

## SECTION 6.0

### INTRODUCTION

#### 6.1 THE PART 150 PROCESS

The Aviation Safety and Noise Abatement Act (ASNA) was established by Congress in 1979 as a means to address the impact of aircraft noise on communities, to provide assistance and to assure continued safety in aviation. Under ASNA, the Secretary of Transportation was charged with the responsibility to establish a single system of measuring noise at airports, determine noise exposure, and identify compatible land uses. Thus, in 1981, the Federal Aviation Administration (FAA) established the Code of Federal Regulation (CFR), Title 14, Part 150 Airport Noise Compatibility Planning.

Through the ASNA, airport operators voluntarily prepare airport Noise Exposure Maps (NEM) and Noise Compatibility Programs (NCP) and submit these materials to the FAA for approval. Federal funding is available to the Airport Sponsor to conduct this work. The NEM is a graphic depiction of noise exposure around an airport in current and future operational conditions. Based on the NEM, an NCP is prepared that sets forth the measures an airport operator proposes to take in order to reduce existing noncompatible land uses and minimize additional noncompatible land uses on and around the airport.

The Part 150 program implements the provisions in the ASNA for airport noise compatibility planning. In addition to minimizing aviation noise impacts, this regulation sets forth the following:

- The yearly day-night average sound level, abbreviated as DNL or  $L_{dn}$ , for measuring noise exposure,
- The Integrated Noise Model (INM) as the standard noise modeling methodology, and
- The voluntary development of NEMs and NCPs by airport operators.

The Part 150 program provides a comprehensive approach to both prevention and mitigation of airport noise in a community, seeks recommendations from interested parties throughout the development of the program, and provides for funding of eligible items through the Federal Airport Improvement Program (AIP). Furthermore, the NCP is primarily conducted to benefit the areas surrounding an airport.

Under the Part 150 process, the FAA will indicate, upon receipt, whether the NEMs are in compliance with the requirements of the program. If they are in compliance, a notice is published in the Federal Register. Once the NEMs are found to be in compliance, the NCP will undergo a 180-day FAA review period, and the FAA will determine which elements of the program will be approved or disapproved.

## 6.2 ALEXANDRIA INTERNATIONAL AIRPORT PART 150 STUDY

Alexandria International Airport (AEX) is located 6 miles west of the City of Alexandria central business district (CBD) and encompasses 2,300 acres of land. It is owned and operated by the England Economic & Industrial Development District (The England Authority). In the FAA's National Plan of Integrated Airport Systems (NPIAS), AEX is classified as a primary and commercial service airport, as well as serving the needs of general aviation (GA) users.

AEX is a relatively new civilian airport. Previously AEX was known as England Air Force Base (EAFB). As part of Department of Defense Base Closure and Realignment initiatives, EAFB was selected for closure on April 12, 1991. On December 15, 1992, the base was officially closed as a military installation. Upon closure of EAFB, the England Authority took charge of the care and management of the base property and operated the "new" Alexandria International Airport as a general aviation Part 139 certified airport from August 1993 to August 1996. On August 18, 1996, commercial airline service was moved from Esler Regional Airport, which is located 10 miles northeast of Pineville, to AEX to take advantage of a centralized regional location, increased runway length, increased runway weight bearing capacity, and potential future growth of facilities. Presently, four categories of aircraft utilize AEX: air carrier, regional air carrier/air taxi, general aviation, and military.

During the operation and closing of EAFB and the opening of AEX, several noise and environmental studies were completed. In June 1983, an Air Installations Compatible Use Zones (AICUZ) study was completed for EAFB. An AICUZ study is the Department of Defense (DOD) equivalent of a Part 150 noise study. In preparation for closing EAFB in 1992, the DOD prepared an Environmental Impact Statement (EIS) to assess the environmental impact of closing the base and utilizing the land for other uses. The EIS included an evaluation of aircraft noise issues. After AEX was opened for public use, the England Authority commissioned a master plan study to outline the future development of AEX. The master plan was completed in 1997. As part of the master plan, a cursory set of noise contours were developed as a tool for land use planning. Since the completion of the above listed studies, numerous changes have occurred at AEX. These changes warrant the preparation of a Part 150 study for AEX.

This Part 150 study serves to assess the current (2004) and future (2010) aircraft noise environments, identify compatible and noncompatible land uses within the noise contours, and recommend methods to mitigate aircraft noise and noncompatible land uses. This report contains the Noise Compatibility Program (NCP) for Alexandria International Airport.

The Noise Exposure Maps (NEMs) and supporting documentation were prepared and submitted to FAA in a separate report comprised of Sections 1 through 5. The FAA announced their determination that the NEMs submitted by the England Authority for AEX were in compliance with applicable requirements effective January 26, 2006. The Federal Register Notice was published on February 3, 2006. These NEMs are incorporated herein, by reference.

In this NCP document, **Sections 7.0** and **8.0** describe operational alternatives and land use measures, respectively. **Section 9.0** describes the measures recommended for implementation for this NCP. A detailed description of public involvement during the development of this NCP is presented in **Section 10.0**. Other supporting documentation is included in appendices.

## **6.3 NOISE METRICS AND THE INTEGRATED NOISE MODEL**

### **6.3.1 Noise Metrics**

The characteristic by which noise can be described objectively is loudness. Loudness is typically measured in decibels (dB). However, aircraft noise studies use the A-weighted decibel (dBA) scale because it is a measure that better associates sound frequencies with the sensitivity of the human ear. The relative loudness of a sound doubles for each increase of 10 dBA on this scale even though this corresponds to factor of 10 in relative sound energy. **Table 6.1** presents some common sounds on the dBA scale and their relative sound energy. It should be noted that sounds that differ by 2 dBA or less are not perceived to be significantly different by most people.

The evaluation of the noise environment at AEX will be conducted using the methodology developed by the FAA. The 14 CFR Part 150 and FAA Advisory Circular 150/5020-1 require that aircraft noise in an airport's vicinity be determined on an annual average daily basis. The methodology uses the Day Night Average Sound Level (DNL) metric developed by the Environmental Protection Agency. DNL is used by the FAA, the Department of Housing and Urban Development, and other federal agencies concerned with community noise levels. DNL is a 24-hour logarithmic average of noise levels in A-weighted decibels, as recommended by the FAA for evaluating aircraft noise impacts. Since sound occurring during nighttime hours is usually found to be more annoying due to sleep disruption, the DNL metric requires the addition of a 10-decibel penalty (twice as loud) to nighttime operations taking place between the hours of 10 p.m. and 7 a.m.

### **6.3.2 The Integrated Noise Model (INM)**

The Federal Aviation Administration's (FAA) Integrated Noise Model (INM), Version (V) 6.1 features enhancements that enable it to produce more accurate noise predictions than previous versions. INM V6.1 also has the capability to compute noise levels from aircraft engine run-ups and to create dispersed tracks, which more accurately represent actual flight tracks.

Noise contours generated by the FAA's INM do not depict a strict demarcation of where the noise levels end or begin. Their purpose is to describe the generally expected noise exposure. It must be recognized that although the INM is the current state-of-the-art aircraft noise modeling software, input variables to the INM require several simplifying assumptions to be made, such as: aircraft types flown, flight track utilization, day-night operational patterns, and arrival/departure profiles flown. Further, the noise contours represent average annual

conditions rather than single event occurrences. Noise exposure on any one day may be greater or less than the average day. The noise model is useful for comparison of noise impacts and provides a consistent and reasonable method to conduct airport noise compatibility planning.

The information needed to perform a noise analysis typically includes the number of aircraft operations by time of day, aircraft type, and stage length for an average day, operational information, including the use of the runways, the location and use of flight tracks, and aircraft departure and arrival profiles.

**TABLE 6.1  
COMMON SOUNDS ON THE dBA SCALE**

Sound	Sound Level (dBA)	Relative Loudness Units (approximate)	Relative Sound Energy Units
Jet Aircraft, 100 feet	130	128	10,000,000
Rock Music with Amplifier	120	64	1,000,000
Thunder, Snowmobile	110	32	100,000
Boiler Shop, Power Mower	100	16	10,000
Orchestral Crescendo at 25 feet	90	8	1,000
Busy Street	80	4	100
Interior of a Department Store	70	2	10
Ordinary Conversation, 3 feet away	60	1	1
Quiet Automobile at Low Speed	50	1/2	0.1
Average Office	40	1/4	0.01
City Residence	30	1/8	0.001
Quiet Country Residence	20	1/16	0.0001
Rustle of Leaves	10	1/32	0.00001
Threshold of Hearing	0	1/64	0.000001

Source: U.S. Department of Housing and Urban Development.

#### **6.4 NOISE COMPATIBILITY PROGRAM CHECKLIST**

To aid in the review process, the FAA has prepared a checklist that details the items to be included in the NCP. This checklist is provided below and indicates the Sections throughout the NCP document in which the checklist items are discussed.

**TABLE 6.2  
NOISE COMPATIBILITY PROGRAM CHECKLIST**

<b>FAR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST</b> <b>AIRPORT NAME: <u>Alexandria International Airport</u>    REVIEWER: _____</b>		
Item	Yes/No/NA	Page Number/Other Reference
<b>I. Identification and Submission Program:</b>		
A. Submission is properly identified:		
1. FAR 150 NCP?	YES	Cover and Section 6.2
2. NEM and NCP together?	NO	Section 6.2
3. Program revision?	NO	Section 6.2
B. Airport and Airport Operator's name identified?	YES	Cover and Section 6.2
C. NCP transmitted by airport operator cover letter?	YES	Transmittal Letter is included following the cover.
<b>II. Consultation: (150.23):</b>		
A. Documentation includes narrative public participation and consultation process?	YES	Section 10 and Appendices H, M, N, O
B. Identification of consulted parties:		
1. Are parties in 150.23(c) consulted?	YES	Sections 10.2 and 10.3
2. Public and planning agencies identified?	YES	Sections 10.2 and 10.3
3. Agencies in 2, above, correspond to those indicated on the NEM?	YES	Section 5.2 in the NEM Document
C. Satisfied 150.23(d) requirements:		
1. Documentation shows active and direct participation of parties in B, above?	YES	Sections 10.3, 10.4, 10.5 and Appendices M, N
2. Active and direct participation of general public?	YES	Section 10.6 and Appendix O
3. Participation was prior to and during development of NCP and prior to submittal to FAA?	YES	Sections 10.3, 10.4, 10.5 and Appendices M, N, O
4. Indicates adequate opportunity afforded to submit views, data, etc.?	YES	Section 10.6 and Appendix O
D. Evidence included of notice and opportunity for public hearing on NCP?	YES	Appendix N

**FAR PART 150  
NOISE COMPATIBILITY PROGRAM CHECKLIST**

**AIRPORT NAME: Alexandria International Airport    REVIEWER: \_\_\_\_\_**

Item	Yes/No/NA	Page Number/Other Reference
E. Documentation of comments:		
1. Includes summary of public hearing comments, if hearing was held?	NA	Section 10.5. A public hearing was held December 14, 2006. No comments were received.
2. Includes copy of all written material submitted to operator?	YES	Appendix N
3. Includes operator's responses/disposition of written and verbal comments?	YES	Section 10.6
F. Informal agreement received from FAA on flight procedures?	YES	Appendix H
<b>III. Noise Exposure Maps: (150.23, b150.3, b150.35[f])</b>		
(This section of the checklist is not a substitute for the Noise Exposure Map checklist. It deals with maps in the context of the Noise Compatibility Program submission.)		
A. Inclusion of NEMs and supporting documentation:		
1. Map documentation either included or incorporated by reference?	YES	NEM document was accepted by the FAA in January 26, 2006. Section 6.2
2. Maps previously found in compliance by FAA?	YES	Section 6.2
3. Compliance determination still valid?	YES	Section 6.2
4. Does 180-day period have to wait for map compliance finding?	NO	Section 6.2
B. Revised NEMs submitted with program: (Revised using NEM checklist if map revisions included in NCP submittal.)		
1. Revised NEMs included with program?	YES	Figure 9.1
2. Has airport operator requested FAA to make a determination on the NEM(s) when NCP approval is made?	YES	Transmittal Letter
C. If program analysis uses noise modeling:		
1. INM or HNM, or FAA approved equivalent?	YES	Section 6.3.2
2. Monitoring in accordance with A150.5?	NO	No monitoring was conducted for the NCP.

**FAR PART 150  
NOISE COMPATIBILITY PROGRAM CHECKLIST**

**AIRPORT NAME:** Alexandria International Airport    **REVIEWER:** \_\_\_\_\_

Item	Yes/No/NA	Page Number/Other Reference
D. Existing condition and 5-year maps clearly identified as official NEMs.	YES	NEM document, Figure 3.5 is Existing Condition and Figure 4.5 is Future, Without Program Implementation. NCP Document Figures 7.9 and 9.1 are Future, With Program Implementation.
<b>IV. Consideration of Alternatives: (B150.7, 150.23[e])</b>		
A. At a minimum, are the alternatives below considered?		
1. Land acquisition and interest therein, including air rights, easements, and development rights?	YES	Sections 8.3.3, 8.4.1.2, and 8.4.2.1
2. Barriers, acoustical shielding, and public building soundproofing?	YES	Sections 7.2, 8.3.4, 8.4.1.3, and 8.4.2.2
3. Preferential runway system?	YES	Section 7.3
4. Flight procedures?	YES	Section 7.4
5. Restrictions on type/class of aircraft (as least one restriction below must be checked):		
a. deny use based on Federal standards?	YES	Section 7.5.1
b. capacity limits based on noisiness?	YES	Section 7.5.2
c. noise abatement takeoff/approach?	YES	Section 7.5.3
d. landing fees based on noise or time of day?	YES	Section 7.5.4
e. nighttime restrictions?	YES	Section 7.5.5
6. Other actions with beneficial impact?	NO	
7. Other FAA recommendations?	NO	
B. Responsible implementing authority identified for each considered alternative?	YES	Table 9.1
C. Analysis of measures:		
1. Measure clearly described?	YES	Section 7.4.2
2. Measures adequately analyzed?	YES	Tables 7.1 through 7.4
3. Adequate reasoning for rejecting alternatives?	YES	Section 7.0
D. Other actions recommended by the FAA:		
1. Should other actions be added?	NO	

**FAR PART 150  
NOISE COMPATIBILITY PROGRAM CHECKLIST**

**AIRPORT NAME:** Alexandria International Airport    **REVIEWER:** \_\_\_\_\_

Item	Yes/No/NA	Page Number/Other Reference
<b>V. Alternatives Recommended for Implementation: (150.23[e], B150.7[c], B150.35[b], B150.5)</b>		
A. Document clearly indicates:		
1. Alternatives recommended for implementation?	YES	Sections 7.6, 8.5, and 9.0
2. Final recommendations are airport operator's not those of consultant or third party?	YES	Section 9.1
B. Do all program recommendations:		
1. Relate directly or indirectly to reduction of noise and noncompatible land uses?	YES	Sections 7.4.2 and 7.6
2. Contain description of contribution to overall effectiveness of program?	YES	Section 7.6 and Table 7.4
3. Noise/land use benefits quantified to extent possible?	YES	Tables 7.1 through 7.4
4. Include actual/anticipated effect on reducing noise exposure within noncompatible area shown on NEM?	YES	Tables 7.1 through 7.4
5. Efforts based on relevant and reasonable expressed assumptions?	YES	Sections 7 and 8
6. Have adequate supporting data to support its contribution to noise/land use compatibility?	YES	Sections 7 and 8
C. Analysis appears to support standards set forth in 150.35[b] and B150.5?	YES	Sections 7 and 8
D. When use restrictions are recommended:		
1. Are alternatives with potentially significant noise/compatible land use benefits thoroughly analyzed so that appropriate comparisons and conclusions can be made?	NA	No restrictions were recommended.
2. Use restrictions coordinated with APP-600 prior to making determination on start of 180 days?	NA	No restrictions were recommended.
E. Do the following also meet Part 150 analytical standards:		
1. Formal recommendations which continue existing practices?	NA	

**FAR PART 150  
NOISE COMPATIBILITY PROGRAM CHECKLIST**

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Item	Yes/No/NA	Page Number/Other Reference
2. New recommendations or changes proposed at the end of Part 150 process?	YES	Sections 7.4.2 and 7.6
F. Documentation indicates how recommendations may change previously adopted plans?	NA	
G. Documentation also:		
1. Identifies agencies which are responsible for implementing each recommendation?	YES	Table 9.1
2. Indicates whether those agencies have agreed to implement?	YES	Appendix H
3. Indicates essential government actions necessary to implement recommendations?	YES	Sections 7, 8, and 9
H. Timeframe:		
1. Includes agreed-upon schedule to implement alternatives?	YES	Table 9.1
2. Indicates period covered by the program?	YES	Table 9.4
I. Funding/Costs:		
1. Includes cost to implement alternatives?	YES	Tables 9.2 and 9.3
2. Includes anticipated funding source?	YES	Section 9.4 and Table 9.1
<b>VI. Program Revision (150.23[e] and [g])</b>		
Supporting documentation includes provision for revision?	YES	Section 9.5