740 CMR 24.00: LOGAN AIRPORT NOISE ABATEMENT

Section

24.01: Definitions

Air carrier - any entity conducting operations at Logan in turbojet aircraft pursuant to a certificate to conduct air transportation services in accordance with 49 U.S.C. Sections 1371, 1372, 1375, 1387, and/or 1388, and/or any other applicable provision of law by which such entity is conducting commercial air transportation services in turbojet aircraft.

Day - 24 hour period commencing at midnight.

Evaluation period - each six-month period commencing July 1, 1986.

Logan - Boston-Logan International Airport.

New entrant air carrier - an air carrier that has not conducted any operations at Logan within the 12 month period immediately preceding the date in which said carrier seeks to commence new operations at Logan.

Noise per seat index - an index value for turbojet aircraft types operated at Logan and calculated in accordance with 740 CMR 24.00: *Appendix A*.

Operation - an aircraft landing or takeoff.

Operator - an entity that owns or exercises operational control over an aircraft.

Stage 1 aircraft - an aircraft that meets the noise levels prescribed in 14 CFR Part 36, Appendix C, § 36.5(a)(3) or, in the case of foreign manufactured aircraft operated by a foreign flag air carrier, in Chapter 2 or 3 of Annex 16 to Article 37 of the International Civil Aviation Organization Convention.

Stage 2 aircraft - an aircraft that meets the noise levels prescribed in 14 CFR Part 36, Appendix C, Section 36.5 (a)(2) or, in the case of foreign manufactured aircraft operated by a foreign flag air carrier, in Chapter 2 of Annex 37 to the ICAO Convention.

Stage 3 aircraft - an aircraft that meets the noise levels prescribed in 14 CFR Part 36, Appendix C, Section 36.5 (a)(3) or, in the case of foreign manufactured aircraft operated by a foreign carrier, in Chapter 3 of Annex 16 to the ICAO Convention.

24.02: Aircraft Noise Proposals

No new aircraft of a type not presently operating at Logan International Airport on a scheduled basis (such as the Concorde SST and the TU-144) shall use said Airport, except in an in-flight emergency, unless it meets noise standards set forth in FAR Part 36, with appendices (14 CFR).

24.02: continued

(NOTES: (1) 740 CMR 24.03 was formerly Part E, Article 11, sections B through 1 of the Rules and Regulations for Logan International Airport.

(2) 740 CMR 24.99(2) of the existing regulations which sets out penalties for violations shall also be amended to reflect the penalty provisions incorporated in 740 CMR 24.03(9) and (10), and (13) of this proposal.)

24.03: Noise Abatement Evaluation Period Rule

(1) Each air carrier conducting in excess of six commercial operations in turbojet aircraft at Logan in any single day during an evaluation period shall comply with any one of the following restrictions during each evaluation period:

(a) the percentage of operations in stage 3 aircraft shall not be less than the following established annual percentage of the total number of operations conducted by such operator in an aircraft:

1986 - 43.9%

(for years subsequent to 1986 see 740 CMR 24.03(2)).

OR

(b) the noise per seat index for the total number of turbojet operations conducted by such operator at Logan shall not exceed the following established levels:

1986 - 77.95 decibels per seat

(for years subsequent to 1986 see 740 CMR 24.03(2))

(2) For the years subsequent to 1986, the Executive Director shall establish a specific stage 3 annual percentage level and annual noise per seat index in accordance with the methodology specified in Appendix B. Notice of the specific stage 3 annual percentage level and annual NPSI for each forthcoming year shall be published in a City of Boston newspaper, filed with the State Secretary for publication in the Massachusetts Register and forwarded to all persons requesting such notification by July 1st of the preceding year.

(3) Compliance with these restrictions shall be evaluated on a six-month basis commencing July 1, 1986.

(4) Each air carrier that conducts in excess of six commercial operations in turbojet aircraft at Logan in any single day during an evaluation period and that fails to comply with the restrictions as set forth in 740 CMR 24.03(1) for an evaluation period shall not conduct for any week during said evaluation period any operations in stage 1 and/or stage 2 aircraft in excess of the total number of operations conducted by that operator in stage 1 and stage 2 aircraft for any week within any four consecutive week period in the immediately preceding evaluation period. Nothing herein shall be construed to preclude any air carrier from conducting six or fewer operations in any single day in stage 1 and/or stage 2 aircraft. For the initial evaluation period, the limitation on operations established hereunder shall be determined based upon the immediately preceding six-month period ending December 31, 1985.

(5) For the purposes of determining compliance with these restrictions, each carrier at Logan shall submit a report in a form approved by the Executive Director as follows:

(a) for air carriers planning to conduct more than six operations in turbojet aircraft in any single day during the evaluation period at hand, a schedule setting forth:

1. total scheduled and unscheduled operations planned to be conducted by the operator during the forthcoming evaluation period;

24.03: continued

2. the model, series, and engine designation of aircraft to be used in each such operation (*e.g.* B727, series 232, JT8D-7A); maximum certificated landing and takeoff weights; certification status of each such aircraft under 14 CFR Part 36 (*i.e.* stage 1, stage 2, stage 3); the certificated noise levels taken from the noise characteristic section of the FAA approved flight manual or published in the then current FAA Advisory Circular; the number of passenger seats on the aircraft; and the number of operations to be conducted in each aircraft type;

3. the total percentage of operations to be conducted in stage 3 aircraft;

4. if such percentage of stage 3 operations is less than the required percentage under 740 CMR 24.03(1), the calculation of the noise per seat index in accordance with Appendix A for the operations planned to be conducted by the operator during the evaluation period;

5. if the percentage of stage 3 operations is less than the required percentage under 740 CMR 24.03(1)(a) and the noise per seat index based upon the operations planned to be conducted by the operator during the evaluation period exceeds the required levels under 740 CMR 24.03(1)(b), a summary of any discrepancies between the total number of operations to be conducted by the operator for the forthcoming evaluation period and the total number of operations allowed to be conducted by the operator under 740 CMR 24.03(4) with the discrepancies identified as individual operations by aircraft model, series, and engine designation, and certification status and date of operation. (Operations conducted by the operator in excess of the number of operations allowed under 740 CMR 24.03(4) shall be subject to the sanctions set forth in 740 CMR 24.03(9).)

(b) For air carriers planning to operate turbojet aircraft at Logan but at a level of six or fewer operations in any single day during the evaluation period, a schedule setting the information required in 740 CMR 24.03(5)(a)1. through 3.

(6) The report required under 740 CMR 24.03(5) shall be submitted to the Noise Abatement office of the Authority at Logan not later than 120 days prior to the commencement of each evaluation period, provided, however, that for the evaluation period commencing July 1, 1986 the report may be submitted no later than April 15, 1986.

(7) New entrant air carriers that plan to commence operations in turbojet aircraft during an evaluation period but were unable to meet the reporting schedule required in 740 CMR 24.03(6) shall be allowed to commence such operations only upon the submission to the Noise Abatement office 21 days prior to the commencement of operations of: (1) a report in the form and containing the information required under 740 CMR 24.03(5) for the remainder of that evaluation period; and (2) such environmental clearances as may be required under state law. Each such carrier shall subsequently file all reports required under 740 CMR 24.03(5) and (8) in a timely manner.

(8) Within 21 days following the end of each evaluation period, each carrier conducting turbojet operations at Logan shall submit an additional report setting forth any variance between the operations as reported under 740 CMR 24.03(5) (or in the case of new entrant, under 740 CMR 24.03(7)) and operations actually conducted during the evaluation period then ended. Any operations conducted that were not reported under 740 CMR 24.03(5) and (7) shall be indicated by date; time of day; aircraft model, series, and engine designation; and certification status of aircraft together with a statement as to whether any such variance has resulted in exceeding any of the restrictions under 740 CMR 24.03(1) and (4). The Noise Abatement office shall review such report and advise each carrier if such variance has resulted in an excess to the penalties under 740 CMR 24.03(9).

24.03: continued

Operation(s) conducted as a result of a required diversion to Logan due to weather, aircraft mechanical difficulties or other reasons beyond the control of operator shall also be included in such report. Such operation(s) which, if included in the calculation of operator's compliance with the restrictions under 740 CMR 24.03(1) will result in violation of any of the restrictions, shall not be included in such calculation if an operator submits a report establishing that the diversion(s) were required as the result of weather, aircraft mechanical difficulties or other reasons beyond the control of operator. In addition operation(s) conducted as part of an international flight in accordance with a bilateral treaty to which the United States is a party, and which treaty imposeslimitations on the number of flights, aircraft types, origin/destination points, or number of U.S. flag carriers allowed to operate within the foreign market, shall be excluded from the provisions of 740 CMR 24.03(1) and (4) only if: (i) inclusion of such operation(s) will result in noncompliance with any of the restrictions set forth in sections 24.03(1) and (4) and such operation(s) are not conducted in stage 1 aircraft; and (ii) the operator establishes that it is not feasible for it to utilize stage 3 aircraft for such operation(s).

(9) Any air carrier conducting in excess of six operations in turbojet aircraft at Logan in any single day during an evaluation period that fails to comply with the restrictions set forth in 740 CMR 24.03(4) during an evaluation period shall be subject to the following sanctions:

(a) first offense (applicable only to the first evaluation period that operator exceeds the restrictions).

- warning and/or fine not to exceed $300 for each operation conducted by the operator in stage 1 or stage 2 aircraft that exceeds the number of operations allowed to be conducted in accordance with 740 CMR 24.03(4) in such stage 1 and stage 2 aircraft.

(b) subsequent offenses

- fine not less than $500 and not more than $2000 for each operation conducted by the operator in stage 1 or stage 2 aircraft that exceeds the number of operations allowed to be conducted in stage 1 or stage 2 aircraft in accordance with 740 CMR 24.03(4).

(10) Any air carrier required to file a report under 740 CMR 24.03 and that fails or refuses to do so in a timely manner shall be subject to a fine of $100 per day for each day that the report remains delinquent.

Any air carrier that knowingly files a false report shall be subject to a fine of $2000 for each such false report.

(11) The Executive Director upon request may exempt any air carrier from any of the provisions of this 740 CMR 24.03 (other than the provisions relating to reporting requirements and the prohibition set forth in 740 CMR 24.03(13)) for one or more evaluation periods upon demonstration by the operator to the satisfaction of the Executive Director that:

(a) the operator is unable to comply due solely to existing aircraft fleet composition and the fact that noise attenuation modifications to existing aircraft or the purchase of quieter aircraft will not be completed in time to affect performance during the applicable evaluation period, and

(b) the operator is pursuing diligently a fleet improvement program through noise attenuation modifications that will achieve stage 2 certification or purchase of alternative aircraft as evidenced by existing contracts and/or a schedule satisfactory to the Executive Director with clearly established milestones for utilization of improved aircraft at Boston.

(12) Any request for an exemption pursuant to 740 CMR 24.03(11) together with supporting documentation shall be submitted to the Executive Director. Within seven days of the receipt of such request the Executive Director shall notify all persons requesting notification of any request for exemption submitted to the Authority and shall afford such persons the opportunity to submit written comment to the Executive Director within 21 days. The Executive Director shall make his/her determination as to the grant of an exemption within 21 days following the close of the comment period.

24.03: continued

(13) Notwithstanding any provision of 740 CMR 24.00 to the contrary, no stage 1 aircraft shall operate at Logan Airport after December 31, 1987. Any operator violating this restriction shall be subject to a fine of $2000 per operation.

24.04: Late Night Aircraft Restrictions

(NOTE: 740 CMR 24.04(1) was formerly Part E, Article III, section A of the Rules and Regulations for Logan International Airport.)

(1) Time and Aircraft Restrictions

(a) Stage 2 and stage 3 aircraft -

Subject to the additional restrictions set forth in 740 CMR 24.04(1)(b), no turbojet aircraft not certificated in accordance with Federal Aviation Regulation Part 36 shall land at Logan Airport between 10:30 p.m. and 7:00 a.m., except as required by an in-flight emergency; or takeoff at Logan Airport between 9:30 p.m. and 7:00 a.m.

(b) Stage 3 aircraft only -

Commencing July 1, 1986 no turbojet aircraft shall be operated at Logan Airport during the following periods and times by an air carrier unless such aircraft is certified as a stage 3 aircraft or meets the certification levels for landing operations (or takeoff operations as the case may be) applicable to stage 3 aircraft as set forth in Appendix C of Part 36 of the Federal Aviation Regulations: shall land (or takeoff) at Logan Airport during the following periods and times:

1986 - 11:30 P.M. to 6:30 A.M.
1987 - 11:00 P.M. to 6:30 A.M.
1988 and 1989 - 11:00 P.M. to 6:45 A.M.
1990 and each year thereafter-11:00 P.M. to 7:00 A.M.

(2) Exceptions

(a) An aircraft (except an aircraft restricted for operations at Logan pursuant to 740 CMR 24.02) will be exempted from 740 CMR 24.04 upon certification in a form satisfactory to the Executive Director that the aircraft has undergone or will undergo phased mechanical maintenance, inspection or modification at Logan over a period of not less than 24 hours, and that exemption from 740 CMR 24.04 is required in order for the procedures to be conducted or to have been conducted at Logan.

(NOTE: 740 CMR 24.04(2)(b) was formerly Part E, Article III, section B(2) of the Rules and Regulations for Logan International Airport.)

(b) An aircraft in air carrier service arriving or departing Logan subsequent to a published schedule time of arrival or departure will be exempted from the restrictions set forth in 740 CMR 24.04(1) upon completion of a report in a form satisfactory to the Executive Director establishing that the arrival or departure of the aircraft was delayed solely as the result of circumstances beyond the control of the operator.

(c) An operation by an aircraft that does not comply with the restrictions set forth in 740 CMR 24.04(1) but which was substituted for an otherwise complying aircraft that was originally scheduled to conduct such operation may be exempted from the requirements of 740 CMR 24.04(1) if a report is filed with the Executive Director which establishes that the substitution was necessitated by unanticipated mechanical or operational considerations beyond the control of the operator and that no other complying aircraft was available for substitution.

(d) 1. Air carriers performing operations in turbojet aircraft in all cargo service that were either scheduled as of January 1, 1986, or performed at least weekly during any month within the 12 month period commencing January 1, 1985 within the periods prescribed in 740 CMR 24.04(1), may petition the Executive Director for an exemption for such operation(s) from the provisions of 740 CMR 24.04(1) by filing with the Executive Director a petition for exemption identifying the specific operation(s) for which an exemption is sought by time and aircraft type and demonstrating that:

24.04: continued

a. a disruption in the continuation of the service provided by the operator will result in an unduly harsh impact on shippers or other entities with a concomitant negative impact to the economy of the New England region or a part thereof;

b. every reasonable effort has been taken to provide the service by an aircraft that complies with the restrictions set forth in 740 CMR 24.04(1); and

c. such service cannot reasonably be scheduled outside of the restricted hours.

2. Within seven days following the receipt of such petition the Executive Director shall notify all persons requesting notice of the filing of such petitions for exemption and request written within 21 days of the date of notice. Within 21 days following the deadline date for receipt of written comments, the Executive Director shall grant or deny the petition, taking into consideration all of the facts and circumstances bearing upon the need for continuing the service which is the subject of the petition, including:

a. the environmental impacts resulting from such service;

b. the ability of the carrier in view of its then existing fleet composition and schedule, and the volume of its business at Logan, to provide such service in complying aircraft;

c. the impacts to the economy of the New England region or a part thereof that may result from the disruption of the continuation of such service; and

d. the possibility that such service can reasonably be scheduled outside of the restricted hours.

Any person aggrieved by a decision of the Executive Director under this paragraph may request that the Authority conduct an independent proceeding to review the determination made by the Executive Director at which time all interested persons shall have an opportunity to be heard and present evidence.

3. Any exemption granted by the Executive Director pursuant to 740 CMR 24.04(2)(d) shall be for a term of not less than six months and not more than two years. Petitions may be renewed at the expiration of an exemption.

24.05: Noise Abatement Ground Procedures

(1) Between the hours of midnight and 6:00 a.m., the Executive Director may prohibit operation of any aircraft engine or aircraft electrical power generating device (except in conjunction with a flight arrival or flight departure) which generates a noise level in excess of 5dB above ambient at any noise monitoring system microphone located in or adjacent to a residential community. Failure to comply with the instruction given by the Executive Director is a violation of 740 CMR 24.05.

(2) Aircraft engine run-ups, except for reciprocating engine run-ups performed as part of pre-takeoff procedures, are prohibited between midnight and 7:00 a.m.

(3) Aircraft engine run-ups (except for reciprocating engine run-ups performed as part of pre-takeoff procedures) shall not be performed between 7:00 a.m. and midnight, unless prior approval of the Executive Director has been obtained. The Executive Director shall not withhold approval for performance of such operations at specific times and places as he shall designate and of which he shall provide notice to aircraft operators prior to the effective date of 740 CMR 24.00.

(4) Idle power aircraft engine run-ups between the hours of midnight and 6:00 a.m. shall not be performed unless prior approval of the Executive Director has been obtained. The Executive Director shall not withhold approval for performances of such operations at specific times and places as he shall designate and of which he shall provide notice to aircraft operators prior to the effective date of 740 CMR 24.00.

(5) Aircraft taxiing to Runway 22R shall hold short of the designated noise abatement hold line on November taxiway, until cleared to proceed by Boston Tower. The hold line is identified by pavement marking and a sign reading "Hold Point-Runway 22R".

24.05: continued

(6) Aircraft taxiing to Runway 27 shall hold short of the designated noise abatement hold line on Delta taxiway, until cleared to proceed by Boston Tower. The hold line is identified by pavement marking and a sign reading "Hold Point - Runway 27".

(7) The following noise abatement rules govern within the North Hangar Area:

(a) Jet engine starts and the taxiing of jet aircraft on the extension of Outer Taxiway or the Hangar Apron northwesterly of the fuel farms, is prohibited.

(b) Jet aircraft departing the airfreight terminal ramps in the northwesterly corner of the North Hangar Area shall be pushed out to a position permitting straight out taxi, aligned with the North Apron Taxiway centerline.

(c) Should the operation of APU's or GPU's be necessary between the hours of 11:00 P.M. and 7:00 A.M., the aircraft shall be positioned so that the APU exhaust or GPU equipment is shielded from the nearest residential area by the fuselage of the aircraft.

(8) The following noise abatement rules govern within the South Hangar Area.

(a) No jet or turboprop aircraft or helicopters shall be operated westerly of the east general aviation terminal ramp under their own power. The movement of such aircraft or helicopters beyond that point will be permitted only if under tow both in and out.

(b) All jet and turboprop aircraft parked at the east general aviation terminal ramp shall be positioned on a heading of 310 degrees magnetic.

(c) Should the operation of APU's or GPU's be necessary between the hours of 11:00 P.M. and 7:00 A.M., the aircraft shall be positioned so that the APU exhaust or GPU equipment is shielded from nearest residential areas by the fuselage of the aircraft.

(d) No stationary aircraft in the South Hangar Area or on the South Taxiway, except an aircraft at an air passenger gate or at a maintenance hangar shall operate a jet engine or an APU for more than 15 minutes in a single interval without prior approval of the Executive Director.

(9) Between the hours of 11:00 P.M. and 7:00 A.M. slight training operations including but not limited to practice approaches and takeoffs or landings shall not be conducted at the airport, exclusive of the initial takeoff and final landing of a training flight conducting such training activities elsewhere, for which takeoff or landing a temporary waiver has been granted by the Executive Director.

(NOTE: 740 CMR 24.05(10) was formerly Part E, Article IV, section J of the Rules and Regulations for Logan International Airport.)

(10)(a) Takeoffs from Runway 4L shall be limited to aircraft with a takeoff noise emission level of 73 dBA or less and landings on Runway 22R shall be limited to aircraft with a landing specified noise emission level 78 dBA or less. For purposes of 740 CMR 24.05 the term "specified noise level" shall mean the noise level for the type of operation in question (*i.e.*, landing or takeoff) as published in the FAA Advisory Circular.

(b) Takeoffs on 4L and landings on 22R are prohibited between the hours of 11:00 P.M. to 6:00 A.M.

(c) An exemption from the prohibitions set forth in 740 CMR 24.05(10)(a) and/or (b) may be granted by the Executive Director under unusual operating circumstances such as when alternative runways are closed or otherwise unavailable or as required to accommodate emergencies.

(11) Intersection takeoffs by jet aircraft or aircraft exceeding 30,000 pounds maximum certificated gross takeoff weight are prohibited, except for departures from Runway 15R.

(12) No aircraft on landing shall intentionally be touched down short of any designated displaced threshold, except that this requirement shall not apply to Runway 4R under day VFR conditions.

24.05: continued

(13) Should a turboprop or jet aircraft utilize a runway for landing or takeoff other than the preferential noise abatement runway initially assigned by Boston Tower according to the preferential runway procedures set forth in any current FAA Boston Tower Standard Operating Procedure a report of the reasons for such use shall be filed by the operator of such aircraft upon the request of the Executive Director.

(14)(a) Notwithstanding any provision of these regulations to the contrary, the Executive Director is hereby authorized to allow part-power aircraft engine run-ups during the period 6:30 A.M. to 7:00 A.M. as part of a routine aircraft maintenance check at designated areas of the airport. The authorization granted hereunder shall not exceed a one year period in order to allow the Executive Director the opportunity to monitor and analyze the effects of such a rule in terms of:

1. environmental impact;
2. improvements to airport and air carrier operating efficiency;

(b) The Executive Director shall report to the Board following the conclusion of the review period with a specific recommendation as to whether or not a further amendment to 740 CMR 24.00 is advisable.

(c) Any air carrier may petition the Executive Director for authorization to conduct such part-power run-up by specifying the particular operation(s) for which such exemption is sought. Such petition will be granted upon the agreement of the air carrier to comply with reasonable controls in order to permit appropriate monitoring and limit environmental impacts, provided, however, that the Executive Director may: (i) limit the areas of the airport within which such run-ups can be conducted in order to avoid excessive environmental impacts; and/or (ii) terminate the experiment if the monitoring results indicate that the environmental harm outweighs the potential or actual operating benefits.

24.06: Certain Ground Movements by Jet and Turboprop Aircraft Not To be Conducted By Self-Propulsion

(1) Definitions: As used in 740 CMR 24.06 the following terms are defined as follows:

Aircraft Operating Movement - any movement of jet or turboprop aircraft on the ground directly to or from a runway in connection with a takeoff or landing by that aircraft.

Aircraft Repositioning Movement - any movement of a jet or turboprop aircraft on the ground which is not an Aircraft Operating Movement.

(2) Within the daily time periods established by the following compliance schedule, no aircraft repositioning movement shall be conducted by self-propulsion.

Compliance Schedule

Commencing February 1, 1977 - 7:00 P.M. - 7:00 A.M.

Commencing July 1, 1977 - 24 hours per day

(3) Within the daily time periods established by the following compliance schedule, no aircraft operating movement (except for arrivals or departures from South Terminal gates 4, 6, 8, 10, 12, and 13) shall be conducted by self-propulsion westerly of an area near the Airport Fire Station designated by the Executive Director as the area for towing initiation (inbound) or towing termination (outbound).

Compliance Schedule: Department Aircraft

Commencing February 1, 1977 - Midnight - 7:00 A.M.

Commencing April 1, 1977 - 11:00 P.M. - 7:00 A.M.

Commencing July 1, 1977 - 7:00 P.M. - 7:00 A.M.

24.06: continued

Commencing January 1, 1978 740 CMR 24.06 shall apply to departing aircraft 24 hours per day. The Executive Director upon notice to be given not later than November 30, 1977 based on a finding that an extension is necessary to permit implementation of the program without undue congestion or delay, may extend until June 30, 1978 the commencement date for 24 hour application of this compliance schedule.

Compliance Schedule: Arriving Aircraft

Commencing February 1, 1977 - Midnight - 7:00 A.M.

Commencing April 1, 1977 - 11:00 P.M. - 7:00 A.M.

Commencing July 1, 1977 - 7:00 P.M. - 7:00 A.M.

(4) An aircraft prohibited from using self-propulsion under 740 CMR 24.06 shall not operate any engine used in propulsion while engaged in an aircraft operating movement or an aircraft repositioning movement.

(5) Except in cases of a safety emergency, no tug or tractor shall tow an aircraft unless two-way radio communication is maintained with the Control Tower on appropriate frequencies in use.

(6) Upon request, the Executive Director may exempt from the restrictions on aircraft operating movements an aircraft which is not equipped with an APU.

(7) The restrictions on aircraft operating movements and aircraft repositioning movements in this Article may be temporarily suspended by the Executive Director if required to alleviate congestion or delays on the aircraft movement areas or be automatically suspended when snow, ice, or slush on operating pavement surfaces impedes proper operation of towing procedures.

(8) The operator of an aircraft with an inoperative APU may obtain a waiver permit from the Executive Director for an aircraft operating movement.

(9) The Executive Director shall maintain a program of monitoring and evaluation of towing for noise abatement purposes and shall periodically report his findings to the Authority.

24.07: Provision of Certain Data to Executive Director

(1) For purposes of 740 CMR 24.07, the term "operation" is defined as a landing or a takeoff.

(2) Each aircraft operator conducting six or more operations at Logan Airport in a calendar month shall submit to the Authority certain information which is required by the Authority in administrating and monitoring the Logan Airport noise abatement program. The information for each operation shall include information on the flight, the aircraft and particular Logan operation. An operator of an aircraft under 75,000 maximum certificated gross landing weight may request an exemption from this report requirement on a form satisfactory to the Executive Director. The Executive Director may waive this reporting requirement for operators of aircraft of less than 75,000 maximum certificated gross landing weight or of such lesser cut-off weight as he may deem appropriate. Failure to file the foregoing monthly report shall constitute a violation of 740 CMR 24.00.

24.08: Severability of Provisions

If any provision of 740 CMR 24.00 or the application thereof to any aircraft operator is held unconstitutional or otherwise unlawful by any court of competent jurisdiction, the remainder of 740 CMR 24.00 and their application to other operators shall not be affected thereby.

24.99: Penalties For Violations

(1) The penalty for violation of 740 CMR 24.02 shall be $2,000.00 per operation.

(2) The penalties of violation of 740 CMR 24.03 shall be as set forth in 24.03(9), (10) and (13).

(3) The penalty for violation of 740 CMR 24.04(1)(a) and/or 24.04(1)(b) shall be a fine of not less than $250.00 and not more than $2,000.00 per operation.

(4) The penalty for violation of any paragraph of 740 CMR 24.05 shall be according to the following schedule. For purposes of 740 CMR 24.99, fines assessed against individuals shall be assessed with regard only to prior infractions by that individual, and fines assessed against aircraft operators shall be assessed with regard to the cumulative infractions incurred by the agents and employees of that operator. Infractions of one numbered paragraph of 740 CMR 24.05 shall not be cumulated with infractions of other number paragraphs for purposes of applying this schedule of penalties.

(a) Each offense: Not less than $50.00 and not more than $100.00.

(b) First subsequent offense within 12 months: Not less than $150.00 and not more than $250.00.

(c) Additional subsequent offenses within 12 months of two or more other offenses: Not less than $300.00 and not more than $500.00.

(5) The penalty for violation of 740 CMR 24.06 shall be assessed according to the following schedule. For purposes of 740 CMR 24.99, fines assessed against individuals shall have regard only to prior infractions by that individual, and fines assessed against aircraft operators shall be assessed with regard to the cumulative infractions incurred by the agents and employees of that operator.

(a) Each offense: Not less than $40.00 and not more than $100.00.

(b) First subsequent offense within 12 months: Not less than $150.00 and not more than $250.00.

(c) Additional subsequent offenses within 12 months of two or more other offenses: Not less than $300.00 and not more than $500.00.

(6) The penalty for failure to submit the information required by 740 CMR 24.07(2) shall be $500.00. Refusal shall constitute a separate offense for each calendar month.

REGULATORY AUTHORITY

740 CMR 24.00: St. 1956.

24.100: continued

Appendix A

NOISE PER SEAT INDEX
CALCULATION METHODOLOGY

DESCRIPTION

NOISE PER SEAT INDEX (NPSI) is an index value that is calculated to effectively represent total noise emissions per seat for commercial turbojet aircraft operations at Logan. A NPSI value can be calculated for specific aircraft types, individual carrier operations or for total airport operations.

METHODOLOGY

On the following pages are descriptions of the methodology for calculating an NPSI value; first for a single aircraft type and second, for all operations conducted (or to be conducted) by an individual air carrier at Logan. The methodology for calculating an NPSI value for the entire airport is effectively the same as that for an individual air carrier except that the calculation is expanded to encompass all airport operations.

NOISE PER SEAT INDEX (NPSI) CALCULATION
ILLUSTRATION OF CALCULATION FOR SPECIFIC AIRCRAFT TYPES

CALCULATION STEPS:

1. Define the characteristics of the subject aircraft in terms of model type, engine type, maximum certificated takeoff weight, maximum certificated landing weight, and stage certification per FAR Part 36. (i.e. 1, 2 or 3)

CALCULATION RESULTS:

AC-TYPE	STAGE	ENG. TYPE	MTOW	MLW
DC9-31	1	JT8D-7B	108.0	95.0
B727-200	2	JT8D-15	184.2	154.5
MD80	3	JT8D-217	147.0	128.0

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2. Based on the characteristics of the subject aircraft defined in step 1, determine the Part 36 approach and takeoff certification levels in EPNdB published in the then current FAA Advisory Circular (36-lc). For aircraft not certificated under FAR Part 36 (stage 1), find the uncertificated EPNdB noise levels at Part 36 approach and takeoff measurement points published in the then current FAA Advisory Circular (36-2B).

AC-TYPE	TAKEOFF EPNdB	APPROACH EPNdB
DC9-31	96.2	105.7
B727-200	98.8	100.4
MD80	90.6	93.1

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3. Divide the approach and takeoff EPNdB noise levels by 10.

AC-TYPE	TAKEOFF DIV BY 10	APPROACH DIV BY 10
DC9-31	9.62	10.57
B727-200	9.88	10.04
MD80	9.06	9.31

4. Take the antilogarithm to the base 10 of the values derived in step 3 and then add them together.

(Takeoff EPNdB/10) Approach EPNdB/10)
10 +10

AC-TYPE	TAKEOFF	APPROACH	TOTAL
DC9-31	4.2E+09	3.7E+10	4.1E+10
B727-200	7.6E+09	1.1E+10	1.9E+10
MD80	1.1E+09	2.0E+09	3.2E+09

NOISE PER SEAT INDEX (NPSI) CALCULATION
ILLUSTRATION OF CALCULATION FOR SPECIFIC AIRCRAFT TYPES
(CONTINUED)

CALCULATION STEPS:

5. Divide the number obtained in step 4 by twice the number of seats on the subject aircraft (counted as seats for one arrival plus one departure) which yields noise energy, per seat.

(Step 4 Total) / (2 * total seats on aircraft)

CALCULATION RESULTS:

AC-TYPE	NO. OF SEATS	STEP 4 TOTAL	NOISE ENERGY /SEAT
DC9-31	116	4.1E+10	1.8E+08
B727-200	148	1.9E+10	62670803
MD80	147	3.2E+09	10849971

6. Take the logarithm to the base ten of the number obtained in step 5 (noise energy per seat) and multiply by ten to yield the NPSI for the aircraft (or effectively decibels per seat).

10 * LOG (Step 5 value or Noise Energy Per Seat)
10

AC TYPE	NPSI
DC9-31	82.5
B727-200	78.0
MD80	70.4

NOISE PER SEAT INDEX (NPSI) CALCULATION
ILLUSTRATION OF CALCULATION FOR INDIVIDUAL AIR CARRIER OPERATIONS

CALCULATION STEPS:

1. Define the characteristics of each aircraft in subject air carrier's fleet (that operate at Logan) in terms of model type, engine type, maximum certificated takeoff weight, maximum certified landing weight, and stage certification per FAR Part 36. (i.e. stage 1, 2 or 3)

CALCULATION RESULTS:

AC-TYPE	STAGE	ENG. TYPE	MTOW	MLW
DC9-31	1	JT8D-7B	184.2	154.5
B727-200	2	JT8D-7	172.5	150.0
B727-200	2	JT8D-15	184.2	154.5
L1011	3	RB211-22B	430.0	358.0

2. Based on the characteristics of the subject aircraft defined in step 1, determine the Part 36 approach and takeoff certification levels in EPNdB published in the then current FAA Advisory Circular (36-1c). For aircraft not certificated under FAR Part 36 (stage 1), find the uncertificated EPNdB noise levels at Part 36 approach and takeoff measurement points published in the then current FAA Advisory Circular (36-2B)

AC-TYPE	TAKEOFF EPNdB	APPROACH EPNdB	
	DC9-31	96.2	105.7
B727-200	100.0	102.6	
B727-200	98.8	100.4	
	L1011	96.0	102.8

3. Divide the approach and takeoff EPNdB noise levels by 10.

AC-TYPE	TAKEOFF DIV BY 10	APPROACH DIV BY 10
DC9-31	9.62	10.57
B727-200	10.00	10.26
B727-200	9.88	10.04
L1011	9.6	10.28

4. Take the antilogarithm to the base 10 of the TAKEOFF value derived in step 3 and multiply it by the number of DEPARTURES conducted (or to be conducted) in each aircraft type. The calculation yields TOTAL TAKEOFF NOISE ENERGY by aircraft type

$$(\text{TAKEOFF EPNdB}/10) * \text{TOTAL DEPARTURES}$$

10

AC-TYPE	TAKEOFF ANTI-LOG	NO. OF DEPARTURES	TAKEOFF ENERGY TOTAL
DC9-31	4.2E+09	200	8.3E+11
B727-200	1.OE+10	1200	1.2E+13
B727-200	7.6E+09	1400	1.1E+13
L1011	4.0E+09	1100	4.4E+12

NOISE PER SEAT INDEX (NPSI) CALCULATION
ILLUSTRATION OF CALCULATION FOR INDIVIDUAL AIR CARRIER OPERATIONS
CONTINUED

CALCULATION STEPS:

5. Take the antilogarithm to the base 10 of the APPROACH value derived in step 3 and multiply it by the number of ARRIVALS conducted (or to be conducted) in each aircraft type. The calculation yields TOTAL APPROACH NOISE ENERGY by aircraft type.

(APPROACH EPNdB/10)
10 * TOTAL ARRIVALS

CALCULATION RESULTS:

AC-TYPE	APPROACH ANTI-LOG	NO. OF ARRIVALS	APPROACH ENERGY TOTAL
DC9-31	3.7E+10	200	7.4E+12
B727-200	1.8E+10	1200	2.2E+13
B727-200	1.1E+10	1400	1.5E+13
L1011	1.9E+10	1100	2.1E+13

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6. For each aircraft type. add the total takeoff noise energy from step 4 to the total approach noise energy from step 5. Then sum the total noise energy for all aircraft types to yield TOTAL NOISE ENERGY generated by the operations conducted by the subject air carrier.

(TAKEOFF NOISE ENERGY)+(APPROACH NOISE ENERGY)

AC-TYPE	TAKEOFF ENERGY TOTAL	APPROACH ENERGY TOTAL	NOISE ENERGY TOTAL
DC9-31	8.3E+11	7.4E+12	8.3E+12
B727-200	1.2E+13	2.2E+13	3.4E+13
B727-200	1.1E+13	1.5E+13	2.6E+13
L1011	4.4E+12	2.1E+13	2.5E+13
TOTAL NOISE ENERGY FOR AIR CARRIER			9.3E+13

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7. Define the number of seats for each aircraft type. Multiply the NUMBER OF SEATS for each aircraft type by the NUMBER OF OPERATIONS

AC-TYPE	NO. OF SEATS	NO. OF OPERATIONS	TOTAL SEATS

(arrivals + departures) conducted in that	DC9-31	116	400	46400
aircraft type. Add total seats by aircraft	B727-200	148	2400	355200
type to yield TOTAL SEATS flown into and out	B727-200	148	2800	414400
of Logan Airport by the subject air carrier.	L1011	302	2200	664400
(NO. OF SEATS ON AIRCRAFT) * (OPERATIONS)	TOTAL SEATS FLOWN BY AIR CARRIER			1480400

NOISE PER SEAT INDEX (NPSI) CALCULATION
ILLUSTRATION OF CALCULATION FOR INDIVIDUAL AIR CARRIER OPERATIONS
CONTINUED

CALCULATION STEPS:	CALCULATION RESULTS:		
8. Divide the total noise energy value obtained in step 6 by total seats from step 7. This calculation effectively yields NOISE ENERGY PER SEAT. (TOTAL NOISE ENERGY) / (TOTAL SEATS)	TOTAL NOISE ENERGY	TOTAL SEATS	NOISE ENERGY PER SEAT
	9.3E+13	1480400	63098406

9. Take the logarithm to the base ten of the value obtained in step 8 (noise energy per seat) and multiply by ten. The result of this calculation is the NOISE PER SEAT INDEX value for the subject air carrier.	NOISE ENERGY PER SEAT	NPSI
	63098406	78.0

$$10 * \log_{10}(\text{Step 8 value or NOISE ENERGY PER SEAT})$$

24.100: continued

APPENDIX B

Methodology to Establish Tier I and Tier II

Criterion Values

The following pages describe the methodology for establishing for years subsequent to 1986 both the stage 3 percentage level (hereinafter referred to generally as "Tier I") and the NPSI level (hereinafter referred to as "Tier II) required of certain air carriers in order to comply with 740 CMR 24.03(1)(a) or (b).

24.100: continued

I DATA SOURCES

These calculations will be based on data routinely supplied by each carrier in compliance with the reporting procedures specified in 740 CMR 24.00. This data will include the following:

A. Aircraft Type Characteristics

Each aircraft type in a respective carrier's fleet that operates at Logan Airport will be defined in terms of the following characteristics.

- model series
- engine type
- maximum certificated landing weight
- maximum certificated takeoff weight
- Part 36 certificated approach and takeoff noise level in EPNdB
- Part 36 stage certification (i.e., 1, 2, or 3)

B. Operations by Aircraft Type

The number of operations to be conducted by aircraft type as defined in step IA will be reported by the respective carriers. Reported operations will be uniformly changed based on projected growth for the upcoming year.

II CALCULATE ANNUAL AIRPORT CUMULATIVE NOISE

Based on the operations data by and aircraft type characteristics supplied above and projected growth calculate annual cumulative noise at Logan Airport for the upcoming year per the following steps:

A. For each carrier and aircraft type determine the proportion of scheduled daytime and nighttime takeoffs and landings conducted during the reporting period. The proportions will be computed using the OAG database. Daytime is defined as 7:00 AM to 10:00 PM and nighttime from 10:00 PM to 7:00 AM. Based on the proportions above, sub-divide the number of operations reported for each aircraft type into daytime departures, nighttime departures, daytime landings, and nighttime landings. Compute the total noise energy generated by the operations conducted in individual aircraft types as follows:

1. Take the antilogarithm to the base 10 of the TAKEOFF EPNdB noise level defined in IA and multiply it by the number of daytime departures.

   (TAKEOFF EPNdB/10)

   10 X Total daytime departures

2. For nighttime departures, take the antilogarithm to the base 10 of the same takeoff EPNdB noise level and add 10 to account for the 10dB weighting for each operation conducted at night. Multiply this value by the number of nighttime departures.

   ((TAKEOFF EPNdB+10)/10)

   10 X Total daytime arrivals

24.100: continued

3. Take the antilogarithm to the base 10 of the Approach EPNdB noise level and multiply it by the number of daytime arrivals.

   (APPROACH EPNdB 10)

   10 X Total daytime arrivals

4. As in step 2 above, add the 10 dB nighttime penalty to the antilogarithm to the base 10 of the approach EPNdB level and multiply it by the number of nighttime arrivals.

   ((APPROACH EPNdB+10)/10)

   10 X Total nighttime arrivals

5. Add the values derived in steps 1 through 4 above to yield the total noise energy generated by the operations conducted by each aircraft type.

B. Add the total noise energy value computed for each aircraft type to yield total noise energy for all airport operations.

C. Take the logarithm to the base ten of the total airport noise energy value obtained in step IIC and multiply by ten. The result of this calculation is the cumulative EPNdB noise level for all airport operations.

III ANNUAL GOAL ASSESSMENT

Compare the cumulative annual EPNdB level computed in step II to the l984 base case level. of 156.34dB. If the computed level falls within the range of 0.1 to 0.3dB below the l984 base level then no adjustment in the stage 3% share for the Tier I criterion or the NPSI for Tier II is necessary.

If the computed annual noise level is not at a minimum of 0.1 dB below the l984 base level then Tier I and Tier II criterion will require adjustment to produce greater cumulative noise reduction. If, on the other hand, the computed noise level proves to be greater than 0.3 dB below the l984 base level, then the Tier I and Tier II criteria will be adjusted to bring the cumulative noise reduction back within the range of the projected goal of the regulations.

The methodology for calculating the adjustment to the Tier I stage 3 % criteria and the Tier II NPSI are described in the following.

IV TIER I AND TIER II ADJUSTMENT METHODOLOGY

A. Adjustment where cumulative noise not reduced in compliance with goals.

In this case the Tier I stage 3% and the Tier 2 NPSI criteria have to be constrained further to produce at a minimum a reduction in cumulative airport noise of 0.1 dB. The method to compute the required adjustments follows:

The methodology is based on the use of the database developed in section II to derive the cumulative airport noise level.

24.100: continued

1. Determine the increase in the stage 3 share necessary to achieve the minimum 0.1 dB noise reduction as follows. First, compute the stage 3 share of the existing fleet. Next, holding seats and day/night proportions constant substitute stage 3 for stage 2 operations and then recalculate the cumulative noise level. Repeat this calculation in an iterative manner until the 0.1 dB minimum reduction in cumulative noise is accomplished. Recalculate the stage 3 share for the adjusted fleet that meets the goal. Then compute the net difference between the stage 3 share for the existing fleet that did not satisfy the goal and share for the adjusted fleet that met the goal. Add the net difference in the stage 3 share to the Tier I % criteria scheduled to be used during the upcoming evaluation period.

2. Determine the reduction in the NPSI criteria for Tier II that is necessary to achieve the minimum cumulative noise goal. First compute the NPSI value for the existing fleet per the methodology described in attachment Appendix A. Next, compute the NPSI for the fleet defined in step IV AI that satisfied the noise goal. Compute the net difference between the NPSI for the adjusted fleet that meets the goal and the existing fleet that did not meet the goal. Subtract the computed difference from the NPSI value scheduled to be used for the upcoming evaluation period, which effectively reduces the NPSI value scheduled to be used for the upcoming evaluation period, which effectively reduces the NPSI in order to achieve a greater reduction in cumulative noise.

B. Adjustment Where Cumulative Noise Reduction in Excess of Goal

In this case, Tier I stage 3 share and the Tier II NPSI criteria can be relaxed to produce a maximum reduction in cumulative noise of 0.3dB. The method to compute the required adjustment follows. In each case, the methodology essentially reverses the procedures described in section IV A.

1. Again, using the fleet database developed in section II, determine the decrease in the stage 3 share that would produce a maximum noise reduction of 0.3 dB. First, compute the stage 3 share of the existing fleet. Next, holding total seats and day/night proportions constant substitute stage 2 for stage 3 operation iteratively until cumulative noise reduction is cut back to 0.3 dB. Then recalculate the stage 3 share for the adjusted fleet mix that produces noise reduction within the goal range. Next, compute the net difference between the stage 3 share for the existing fleet that produced excessive noise reduction and for the projected fleet that produces the maximum reduction goal. Finally, subtract the computed net difference in stage 3 share from the Tier I share scheduled to be used for the upcoming evaluation period.

2. Determine the increment to be added to the NPSI value for Tier II that is consistent with a maximum cumulative noise reduction of 0.3 dB. First, compute the NPSI for the existing fleet that produced the excessive noise reduction (per the methodology in Appendix A). Next, compute the NPSI value for the projected fleet that produced the preferred maximum noise reduction in step B1. Then compute the net difference between the NPSI for the existing fleet that produced excessive noise reduction and the adjusted fleet mix that meets the maximum goal. Then add the computed difference to the NPSI value scheduled to be used during the upcoming evaluation period which effectively relaxes the constraint on cumulative noise reduction

REGULATORY AUTHORITY

740 CMR 24.00: St. 1956, c. 465.