FEDERAL AVIATION ADMINISTRATION

NEW ENGLAND REGION

AIR TRAFFIC DIVISION

RECORD OF DECISION

IMPLEMENTATION OF NEW AIR TRAFFIC CONTROL TURBOJET DEPARTURE PROCEDURE

FOR RUNWAY 27 AT BOSTON-LOGAN INTERNATIONAL AIRPORT

AUGUST 30, 1996

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I. PURPOSE

This Record of Decision documents the selection and rationale for an alternative air traffic control turbojet departure procedure for Runway 27 at Boston-Logan International Airport.

II. BACKGROUND

The departure area for Runway 27 is aligned with substantial residential neighborhoods in the City of Boston and neighboring communities, such as Brookline and Milton. As turbojet traffic grew at Logan Airport during the 1970s, the air traffic control tower changed air traffic control procedures to more efficiently control traffic and respond to growing concerns with aircraft noise. In the early 1980s, a community group called the Runway 27 Coalition, , filed suit against the Federal Aviation Administration (FAA), charging that FAA failed to undertake an Environmental Impact Statement (EIS) as required by the National Environmental Policy Act. In 1987, the U.S. District Court for the District of Massachusetts determined that FAA's change of turbojet departure procedures required preparation of an Environmental Assessment to ascertain the significance of the change. In April of 1988, the FAA issued an Environmental Assessment concluding that the noise environment had changed significantly and a more detailed EIS needed to be prepared.

The objective of the EIS was to see if an alternative procedure (including the existing procedure) could minimize the population adversely impacted by aircraft noise and at the same time not adversely affect air traffic control safety or efficiency.

The FAA and the Runway 27 Advisory Committee, comprised primarily of community representatives potentially impacted by alternative procedures, drafted a Scope of Work for the EIS in 1988 and 1989. The EIS was underway between 1990 and 1996 and experienced several delays due primarily to obtaining funding. In November of 1995, FAA issued a Draft EIS (DEIS) and on December 4, 1995, FAA conducted a public hearing on the Draft. As the EIS progressed between 1988 and 1995, over 40 public Advisory Committee and other meetings were held. A Final EIS was issued in June 1996.

III. STATUTORY AUTHORITY

Title 49 of the United States Code, which includes the former Federal Aviation Act of 1958, grants FAA control of airspace in United States and charges FAA with maintaining a safe and efficient system of air traffic control. Section 40103(b) of Title 49 grants to the Administrator of FAA the authority to issue orders which affect the safe and efficient use of airspace. FAA's decision to implement the air traffic control procedure which is the subject of this Record of Decision is issued pursuant to this authority and constitutes an order of the Administrator reviewable in the Circuit Court of Appeals in accordance with 49 U.S.C. 46110.

IV. THE DECISION

FAA has selected the Final Alternative (or Preferred Procedure) of the Final Environmental Impact Statement. This alternative is expressed in land use terms as follows: Maintain runway heading until reaching the World Trade Center, then turn left to overfly the southern end of Ft. Point Channel, the Massachusetts Avenue intersection of the Southeast Expressway, areas of Roxbury, the center of Franklin Park and Forest Hills Cemetery, and then turn northerly, westerly, or southerly in accordance with the destination airport.

Using air traffic control terminology, this procedure is as follows: Maintain runway heading until 2 DME [DME stands for distance measurement equipment and refers to the distance between the aircraft and the ground component of the equipment at Logan Airport], turn left to 235 degrees [magnetic], continue climb until reaching 6 DME, then proceed as vectored on course.

Since the air traffic control terminology represents the procedure the aircraft will fly and this procedure is based on heading rather than track (position over the ground), FAA will revise the air traffic control terminology in the future as needed to achieve as closely as possible the procedure expressed in land use terms.

A minor related federal action is to reduce the minimum departure ceiling and visibility requirement for aircraft departing Runway 27 from 900 feet ceiling and 1 mile visibility to 600 feet runway visual range. This would permit aircraft to depart from Runway 27 under conditions of reduced ceiling and visibility.

V. ALTERNATIVES

The EIS is essentially a noise abatement study which examined over 20 alternative procedures that varied by location of turn points, aircraft headings, and locations and altitudes at which aircraft turn on course toward distant navigational aids.

At the outset, the Advisory Committee considered a broad range of potential alternatives. Some of these alternatives, such as flight tracks in close proximity to building obstructions in downtown, were not practical because of their adverse impact on safety. Others, such as turns further easterly, would have required the redesign of airspace associated with other runway procedures and significantly affected air traffic efficiency. Still others, such as turns to the west over Boston Harbor and changes to Massport-community runway utilization goals of the Preferential Runway Advisory System, would have resulted in significant new noise to areas already significantly impacted from other runway departure or arrival procedures. FAA determined, after coordination with the Advisory Committee, that adverse impacts to safety, air traffic control efficiency, and cumulative noise would be used as evaluation criteria.

Eight alternatives (A through H) were modeled utilizing FAA's Integrated Noise Model. Noise contours and residential populations within various contour levels were calculated. Noise sensitive receptors such as schools, parks, and nursing homes were also counted. These alternatives are as follows:

Alternative A (the current procedure): Maintain runway heading to 2 DME, then turn left to 240 degrees and continue climb to 3,000 feet, then proceed as vectored on course.

Alternative B: Maintain runway heading to 2.2 DME, then turn left to 235 degrees and continue climb to 3,500 feet, then proceed as vectored on course.

Alternative C: Maintain runway heading to 2.2 DME, then turn left to 240 degrees and continue climb to 3,500 feet, then proceed as vectored on course.

Alternative D: Maintain runway heading to 2.2 DME, then turn left to 250 degrees and continue climb to 3,500 feet, then proceed as vectored on course.

Alternative E: Maintain runway heading to 2.2 DME, then turn left to 235 degrees and continue climb to 3,000 feet, then proceed as vectored on course.

Alternative F: Southbound traffic maintain runway heading to 2.2 DME, then turn left to 235 degrees and continue climb to 4,500 feet, then proceed as vectored on course; westbound and northbound traffic maintain runway heading to 2.2 DME, then turn left to 235 degrees and continue climb to 3,000 feet, then proceed as vectored on course.

Alternative G: Southbound traffic maintain runway heading to 2.2 DME, then turn left to 235 degrees and continue climb to 4,500 feet, then proceed as vectored on course; westbound traffic maintain runway heading to 2.2 DME, then turn left to 235 degrees and continue climb to 3,000 feet, then proceed as vectored on course; northbound traffic maintain runway heading to 2.2 DME, then turn left to 235 degrees and continue climb to 2,000 feet, then proceed as vectored on course.

Alternative H: Same as Alternative G, except a broader dispersion of flight tracks was modeled for the initial turn at 2.2 DME.

Alternatives C, E, and F were considered promising noise abatement alternatives and were assessed in additional detail. They were flight tested, flight tracks were down-loaded from the air traffic control computer, and noise monitoring and visual observations from various locations in Boston were conducted to corroborate data.

The Final Alternative, a variant of Alternative F, was modeled to better locate the initial turn point over the World Trade Center and retain aircraft on a 235 degree heading so that aircraft would overfly greater amounts of green space associated with Franklin Park and Forest Hills Cemetery. This alternative is as follows: Maintain runway heading until 2 DME, turn left to 235 degrees, continue climb until reaching 6 DME, then proceed as vectored on course.

With regard to reducing departure weather ceiling and visibility minima for Runway 27, no alternatives other than continuation of the existing departure minima were considered.

VI. RATIONALE FOR THE DECISION

FAA considered the following aeronautical factors during the EIS process and in its decision: air traffic control safety, air traffic control efficiency (minimal use of airspace, procedural simplicity, minimal controller and pilot workload), airborne and ground-based navigation technology, and airline energy consumption. FAA considered environmental impact as documented in the EIS.

From the outset, FAA has been concerned that all alternatives evaluated must not adversely affect air traffic control safety or efficiency. The air traffic control tower and the Air Traffic Division at the Regional level have provided oversight through several specialists, who reviewed alternatives and provided feedback at Advisory Committee meetings. Additionally, aviation safety specialists within FAA's Flight Standards Division have reviewed the flight safety aspects of the alternatives, particularly with regard to potential obstructions in the departure flight path.

The amount of airspace available for alternative procedures was constrained for reasons of aeronautical safety, with a heading of 240 degrees representing the westerly boundary of reasonable alternatives because of building obstructions in the City of Boston and 235 degrees representing an easterly limit because of conflicting airspace with turboprop departures from Runway 27, as well as conflicting airspace

with airport arrival traffic. FAA has also expressed concern with alternatives which would cause turbojets to proceed further than 6 DME along the same 235 degree heading. FAA discouraged such alternatives because different aircraft speeds and rates of climb could cause one aircraft to overtake another, thereby requiring air traffic control intervention (a change in aircraft heading) to a greater extent than exists today. This would negate the environmental benefits of the procedure.

FAA believes that the Final Alternative is a safe procedure that is neutral with regard to air traffic control efficiency. From 6 DME (over Forest Hills Cemetery) approximately 50% of turbojets would continue south over Block Island or southwest over Hartford. For these aircraft, the new procedure would be slightly more efficient than the 250 degree heading of the existing procedure. The other 50% would turn westerly toward Chester or Westfield, Massachusetts, or northerly toward Manchester, New Hampshire. For these aircraft, the new procedure would be slightly less efficient. The procedure would not adversely affect controller or pilot workload and is not complicated.

FAA considered the capability of alternative navigational aids to increase the precision of aircraft turns at the initial 2 DME turn point and decrease dispersion along the desired flight track after the initial turn. FAA concluded there are no practical short-term solutions, with the possible exception of limited use of flight management systems by air carriers. These aircraft computer systems would enable more accurate point-to-point navigation but are not yet in use by substantial numbers of aircraft in the air carrier fleet. Beyond five years, satellite-based Global Positioning Systems are expected to enable widespread point-to-point navigation possible for aircraft involved in instrument departure procedures. FAA's emphasis on transitioning to GPS procedures is expected to remain with instrument approach procedures until then. FAA would be responsible at that time for assessing any significant change in the noise environment that future undefined procedures could cause.

No significant change in airline energy consumption is anticipated from the new procedure, since decreases and increases in mileage flown to outer navigation points are approximately equal.

From the perspective of environmental impact, the Final Alternative would impact approximately 6,500 fewer people than the existing procedure, within the 65 average day-night sound level contour (a measure of land use compatibility utilized by the federal government). It is the only practical alternative studied that reduces noise exposure to this extent and is consequently the environmentally preferable alternative.

With regard to reducing the ceiling and visibility minima for aircraft departing Runway 27, FAA considered additional aircraft that could depart on Runway 27. An analysis of hourly weather data indicates that approximately 100 additional aircraft annually could depart on Runway 27. These aircraft would otherwise have to depart on another runway. Noise contours for Runway 27 would increase less than 0.1 decibel, substantially below the 1.5 decibels that FAA considers a significant change in the noise environment. The reduction in minima would slightly improve the availability of Runway 27 and at the same time slightly improve (less than 1%) compliance with Massport and community runway-end utilization goals of the Preferential Runway Advisory System.

VII. IMPLEMENTATION AND MITIGATION MEASURES

The Final Alternative will be implemented through publication of a Notice to Airmen and a revised Standard Instrument Departure (SID) procedure. The new procedure will become effective beginning September 15, 1996.

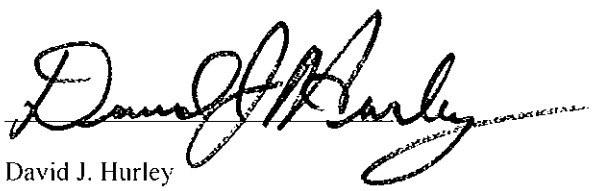
FAA (with technical assistance from Massport) will subsequently conduct radar flight track analysis between six months and one year after publication of the SID. FAA will report its findings to the Logan Community Advisory Committee (CAC). FAA will take subsequent action, including future changes to the SID procedure, implementation of aircraft Flight Management System procedures, publication of Letters to Airmen, and other coordination with air carriers serving Logan, as necessary to reduce track

dispersion and center the flight track as specified in land use terms for the Final Alternative. (See Section IV above.) Acceptable track dispersion will be a procedure flight corridor two standard deviations in width. The center of the flight track will be considered acceptable when within one standard deviation of the flight track specified in land use terms for the Final Alternative.

Should FAA need to undertake subsequent action, FAA will conduct radar flight track analysis each nine months after the radar flight track analysis indicating the need for action, until such analysis indicates that an acceptable flight track dispersion and flight track center has been achieved. FAA will subsequently consider flight track analysis as requested by the CAC.

VIII. RESPONSIBLE OFFICIAL

Having carefully considered probable environmental, air traffic control safety, and air traffic control efficiency impacts, I find that the decision to implement an alternative air traffic control departure procedure for turbojet aircraft departing from Runway 27 at Boston-Logan International Airport, as specified herein, is reasonably supported.



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