BALTIMORE/WASHINGTON INTERNATIONAL Thurgood Marshall AIRPORT

Maryland Aviation Administration

Division of Noise, Real Estate and Land Use Compatibility Planning

Quarterly Noise Report

First Quarter 2011

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DEFINITIONS

Airport Noise Zone (ANZ): The area surrounding the airport where aircraft noise levels are equal to or greater than DNL 65

Code of Maryland Regulations (COMAR): Requires the MAA to control residential and commercial development in the ANZ

Decibel (dB): A logarithmic unit of measurement of sound intensity. "A" weighted decibels have been adjusted to account for the response of the human ear to certain sound levels

Day-Night Average Sound Level (DNL): A measurement unit of 24 hours of noise (midnight to midnight) that accounts for the increased impact of night-time noises

Sound Exposure Level (SEL): A term used to describe the total sound energy from a single aircraft noise event. It takes into account both the maximum noise level (Lmax) and the duration of the event

This report was prepared by the Division of Noise, Real Estate and Land Use Compatibility Planning of the Maryland Aviation Administration. 410.859.7375

SUMMARY

This report provides a review of the aviation noise abatement program for the first quarter of 2011 (January 1 to March 31). Included in this report are updates on the various types of aircraft operations, noise levels at the permanent noise monitoring sites, and a summary of complaints received about aircraft noise.

Average daily jet flights were approximately 563 per day during the 1st quarter of 2011, compared to 550 per day for the 1st quarter of 2010, an increase of 2.4 percent.

- Night-time operations averaged 49 per night for the 1st quarter of 2011, compared to 47 per night during the 1st quarter of 2010.
- The percentage of re-certified (hush-kitted) aircraft operating at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall) was 1.2 percent during the 1st quarter of 2011, compared to 1.9 percent during the 1st quarter of 2010.
- Aircraft noise levels at three permanent monitoring sites were higher than during the previous quarter; eight sites were lower; two were the same.
- There were 31 calls to the Airport Noise Hotline during the 1st quarter of 2011.
- The Airport operated in west flow for 76 percent of the time during the 1st quarter of 2011.

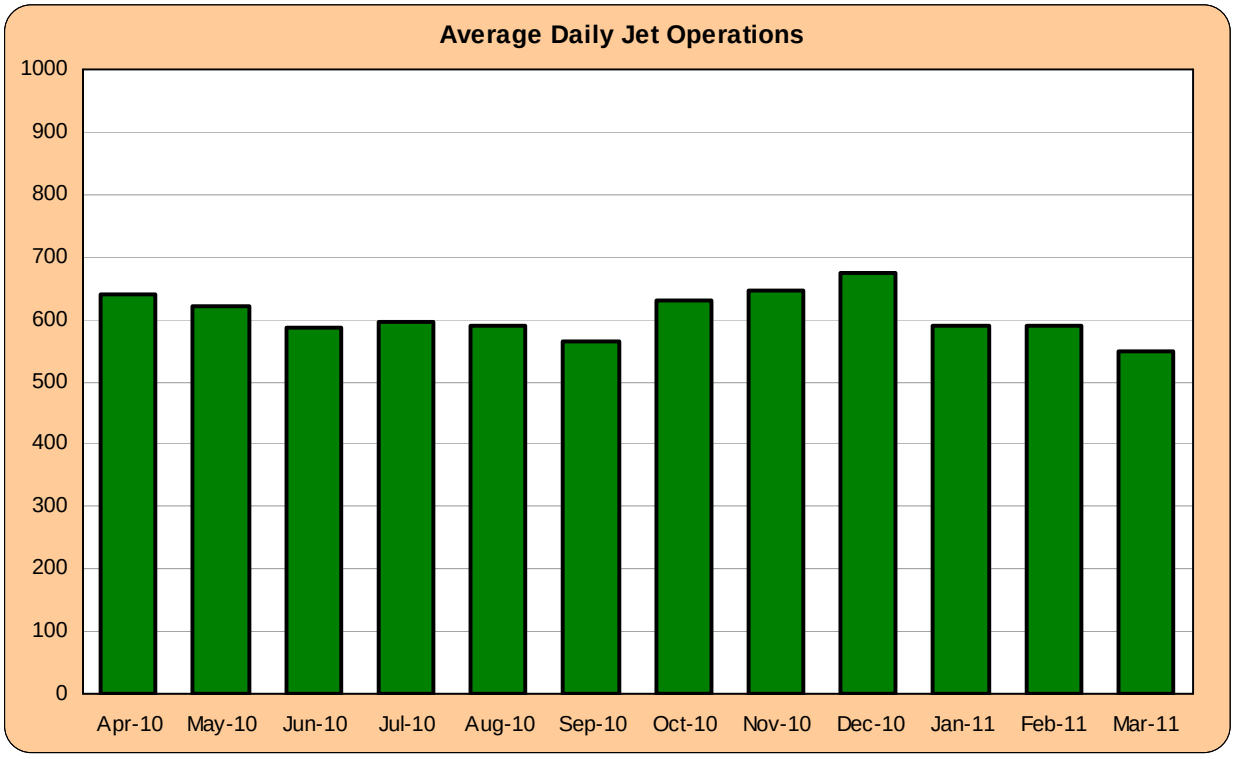
Aviation News Items of Interest:

- Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall) has received approval from U.S. Customs and Border Protection to provide passenger charter air service to Cuba. Previously, only airports in Miami, New York and Los Angeles were authorized for Cuba service. Several regulatory and procedural steps need to be completed before the service commences.
- The U.S. Transportation Security Administration (TSA) began testing new software on the advanced imaging technology (AIT) machines in order to protect passenger privacy. According to the TSA, "The new software will automatically detect potential threat items and indicate their location on a generic outline of a person that will appear on a monitor attached to the AIT unit. As with the current version of AIT, the areas identified as containing potential threats will require additional screening. The generic outline will be identical for all passengers. This software is currently being tested at Las Vegas McCarran International Airport, Hartsfield Jackson Atlanta International and Ronald Reagan Washington National Airport.
- The Federal Aviation Administration's (FAA) annual forecast predicts that air travel will more than double in the next 20 years. The report, FAA Aerospace Forecast Fiscal Years 2011-2031, indicates that U.S. Airlines will carry one billion passengers per year by 2021.

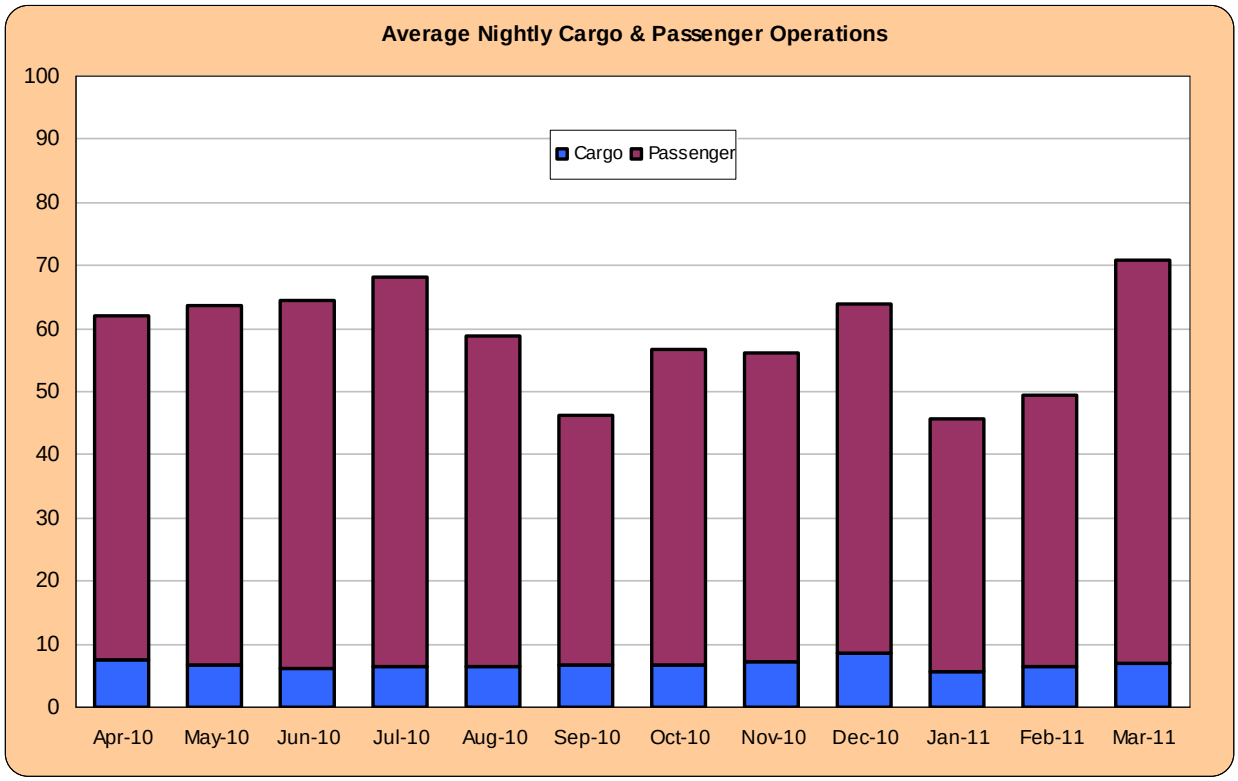
AIRPORT OPERATIONS

This section provides information on various types of aircraft operations at BWI Marshall, including the percentage of re-certified aircraft operating at the airport, and the percentage of aircraft operations on each runway.

The graph below shows the average number of daily jet flights for each month, including arrivals and departures by air carrier aircraft. Twenty-four hours of flights each day are averaged for each month to arrive at the results. The average daily number of operations during the 1st quarter of 2011 was 563, compared to 550 for the 1st quarter of 2010, an increase of approximately 2.4 percent.



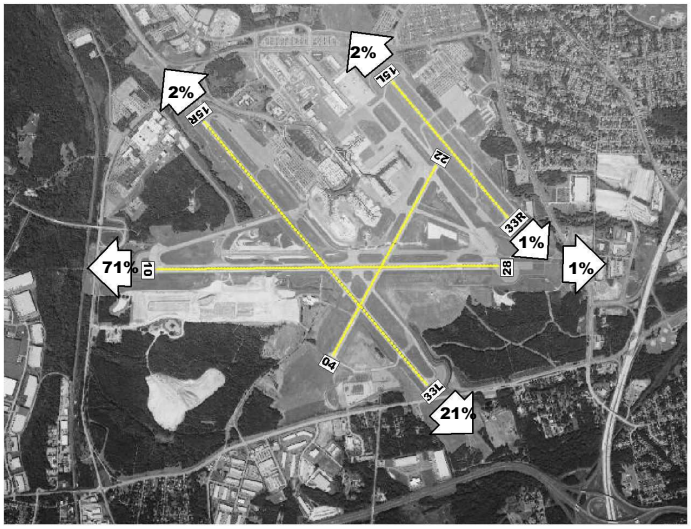
This graph shows night-time air-carrier jet and cargo operations. A night-time operation is defined as an arrival or departure that occurs between the hours of 10 p.m. and 7 a.m. The average number of night-time jet operations was 49 per night during the 1st quarter of 2011, compared to 47 per night for the 1st quarter of 2010. The average number of night-time cargo operations was approximately 6 per night for the 1st quarter of 2011, and 7 for the 1st quarter of 2010.



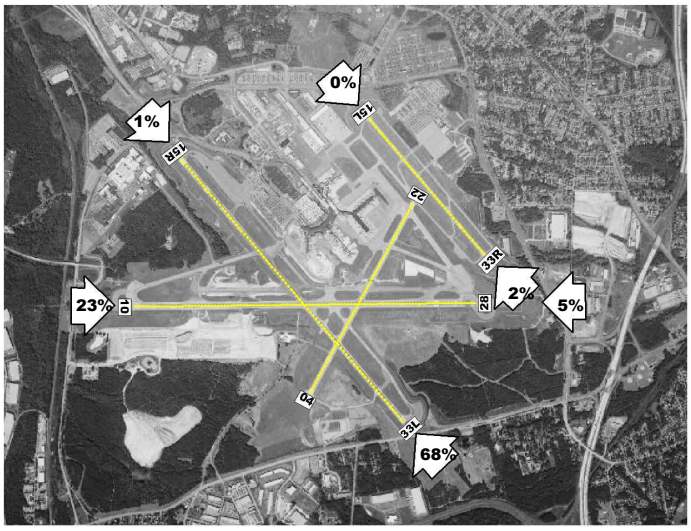
Runway Use

The MAA implemented the Preferential Runway Use System to minimize the impact of aircraft noise on neighboring communities. Aircraft departures in west flow are more desirable since a smaller population is impacted by aircraft noise than when in east flow. Wind direction, weather and operational factors determine the direction of air traffic flow. Aircraft take off and land facing into the wind for operational and safety reasons. During west flow large jet aircraft take-off primarily from Runway 28 and land on Runway 33L. During east flow large jet aircraft take-off primarily from Runway 15R and land on Runway 10. The figures below show percentages of runway use for this quarter for all jets. Historical trends for prevailing winds result in an annual average west flow of approximately 70 percent.

Jet Departures by Runway



Jet Landings by Runway



Flight Corridors

The following three pages show flight corridors (air traffic patterns) for the following operations:

- all jet departures in west flow
- all jet departures in east flow
- all jet arrivals

The data used to create the flight corridor maps was taken from the aircraft noise and flight track monitoring system located in the Division of Noise, Real Estate and Land Use Compatibility Planning. Each map shows the average number of flights per day for each corridor, the percentages of arrivals or departures for each corridor, and the number of days with no flights. The category “all jets” includes commercial air carrier aircraft and private and corporate jets.

The purpose of the corridor maps is to show the actual flight patterns in use at BWI Marshall, and the average number of daily flights for each pattern for the quarter.

Jet Departures in West Flow shows that the most commonly used departure pattern in west flow was corridor B, accounting for 46 percent of all departures, averaging 126 departures per day.

Jet Departures in East Flow shows that the most commonly used departure pattern in east flow was corridor P, accounting for 12 percent of all departures, averaging 32 departures per day.

All Jet Arrivals shows that the most commonly used arrival pattern was corridor B, accounting for 70 percent of all arrivals, averaging 200 arrivals per day.

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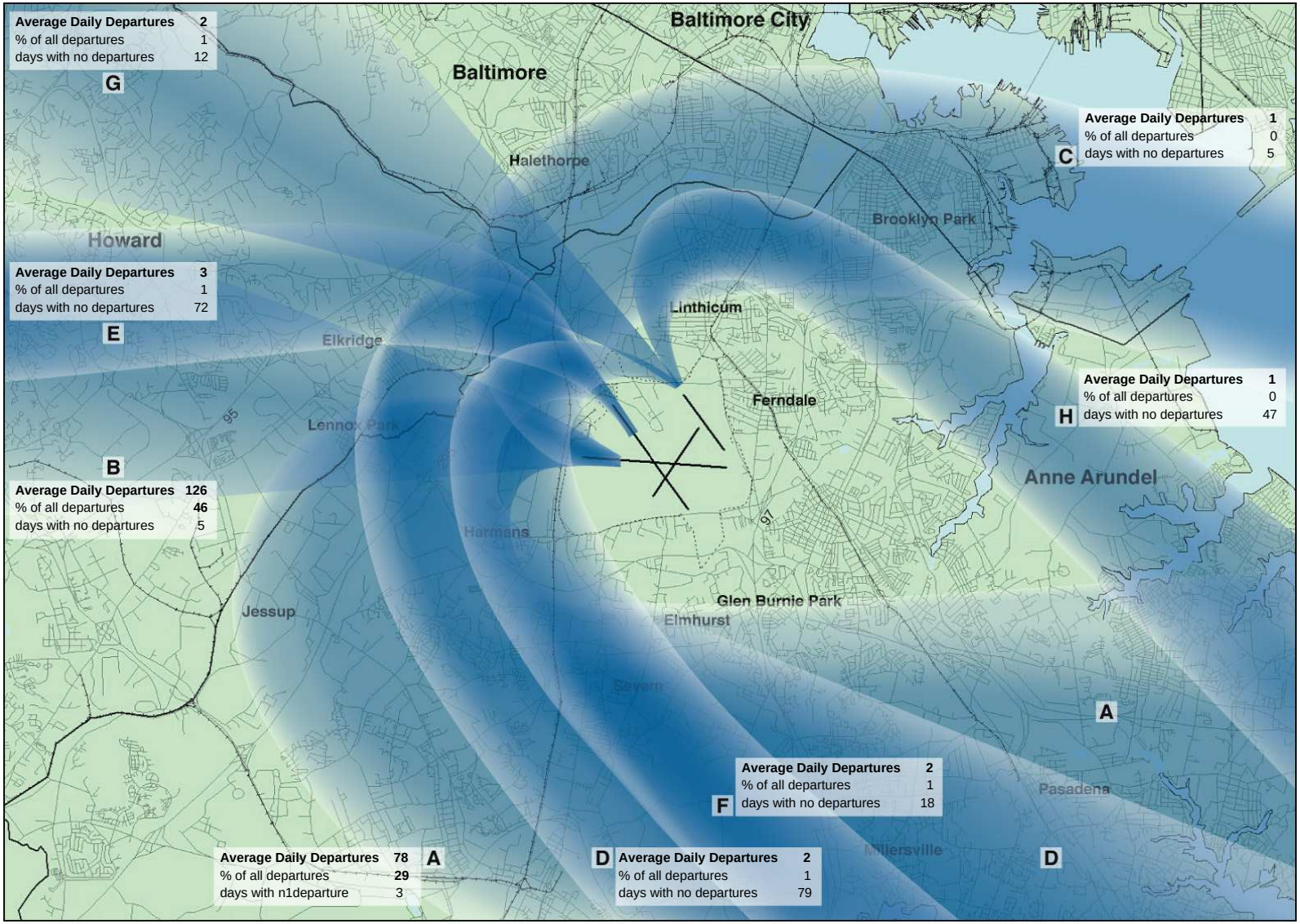

Scale in feet
0 5,000 10,000

Jet Departures in West Flow

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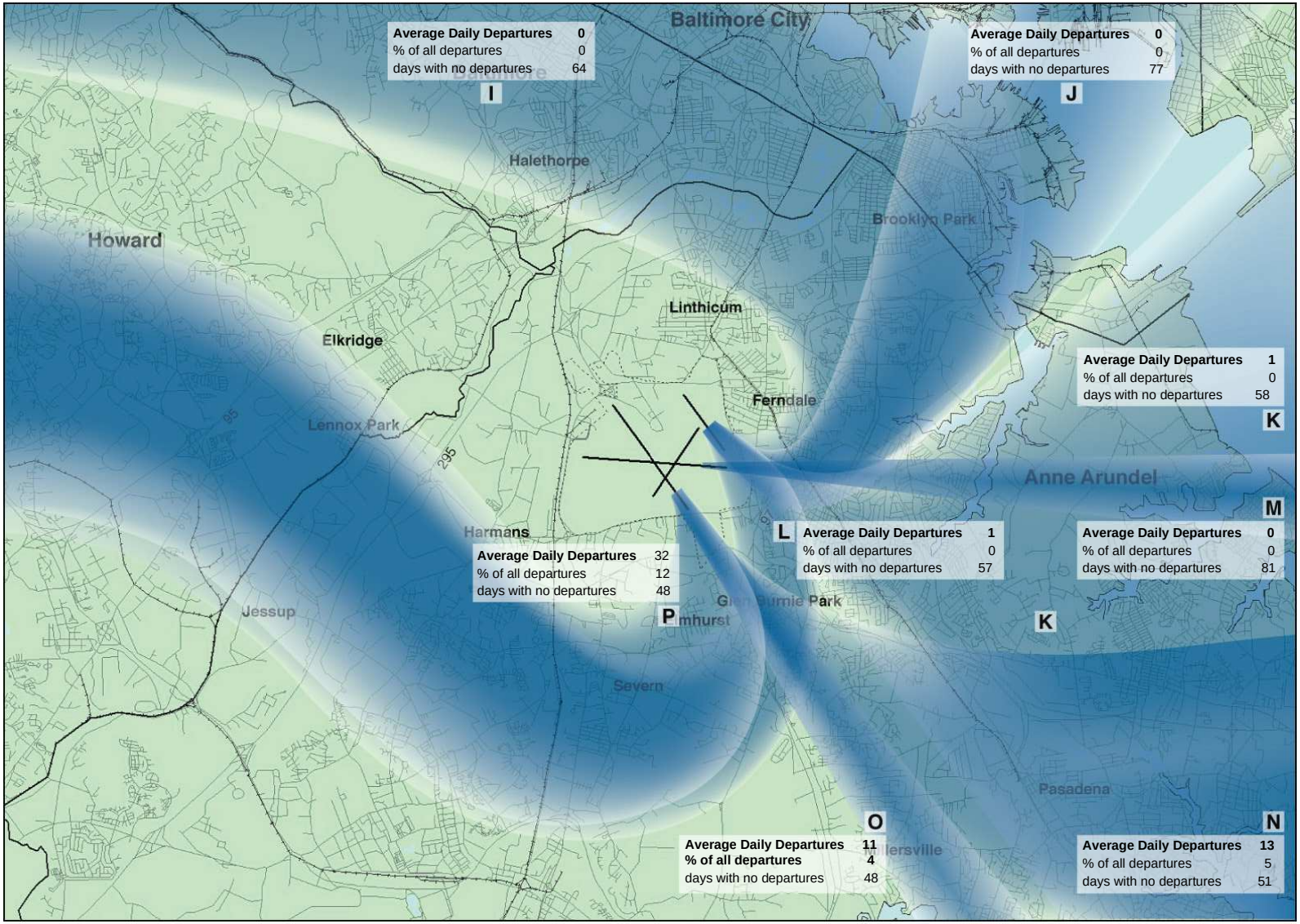

Scale in feet
0 5,000 10,000

Jet Departures in East Flow

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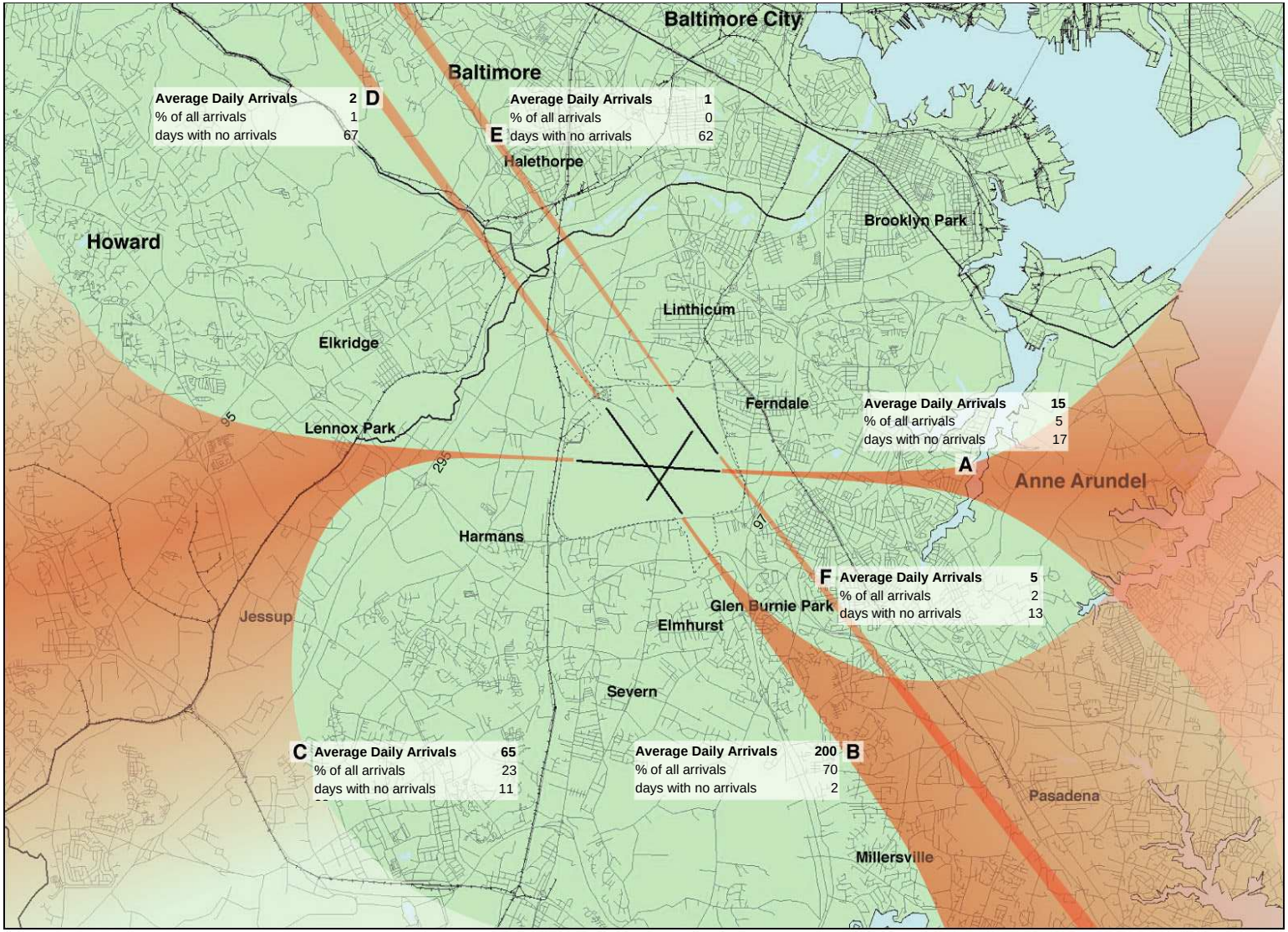


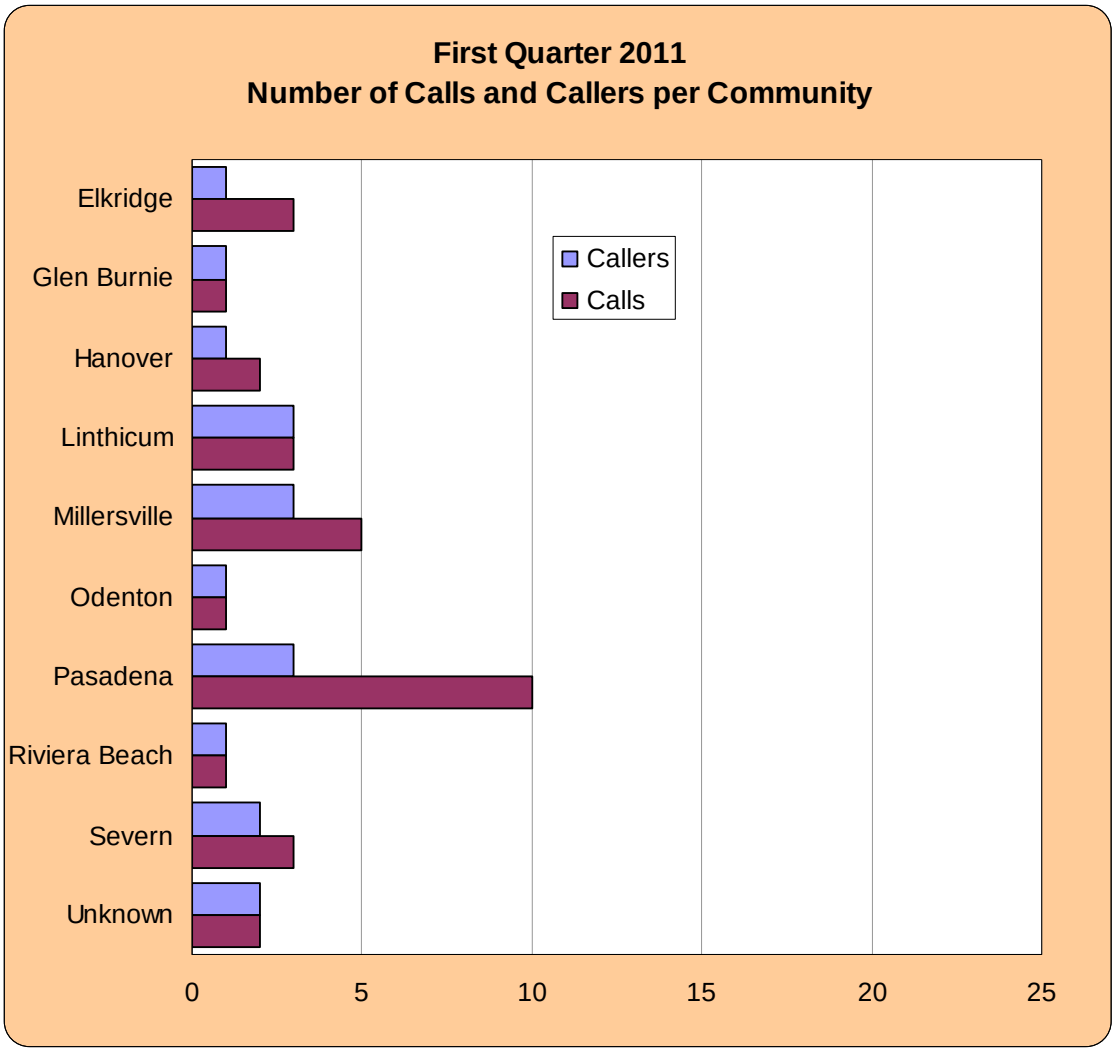
Scale in feet
0 5,000 10,000

All Jet Arrivals

AIRPORT NOISE HOTLINE CALLS

The MAA maintains a 24-hour Airport Noise Hotline at **410-859-7021**. Staff is available during normal business hours to discuss aircraft noise complaints directly with callers. Voicemail is available for recording noise complaints at night and on weekends. The graph below shows the number of calls and callers per community for the quarter.

There were 31 calls (18 callers) to the Airport Noise Hotline during the 1st quarter of 2011 compared to 28 calls (18 callers) during the 1st quarter of 2010.

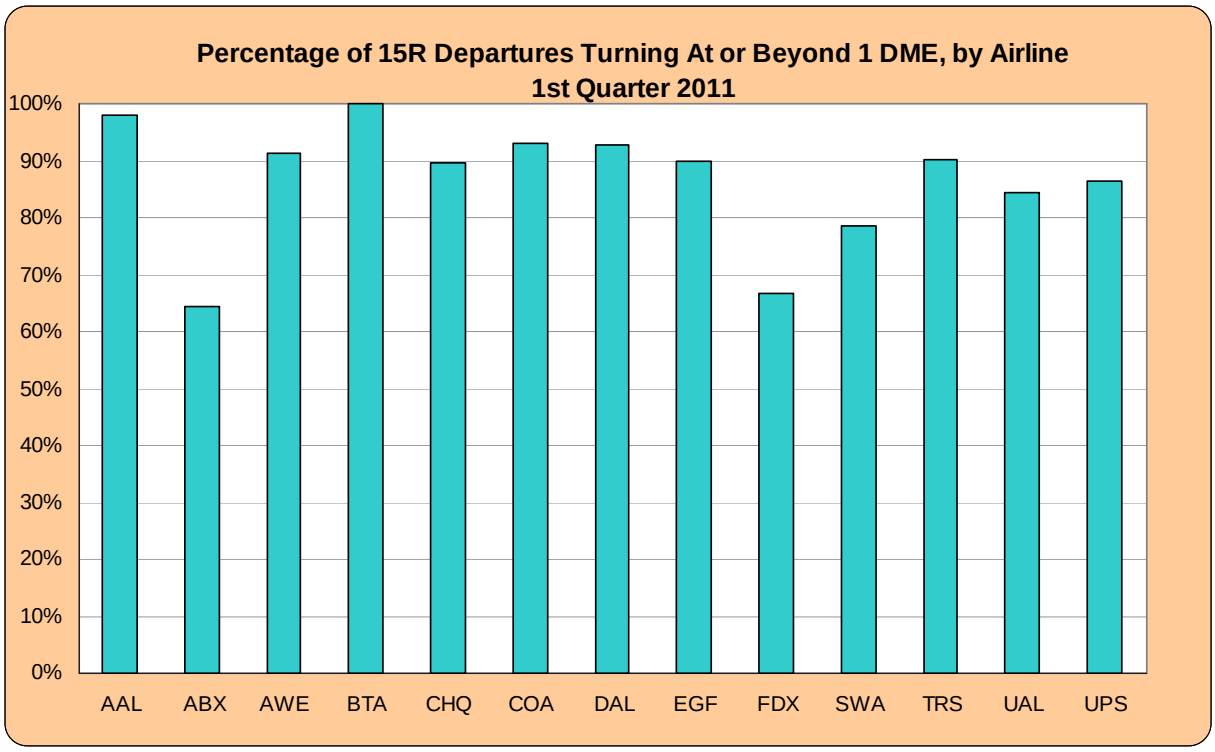


OBSERVANCE OF NOISE ABATEMENT PROCEDURES

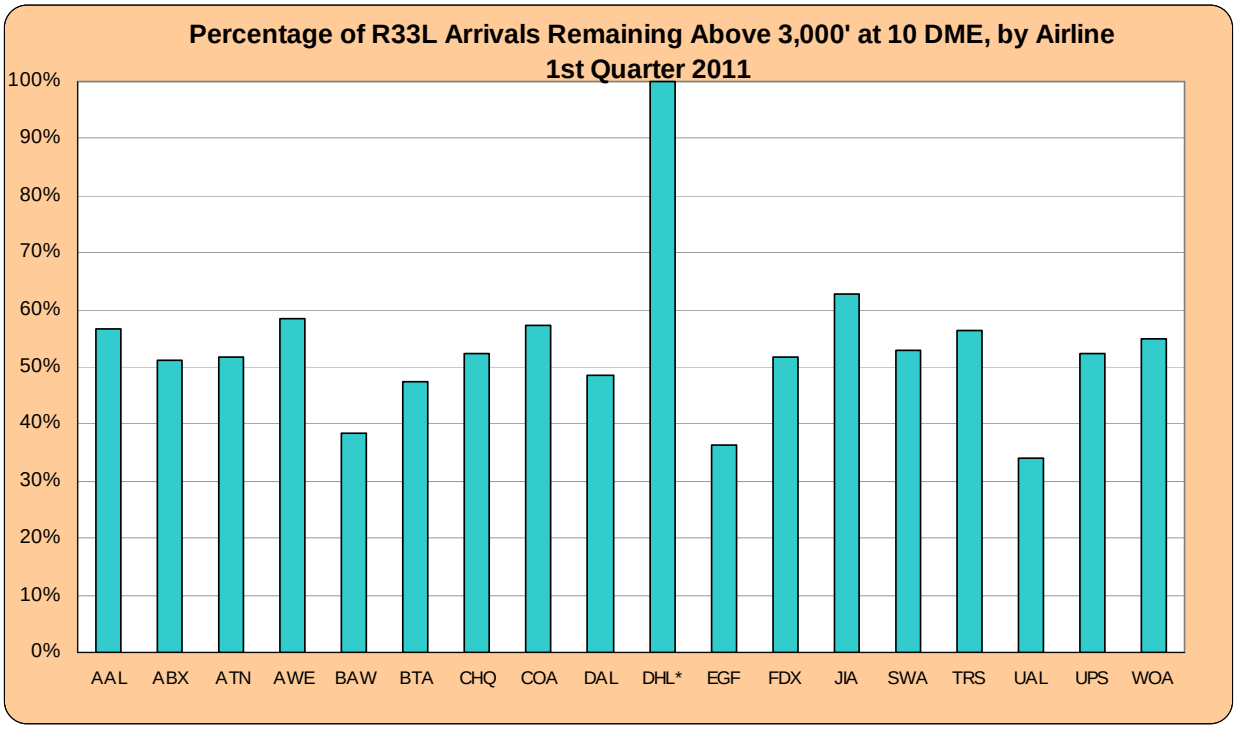
In order to encourage on-going compliance with the voluntary noise abatement procedures developed for BWI Marshall, a Quarterly Airline Performance Report is generated for the major carriers and cargo operators. Data is obtained from our noise and flight track monitoring system and the three noise abatement procedures of most interest to the local communities are evaluated. These procedures are:

1. Runway 15 Right departures initiating their right turns at, but not prior to, 1 DME
2. Runway 33 Left Visual Approach arrivals maintaining 3,000 feet altitude or higher until reaching 10 DME from the Airport
3. Runway 28 departures initiating their turns at, but not prior to, 3 DME

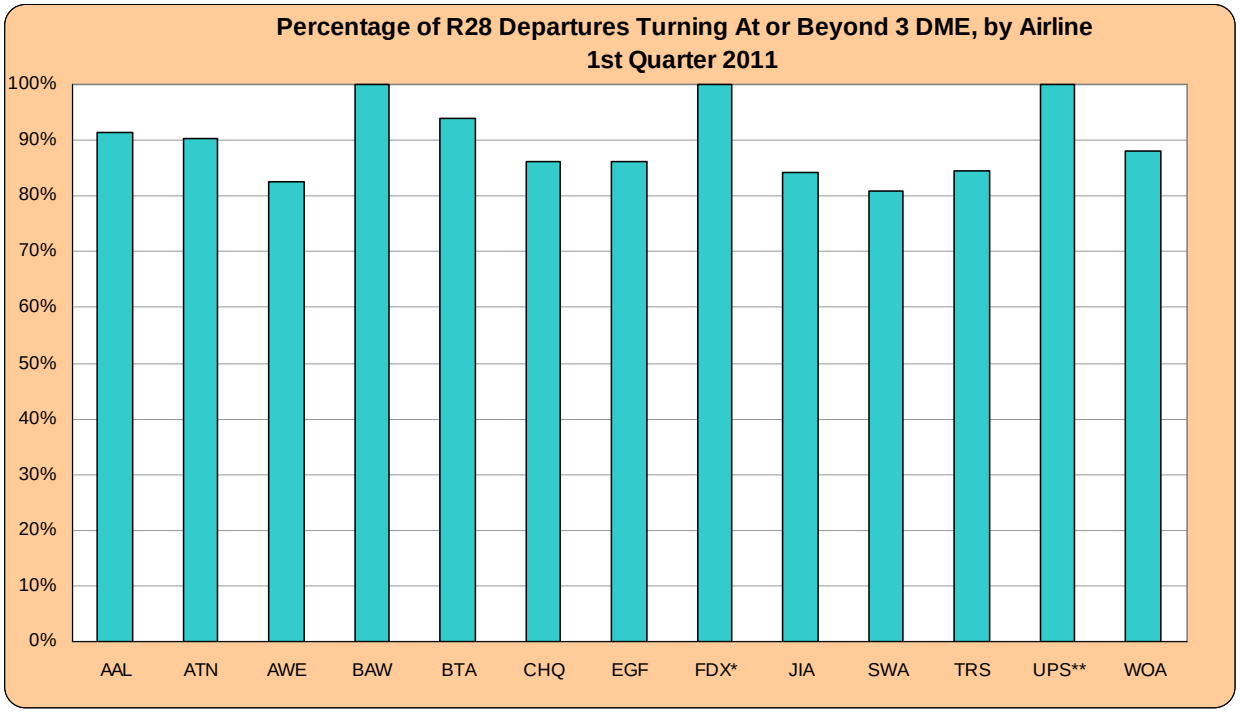
The following graphs were derived from the Quarterly Airline Performance Report for the 1st quarter of 2011. They show the percentage of flights for each airline which comply with each of the three procedures. DME stands for Distance Measuring Equipment, and is measured slant-range from the navigational aid located near the center of the Airport. One DME is one nautical mile.



First Quarter 2011



* DHL – 2 flights used this runway



*FDX – four flights used this runway. **UPS – one flight used this runway.

COMMUNITY OUTREACH

The MAA engages in on-going efforts to enhance the level of communication and interaction between the Airport and area residents. The MAA Community Outreach Programs encourage the exchange of information between the MAA and local community groups and residences by providing a contact point for listening to and responding to Airport-related community concerns. These programs also supplement the efforts of the BWI Marshall Neighbors' Committee to promote the active participation of local residents in Airport issues.

The Division of Noise, Real Estate and Land Use Compatibility Planning keeps track of services provided to the local community to promote public education and communication, and of the number of responses to public concerns regarding aviation noise. Specific services or activities provided by the MAA and the Noise Abatement Office are listed below, along with the number of contacts.

Public Education Events & Activities during the 1st Quarter of 2011

Committee Meetings	2
Community Meetings	0
Community Noise Monitoring Reports	0
Airport Zoning Permits	76
Mailings	3

COMMUNITY ENHANCEMENT GRANT PROGRAM

Maryland Senate Bill 276 established an 11-member "Citizens Committee for the Enhancement of Communities Surrounding Baltimore/Washington International Thurgood Marshall Airport." The intent of this legislation is to provide some benefit to those citizens living in communities impacted by the daily operation of BWI Marshall by allowing them the opportunity to apply for grants for transportation-related projects such as sidewalks, speed humps, street lights, etc. These communities must be located within the most recently certified Airport Noise Zone or within two miles of the outermost noise contour.

The Community Enhancement Grant Committee met on February 16, 2011. The Committee reviewed six grant applications and four were recommended for approval. This included three grants for Elvaton Towne Condominium Regime II totaling $69,095, and one grant for Orchard Club Condominium for $15,700

NOISE MONITORING PROGRAM

The MAA operates a permanent noise monitoring system that operates 24 hours per day, seven days a week. The noise monitoring equipment in place at BWI-Marshall was installed in the late 1980's and is approaching the end of its useful life due to the age of the equipment and the inability to obtain replacement parts. The MAA is currently in the process of selecting a new system to be installed within the next 24 to 36 months. Until that time, we will continue to collect noise data and report, in table format, the finding from all equipment which is still operational. The individual noise monitor graphs will be discontinued until the new system is installed.

The map on the next page shows the locations of the noise monitors and the measured noise levels at each location. The term **DNL** (symbolized as "Ldn" in mathematical equations) means **Day-Night Average Sound Level***,* and is used to report aircraft, community and total noise levels. DNL is defined as the cumulative sound energy averaged over a twenty-four hour period, with ten-decibels (dB) added to noise events which occur between the hours of 10 p.m. and 7 a.m. This penalty accounts for the greater impact of noise events which occur at night. DNL is measured from midnight to midnight.

The map on the following page shows the quarterly Aircraft (A), Community (C), and Total (T) DNL values at each site. At some sites community or environmental noise levels (street traffic and other neighborhood noises) exceed aircraft noise levels.

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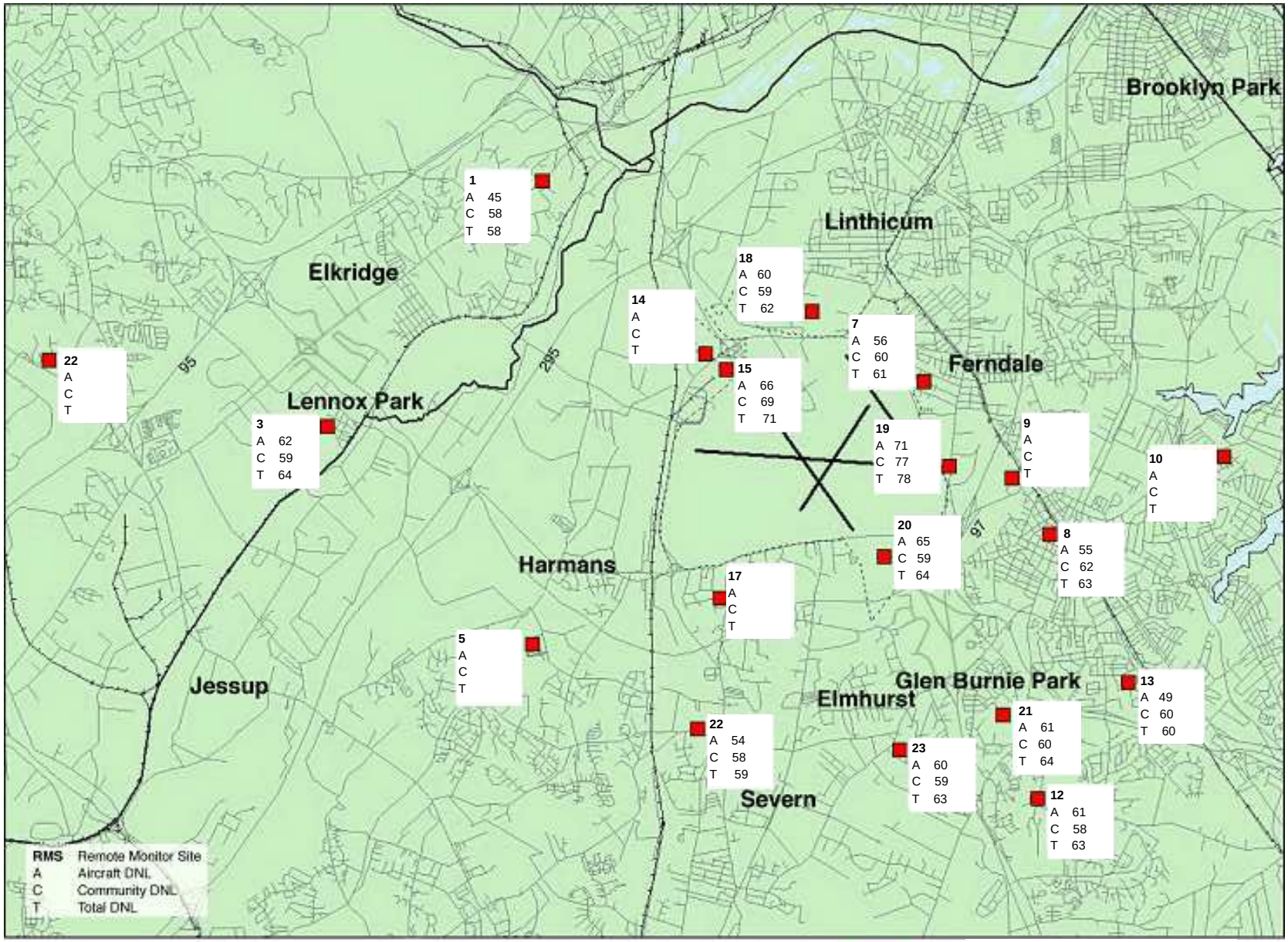


Quarterly Noise Levels

Sites 2, 4, 11, and 16 have been taken out of service and will be re-located.
Sites 5, 9, 10, 14, 17 and 22 have malfunctioned and are being repaired.

Quarterly Noise Measurements*

Site		Aircraft DNL				Community DNL				Total DNL				DNL-A 2010
		1 Qtr.	2 Qtr.	3 Qtr.	4 Qtr.	1 Qtr.	2 Qtr.	3 Qtr.	4 Qtr.	1 Qtr.	2 Qtr.	3 Qtr.	4 Qtr.	1 Qtr.
1	St. Augustine Church Elkridge	45	--	--	--	58	--	--	--	58	--	--	--	47
2	Harwood Park	--	--	--	--	--	--	--	--	--	--	--	--	--
3	Lennox Ave. Dorsey	62	--	--	--	59	--	--	--	64	--	--	--	62
4	Hanover	--	--	--	--	--	--	--	--	--	--	--	--	--
5	Harmans E.S. Hanover	--	--	--	--	--	--	--	--	--	--	--	--	--
6	Delmont Church Severn	51	--	--	--	56	--	--	--	57	--	--	--	50
7	Wicklow Woods Ferndale	56	--	--	--	60	--	--	--	61	--	--	--	56
8	Glen Burnie Heights	55	--	--	--	62	--	--	--	63	--	--	--	51
9	Army National Guard Armory, Glen Burnie	--	--	--	--	--	--	--	--	--	--	--	--	55
10	Pumping Station Margate	--	--	--	--	--	--	--	--	--	--	--	--	48
11	Queenstown	--	--	--	--	--	--	--	--	--	--	--	--	--
12	Rippling Woods E.S. Glen Burnie	61	--	--	--	58	--	--	--	63	--	--	--	62
13	Oakwood Park Glen Burnie	49	--	--	--	60	--	--	--	60	--	-	--	48
14	Approach End RWY 15 Right (Outer)	--	--	--	--	--	--	--	--	--	--	--	--	58
15	Approach End RWY 15 Right (Inner)	66	--	--	--	69	--	--	--	71	--	--	--	65
16	Hanover	--	--	--	--	--	--	--	--	--	--	--	--	--
17	Timber Ridge Rd. Timber Ridge	--	--	--	--	--	--	--	--	--	--	--	--	52
18	Approach End RWY 15 Left	60	..	..	--	59	..	..	--	62	..	..	--	59
19	Hollins Ferry Rd. Glen Burnie	71	--	--	--	77	--	--	--	78	--	--	--	69
20	Friendship Park Glen Burnie	62	--	--	--	59	--	--	--	64	--	--	--	68
21	Glen Burnie Park Elementary School	61	--	--	--	60	--	--	--	64	--	--	--	61
22	Columbia	--	--	--	--	--	--	--	--	--	--	--	--	55
23	Quarterfield E.S. Severn	60	--	--	--	59	--	--	--	63	--	--	--	58

*Sites 2, 4, 11, and 16 have been taken out of service and will be re-located. Sites 5, 9, 10, 14, 17, and 22 have malfunctioned and are being repaired. MAA's noise monitoring sites are over 20 years old. A new system is planned for installation in the next few years.

Monthly Noise Measurements

Aircraft Noise Levels DNL(A)

Site		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	St. Augustine Church, Elkridge	45	46	44	--	--	--	--	--	--	--	--	--
2	Harwood Park	--	--	--	--	--	--	--	--	--	--	--	--
3	Lennox Ave., Dorsey	61	61	62	--	--	--	--	--	--	--	--	--
4	Hanover	--	--	--	--	--	--	--	--	--	--	--	--
5	Harmans E.S., Hanover	--	--	--	--	--	--	--	--	--	--	--	--
6	Delmont Church, Severn	50	49	53	--	--	--	--	--	--	--	--	--
7	Wicklow Woods, Ferndale	55	57	55	--	--	--	--	--	--	--	--	--
8	Glen Burnie Heights	55	54	55	--	--	--	--	--	--	--	--	--
9	Army National Guard Armory	--	--	--	--	--	--	--	--	--	--	--	--
10	Pumping Station, Margate	--	--	--	--	--	--	--	--	--	--	--	--
11	Queenstown	--	--	--	--	--	--	--	--	--	--	--	--
12	Rippling Woods E.S.	60	60	61	--	--	--	--	--	--	--	--	--
13	Oakwood Park, Glen Burnie	47	50	50	--	--	--	--	--	--	--	--	--
14	Approach End R15R (Outer)	--	--	--	--	--	--	--	--	--	--	--	--
15	Approach End R15R (Inner)	63	66	66	--	--	--	--	--	--	--	--	--
16	Hanover	--	--	--	--	--	--	--	--	--	--	--	--
17	Timber Ridge Rd., Timber Ridge	--	--	--	--	--	--	--	--	--	--	--	--
18	Approach End RWY 15L	60	60	60	..	..	..	..	..	..	--	--	--
19	Hollins Ferry Rd., Glen Burnie	58	72	72	--	--	--	--	--	--	--	--	--
20	Friendship Park, Glen Burnie	58	65	62	--	--	--	--	--	--	--	--	--
21	Glen Burnie Park E.S.	60	60	62	--	--	--	--	--	--	--	--	--
22	Columbia	--	--	--	--	--	--	--	--	--	--	--	--
23	Quarterfield E.S., Severn	57	58	64	--	--	--	--	--	--	--	--	--

BWI MARSHALL NEIGHBORS COMMITTEE

The BWI Marshall Neighbors Committee was established in December 1983 and serves as a liaison between the Airport and the surrounding communities to ensure continuing and timely discussion of mutual airport and community interests. The committee serves as a forum for exchanging information, ideas and suggestions.

Such interests include, but are not limited to:

(1) ground access (highways, light rail, etc.)

(2) long-range transportation planning issues

(3) operational changes (construction, maintenance and air traffic control)

(4) noise abatement and other environmental issues

(5) parking and ground transportation

(6) land use planning.

The Neighbors Committee consists of the following groups:

- Columbia Council
- Elkridge Community Association
- Elmhurst Improvement Association
- Glen Burnie Improvement Association
- Glen Burnie Park Civic Association
- Ferndale Area Community Council
- Greater Pasadena Council
- Harmans Civic Association
- Linthicum/Shipley Improvement Association
- Severn Improvement Association
- Timber Ridge Improvement Association

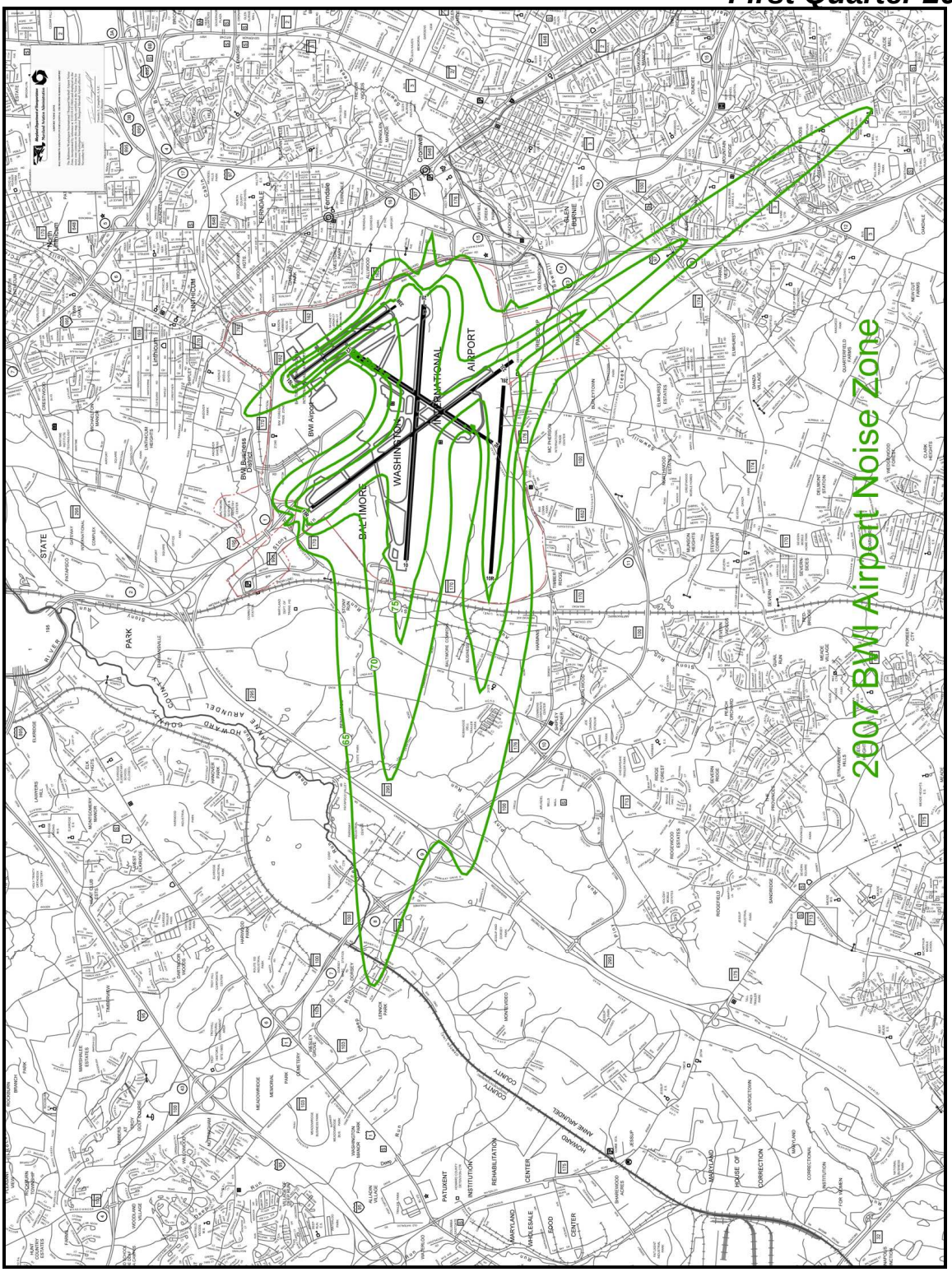
AIRPORT NOISE ZONE

The Maryland Environmental Noise Act of 1974 provides for the protection of citizens from the impact of transportation related noise. The aviation portion of the Act requires the MAA to create a certified Airport Noise Zone (ANZ) to control incompatible land development around BWI Marshall and a Noise Abatement Plan (NAP) to minimize the impact of aircraft noise on people living near the Airport. An ANZ and NAP were first established for BWI Marshall in 1976. Both were updated in 1982, 1988, 1993, and 1998. An updated ANZ was certified on November 6, 2007.

The ANZ is determined by a composite of three noise contours: a base year contour, a five-year forecast, and a ten-year forecast. The largest of the three contours in any area around the Airport determines the outline of the ANZ, thereby offering protection within the largest of the existing or future noise contours.

The contours depict the Day-Night Average Sound Level (DNL) around BWI Marshall. Both the State of Maryland and the FAA require the use of the DNL metric by all airports conducting environmental studies. The FAA also requires the use of its standard computer model for developing noise contours, known as the Integrated Noise Model (INM).

The 2007 ANZ is depicted on the following page.


2007 BWI Airport Noise Zone
BALTIMORE
WASHINGTON
INTERNATIONAL
AIRPORT
BWI Airport
BWI Business District
Linthicum
Ferndale
Glen Burnie
Cromwell
Severna Park
Maryland House of Correction
Patuxent Institution
Maryland Wholesale Food Center
Anne Arundel County
Howard County
Baltimore County
Harwood Park
Meadowridge
Sandridge
Rockenburg
Severn Run
Pioneer City
Linthicum Heights
Lake Shore
Marley Station
Ordnance Road
Hanover
Elkridge
Dorsey
Jessup
Maple Lawn
Fulton
Clarksville
Columbia
Laurel
Savage
Guilford
Dunloggin
Ellicott City
Catonsville
Arbutus
Lansdowne
Baltimore
Brooklyn
Curtis Bay
Brooklyn Park
Pasadena
Glen Burnie
Severna Park
Crofton
Gambrills
Odenton
Millersville
Pumphrey
Linthicum Heights