sound attenuation as described on Measure LU-4 would not be consistent with Part 150. The FAA believes that the prevention of additional residential uses within the DNL 65 dB contour is highly preferred over allowing such uses even at lower densities and combined with sound attenuation and easements. The airport operator, Milwaukee County and the Town of Oak Creek are urged to pursue all possible avenues to discourage new residential development within this level of noise exposure.

LU4. ADOPT AIRPORT NOISE OVERLAY ZONING (CUDAHY, MILWAUKEE, OAK CREEK, ST. FRANCIS).

References: (NCP Pages 6-10:6-12, 6-16:6-17, 6-37, 7-16:7-21, 7-41, Appendix C)

Milwaukee County proposes to adopt airport noise overlay zoning. Two overlay districts should be established with the boundaries corresponding to a composite of the DNL 65 and 70 noise contours for 1992 and 1997 based on implementation of the noise compatibility program. Proposed overlay zone boundaries are shown in Exhibit 7D of the NCP. The local cities may wish to adjust these boundaries to relate better to local land use planning needs.

Airport noise overlay zoning establishes special standards within noise-impacted areas to help mitigate the problems caused by noise. These provisions supplement the standards of the underlying zoning classifications and would apply only to new development.

Within the AC-1 zone, corresponding to the DNL 65 contour, mobile homes and outdoor music shells and amphitheaters would be prohibited. Sound insulation of new residential uses, hotels and motels, hospitals and nursing homes, and schools also would be required. Adoption of these regulations would make mobile home parks on the north side of College at 6th Street and on the south side of College just east of 27th Street non-conforming uses. In addition, many existing residential uses, motels, schools, and one nursing home within the district could become non-conforming with respect to the sound insulation standard.

Within the AC-2 zone, corresponding to the DNL 70 contour, additional restrictions would apply. Group quarters, residential hotels, hospitals and nursing homes, schools, churches, places of public assembly, auditoriums and concert halls would be prohibited. Any of these uses which currently exist and which may be damaged or destroyed in the future could be rebuilt, provided that they were soundproofed to achieve an outdoor to indoor noise level reduction of 30 dB. Outdoor sports arenas, amusements, resorts and group camps would be completely prohibited in the AC-2 zone.

Within the AC-2 zone, most residential uses would be permitted if sound insulated to achieve a noise level reduction of 30 dBA. In addition, business, industrial, and institutional uses would be encouraged, but not required, to provide sound insulation for public use and office areas. It was judged that a soundproofing requirement for these uses would impose administrative burdens on the inspections staffs of the cities that could not be fully justified, especially since very little undeveloped land is available within the AC-2 zone.

The airport noise overlay zoning provisions also should require notification of the airport management of any development proposals within the overlay zone which require discretionary review or approval by the zoning boards of appeals, the planning commissions, or the city councils. This is intended to give the airport management an opportunity to review and comment on applications for variance, conditional use, rezoning, and subdivision plat approval. This special notification requirement would not apply to simple applications for building and zoning permits and occupancy certificates.

Milwaukee County should encourage Cudahy, Milwaukee, Oak Creek, and St. Francis to adopt airport noise overlay zoning. The local communities would implement this through the adoption of ordinances amending their zoning codes. This measure would involve administrative costs for the County and cities.

cut
APPROVED. The FAA believes that the prevention of additional residential uses within the DNL 65 dB contour is highly preferred over allowing such uses even at lower densities and combined with sound attenuation. The airport operator, Milwaukee County and the other listed jurisdictions are urged to pursue all possible avenues to discourage new residential development within these levels of noise exposure.

LU-5. AMEND BUILDING CODES TO PROVIDE SOUND INSULATION STANDARDS FOR NOISE-SENSITIVE DEVELOPMENT IN AIRPORT NOISE OVERLAY ZONES (CUDAHY, MILWAUKEE, OAK CREEK, ST. FRANCIS).
References: (NCP Pages 6-17:6-18, 6-37, 7-21, 7-41, Appendix C)

Milwaukee County proposes to encourage the cities of Cudahy, Milwaukee, Oak Creek, and St. Francis to adopt local amendments to their building codes to provide sound insulation standards for use within the airport noise overlay zones. This would implement the sound insulation requirements of the overlay zoning ordinance. Suggested standards are in Appendix C.

APPROVED. The FAA strongly discourages the development of additional noise sensitive uses within the DNL 65dB contour rather than allowing such uses if sound attenuated. This is, however, a matter within the jurisdiction of the Cities and County and if such development is deemed necessary by those bodies, the houses should be sound attenuated during construction and an easement dedicated to the airport.

LU-6. AMEND SUBDIVISION REGULATIONS TO REQUIRE RECORDING OF PLAT NOTES REGARDING AIRCRAFT NOISE ON FINAL PLAT (OAK CREEK).

References: (NCP Pages 6-14:6-17, 6-37, 7-21:7-22, 7-41, Appendix C)

Milwaukee County proposes to encourage Oak Creek to amend its subdivision regulations to require the recording of plat notes on the final plat of any new subdivision within an airport noise overlay zone. The plat note would state that the land is subject to frequent aircraft overflights and potentially annoying levels of aircraft noise. While the rezoning and noise overlay zoning proposals discussed in previous land use measures should restrict the opportunities

for land subdivision, this measure is recommended to provide some back-up protection in case of unforeseen events. Suggested language for an amending ordinance is included in Appendix C.

LU6
APPROVED.

LU-7. SHOW "AIRPORT AFFECTED AREA" ON OFFICIAL MAPS AND LAND USE PLANS (CUDAHY, FRANKLIN, MILWAUKEE, OAK CREEK, ST. FRANCIS, SOUTH MILWAUKEE).

References: (NCP Pages 6-15:6-16, 6-37, 7-22, 7-41)

Milwaukee County proposes to encourage the cities of Cudahy, Franklin, Milwaukee, Oak Creek, St. Francis and South Milwaukee to show the "airport affected area" by amending official maps and land use plans.

In 1985, the Wisconsin legislature adopted Wisconsin Act 136, to promote the public interests in aviation. (See Wis. Stat. 62.23(6).) The law defines as "airport affected areas" land within three miles of the airport, although smaller areas can be defined through intergovernmental agreements. Among other things, municipalities are required to show the "airport affected area" on their official maps and development plans.

APPROVED.

LU-8. AMEND COMPREHENSIVE PLAN TO REFLECT NOISE COMPATIBILITY PLAN RECOMMENDATIONS (OAK CREEK).

References: (NCP Pages 6-19:6-20, 6-37, 7-22:7-23, 7-41)

Milwaukee County proposes to encourage Oak Creek to amend its comprehensive plan to reflect the recommendations of the Noise Compatibility Plan. The Noise Compatibility Plan sets forth a plan for the airport area which has been coordinated with all of the jurisdictions as well as with the airport staff. It can continue to be important in ensuring land use planning coordination in the airport area. It is important for all jurisdictions in the airport study area to officially acknowledge their separate and mutual interests in order to facilitate coordination in this important area.

Oak Creek is the only impacted community in the study area with a traditional Comprehensive Plan, or Community Land Use Plan. It would be appropriate for the City to amend this document to reflect the recommendations of the Noise Compatibility Plan.

APPROVED.

LU-9. ADOPT AIRPORT VICINITY SUB-AREA PLAN REFLECTING KEY RECOMMENDATIONS OF NOISE COMPATIBILITY PLAN (CITY OF MILWAUKEE).

References: (NCP Pages 6-20:6-21, 6-37, 7-23, 7-41)

Milwaukee County proposes to encourage the City of Milwaukee to adopt an airport vicinity land use plan, or sub-area plan, reflecting the land use recommendations of this study.

While the City of Milwaukee does not have a traditional comprehensive plan covering the entire city, it does have a well-developed planning program, including an overall policy plan for the city. It also has a number of special purpose policy plans and a series of sub-area and neighborhood plans. None of these special plans, however, covers the airport area.

APPROVED.

LU-10. CONSIDER PREPARATION OF ECONOMIC DEVELOPMENT OR REDEVELOPMENT PLANS (CUDAHY AND ST. FRANCIS).

References: (NCP Pages 6-26:6-27, 6-37, 7-23:7-24, 7-41)

Milwaukee County proposes to encourage Cudahy and St. Francis to prepare economic development or redevelopment plans recognizing the airport compatibility issues and recommendations of the Noise Compatibility Plan. The County should officially encourage Cudahy and St. Francis to enact this recommendation. The cities may wish to seek technical assistance from the Southeast Wisconsin Regional Planning Commission (SEWRPC).

An economic development or redevelopment plan could look in detail at the issues confronting the city, define objectives for development, and decide how city policy might influence desired outcomes. One of the important issues in each city is the influence of the airport on potential development, both as an environmental constraint and an economic asset. This Noise Compatibility Plan would provide a helpful framework for this effort.

APPROVED, to the extent of considering and encouraging compatible land use consistent with the NCP.

LU-11. ESTABLISH AIRPORT COMPATIBILITY CRITERIA FOR PROJECT REVIEW (CUDAHY, MILWAUKEE, OAK CREEK, ST. FRANCIS).

References: (NCP Pages 7-24:7-25, 7-42)

Milwaukee County proposes to encourage Cudahy, Milwaukee, Oak Creek, and St. Francis to adopt project review guidelines. It would be appropriate for Oak Creek to incorporate these into its comprehensive plan and for

Milwaukee to incorporate them into the proposed airport vicinity sub-area plan. Cudahy and St. Francis could adopt these as part of the proposed economic development plans or as separate administrative guidelines.

The County should encourage the cities to adopt the following guidelines for use within areas subject to noise above DNL 65:

A. Determine the sensitivity of the subject land use to aircraft noise exposure levels. The F.A.R. Part 150 land use compatibility table can be used for this purpose.

B. Advise the airport management of development proposals involving noise-sensitive land uses within the DNL 65 noise contour (or within any noise overlay zone).

C. Locate noise-sensitive public facilities outside the DNL 65 contour, if possible. Otherwise, encourage building construction to attenuate interior noise levels to DNL 45.

D. Discourage the approval of rezonings, exceptions, variances, and conditional uses which introduce noise-sensitive development into areas impacted by noise exceeding DNL 65.

E. Where development within the DNL 65 contour must be permitted, encourage developers to incorporate the following measures into their site designs:

(1) Where noise-sensitive uses will be incorporated into a larger, mixed use building, locate noise-sensitive activities on the side of the building opposite the airport or, if the building is beneath a flight track, opposite the prevailing direction of aircraft flight.

(2) Where noise-sensitive uses are part of a larger mixed use development, use the height and orientation of compatible uses, and the height and orientation of landscape features such as natural hills, ravines and manmade berms, to shield noise-sensitive uses from ground noise generated at the airport.

Luc
APPROVED.

LU-12. ACQUIRE UNDEVELOPED LAND ZONED FOR RESIDENTIAL USE WITHIN DNL 65 BASED ON 1997 NOISE COMPATIBILITY PLAN (MILWAUKEE COUNTY).

References: (NCP Pages 6-25:6-26, 6-38, 7-25:7-26, 7-42)

Milwaukee County proposes to acquire the undeveloped land shown in Exhibit 7E. These parcels are all zoned for residential use. For various reasons, none have strong

potential for commercial or industrial rezoning. All are clustered near the extended centerline of Runway 1L-19R and under the east departure track for Runway 19R departures. Thus, they will be exposed to frequent overflights and high noise levels through the future. Indeed, Noise Abatement Measures 7 and 8, involving the installation of the DME and VOR and redefinition of the left turn for Runway 19R departures, rely on this undeveloped area as a noise-compatible corridor.

CU12 APPROVED, subject to an evaluation at the time of implementation that the property is within the DNL 65 contour, and to a determination that the property either has been developed incompatibly or is in imminent danger of being developed incompatibly unless it is acquired by the airport operator.

LU-13. ACQUIRE SCATTERED HOMES WITHIN RUNWAY PROTECTION ZONES AND DNL 70 CONTOUR ADJACENT TO AIRPORT (MILWAUKEE COUNTY).
References: (NCP Pages 6-23:6-25, 6-38, 7-26:7-28, 7-42)

Milwaukee County proposes to acquire scattered homes shown in Exhibits 7E and 7F off each end of Runway 7R-25L and Runway 1L-19R. They are either within or immediately adjacent to the runway protection zones (east of Runway 7R-25L) or within the DNL 70 contour. Only isolated homes or small clusters of homes within the DNL 70 are proposed for acquisition. Homes within commercial/industrial zoned areas, and within the DNL 70 contour, are included. It has been decided not to extend the acquisition program into large, established neighborhoods. This is considered too costly, and disruptive to the communities involved. After securing funding, it should inform property owners of its desire to buy the property. Notifications, appraisals, negotiations, and relocation assistance must comply with federal law.

A guaranteed purchase approach is proposed. When the airport has the funding in hand, it would inform the property owners that it is willing to buy their homes. At their option, property owners would enter into negotiations. The use of the eminent domain power is not envisioned. Federal law would require relocation and moving assistance payments to the property owners and tenants. (See the Uniform Relocation Assistance and Real Property Acquisition Regulations of the U.S. Department of Transportation - 49 CFR Part 24.)

A total of 86 residential buildings, including 81 single-family homes, four duplexes, and one four-unit apartment building, would be acquired. Three vacant residential lots in the St. Francis acquisition are also included. A breakdown by city is shown below.

Cudahy - 21 single-family homes
2 duplexes

Milwaukee - 20 single-family homes
1 duplex
1 four-unit apartment building

Oak Creek - 16 single-family homes
1 duplex

St. Francis - 24 single-family homes
3 vacant lots

The cost of acquiring and demolishing the dwellings and relocating the residents is estimated at \$9,260,000. This is based on estimated average prices of \$60,000 to \$80,000 for the homes, \$75,000 to \$90,000 for the duplexes, and \$120,000 for the apartment building. Demolition expenses are estimated at \$7,000 per building. Relocation and moving expenses, which could vary greatly, are estimated at an average of \$12,000 per household. The vacant lots are estimated to cost \$15,000 each. A contingency factor of 25% has been added to the estimated prices in developing the total cost estimate.

LU-13 APPROVED IN PART. Acquisition of the residential property is approved. Acquisition of the vacant properties is disapproved pending (1) a demonstration at the time of implementation that the property is within the DNL 65 or greater contour, and (2) a determination that the property either has been developed incompatibly or is in imminent danger of being developed incompatibly unless it is acquired by the airport operator.

LU-14. PHASE 1 RESIDENTIAL MITIGATION - SOUND INSULATION, EASEMENT PURCHASE, OR SALES ASSISTANCE FOR HOMES WITHIN DNL 70 (MILWAUKEE COUNTY).

References: (NCP Pages 6-30:6-35, 6-38, 7-28:7-30, 7-42, Appendix C)

Milwaukee County proposes to establish a mitigation program involving sound insulation, purchase of noise and aviation easements, or sales assistance for homes within the DNL 70 contour, based on the 1997 noise compatibility plan contours. While the nominal eligibility boundary is proposed as the DNL 70 contour, a 1.5 dB buffer around the DNL 70 contour, off the ends of the primary runways, is

proposed for more detailed definition of the eligibility area. Within this area, noise levels are now, and for several years will continue to be, perceived as very loud. In addition, typical aircraft noise events occurring within this buffer area will not be perceptibly different from noise at a site on the DNL 70 contour.

The boundaries of the eligibility area are shown in Exhibits 7E and 7F of the NCP. It is proposed that the boundaries be squared off to follow streets, alleys, and back lot lines wherever possible.

Single-family homes and duplexes are eligible for all three mitigation program options. Multi-family buildings (three units or more) and dwellings sharing a lot or building with a business are eligible for sound insulation. Purchases of easements from owners of multi-family buildings or dwelling units affiliated with businesses shall be made only if sound insulation is not feasible or has already been done by the property owner. Multi-family buildings and dwellings sharing a lot or building with a business shall not be eligible for sales assistance.

The mitigation program would give property owners their choice of actions. For those who want to remain in the neighborhood, sound insulation of their homes may be a desirable option. For those who believe they have already adequately sound-insulated their homes, sale of a noise and aviation easement may be desirable. For those who wish to move, sales assistance may be a better option. For those who choose sound insulation or sales assistance, the County should secure a noise and aviation easement from the property owner as a condition of participating in the mitigation program. (Suggested language for the easement is in Appendix C of the NCP) The mitigation program would be strictly voluntary. Property owners would be under no obligation to participate. It is intended that any given home would only be eligible for this program once. After the County has secured a noise and aviation easement from a home, it would no longer be eligible for the program.

The sound insulation, easement purchase, and sales assistance programs are limited measures which are intended to respond to the most heavily impacted people without demolishing neighborhoods and permanently disrupting the tax base.

An estimated total of 1,602 homes and duplexes and 41 multi-family buildings would be eligible for this mitigation program.

244
APPROVED.

LU-15. PHASE 2 RESIDENTIAL MITIGATION - SALES ASSISTANCE OR EASEMENT PURCHASE FOR HOMES WITHIN DNL 65 BASED ON 2000 NOISE COMPATIBILITY PLAN (MILWAUKEE COUNTY).

References: (NCP Pages 6-30:6-31, 6-34:6-35, 6-39, 7-30, 7-42, Appendix C)

Milwaukee County proposes to implement the sales assistance or easement purchase mitigation program for homes within the DNL 65 contour, based on noise in the year 2000. Sales assistance is proposed for single-family and duplex dwellings, condominiums and three and four-unit apartment buildings in this area. Only easement purchase, and not sales assistance, should be offered to all residences affiliated with businesses within the Phase 2 eligibility area.

Exhibits 7E and 7F show the DNL 65 contour based on the Noise Compatibility Plan in 2000. Again, the boundaries of the eligibility area have been adjusted to follow streets, alleys and back lot lines wherever possible.

An estimated 2,081 dwellings are eligible for the Phase 2 program, based on the noise contours for the year 2000.

APPROVED:

LU-16. INSTALL SOUND INSULATION FOR SCHOOLS AND NURSING HOME IMPACTED BY NOISE AT OR ABOVE 65 DNL AND CHURCHES IMPACTED BY NOISE AT 70 DNL (MILWAUKEE COUNTY).

References: (NCP Pages 6-31:6-34, 6-39, 7-31:7-32, 7-42, Appendix C)

Milwaukee County proposes sound insulation for ten schools impacted by noise above DNL 65, based on 1997 noise compatibility plan conditions, and another one just beyond the DNL 65 contour. In addition, one nursing home in St. Francis is impacted by noise above DNL 65. (See Exhibits 7E and 7F in the NCP.) While noise between DNL 65 and 70 at Milwaukee does not pose a serious enough problem for churches to justify sound insulation (peak use of the churches occurs at different times than airport peak use periods), noise above DNL 70 is considered serious. Within the DNL 70 contour, churches will be subjected to very high single event levels even during off-peak airport use periods. For this reason, sound insulation of the two churches within the 1997 DNL 70 contour, St. Stephen's on Howell south of Runway 7R-25L and St. Paul's north of Runway 1L-19R, is proposed.

(Stained glass windows may have to be removed and replaced by, or covered with, special sound attenuation windows. Interior walls or ceilings may need to be added to thicken the wall and roof/ceiling sections.) Sound insulation of

office and classroom areas probably will be more practical.

The County should cooperate with the school districts, church officials, and the nursing home operator to arrange for these projects. It is important for the building owners to understand that effective sound insulation depends on keeping windows closed. This could result in higher heating and cooling costs, although this could at least be partially offset by the improvement in energy insulation. This should be given serious attention before the building owners commit to sound insulation.

Wike
APPROVED

CONTINUING PROGRAM

CP-1 PUBLISH NOISE ABATEMENT PROCEDURES IN AIRPORT/FACILITY DIRECTORY.

References: (NCP, Pages 7-33:7-34, 7-42)

Milwaukee County proposes to coordinate with FAA and arrange for publication of the airport's noise abatement procedures in the Airport/Facility Directory. This multi-volume document is published by the National Oceanic and Atmospheric Administration as an information aid to pilots. It includes a description of all public use airports in the country and is reissued every eight weeks. The East Central edition covers Wisconsin.

The Facility Directory entry for General Mitchell International Airport already describes several of the runway use restrictions at the airport. It would be appropriate to add language noting that all approaches are over noise-sensitive areas, that departure vectors for turbojets are assigned for noise abatement, and that noise abatement departure procedures are encouraged for all turbojets.

It has been the practice at Milwaukee to try to achieve this informational function through a message on the ATIS (automated terminal information service) broadcast. This is a taped message which incoming pilots can receive. The current ATIS message notes that all approaches are over noise-sensitive areas. The purpose of the ATIS is actually to inform pilots of a variety of critical information in high traffic areas. The length of the message must be limited. With publication of the noise abatement information in the Facility Directory, a more appropriate place for this information, the noise abatement language could be deleted from the ATIS, freeing the space for other messages as needed.

The airport management should consult with the local Tower Manager and agree on proposed language to cover the noise abatement procedures. Space in the directory is limited and it is not intended to describe detailed air traffic control procedures. Thus, the language will have to be concise and somewhat general. The following language is suggested:

"All approaches are over noise-sensitive areas. Departure vectors for turbojets are assigned for noise abatement. Noise abatement departure procedures are encouraged for all turbojets."

The proposed language should be submitted to the FAA Cartographic Standards Branch in Washington with a recommendation that it be published in the directory.

CP-1 APPROVED, for Part 150 purposes to the extent that information reflects approvals of Part 150 program measures. The last sentence of the second paragraph above suggests including in the Airport Facility Directory a statement that departure vectors for turbojets are assigned for noise abatement. This is not entirely correct. The statement should be either deleted or modified to include the phrase, "safety and efficiency permitting."

CP-2 COORDINATE AND COMMUNICATE WITH KEY AGENCIES.

References: (NCP, Pages 7-34, 7-42)

Milwaukee County proposes to maintain communications with the local governments and local planning officials to follow their progress in implementing the land use management element.

The airport management also must monitor compliance with the noise abatement element. This includes checking periodically with the air traffic control tower regarding compliance with the air traffic control procedures. The airport management also should check with air carriers, business users, and military users. This can serve as a friendly reminder as to the importance which the airport management places on the program while providing an opportunity to find out about any difficulties with the application of the noise abatement measures.

The Airport Noise Advisory Committee can play a role in encouraging communication among the airport, local communities, and aviation interests regarding implementation of the Noise Compatibility Plan.

APPROVED.

CP-3 MAINTAIN COMPLAINT RESPONSE SYSTEM.

References: (NCP, Pages 7-34:7-35, 7-42)

Milwaukee County proposes to maintain its complaint response system. The airport has a well-organized system of recording and responding to noise complaints. It would be greatly improved, however, if it was computerized. Compilation and mapping of the noise complaints is a very large job as it is done manually. Analysis of complaint trends is not only time-consuming but extremely difficult as well.

Ideally, complaints should be incorporated into a simple geographic information system (a geocoded data base management system). This would enable the data to be filtered, analyzed, and mapped. It would provide great flexibility in querying the system and producing custom reports. Standard data base software linked to autocad software would produce a satisfactory system.

APPROVED.

CP-4 MONITOR AIRCRAFT ACTIVITY AND FLEET CONVERSION.

References: (NCP, Pages 7-35:7-36, 7-42)

Milwaukee County proposes to make additional efforts to monitor the overall fleet mix of the airlines operating at Milwaukee. This will help to inform the airport of likely changes they may expect to see at Milwaukee and give the staff the information it may need if it wishes to discuss with any airlines their choice of aircraft being assigned to Milwaukee. Since the adoption of the Stage 2 phaseout legislation by Congress, it is not necessary to adopt formal fleet transition policies at Milwaukee. Nevertheless, the question of fleet mix is a sensitive one at Milwaukee. It would be helpful for the airport staff to have the information at hand needed to be well-informed.

The airport staff presently maintains data on passenger enplanements, aircraft operations, and the operational fleet mix at Milwaukee. This is extremely important information for use in aviation and noise compatibility planning.

It is suggested that the staff purchase JP Airline Fleets International each year and maintain an annual subscription to *Airliners Monthly News*. The book lists all aircraft, by registration number and type, for every air carrier in the world. It also includes a list of aircraft on order for each carrier. The monthly magazine provides an update of the data in the book. This will be a good source of data,

but it is not complete as it does not include information about orders for hush-kits or replacement engines. The airport staff should review other aviation industry literature to glean information on these topics.

If the staff considered it worthwhile, this fleet mix information could be put into a simple data base file for ease of access, analysis, and update. Alternatively, computerized versions of the airline fleets data is available from the publisher of JP Airline Fleets International.

CP-5
APPROVED. The FAA strongly encourages the airport sponsor to frame any discussions with the airlines based on this information in the context of voluntary agreements that complement the national transition schedule. As a matter of policy, the FAA encourages airports to use voluntary agreements to achieve their noise mitigation objectives. Any proposal to limit the use of Stage 2 aircraft would be subject to the requirements of the Airport Noise and Capacity Act of 1990.

Fleet mix information is available, at no cost, from the FAA Office of Environment and Energy. This office publishes annual progress reports on the transition to quieter airplanes under the national transition schedule.

CP-5 DEVELOP FLIGHT TRACK AND NOISE MONITORING SYSTEM.

References: (NCP, Pages 7-36:7-37, 7-42)

Milwaukee County proposes to develop an automated flight track monitoring system. Such a system should provide accurate data on aircraft identification, location, altitude, and time. It should be able to provide data within a reasonable time after the actual event. The system should also be able to provide cost-effective data over a long-term period to enable analysis and evaluation of noise abatement procedures.

The airport staff has expressed a need for a system for investigating noise complaints and verifying compliance with the flight track procedures of the noise abatement plan. Several airports around the country are developing such systems.

In general, two types of systems are available. One relies on the use of FAA's ARTS (automated radar terminal service) system data. The other relies on the use of a passive radar detection system.

FAA's ARTS system, used for air traffic control purposes, records complete flight track data and saves it to computer

tape or computer disks. The system is not set up to provide data for end users such as an airport noise office or planning consultant. It is very raw data. Before it would be of any use for the purposes envisioned here, it would have to be filtered and converted to a format compatible with a microcomputer. This involves considerable processing expense. In addition, use of the ARTS data requires a 15-day waiting period. In order to use the data, special software would be required.

Passive radar detection systems involve the installation of a radar receiver and related computer hardware and software. The systems operate by picking up radar echoes and transponder signals. The system has some advantages over ARTS data since it can provide real time flight track information. Unfortunately, it only identifies aircraft by transponder code. In order to identify the specific aircraft corresponding to the code, the air traffic control tower's flight strips must be secured and encoded manually into the computerized flight track system. As with the ARTS data, the flight strip data also cannot be released until after a 15-day waiting period.

CP-5 APPROVED. NOTE: It is important to note that use of the national airspace computer and radar data or equipment by outside interests is subject to the provisions of FAA Order 1200.22B. In addition, for reasons of aviation safety, this approval does not extend to the use of the monitoring equipment for enforcement purposes by in-situ measurement of any pre-set noise thresholds (The FAA notes that the MKE NCP does not include such thresholds or sanctions for noncompliance).

CP-6 EVALUATE AND UPDATE THE PLAN.

References: (NCP, Pages 7-37:7-38, 7-42)

Milwaukee County proposes to review the Noise Compatibility Plan and consider revisions and refinements as necessary. A complete plan update will be needed periodically to respond to changing conditions in the local area and in the aviation industry. This can be anticipated every six to eight years. An update may be needed sooner, however, if major changes occur and later if conditions at the airport and in the surrounding area remain stable.

Proposed changes to the Noise Compatibility Plan should be reviewed by the FAA and all affected aircraft operators and local agencies. Proposed changes should be submitted to FAA for approval after local consultation and a public hearing in order to comply with F.A.R. Part 150.

As a rule of thumb, the trigger for determining the need for contour updating is a 17% change in equivalent operations by jet aircraft, based on the FAA's Area Equivalency Method (AEM) for estimation of noise contour areas. To calculate "equivalent operations", all nighttime operations, (between 10:00 p.m. and 7:00 a.m.) must be multiplied by ten and added to daytime operations. Noise contours should be mapped and compared to previously calculated noise contours to identify significant changes, namely changes exceeding DNL 1.5 dB.

CFB
APPROVED.

CP-7 ESTABLISH NOISE ABATEMENT AND MITIGATION STAFF.

References: (NCP, Pages 7-38:7-39, 7-43)

Milwaukee County proposes to increase its staff dedicated to noise abatement and mitigation. Currently, the airport has a full-time noise coordinator. This position in addition to other existing staff could be used to handle most of the coordination, data collection, and data management functions outlined in this plan. (Specifically, Program Management Measures 2, 3, 4, and 6.)

Maintenance of the proposed flight track monitoring system and analysis of the data will require the equivalent of 20 hours per week from a skilled technician.

In addition, the land acquisition and mitigation programs will require personnel to manage the programs, negotiate with property owners, handle inquiries, perform work write-ups, etc. It is estimated that this will require a mitigation program manager and one technician. In addition, specialized assistance probably will be required to set up detailed program guidelines and to ensure that staff technicians, local building inspectors, and local contractors are properly trained in soundproofing techniques. At the County's option, these functions could be handled by qualified consultants instead of in-house staff.

APPROVED.