KPMG Peat Marwick

Airport Consulting Services

Final Report

FAR Part 150 Noise Exposure Maps and Noise Compatibility Program Update Huntsville International Airport

Prepared for

Huntsville-Madison County Airport Authority
Huntsville, Alabama

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EXECUTIVE SUMMARY
NOISE COMPATIBILITY MEASURES
FAR PART 150 NOISE EXPOSURE MAPS AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport

The following 19 noise compatibility measures were adopted by the Board of Directors of the Huntsville-Madison County Airport Authority on April 10, 1990 for inclusion in the FAR Part 150 Noise Exposure Maps and Noise Compatibility Program Update for Huntsville International Airport. A more complete description of each of these measures is presented in Chapter 6 of the Report.

SHORT-TERM MEASURES (IMPLEMENTATION TO COMMENCE IN FIRST FIVE YEARS)

Noise Abatement

1. Extend Runway 18L-36R 1,500 feet to the south and 500 feet to the north to place departing aircraft at higher altitudes when passing over residential areas in the City of Madison to the north and the City of Triana to the south, thus reducing exposure to aircraft noise.

2. Continue to equalize runway use for passenger airline aircraft.

Noise Mitigation-Remedial

1. Establish an acoustical treatment program for single-family residential structures, which existed as of the date the HMCAA approved the FAR Part 150 Noise Compatibility Program Update, and which are located in areas exposed to present or future noise levels above Ldn 65. Participation in the program will be voluntary on the part of the property owner. The granting of an avigation easement to the HMCAA will be required as a condition of participation in the acoustical treatment program. In the short term this program will be limited to the three farm houses in the current Ldn 65-70 noise exposure range and the one farm house in the Lnd 70-75 noise exposure range. The additional 154 single-family residential units anticipated to be exposed to Ldn 65 or greater will be included in the long-term program when passenger and all-cargo airline hubbing occurs.

2. Offer a program for the purchase of aviation easements in areas exposed to present or future noise levels above Ldn 65 on properties having noise-sensitive land uses which were constructed prior to the date the HMCAA approved the Noise Compatibility Program Update where the structures are not suitable for soundproofing or when owners may not wish to have their homes acoustically treated. Participation in the program by property owners will be voluntary. The time frame for implementation will be the same as for Noise Mitigation-Remedial Measure 1 above.

Noise Mitigation-Preventative

1. Encourage and work with the cities of Huntsville and Triana to develop comprehensive plans incorporating land use planning measures (within noise exposure areas) similar to those adopted by the City of Madison.

2. Encourage and work with the cities of Madison, Triana, and Huntsville to amend their zoning maps to reflect a change in potential residential land uses (in areas exposed to Ldn 65 or higher) to commercial-industrial uses, as appropriate, given adjacent uses and any overall area plans.

3. Encourage and work with the cities of Madison and Triana to adopt a height/noise/safety zoning overlay ordinance, and to encourage and work with the City of Huntsville to amend its overlay ordinance, to reflect the new noise exposure maps.

4. Encourage and work with the cities of Huntsville, Madison, and Triana to pass fair disclosure ordinances that require notification prior to the sale or lease of any residential property or structure exposed to existing or forecast aircraft noise exposure levels in excess of Ldn 65.

5. Work with the Federal Housing Administration and the Veterans Administration to discourage the issuance of insurance for mortgages on proposed residential construction in areas exposed to aircraft noise of Ldn 75+. Other local policies conforming to the U.S. Department of Housing and Urban Development guidelines should be continued and extended, if needed, to discourage incompatible development in areas exposed to Ldn 65+ noise levels.

6. Encourage and work with local jurisdictions to consider land use compatibility policies when determining infrastructure sequencing.

7. Request the Top of Alabama Regional Council of Governments to adopt the noise compatibility measures as part of its regional transportation plan.

8. Acquire some 311 acres of undeveloped land in the future Ldn 75 noise exposure area and runway protection zones to preclude incompatible development

9. Encourage and work with affected local jurisdictions to modify their subdivision regulations to require acoustical treatment, as specified in local building codes, as a condition of approval for all new residential development.

10. Support the FAA, other federal agencies, and aircraft manufacturers to continue their research into new technology for designing quieter aircraft.

11. Encourage and work with the cities of Madison and Triana to adopt ordinances (similar to those of the City of Huntsville) to require that an acoustical analysis be performed on new residential structures within areas exposure to annual noise levels of Ldn 65 or greater, showing that the structure has been designed to provide noise reduction levels according to Table 1 of Appendix A of Federal Aviation Regulation Part 150.

12. Maximize the use of available federal funding for implementation of the noise noise mitigation programs.

13. Maximize the use of available federal funding for continuing noise compatibility planning.

14. Establish a noise advisory committee to (a) advise the Board of Directors and staff of the HMCAA on matters related to aircraft noise and (b) maintain a channel of communication between the HMCAA and local jurisdictions on matters of mutual concern. Representatives of the cities of Huntsville, Madison, and Triana; the counties of Madison and Limestone; Airport users, and others, as appropriate, will be invited to serve on the committee.

15. Acquire and install one or more noise monitors, as appropriate, for use in checking aircraft Ldn noise exposure levels in locations where aircraft noise is perceived to be a problem.

LONG-TERM MEASURES (IMPLEMENTATION TO CONTINUE BEYOND THE FIVE-YEAR TIME FRAME)

Passenger and all-cargo airline hubbing at Huntsville International Airport is being vigorously pursued by the Huntsville-Madison County Airport Authority and is anticipated to commence within the five-year time frame of this FAR Part 150 Noise Compatibility Program Update. The forecast level of hubbing activity will greatly increase the noise exposure footprint for the Airport and result in a number of existing dwelling units in the Cities of Madison and Triana to be exposed to noise levels in excess of Ldn 65+. The following two measures for acoustical treatment and avigation easements are a continuation of the same measures recommended in the short-term program but would not be implemented until the forecast hubbing actually occurs.

Noise Mitigation-Remedial

1. Establish an acoustical treatment program for single-family residential structures, which existed as of the date the HMCAA approved the FAR Part 150 Noise Compatibility Program Update, and which are located in areas exposed to present or future noise above Ldn 65. Participation in the program will be voluntary on the part of the property owner. The granting of an avigation easement will be required as a condition for participation in the program. Of the 154 single-family residences that would be exposed to noise levels of Ldn 65 or greater when hubbing occurs, two are farm houses in the Ldn 70-75 noise exposure range.

2. Offer a program for the purchase of avigation easements in areas exposed to present or future noise levels above Ldn 65 on properties with noise-sensitive land uses that were constructed prior to the date of approval by HMCAA of the Noise Compatibility Program Update where the structures are not suitable for soundproofing or where owners do not want their homes to be acoustically treated. Participation in the program by property owners will be voluntary.

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TABLES

EXHIBITS

Introduction

Chapter 1

INTRODUCTION

A Federal Aviation Regulations (FAR) Part 150, "Airport Noise Compatibility Planning" study* was completed for Huntsville International Airport in 1987. Several recommendations to reduce the effects of aircraft noise were included in the Noise Compatibility Program, and some have been implemented.

The Huntsville-Madison County Airport Authority (HMCAA) initiated this Noise Compatibility Program Update to provide a current, comprehensive, independent review of its ongoing noise compatibility program in light of changes in the aviation industry, increasing levels of aviation activity at the Airport, and the desire to continue to be a good neighbor to the surrounding communities and neighborhoods. In response to the projected growth of the Airport, changes in the aviation industry, and an on-going program to attract passenger and all-cargo airlines to hub at the Airport, HMCAA is planning to extend Runway 18L-36R 1,500 feet to the south, and 500 feet to the north by 1993. By performing the study within the framework of FAR Part 150, HMCAA also ensures that compliance with applicable federal regulations is maintained.

In January 1981, the Federal Aviation Administration (FAA) issued its Interim Rule on FAR Part 150. The final rule on FAR Part 150 became effective in January 1985. The regulations were issued in response to provisions in the Aviation Safety and Noise Abatement Act (ASNA) of 1979,** which allow airport operators to receive funding to prepare airport noise maps and land use compatibility programs, if they so choose. After these maps and programs have been approved by the FAA, the airport operator is also eligible for federal funding of noise abatement (on-airport) and noise mitigation (off-airport) programs. FAR Part 150 sets forth the methodology and procedures to be followed by those airport operators that

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*The Associated Consulting Group, "Noise Exposure Map and Land Use Compatibility Program, Huntsville-Madison County Airport," January 1987.

**U.S. Congress, "Aviation Safety and Noise Abatement Act of 1979, "Public Law 96-193, February 18, 1980.

wish to prepare noise maps and develop land use compatibility programs in conformance with ASNA to receive such federal funding.

Noise and land use compatibility planning is not new--the FAA has had guidelines and grant programs for planning and implementation since the mid-1970s. However, FAR Part 150 is more comprehensive than previous regulations and, for the first time, FAA grants can be applied to implement programs in the communities affected by airport noise.

Under FAR Part 150, noise compatibility planning is divided into two parts: (1) preparation of noise exposure maps for existing and five-year future conditions with the identification of present and future noise incompatibilities, and (2) development of a noise compatibility program to reduce, to the greatest degree possible, the incompatibilities identified by the noise exposure maps. The noise compatibility program, in turn, identifies noise abatement or noise mitigation measures that are (1) within the airport operator's implementation authority, (2) within the authority of another local agency or state or local government body, or (3) under federal authority.

This report meets all of the federal requirements and contains the pertinent information in the following chapters:

- Airport and Environs Conditions (Chapter 2)
- Aviation Demand Forecasts (Chapter 3)
- Aircraft Noise Exposure Analysis (Chapter 4)
- Evaluation of Noise Compatibility Planning Options (Chapter 5)
- Noise Compatibility Program (Chapter 6)
- Program Costs, Sources of Funding, Implementation Schedule, and General Conditions (Chapter 7)
- Public and Airport User Consultation (Chapter 8)
- Sample Fair Disclosure Statement (Appendix A)
- Project Advisory Committee (Appendix B)

- Public Information Sessions (Appendix C)
- Public Hearing and Written Communications Received (Appendix D)

Chapters 2 through 4 present the documentation required for preparation of the noise exposure maps. Chapters 5 through 7 define the noise compatibility program. Chapter 8 describes the public and Airport user consultation process required for preparation of the noise exposure maps and the noise compatibility program.

Airport and Environs

Chapter 2

AIRPORT AND ENVIRONS CONDITIONS

This chapter provides a summary of (1) existing and planned facilities at Huntsville International Airport, (2) existing and planned land use in the Airport environs, and (3) land use controls currently available to the local jurisdictions to help achieve land use compatibility. Knowledge of existing and planned land use and land use controls provides a basis for estimating the effects of existing and projected aircraft noise exposure on the surrounding community.

THE AIRPORT

Huntsville International Airport occupies 3,330 acres of land in the City of Huntsville. As shown on Exhibit 2-1, the Airport is 12 miles west of the Huntsville Central Business District, and abuts the City of Madison to the north and the County of Limestone to the east. The Airport is west of the Redstone Arsenal and north of the Tennessee River. Huntsville International Airport is the only public airport serving the region, including southern Tennessee and northern Alabama, and defined more specifically in Chapter 3. The Airport is at an elevation of 629.5 feet above mean sea level and has a mean maximum temperature of 93.7°F in the hottest month.

Existing Facilities

The existing Airport facilities are shown on Exhibit 2-2. The airfield has two parallel runways, and a series of taxiways and aircraft aprons. Runways 18R-36L and 18L-36R are paved with grooved asphalt.

Both runways are oriented north-south and are 8,000 feet long and 150 feet wide, with a distance of 5,000 feet between them. Runways 18R-36L and 18L-36R are equipped with high-intensity runway lights (HIRL). Runways 18R, 36L, and 18L are equipped with instrument landing systems (ILS). The ILS gives vertical and horizontal guidance to aircraft landing in poor weather.

LEGEND

- Airport boundary
- City boundary
- County boundary
- Redstone Arsenal

N

3000 0 3000 8000

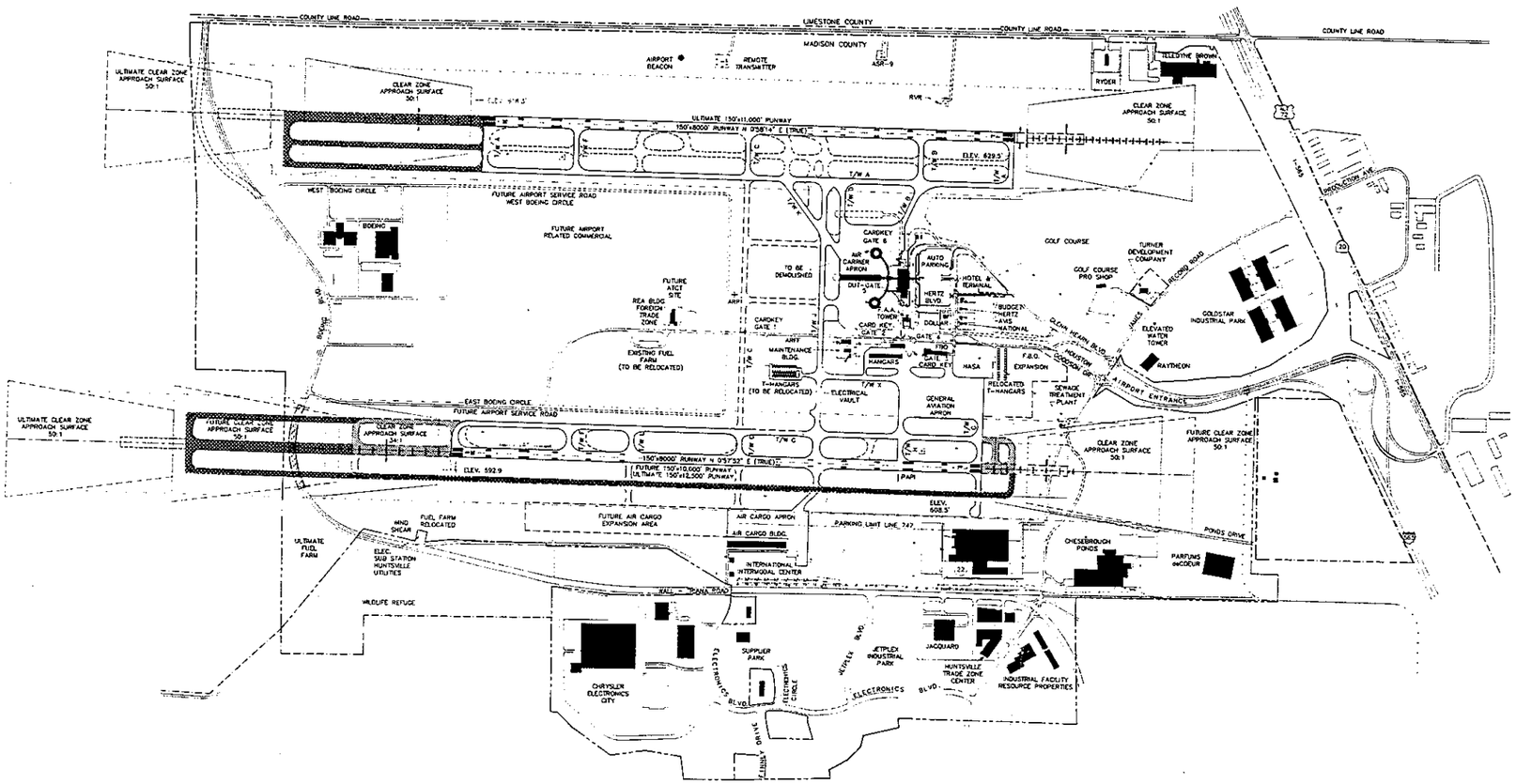
Graphic Scale in Feet

Exhibit **2-1**

JURISDICTIONAL BOUNDARIES

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick February 1990



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1000 0 1000 3000

Graphic Scale in Feet

LEGEND

- Building
- Airport boundary
- Airfield/apron boundary
- Road
- Building Restriction Line (BRL)
- Fence
- Railroad

Proposed runway extensions and associated taxiways

- Future (1993)
- Ultimate (2008)

Exhibit **2-2**

EXISTING AND PLANNED AIRPORT FACILITIES

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick

February 1990

A VORTAC* used for en route navigation is located seven miles west of the airfield. On approaches, this equipment gives course and distance information to the pilot. Other instrumentation at the Airport includes visual approach slope indicators (VASI), which provide glideslope guidance to both runways; a precision approach path indicator (PAPI) on Runway 18L; and airport surveillance radar (ASR).

The Airport Traffic Control Tower is located east of the terminal building. From the Tower, FAA air traffic controllers maintain air traffic control and communications with pilots operating on the runways or within the Terminal Control Area, which is the airspace in the vicinity of the Airport.

The taxiway system at the Airport consists of a series of major taxi thoroughfares and access taxiways. A total of 11 taxiways connect the 2 runways with the terminal, air cargo area, and general aviation area.

Planned Facilities

The major improvements planned for the Airport that would affect aircraft noise exposure are two extensions to Runway 18L-36R. It is expected that Runway 18L-36R will be extended 1,500 feet to the south by 1990 and 500 feet to the north by 1993, as shown on Exhibit 2-2. The runway extensions would accommodate future passenger and all-cargo airline hubbing operations at the Airport.

Runway 18R-36L is also expected to be extended 3,000 feet to the south to an eventual length of 11,000 feet. However, because this runway will not be extended until after 1993, the project is beyond the scope of this report and, therefore, is not discussed.

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*Very high frequency omnidirectional range (VOR) navigation transmitter for civilian aircraft use and an ultra-high frequency tactical air navigational (TACAN) aid transmitter for military aircraft use. The combined facility is referred to as a VORTAC.

EXISTING LAND USE IN THE AIRPORT ENVIRONS

The generalized existing land use in the environs of Huntsville International Airport, depicted on Exhibit 2-3, was derived from aerial photographs taken in October 1988 and field-verified in January 1989.

The areas west and south of the Airport are primarily undeveloped, except for portions of the City of Triana, which include single-family residential uses, a few mobile homes, and a church. One church is also located on County Line Road on the west side of the Airport.

The area east of the Airport is primarily vacant, with some industrial uses on the northeast side. Also, one church is located along the Wall-Triana Highway.

The area north of the Airport is primarily vacant, but does include some single-family and multifamily residential uses and mobile homes in the City of Madison, associated commercial and industrial uses, and a park. Most of the development has been in the eastern portion of the north side. Most of the commercial and industrial uses are along Highway 20 and the Wall-Triana Highway.

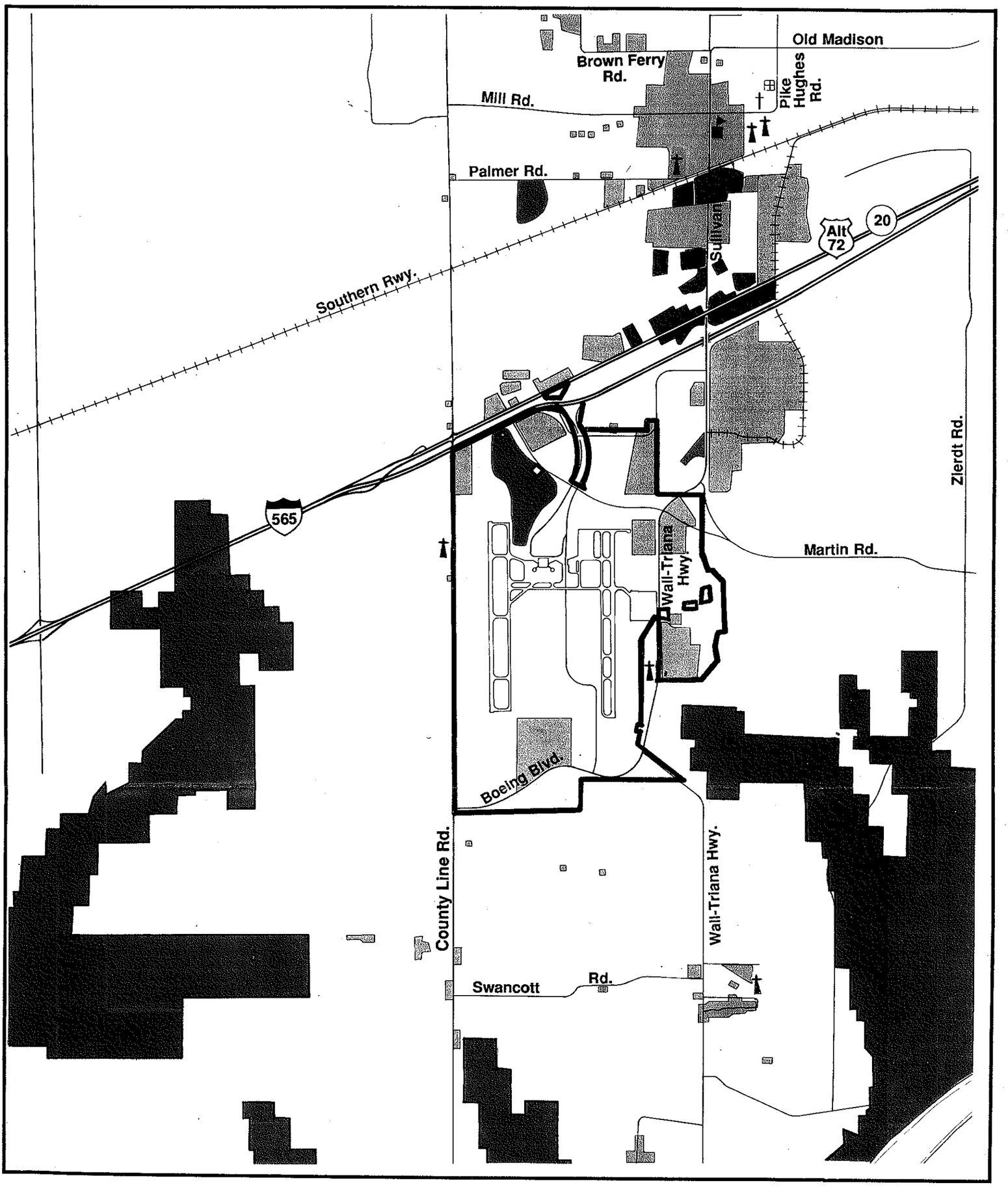
PLANNED LAND USE IN THE AIRPORT ENVIRONS

The need to ensure land use compatibility with aircraft operations is recognized in the City of Madison's Comprehensive Plan, the objective of which is to minimize, to the fullest extent, the potential for adverse noise effects upon its citizens.

The Comprehensive Plan recommends the following for the public health and safety:

- Land use compatibility standards
- Noise attenuation construction standards for noise impact areas
- Height restrictions for structures in the Airport environs

No comprehensive land use plans have been adopted for the cities of Huntsville and Triana or for the unincorporated areas of Madison and Limestone counties.



LAND USE LEGEND

- Single-family residential
- Multifamily residential
- Mobile home park
- Church
- School
- Cemetery
- Industrial
- Commercial
- Park/recreational
- Agricultural/vacant
- Airport boundary

Land Use

Source: October 1988 aerial photograph and January 1989 field verification.

N

2000 0 2000 6000

Graphic Scale in Feet

Exhibit 2-3

GENERALIZED EXISTING LAND USE

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick February 1990

LAND USE CONTROL REGULATIONS

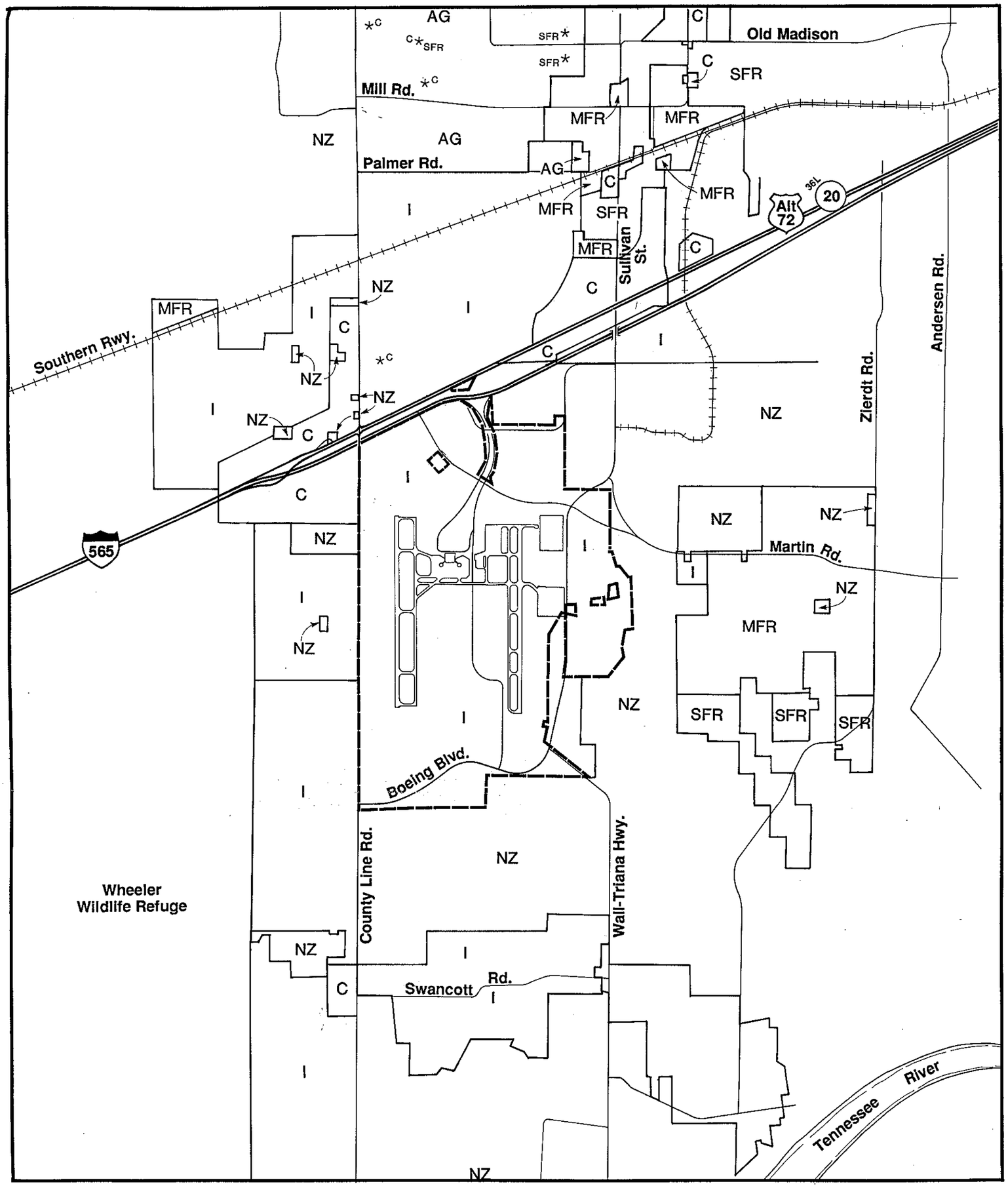
Zoning is the basic regulation used to control land use in the Airport environs. Zoning ordinances can be implemented to regulate land use, among other things, to achieve compatibility with an airport's operations. Although zoning regulations can be amended at any time and do not necessarily ensure that land use compatibility will always be maintained, they do indicate the willingness of a community to protect the health and safety of it residents.

The cities of Huntsville, Madison, and Triana have direct responsibility for regulating land use within their incorporated areas. The generalized existing zoning in the Airport environs is shown on Exhibit 2-4. Limestone and Madison counties have no authority to impose land use regulations and, therefore, cannot establish land use compatibility zoning in the unincorporated portions of the Airport environs.

Most of the area west of the Airport is in unincorporated Limestone County and, therefore, has no zoning. However, some recently annexed portions in the City of Huntsville have, for the most part, been zoned commercial or industrial. Other unincorporated areas exist south and east of the Airport. Some areas south of the Airport are within the City of Huntsville and are zoned industrial. The area east of the Airport is either zoned industrial or has no zoning.

The area north of the Airport is zoned industrial, commercial, multifamily residential, and single-family residential. This area falls within the jurisdiction of the City of Madison.

The City of Huntsville has adopted an Airport Obstruction and Noise Exposure District Regulations ordinance to regulate land uses in the Airport vicinity. The City of Madison does not have such an overlay in its zoning ordinance nor does the City of Triana. The Huntsville overlay establishes a range of uses compatible with Airport noise exposure areas and height obstruction areas.



LEGEND

SFR	Single-family residential	**AG**	Agriculture
MFR	Multifamily residential	**NZ**	No zoning established
C	Commercial	**- -**	Airport boundary
I	Industrial		

$^{C}*_{SFR}$ Zoning approved. Zoning boundaries not yet delineated by the jurisdiction. Letter designation denotes zoning classification.

Sources: Cities of Huntsville and Madison Zoning Maps.

N

2000 0 2000 6000

Graphic Scale in Feet

Exhibit **2-4**

GENERALIZED EXISTING ZONING

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick February 1990

Aviation Demand Forecast

Chapter 3

AVIATION DEMAND FORECASTS

This chapter presents forecasts of aviation demand for Huntsville International Airport. The forecasts are for 1993, to be used in preparing a five-year future noise exposure map for the Airport.

The Terminal Development Plan for Huntsville International Airport, prepared by KPMG Peat Marwick in September 1988, presents updated forecasts of aviation demand for the Airport. This report further updates the Terminal Development Plan forecasts and provides information concerning specific aircraft types that contribute to noise at the Airport.

The first section of this chapter presents an overview of the population and economy of the Airport service region because aviation demand at the Airport responds to the characteristics and trends in the population and economy of the region served by the Airport.

The second section presents historical and forecast passenger and cargo airline traffic (enplaned passenger and landed weight), and the third section presents historical and forecast annual aircraft operations (air carrier, air taxi and commuter, general aviation, and military). Forecasts of average daily aircraft operations by aircraft type, for use in preparing the noise exposure maps, are presented in Chapter 4.

POPULATION AND ECONOMY

Airport Service Region

Airline traffic at any airport is a function of the economic characteristics and growth of the airport service region. A market analysis prepared for the Airport by J. A. Nammack Associates* identified the five-county area consisting of Jackson, Limestone, Madison, Marshall, and Morgan counties in Alabama as the primary area within the service region for Huntsville International Airport. The Airport is located in

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*J. A. Nammack Associates, Inc., "The Huntsville Air Service Market," March 1988.

the City of Huntsville (12 miles west of the Huntsville Central Business District) in Madison County, the region's major city. In 1987, Madison County represented about 46% of the population of the five-county primary area.

The primary area is surrounded by a secondary area also served by the Airport. The limits of this secondary area are generally defined by the availability and quality of airline service at air carrier airports in nearby cities--Nashville (110 road miles to the north); Chattanooga (105 road miles to the northeast); Atlanta (176 road miles to the southeast); Birmingham (97 road miles to the south); and Memphis (214 road miles to the west).*

Population

Table 3-1 presents historical and forecast population growth for the Airport service region (primary area), the State of Alabama, and the United States. The population of the region increased from 398,958 in 1970 to 505,400 in 1987, at an average annual rate of 1.4%. This rate exceeded the average annual population growth for both the State of Alabama and the nation as a whole. The population of the Airport service region is forecast to increase at an average annual rate of 1.6% between 1987 and 1995, compared with 1.2% for the State and 0.8% for the nation.

Employment and Industry

Table 3-2 presents comparative nonagricultural employment growth for the Airport service region (primary area), the State of Alabama, and the United States for 1975 through 1987. Nonagricultural employment in the region increased steadily, from 144,120 in 1975 to 222,930 in 1987, at an average annual rate of 3.7%. Nonagricultural employment growth averaged 2.3% annually in the State, and 2.4% annually nationwide. Between 1982 and 1987, nonagricultural employment in the region increased at an average annual rate of 4.9%, compared with 2.9% in the State and 2.7% in the nation.

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*In the following subsections, data for the primary area are used to represent the overall Airport service region.

Table 3-1

HISTORICAL AND PROJECTED POPULATION
1970-1995

		Average annual percent increase		
	Airport service region	Airport service region	Alabama	United States
Historical				
1970	398,958	--%	--%	--%
1975	425,800	1.3	1.3	1.0
1980	450,231	1.1	1.1	1.1
1985	485,474	1.5	0.6	1.0
1987	505,400	2.0	0.8	1.0
1970-1987	--	1.4	1.0	1.0
Projected				
1990	542,000	2.4	1.6	0.8
1995	574,000	1.1	0.9	0.8
1987-1995	--	1.6	1.2	0.8

Note: Airport service region consists of Jackson, Limestone, Madison, Marshall, and Morgan counties.

Sources: Airport service region and Alabama: Alabama State Data Center, University of Alabama, Center for Business and Economic Research, "Population Estimates."

United States: U.S. Department of Commerce, Bureau of the Census, "Current Population Reports," Series P-25, No. 1006, April 1987, and "Statistical Abstract of the United States," 1988 edition.

Table 3-2

HISTORICAL NONAGRICULTURAL EMPLOYMENT GROWTH
1975-1987

Year	Airport service region	Average annual percent increase (decrease) Airport service region	Alabama	United States
1975	144,120	--%	--%	--%
1980	172,120	3.6	3.3	3.3
1981	174,780	1.5	(0.8)	0.8
1982	175,120	0.2	(2.6)	(1.7)
1983	182,040	4.0	1.2	0.7
1984	194,930	7.1	4.4	4.8
1985	205,630	5.5	2.8	3.2
1986	212,840	3.5	2.4	2.1
1987	222,930	4.7	3.7	2.6
1975-1987	--	3.7	2.3	2.4

Note: Airport service region consists of Jackson, Limestone, Madison, Marshall, and Morgan counties.

Sources: State of Alabama, Department of Industrial Relations, Alabama State Employment Service; U.S. Department of Labor, Bureau of Labor Statistics, "Employment and Earnings," May 1977-May 1988 editions.

Manufacturing accounted for about 30% of the nonagricultural employment in the region in 1987, compared with about 24% in the State and 19% in the nation. The largest manufacturing industry in the region is electric and electronic equipment. At one time, the economy of the region was dominated by defense and space programs. However, a study prepared in December 1986 by the University of Alabama's Center for High Technology Management and Economic Research noted that the region, and Madison County in particular, has become less dependent on federal funding. This decreasing dependence on federal funding is the result of the development of private sector high-technology and service-oriented industries in the region.

Personal Income

Table 3-3 presents comparative disposable personal income for the Airport service region, the State of Alabama, and the United States for 1970 through 1987. Personal income (in constant 1982 dollars) in the region increased as fast as or faster than the national average between 1970 and 1987, and exceeded the average growth in the State between 1980 and 1987. Between 1985 and 1987, personal income increased at an average annual rate of 5.6% in the region, to a total of $4.8 billion.

AIRLINE TRAFFIC FORECASTS

The forecasts presented in this report are for the year 1993.

Historical and Forecast Enplaned Passengers

Table 3-4 presents historical and forecast enplaned passengers at the Airport from 1970 through 1993. Total enplaned passengers increased from 214,062 in 1970 to 277,372 in 1978, at an average annual rate of 3%. Enplaned passengers decreased at an annual rate of 8% between 1978 and 1981. The decrease was the result of (1) reduced levels of service after deregulation of the airline industry in 1978 and (2) a national recession, which reduced passenger demand nationwide between 1979 and 1981.

Commuter service was introduced in 1982, when Atlantic Southeast Airlines began operations at the Airport. From 1982 through 1987, enplaned passengers on the commuter airlines increased at an average annual rate of 54%; enplaned passengers on the scheduled domestic airlines increased 9% per year, and

Table 3-3

COMPARATIVE DISPOSABLE PERSONAL INCOME
1970-1987

	Total personal income (millions of constant 1982 dollars)			
	1970	1980	1985	1987
Airport service region	$ 2,597	$ 3,629	$ 4,335	$ 4,836
Alabama	18,905	28,487	31,838	34,153
United States	1,581,000	2,095,000	2,505,000	2,669,000

	Average annual percent increase		
	1970-1980	1980-1985	1985-1987
Airport service region	3.4%	3.6%	5.6%
Alabama	4.2	2.2	3.6
United States	2.9	3.6	3.2

Note: Airport service region consists of Jackson, Limestone, Madison, Marshall, and Morgan counties.

Source: Sales & Marketing Management, "Survey of Buying Power," for years noted. Disposable personal income is equivalent to Effective Buying Income. Constant dollar adjustment is based on the Implicit Price Deflator for personal consumption expenditures published by the U.S. Bureau of Economic Analysis.

Table 3-4

HISTORICAL AND FORECAST ENPLANED PASSENGERS
Huntsville International Airport
1970-1993

These forecasts have been prepared on the basis of the information and assumptions given in the text. The achievement of any forecast is dependent upon the occurrence of future events which cannot be assured. Therefore, the actual results may vary from the forecasts.

	Scheduled domestic	Charter	Commuter	Total	Annual increase (decrease)
Historical					
1970	214,062	--	--	214,062	--%
1971	214,608	--	--	214,608	0.3
1972	222,652	--	--	222,652	3.7
1973	229,374	--	--	229,374	3.0
1974	230,081	--	--	230,081	0.3
1975	214,680	--	--	214,680	(6.7)
1976	231,314	--	--	231,314	7.7
1977	250,931	--	--	250,931	8.5
1978	277,372	--	--	277,372	10.5
1979	268,271	--	--	268,271	(3.3)
1980	240,459	--	--	240,459	(10.4)
1981	215,777	1,452	--	217,229	(9.7)
1982	227,689	1,515	11,137	240,341	10.6
1983	231,387	744	25,365	257,496	7.1
1984	268,627	1,147	27,396	297,170	15.4
1985	283,435	920	57,710	342,065	15.1
1986	304,046	1,224	69,140	374,410	9.5
1987	343,217	1,230	97,250	441,697	18.0
1988	361,066	1,045	77,865	439,976	(0.4)
Forecast					
1993	460,000	1,000	99,000	560,000	4.9

Sources: Historical: Huntsville-Madison County Airport Authority, Airport records.
Forecast: KPMG Peat Marwick, April 1989.

total enplaned passengers, including charters, increased 13% per year. In 1988, total enplaned passengers at the Airport decreased 0.4%. Traffic growth nationwide slowed during 1988 as average airline fares increased significantly. Enplaned passengers on the charter airlines have fluctuated annually, maintaining an average level of about 1,000 since 1984.

Table 3-4 also presents the enplaned passenger forecast at the Airport for 1993. The total number of passengers enplaned at the Airport is forecast to increase from 439,976 in 1988 to 560,000 in 1993 at an average annual rate of about 5.0%. This rate of increase is low relative to the growth since 1982, but is consistent with long-term trends in both airline traffic and regional economic activity.

Enplaned passengers on the scheduled domestic airlines are forecast to increase to 460,000 in 1993, representing 82% of the total enplanements in that year (similar to 1988). Enplaned passengers on the commuter airlines are forecast to increase from 77,865 in 1988 to 99,000 in 1993. Enplaned passengers on the charter airlines, which have shown no consistent trend since 1981, are forecast to maintain a level of about 1,000 through 1993.

The forecasts shown in Table 3-4 were based on analyses of historical and forecast population and economic indicators for the Airport service region, and historical airline traffic at the Airport. Also considered were (1) recent and potential developments in the national economy and the air transport industry as they have had, or may have, a significant effect on airline traffic demand at the Airport, and (2) recent FAA aviation activity forecasts for the nation as a whole.

In preparing the forecasts, it was assumed that future growth in airline traffic at the Airport will not be constrained by (1) the availability of aviation fuel, (2) limitations in airline service at the Airport, (3) limitations in the capacity of the air traffic control system or of the Airport, or (4) government policies or actions that restrict growth. Over the forecast period, it was also assumed that:

1. The national and local economies will experience moderate but sustained average annual growth.

2. Air fares for flights to and from Huntsville will change at rates that are generally consistent with the changes in prices of other goods and services.

Passenger Origin and Destination Patterns and Airline Service

Table 3-5 presents scheduled domestic airline passenger origin and destination patterns for the Airport for the 12 months ended September 30, 1988. Twenty-three cities each accounted for 1% or more of total passenger origins and destinations, representing approximately 70% of total passenger origins and destinations at the Airport.

Washington, D.C. accounted for 12.8% of the origins and destinations, followed by Los Angeles with 6.2%, New York with 5.7%, Orlando with 4.3%, and Atlanta with 4.2%. Together, the top five cities accounted for about 33% of total origin and destination passengers, and the top 10 cities accounted for roughly 50%.

As shown in Table 3-5, 22 daily nonstop departures were provided by the scheduled domestic airlines at the Airport in April 1989, using aircraft within the 100- to 150-seat range--B-727-100 and -200, DC-9-30 and -50, and B-737-200 and -300. These 22 daily nonstop departures represent service to 8 cities:

Cities with 1% or more of origin-destination traffic:

- Atlanta - 6 daily nonstop departures
- Dallas/Fort Worth - 2 daily nonstop departures
- Chicago - 2 daily nonstop departures
- Washington, D.C. - 1 daily nonstop departure

Other Cities:

- Memphis - 4 daily nonstop departures
- Birmingham - 4 daily nonstop departures
- Nashville - 3 daily nonstop departures
- Knoxville - 2 daily nonstop departures

Commuter airlines (not shown in Table 3-5) provide an additional 13 daily nonstop departures to three cities--11 to Atlanta, 1 to Chattanooga, and 1 to Muscle Shoals--with aircraft ranging from the 19-seat Embraer Bandeirante to the 50-seat Dash 8.

Historical and Forecast Air Cargo

Table 3-6 presents historical and forecast total pounds of air cargo (freight and mail) enplaned at the Airport from 1976 through 1993.

Table 3-5

DOMESTIC ORIGIN-DESTINATION PATTERNS
Scheduled Domestic Airlines
Huntsville International Airport
12 Months Ended September 30, 1988

City of origin or destination[a]	Air miles from Huntsville	Percent of scheduled airline passengers	Daily nonstop departures[b]
Washington, D.C.[c]	604	12.8%	1
Los Angeles[d]	1,804	6.2	0
New York[e]	819	5.7	0
Orlando	534	4.3	0
Atlanta	150	4.2	5
Boston	1,005	3.6	0
Dallas/Ft. Worth	605	3.5	2
San Francisco[f]	1,989	3.1	0
Chicago	502	3.0	2
Detroit	564	2.6	0
Philadelphia	738	2.4	0
Houston	609	2.3	0
Denver	1,057	2.2	0
Seattle/Tacoma	2,034	1.8	0
Minneapolis	784	1.7	0
El Paso	1,151	1.5	0
Miami	725	1.5	0
St. Louis	336	1.3	0
Salt Lake City	1,438	1.2	0
Tampa	528	1.2	0
Cleveland	544	1.1	0
San Diego	1,751	1.0	0
Raleigh/Durham	460	1.0	0
Cities listed		69.2%	10
Other cities		30.8	12
All cities		100.0%	22

a. Cities with 1% or more of total inbound and outbound passengers (on the scheduled airlines) at Huntsville International Airport in 10% sample for 12 months ended September 30, 1988.
b. Official Airline Guides, Inc., "Official Airline Guide," April 1989. Scheduled domestic airline flights (does not include commuter service) operating at least five days a week.
c. Washington Dulles International, Washington National, and Baltimore/ Washington International airports.
d. Los Angeles International, Burbank-Glendale-Pasadena, John Wayne (Orange County), and Ontario International airports.
e. John F. Kennedy International, LaGuardia, and Newark International airports.
f. San Francisco, Oakland, and San Jose international airports.

Source: U.S. Department of Transportation/Air Transport Association of America, "Origin-Destination Survey of Airline Passenger Traffic, Domestic," Third Quarter 1988, except as noted.

Table 3-6

HISTORICAL AND FORECAST AIR CARGO ACTIVITY
Huntsville International Airport
1976-1993

These forecasts have been prepared on the basis of the information and assumptions given in the text. The achievement of any forecast is dependent upon the occurrence of future events which cannot be assured. Therefore, the actual results may vary from the forecasts.

	Enplaned air cargo (pounds)		
	Passenger airlines[a]	All-cargo airlines	Total
Historical			
1976	2,791,400	521,245	3,312,645
1977	2,449,800	595,023	3,044,823
1978	2,895,800	862,531	3,758,331
1979	2,280,600	884,467	3,165,067
1980	1,539,600	683,086	2,222,686
1981	1,530,600	334,537	1,865,137
1982	1,488,600	622,378	2,110,978
1983	1,787,000	901,412	2,688,412
1984	2,316,800	916,273	2,233,073
1985	1,421,800	1,225,282	2,647,082
1986	983,883	1,725,244	2,709,127
1987	1,282,512	5,051,163	6,333,675
1988	1,853,974	7,472,658	9,326,632
Forecast			
1993	2,500,000	10,600,000	13,100,000

a. Data for cargo enplaned on passenger airlines from 1976-1985 are from Federal Aviation Administration, "Airport Activity Statistics of Certificated Route Air Carriers," 1976-1985 editions.

Sources: Historical: Huntsville-Madison County Airport Authority, Airport records, except as noted.
Forecast: KPMG Peat Marwick, April 1989.

Between 1976 and 1986, total pounds of air cargo enplaned at the Airport decreased from 3,312,645 to 2,709,127. During this same period, enplaned cargo on the all-cargo airlines increased from 521,245 pounds to 1,725,244 pounds, and enplaned cargo on the passenger airlines decreased from 2,791,400 pounds to 983,883 pounds.

The completion of the International Air Cargo Center at the Airport contributed to a 134% increase in air cargo enplaned in 1987. The all-cargo airlines accounted for 80% of the 6,333,675 pounds of cargo enplaned in 1987, up from 16% in 1976. In 1988, total cargo increased almost 50%, to 9,326,632 pounds.

CF AirFreight accounted for the largest share of enplaned cargo at the Airport in 1988, followed by Emery Worldwide, and Airborne Express. Consolidated Freightway, the parent company of CF Airfreight, acquired Emery Worldwide in April 1989. As a result, the cargo activity of CF Airfreight and Emery Worldwide has been combined and the merged company is operated as Emery Worldwide. Emery Worldwide currently operates two B-727 flights per day at the Airport, and Airborne Express operates two YS-11 flights each day.

Total pounds of air cargo enplaned at the Airport are forecast to increase at an average annual rate of about 7%, to 13,100,000 in 1993. The all-cargo airlines are forecast to account for about 81% of the total enplaned cargo in 1993.

AIRCRAFT OPERATIONS FORECASTS

Table 3-7 presents historical and forecast aircraft operations at the Airport. Total operations peaked in 1984 at 88,064, then decreased to 57,553 in 1986 because of sharp decreases in air carrier, general aviation, and military operations. Total aircraft operations increased to 66,781 in 1988.

Total aircraft operations are forecast to increase to 76,000 in 1993, at an average annual rate of 2.6% between 1988 and 1993.

Air Carrier

Air carrier operations include the operations of scheduled, charter, and nonscheduled airlines, but exclude those of commuter airlines and airline training operations. Increases in air carrier operations reflect trends in enplaned passenger and air cargo growth.

Table 3-7

HISTORICAL AND FORECAST AIRCRAFT OPERATIONS
Huntsville International Airport
1980-1993

These forecasts have been prepared on the basis of the information and assumptions given in the text. The achievement of any forecast is dependent upon the occurrence of future events which cannot be assured. Therefore, the actual results may vary from the forecasts.

	Air carrier	Air taxi and commuter	General aviation[a]	Military	Total operations
Historical					
1980	16,015	1,969	58,396	2,773	79,153
1981	13,970	1,054	57,163	3,327	75,514
1982	18,895	1,713	56,181	4,258	81,047
1983	19,677	3,133	56,190	5,383	84,383
1984	17,645	5,248	54,122	11,049	88,064
1985	12,329	10,034	32,524	3,899	58,786
1986	12,588	11,078	30,665	3,222	57,553
1987	13,619	14,229	32,113	3,628	63,589
1988	16,655	11,181	35,007	3,938	66,781
Forecast					
1993	19,600	12,800	39,600	4,000	76,000

a. Includes airline training operations.

Sources: Historical: Huntsville-Madison County Airport Authority, Airport records.
Forecast: KPMG Peat Marwick, April 1989.

Air carrier aircraft operations peaked at 19,677 in 1983, and then decreased to a low of 12,329 in 1985. Since 1985, air carrier operations have increased, reaching 16,655 in 1988.

Air carrier operations at the Airport are forecast to increase to 19,600 in 1993, as presented in Table 3-7. The forecast average annual rate of increase between 1988 and 1993 is about 3%.

Air Taxi and Commuter

Air taxi and commuter operations include those of scheduled commuter airlines and nonscheduled air taxis. Air taxi and commuter operations increased from 1,969 in 1980 to 14,229 in 1987--mostly because of the rapid increase in commuter airline traffic at the Airport since 1982--and then decreased to 11,181 in 1988. The decrease in 1988 is the result of a decrease in average daily commuter airline departures and the increasing use of larger air carrier aircraft by the all-cargo airlines.

Air taxi and commuter operations are forecast to increase to 12,800 in 1993--at an average annual rate of about 3% between 1988 and 1993.

General Aviation

General aviation operations include all civil operations other than revenue air carrier and air taxi/commuter flights. At the Airport, general aviation operations consist primarily of private business flights and airline training flights.

General aviation operations decreased from 58,396 in 1980 to 54,122 in 1984, at an average annual rate of about 2%, compared with an average annual 7% decrease nationwide. In 1985, general aviation operations at the Airport decreased to 32,524--about 40% below the 1984 level--as the Airport's fixed base operator, Huntsville Aviation, closed its flight school.

General aviation operations at the Airport decreased to 30,665 in 1986 then increased to 35,007 in 1988.

General aviation operations at the Airport are forecast to increase to 39,600 in 1993, as presented in Table 3-7. The forecast average annual rate of increase between 1988 and 1993 is about 2.5%. According to Huntsville Aviation, corporate aircraft--turboprop and business jets--have significantly

increased their share of total general aviation operations at the Airport because the rising costs of owning and operating an aircraft have discouraged personal flying. Corporate aircraft are expected to continue to account for an increasing share of general aviation operations at the Airport as the economy of the Airport service region expands and diversifies.

Based aircraft at the Airport are forecast to increase from 70 in 1988 to 77 in 1993. The forecast average annual rate of increase, 2%, is the low growth rate from the Airport Master Plan Update, and was used because of the recent trends in based aircraft at the Airport and the FAA forecasts of active general aviation aircraft nationwide.

Military

Military aircraft operations increased from 2,773 in 1980 to a peak of 11,049 in 1984. Military operations decreased sharply to 3,899 in 1985, but have remained fairly constant since then.

Military operations are forecast to remain constant at about 4,000 throughout the planning period.

PASSENGER AND ALL-CARGO AIRLINE HUBBING

For the purposes of this FAR Part 150 noise compatibility program update for Huntsville International Airport, passenger and all-cargo airline hubbing operations were assumed. Several airlines are considering the establishment of a hub in the southeastern United States, and the hubbing operations described below are based on discussions between HMCAA and those airlines.

It was assumed that airline hubbing would involve 100 average daily operations in 1993. Almost all (97.5%) of the operations were assumed to occur during the daytime, which encompasses the peak periods for typical passenger airline hubbing.

All-cargo airline hubbing would involve 35 average daily operations in 1993. It was assumed that half of the all-cargo operations would occur during the day and half would occur at night. These operations assumptions are similar to the all-cargo hubbing operations currently proposed at other airports.

The additional 135 daily passenger and all-cargo airline hubbing operations would increase the number of air carrier operations in 1993 from the 19,600 shown in Table 3-7 to 68,900. Total operations at the Airport in 1993 would increase from 76,000 to 128,975.

Aircraft Noise Exposure

Chapter 4

AIRCRAFT NOISE EXPOSURE ANALYSIS

GENERAL CHARACTERISTICS OF AIRCRAFT NOISE

Aircraft noise originates from both the engines and the airframe of an aircraft, but the engines are by far the more significant source of noise. Although noise from propeller-driven aircraft (mostly commuter and general aviation) can be annoying, jet aircraft are the primary source of disturbing noise from Huntsville International Airport.

Loudness, measured in decibels (dB), is the most commonly used characteristic to describe noise. The A-weighted decibel (dBA) is used in aircraft noise studies because it is a rating scale that more closely associates sound frequencies with the sensitivity of the human ear.

Some common sounds on the dBA scale are listed in Table 4-1. On the dBA scale, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10-dBA change corresponds to a factor of 10 in relative sound energy (Table 4-1). Generally, sounds that differ about 2 dBA or less are not perceived to be noticeably different by most listeners.

Two basic types of jet aircraft engines are used at the Airport. Air carrier aircraft and military aircraft are usually equipped with turbofan jet engines, and corporate jet aircraft are equipped with turbojet engines. Turbofan engines produce thrust as a result of the rate at which high-velocity gas is discharged from nozzles. The turbofan is composed of a core engine--consisting of a compressor, combustor, and turbine--and a front fan. The major noise sources are (1) the core engine and fan exhaust streams; (2) the compressor and fan blades (noise radiating from the inlet) and fan exhaust nozzles; and (3) turbine blades, combustor, and miscellaneous sources whose noise radiates from the core engine exhaust nozzle.*

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*Lipscomb, David M., and Taylor, Arthur C., Jr., Editors, "Noise Control Handbook and Principles and Practices," taken from Chapter 9, Aircraft and Airport Noise, by William C. Sperry, Van Nostrand Reinhold Company, New York, 1978.

Table 4-1

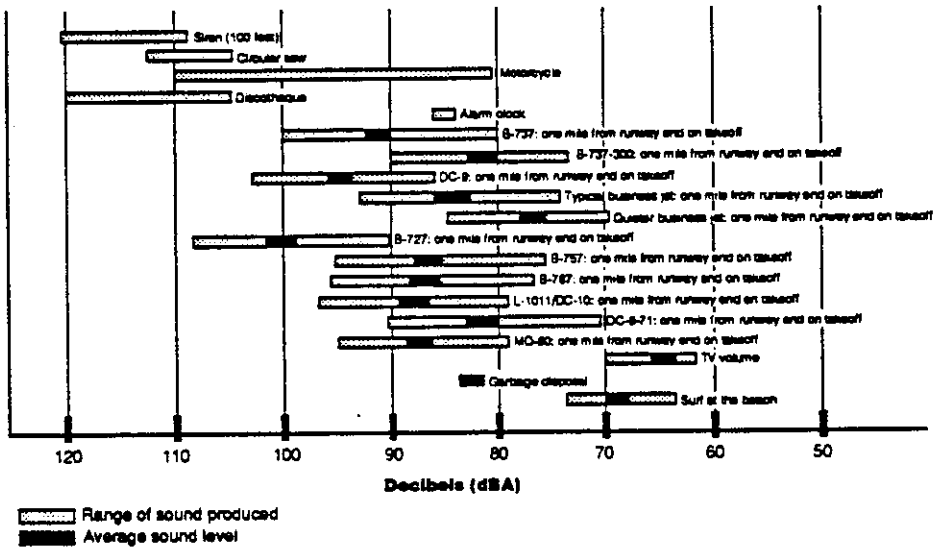
COMMON SOUNDS ON THE dBA SCALE

Sound	Sound level (dBA)	Relative loudness (approximate)	Relative sound energy
Jet aircraft, 100 feet	130	128	10,000,000
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobile at low speed	50	1/2	.1
Average office	40	1/4	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

Source: U.S. Department of Housing and Urban Development, "Aircraft Noise Impact--Planning Guidelines for Local Agencies," 1972.

In contrast to turbofan engines, turbojet engines have only the core engine component. In most cases, the sound energy produced by a turbojet engine will be greater than that of a turbofan engine of an equivalent thrust rating.

The noise events produced by jet aircraft flyovers are usually characterized by the building up of a peak noise as the aircraft approaches, which lessens as the aircraft passes overhead, and then decreases in a series of lesser peaks or pulses as the aircraft departs and the noise recedes. The chart below illustrates the range of sound produced and the average sound level of many aircraft currently serving Huntsville International Airport, compared with other sounds such as sirens, motorcycles, and garbage disposals.



In nonjet aircraft (propeller-driven and helicopters), the noise generated by propellers, rotors, and fans can be separated into vortex and rotational components. Vortex noise, the major source of broadband noise, is generated by the formation and shedding of vortexes (whirlpools of air) in the flow past the blade. Rotational or periodic noise is produced by the oscillating pressure field on the air resulting from the passage of the blade. For helicopters, an additional type of rotational noise is blade slap, which is high-amplitude periodic noise plus highly modulated vortex noise, caused by

fluctuating forces on the blades when one blade cuts the tip vortexes of another blade.*

NOISE ANALYSIS METHODOLOGY

The methodology used for this noise analysis involved the application of a computer model that provides estimates of aircraft noise exposure.

Noise Descriptors

The computer model is used to determine the sound levels created in an airport environs as a result of individual overflights and to report these levels by using the following noise descriptors:

- A-Weighted Sound Pressure Level, dBA: dBA is a frequency-weighted sound level that approximately correlates with the way sound is heard by the human ear. The measurement is in decibels.
- (Energy) Average Sound Level, Leq: Leq is the level of a steady sound that, in a given time period, would contain the same sound energy as the actual time-varying sound level that occurs during the same period.
- Sound Exposure Level, SEL: SEL is a time-integrated measure, expressed in decibels, of the sound energy of a single event. The sound level is integrated over the time period when the level exceeds a threshold (normally 65 dBA). The SEL concept is depicted in the drawing on the following page.

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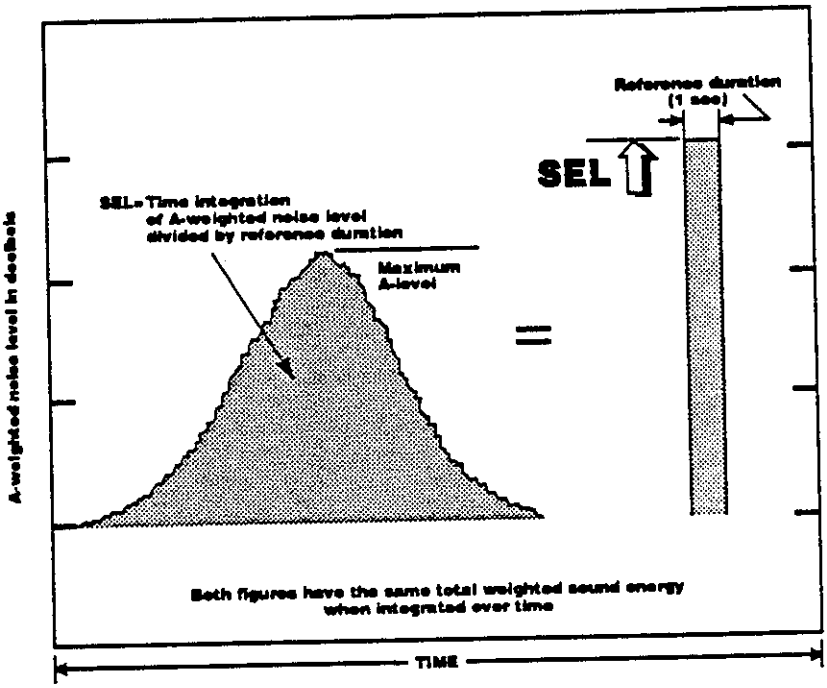
*U.S. Department of Housing and Urban Development, "Aircraft Noise Impact--Planning Guidelines for Local Agencies," 1972.



- Day-Night Sound Level, Ldn: Ldn is a method used to describe the existing and predicted cumulative noise exposure that affects communities in airport environs. Ldn values are expressed in dBA and represent the noise level over a 24-hour period. The Ldn values are then used to estimate the effects of specific noise levels on land use.

  With Ldn, for each hour during the nighttime period (10 p.m. to 7 a.m.), the average sound levels are increased by a 10-decibel weighting penalty before the 24-hour average is computed. The weighting penalty accounts for the more intrusive nature of noise at night.

  Ldn has been widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required in FAR Part 150 for use in aircraft noise exposure analyses and noise compatibility planning.

  Ldn, as used in the FAR Part 150 process, is expressed as an average noise level on the basis of annual aircraft operations. To calculate the Ldn value at a specific location, SEL values for that location are

determined for each aircraft noise event (landing or takeoff). The SEL value for each noise event is then adjusted to (1) reflect the duration of the noise event and (2) arrive at a "partial" Ldn value for the noise event. The partial Ldn values are then added logarithmically to determine the total Ldn.

The logarithmic addition process, whereby the partial Ldn values are combined, can be approximated by the following guidelines:

When two Ldn values differ by:	Add the following amount to the higher value
0 or 1 dBA	3 dBA
2 or 3 dBA	2 dBA
4 to 9 dBA	1 dBA
10 dBA or more	0 dBA

For example:

70 dBA + 70 dBA (difference: 0 dBA) = 73 dBA
60 dBA + 70 dBA (difference: 10 dBA) = 70 dBA

Adding the noise from a relatively quiet event (60 dBA) to a relatively noisy event (70 dBA) results in a value of 70 dBA because the quieter event has only one-tenth the sound energy of the noisier event. As a result, the quieter noise event is "drowned out" by the noisier one and the overall noise level as perceived by the human ear does not increase.

- Levels Exceeded a Certain Proportion of the Time, Lx: Lx values are used to assess sounds that vary with time and to describe the sound level exceeded a certain proportion of the time. Thus, the sound level expressed in dBA, which is exceeded for a given percentage of the time, can be described by:

  - L90 - The level exceeded 90% of the time. L90 approximately corresponds with what we normally think of as the residual or ambient background noise level generated by unidentifiable sources both nearby and far away.

  - L50 - The median level, or the level exceeded 50% of the time.

- L10 - The level exceeded 10% of the time. L10 identifies the noise level of events that intrude on a background noise environment defined by Leq or L90 (ambient). These sources generally include automobiles and aircraft.

Integrated Noise Model

The Integrated Noise Model (INM) is a computer model required by the FAA to be used in developing noise exposure maps in all FAR Part 150 studies. The INM data base reflects *average* aircraft operating conditions at an *average* airport.

Version 3 of the INM was used for the Huntsville noise analysis. Version 3 was published by the FAA in October 1982 and is a state-of-the-art tool for determining the total effect of aircraft noise at and around airports.

Data Base No. 9, a standard data base of individual aircraft noise and performance characteristics, was used with Version 3 of the INM (called INM Version 3.9). The data base contains a representation of commercial, general aviation, and military aircraft powered by turbojet, turbofan, or propeller-driven engines.

In the data base, each aircraft is associated with an aircraft category. For each category, the following are provided: (1) a set of departure profiles for each applicable trip length; (2) a set of approach parameters; (3) SEL versus distance curves at several thrust settings; and (4) Effective Perceived Noise Level (EPNL) versus distance curves at several thrust settings. As described earlier, SEL is essentially an A-weighted sound level corrected for time-duration effects. The EPNL measure is essentially a perceived noise level corrected for time-duration and pure tone effects.

The noise exposure maps derived from the INM use the Ldn noise descriptor.

Ldn and Noise Exposure Ranges. Noise exposure values of Ldn 75, 70, and 65 were selected as the criterion levels for the noise analysis. Three specific ranges of noise exposure were used: (1) Ldn 75 or higher, (2) Ldn 70 to 75, and (3) Ldn 65 to 70. These ranges are specified in FAR Part 150.

The cutoff point of Ldn 75 or higher is a federal guideline first discussed by the FAA in the Aviation Noise Abatement Policy* and in FAA Order 5100.33.** Ldn 75 exposure is considered to be unsuitable for most types of urban development. Likewise, the Ldn 65 cutoff point is based on FAA Order 5100.33, which specifically refers to Ldn 65 as a noise exposure level that must be considered in land use compatibility studies.

Limitations of the Ldn Descriptor. The validity and accuracy of Ldn calculations depend on the basic information used in the calculations. For future airport activities, the reliability of Ldn calculations is affected by a number of uncertainties:

- Aviation activity levels--the forecast number of aircraft operations, the types of aircraft serving the airport, the times of operation (daytime versus nighttime), and flight tracks--are estimates. The achievement of the estimated levels of activity cannot be assured.
- Aircraft acoustical and performance characteristics are also estimates. When new aircraft designs are involved, aircraft noise data and flight characteristics must be estimated.
- The noise descriptions used in the Ldn procedure represent typical human response (and reaction) to aircraft noise. Because people vary in their response to noise and because the physical measure of noise accounts for only a portion of an individual's reaction to that noise, the Ldn scale can show only an average response to aircraft noise that might be expected from a community.
- Single flight tracks used in computer modeling represent a wider band of actual flight tracks.

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*U.S. Department of Transportation, Office of the Secretary, Federal Aviation Administration, "Aviation Noise Abatement Policy," November 18, 1976.

**U.S. Department of Transportation, Federal Aviation Administration, "Interim Instructions for Processing ADAP Requests for Land Use Purchases for Noise Compatibility Purposes," Order 5100.33, May 26, 1977.

Notwithstanding these uncertainties, Ldn mapping was developed as a tool to assist in land use planning around airports. The mapping is best used for comparative purposes, rather than for providing absolute values. That is, Ldn calculations provide valid comparisons between different projected conditions, so long as consistent assumptions and basic data are used for all calculations.

Thus, sets of Ldn calculations can show which of the simulated situations is better, and generally how much better, from the standpoint of noise effects. However, a line drawn on a map does not imply that a particular noise condition exists on one side of that line and not on the other. Ldn calculations are merely a means for comparing noise effects, not for precisely defining them relative to specific parcels of land.

Nevertheless, Ldn contours can be used to (1) highlight an existing or potential aircraft noise problem that requires attention; (2) assist in the preparation of noise compatibility programs; and (3) provide guidance in the development of land use controls, such as zoning ordinances, subdivision regulations, and building codes. Ldn is the accepted method used for measuring noise in the United States, and it is considered to be the best methodology available for depicting noise exposure.

Graphic Representation. Contours are lines drawn on a map that connect points of equal Ldn values. For example, a contour may be drawn to connect all points with an Ldn value of 70; another may be drawn to connect all points with an Ldn value of 65; and so forth. Generally, contours are plotted at 5-Ldn intervals. Noise contours were developed for Huntsville International Airport in conformance with FAR Part 150.

Basic Data and Assumptions

The most important data required to develop noise exposure maps are:

- The existing and forecast number of aircraft operations by aircraft type, time of day, and stage length.
- Operational information, including the use of the runways, the location of flight tracks (the paths that pilots fly to arrive at and depart from the airport), departure profiles, and existing noise abatement procedures.

Aircraft Operations (Time of Day, Mix of Aircraft Types, and Stage Length). To determine existing and future noise exposure, aircraft traffic levels associated with the average day of the year are used in the INM. The existing and projected types of aircraft (mix) and the number of aircraft operations by time of day and departures by stage length for Huntsville International Airport for an average day in 1988 and 1993 are listed in Tables 4-2 and 4-3, respectively. Calendar year data are used in the INM as required by the FAA for developing noise exposure maps.

The aircraft types listed in Tables 4-2 and 4-3 are representative of the types using the Airport; they are not meant to constitute the full range of aircraft that *will* use the Airport.

As shown in Table 4-3, specific levels of air carrier operations are projected for 27 different types of aircraft. The proportion of quieter Stage 3 aircraft (L-1011, A-300, B-737-300, MD-80, B-757, and B-767) in the mix is projected to increase gradually. For example, in 1988, approximately 29% of the total air carrier aircraft operations (arrivals and departures) at the Airport were by quieter Stage 3 aircraft. In 1993, this percentage is projected to increase to 41%.

Data for 1988 are based on records of the Huntsville Airport Traffic Control Tower and schedules in the Official Airline Guide.* The nighttime (10 p.m. to 7 a.m.) share of operations is projected to increase from 17.9 operations in 1988 to 42.3 operations in 1993. In the INM, the noise created by each nighttime operation is increased by 10 decibels, a ten-fold increase in relative sound energy. Thus, each nighttime operation is equivalent to 10 daytime operations.

Stage length refers to the average distance an aircraft travels nonstop from Huntsville. This information is needed to determine the average gross takeoff weight of each aircraft type. Aircraft noise characteristics can vary depending on the takeoff weight of aircraft and on the weather.

For example, a fully loaded aircraft departing on a long flight will probably weigh more than the same aircraft departing on a shorter flight because the longer flight requires more fuel on board. It usually takes heavier aircraft longer than lighter aircraft to gain altitude, particularly on hot, humid days.

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*Official Airline Guide is a registered trademark of Official Airline Guides, Inc.

Table 4-2

AVERAGE DAILY AIRCRAFT OPERATIONS BY STAGE LENGTH AND AIRCRAFT TYPE
Huntsville International Airport
1988

Aircraft type	Time of day	Arrivals	Departures by stage length: 0-500 miles	500-1,000 miles	1,000-1,500 miles	Total
Air carrier						
B-747	Day	0.0	0.0	0.0	0.0	0.0
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0
DC-8-62	Day	0.1	0.1	0.0	0.0	0.2
	Night	0.6	0.3	0.3	0.0	1.2
	Total	0.7	0.4	0.3	0.0	1.4
DC-8-70	Day	0.0	0.0	0.0	0.0	0.0
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0
DC-10/ L-1011	Day	0.1	0.1	0.0	0.0	0.2
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.1	0.1	0.0	0.0	0.2
A-320	Day	0.0	0.0	0.0	0.0	0.0
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0
B-767	Day	0.0	0.0	0.0	0.0	0.0
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0
B-757	Day	0.0	0.0	0.0	0.0	0.0
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0
B-727-100 & -200	Day	3.9	2.9	1.0	0.0	7.8
	Night	0.2	0.2	0.0	0.0	0.4
	Total	4.1	3.1	1.0	0.0	8.2
MD-80	Day	1.6	1.1	0.5	0.0	3.2
	Night	0.0	0.0	0.0	0.0	0.0
	Total	1.6	1.1	0.5	0.0	3.2
B-737-300	Day	0.0	0.0	0.0	0.0	0.0
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0
B-737-100 & -200/DC-9	Day	12.2	10.5	1.8	0.0	24.5
	Night	0.7	0.6	0.0	0.0	1.3
	Total	12.9	11.1	1.8	0.0	25.8
BAe 146	Day	2.1	1.6	0.5	0.0	4.2
	Night	0.5	0.5	0.0	0.0	1.0
	Total	2.6	2.1	0.5	0.0	5.2
YS-11/ CV-440	Day	0.3	0.2	0.0	0.0	0.5
	Night	0.5	0.6	0.0	0.0	1.1
	Total	0.8	0.8	0.0	0.0	1.6
Subtotal	Day	20.3	16.5	3.8	0.0	40.6
	Night	2.5	2.2	0.3	0.0	5.0
	Total	22.8	18.7	4.1	0.0	45.6
Air taxi and commuter						
DC-3	Day	0.1	0.1	0.0	0.0	0.2
	Night	0.2	0.2	0.0	0.0	0.4
	Total	0.3	0.3	0.0	0.0	0.6
F-27/DHC-7	Day	6.3	6.1	0.0	0.0	12.6
	Night	0.5	0.5	0.0	0.0	1.0
	Total	6.8	6.6	0.0	0.0	13.6
SH3-36	Day	3.9	2.9	0.0	0.0	6.8
	Night	0.0	1.0	0.0	0.0	1.0
	Total	3.9	3.9	0.0	0.0	7.8
BE-18	Day	0.3	0.3	0.0	0.0	0.6
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.4	0.4	0.0	0.0	0.8
Lear 20s	Day	0.3	0.3	0.0	0.0	0.6
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.4	0.4	0.0	0.0	0.8

Table 4-2 (page 2 of 2)
AVERAGE DAILY AIRCRAFT OPERATIONS BY STAGE LENGTH AND AIRCRAFT TYPE
Huntsville International Airport
1988

Aircraft type	Time of day	Arrivals	Departures by stage length: 0-500 miles	500-1,000 miles	1,000-1,500 miles	Total
Air taxi and commuter (continued)						
Lear 35	Day	0.0	0.0	0.0	0.0	0.0
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0
Fairchild/ Metro/ Embraer 110	Day	0.8	0.8	0.0	0.0	1.6
	Night	0.2	0.2	0.0	0.0	0.4
	Total	1.0	1.0	0.0	0.0	2.0
Cessna 402	Day	0.8	0.8	0.0	0.0	1.6
	Night	0.2	0.2	0.0	0.0	0.4
	Total	1.0	1.0	0.0	0.0	2.0
Single-engine small	Day	1.2	1.2	0.0	0.0	2.4
	Night	0.3	0.3	0.0	0.0	0.6
	Total	1.5	1.5	0.0	0.0	3.0
Subtotal	Day	13.7	12.7	0.0	0.0	26.4
	Night	1.6	2.6	0.0	0.0	4.2
	Total	15.3	15.3	0.0	0.0	30.6
General aviation						
L-1011	Day	1.0	1.0	0.0	0.0	2.0
	Night	0.2	0.2	0.0	0.0	0.4
	Total	1.2	1.2	0.0	0.0	2.4
B-757	Day	1.0	1.0	0.0	0.0	2.0
	Night	0.2	0.2	0.0	0.0	0.4
	Total	1.2	1.2	0.0	0.0	2.4
MD-88	Day	0.5	0.5	0.0	0.0	1.0
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.6	0.6	0.0	0.0	1.2
B-727	Day	0.5	0.5	0.0	0.0	1.0
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.6	0.6	0.0	0.0	1.2
Lear 35	Day	9.5	9.5	0.0	0.0	19.0
	Night	1.0	1.0	0.0	0.0	2.0
	Total	10.5	10.5	0.0	0.0	21.0
Lear 20s	Day	12.2	12.1	0.0	0.0	24.3
	Night	1.1	1.2	0.0	0.0	2.3
	Total	13.3	13.3	0.0	0.0	26.6
Twin-engine small	Day	10.5	10.5	0.0	0.0	21.0
	Night	0.8	0.8	0.0	0.0	1.6
	Total	11.3	11.3	0.0	0.0	22.6
Single-engine small	Day	8.6	8.6	0.0	0.0	17.2
	Night	0.7	0.7	0.0	0.0	1.4
	Total	9.3	9.3	0.0	0.0	18.6
Subtotal	Day	43.8	43.7	0.0	0.0	87.5
	Night	4.2	4.3	0.0	0.0	8.5
	Total	48.0	48.0	0.0	0.0	96.0
Military						
C-5	Day	0.1	0.1	0.0	0.0	0.2
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.1	0.1	0.0	0.0	0.2
C-130	Day	4.4	4.4	0.0	0.0	8.8
	Night	0.1	0.1	0.0	0.0	0.2
	Total	4.5	4.5	0.0	0.0	9.0
T-38	Day	0.8	0.8	0.0	0.0	1.6
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.8	0.8	0.0	0.0	1.6
Subtotal	Day	5.3	5.3	0.0	0.0	10.6
	Night	0.1	0.1	0.0	0.0	0.2
	Total	5.4	5.4	0.0	0.0	10.8
Total	Day	83.1	78.2	3.8	0.0	165.1
	Night	8.4	9.2	0.3	0.0	17.9
	Total	91.5	87.4	4.1	0.0	183.0

Source: Huntsville Airport Traffic Control Tower records.

Table 4-3

PROJECTED AVERAGE DAILY AIRCRAFT OPERATIONS BY STAGE LENGTH
AND AIRCRAFT TYPE WITH PASSENNGER AND ALL-CARGO AIRLINE HUBBING
Huntsville International Airport
1993

These forecasts have been prepared on the basis of the information and assumptions given in the text. The achievement of any forecast is dependent upon the occurrence of future events which cannot be assured. Therefore the actual results may vary from the forecasts.

Aircraft type	Time of day	Arrivals	Departures by stage length 0-500 miles	500-1,000 miles	1,000-1,500 miles	Total
Air carrier						
B-747	Day	1.0	0.0	0.0	1.0	2.0
	Night	0.6	0.0	0.0	0.6	1.2
	Total	1.6	0.0	0.0	1.6	3.2
DC-8-62	Day	2.6	1.1	1.0	0.0	4.7
	Night	3.1	1.8	1.8	0.0	6.7
	Total	5.7	2.9	2.8	0.0	11.4
DC-8-70	Day	0.0	0.0	0.0	0.0	0.0
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0
DC-10/L-1011	Day	0.2	0.1	0.1	0.0	0.4
	Night	0.1	0.0	0.1	0.0	0.2
	Total	0.3	0.1	0.2	0.0	0.6
A-320	Day	0.2	0.1	0.2	0.0	0.5
	Night	0.1	0.0	0.0	0.0	0.1
	Total	0.3	0.1	0.2	0.0	0.6
B-767	Day	4.3	0.0	3.2	1.1	8.6
	Night	0.0	0.0	0.0	0.0	0.0
	Total	4.3	0.0	3.2	1.1	8.6
B-757	Day	5.1	3.4	1.7	0.0	10.2
	Night	0.2	0.1	0.1	0.0	0.4
	Total	5.3	3.5	1.8	0.0	10.6
B-727-100 & -200	Day	20.6	17.5	3.1	0.0	41.2
	Night	5.9	4.9	1.0	0.0	11.8
	Total	26.5	22.4	4.1	0.0	53.0
MD-80	Day	3.0	2.7	0.3	0.0	6.0
	Night	0.4	0.3	0.1	0.0	0.8
	Total	3.4	3.0	0.4	0.0	6.8
B-737-300	Day	18.8	17.2	1.6	0.0	37.6
	Night	1.0	0.0	1.0	0.0	2.0
	Total	19.8	17.2	2.6	0.0	39.6
B-737-100 & -200/DC-9	Day	22.3	20.5	2.3	0.0	45.1
	Night	1.2	0.7	0.0	0.0	1.9
	Total	23.5	21.2	2.3	0.0	47.0
BAe 146	Day	2.7	2.2	0.5	0.0	5.4
	Night	0.3	0.3	0.0	0.0	0.6
	Total	3.0	2.5	0.5	0.0	6.0
YS-11/CV-440	Day	0.3	0.3	0.0	0.0	0.6
	Night	0.4	0.4	0.0	0.0	0.8
	Total	0.7	0.7	0.0	0.0	1.4
Subtotal	Day	81.1	65.1	14.0	2.1	162.3
	Night	13.3	8.5	4.1	0.6	26.5
	Total	94.4	73.6	18.1	2.7	188.8
Air taxi and commuter						
DC-3	Day	0.1	0.1	0.0	0.0	0.2
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.2	0.2	0.0	0.0	0.4
F-27/DHC-7	Day	5.6	5.6	0.0	0.0	11.2
	Night	0.5	0.5	0.0	0.0	1.0
	Total	6.1	6.1	0.0	0.0	12.2
SH3-36	Day	5.2	5.2	0.0	0.0	10.4
	Night	1.5	1.5	0.0	0.0	3.0
	Total	6.7	6.7	0.0	0.0	13.4
BE-18	Day	0.1	0.1	0.0	0.0	0.2
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.2	0.2	0.0	0.0	0.4

Table 4-3 (page 2 of 2)
PROJECTED AVERAGE DAILY AIRCRAFT OPERATIONS BY STAGE LENGTH
AND AIRCRAFT TYPE WITH PASSENGER AND ALL-CARGO AIRLINE HUBBING
Huntsville International Airport
1993

Aircraft type	Time of day	Arrivals	Departures by stage length 0-500 miles	500-1,000 miles	1,000-1,500 miles	Total
Air taxi and commuter (continued)						
Lear 20s	Day	0.2	0.2	0.0	0.0	0.4
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.3	0.3	0.0	0.0	0.6
Lear 35	Day	0.1	0.1	0.0	0.0	0.2
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.2	0.2	0.0	0.0	0.4
Fairchild/ Metro/ Embraer 110	Day	1.2	1.2	0.0	0.0	2.4
	Night	0.3	0.3	0.0	0.0	0.6
	Total	1.5	1.5	0.0	0.0	3.0
Cessna 402	Day	0.4	0.4	0.0	0.0	0.8
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.5	0.5	0.0	0.0	1.0
Single-engine small	Day	1.7	1.7	0.0	0.0	3.4
	Night	0.4	0.4	0.0	0.0	0.8
	Total	2.1	2.1	0.0	0.0	4.2
Subtotal	Day	14.6	14.6	0.0	0.0	29.2
	Night	3.2	3.2	0.0	0.0	6.4
	Total	17.8	17.8	0.0	0.0	35.6
General aviation						
L-1011	Day	1.0	1.0	0.0	0.0	2.0
	Night	0.2	0.2	0.0	0.0	0.4
	Total	1.2	1.2	0.0	0.0	2.4
B-757	Day	1.1	1.1	0.0	0.0	2.2
	Night	0.2	0.2	0.0	0.0	0.4
	Total	1.3	1.3	0.0	0.0	2.6
MD-88	Day	0.7	0.7	0.0	0.0	1.4
	Night	0.2	0.2	0.0	0.0	0.4
	Total	0.9	0.9	0.0	0.0	1.8
B-727	Day	0.5	0.5	0.0	0.0	1.0
	Night	0.1	0.1	0.0	0.0	0.2
	Total	0.6	0.6	0.0	0.0	1.2
Lear 35	Day	15.2	15.2	0.0	0.0	30.4
	Night	1.6	1.6	0.0	0.0	3.2
	Total	16.8	16.8	0.0	0.0	33.6
Lear 20s	Day	9.4	9.4	0.9	0.0	18.8
	Night	0.7	0.7	0.0	0.0	1.4
	Total	10.1	10.1	0.0	0.0	20.2
Twin-engine small	Day	11.8	11.8	0.0	0.0	23.6
	Night	0.9	0.9	0.0	0.0	1.8
	Total	12.7	12.7	0.0	0.0	25.4
Single-engine small	Day	9.9	9.9	0.0	0.0	19.8
	Night	0.7	0.7	0.0	0.0	1.4
	Total	10.6	10.6	0.0	0.0	21.2
Subtotal	Day	49.6	49.6	0.0	0.0	99.2
	Night	4.6	4.6	0.0	0.0	9.2
	Total	54.2	54.2	0.0	0.0	108.4
Military						
C-5	Day	0.1	0.1	0.0	0.0	0.2
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.1	0.1	0.0	0.0	0.2
C-130	Day	4.5	4.5	0.0	0.0	9.0
	Night	0.1	0.1	0.0	0.0	0.2
	Total	4.6	4.6	0.0	0.0	9.2
T-38	Day	0.8	0.8	0.0	0.0	1.6
	Night	0.0	0.0	0.0	0.0	0.0
	Total	0.8	0.8	0.0	0.0	1.6
Subtotal	Day	5.4	5.4	0.0	0.0	10.8
	Night	0.1	0.1	0.0	0.0	0.2
	Total	5.5	5.5	0.0	0.0	11.0
Total	Day	150.7	134.7	14.0	2.1	301.5
	Night	21.2	16.4	4.1	0.6	42.3
	Total	171.9	151.1	18.1	2.7	343.8

Source: KPMG Peat Marwick, April 1989.

Therefore, more land will be exposed to higher levels of aircraft noise from those aircraft that take longer to gain altitude.

Operational Information

The existing and assumed future uses of the runways are important in determining where aircraft are flying and to what extent pilots are following specific flight tracks. The existing 1988 and assumed 1993 annual runway uses are provided in Table 4-4. The 1988 annual runway use reflects a 60% south flow (arrivals and departures on Runways 18R and 18L); the 1993 annual runway use also reflects a 60% south flow.

The generalized flight tracks used as input to the INM for 1988 and 1993 are shown on Exhibit 4-1. The generalized flight tracks were provided by supervisory staff of the Huntsville Airport Traffic Control Tower and were verified by radar data and visual observations. The tracks indicate the generalized flight path within specific corridors, but deviation from these tracks does occur because of weather, pilot technique, air traffic control, and aircraft weight.

A review of aeronautical and obstruction charts and conversations with FAA personnel at the Airport Traffic Control Tower indicated were no topographic or airspace limitations to aircraft operations exist at Huntsville from a noise exposure standpoint. Airspace interactions occur between Huntsville and the Redstone Arsenal east of the Airport. Restricted areas and aircraft activities at the Redstone Arsenal affect close-in segments of the arrival and departure tracks.

The flight tracks assumed for 1993 are the same as those in use in 1988. These flight tracks were used to develop the preliminary noise exposure map for 1993 shown on Exhibit 4-3 (presented later).

In addition to the runway use, the actual and assumed uses of each flight track shown on Exhibit 4-1 are important inputs to the INM. The percent use of each track for arrivals and departures in 1988 and 1993 are shown in Tables 4-5 and 4-6, respectively.

Table 4-4

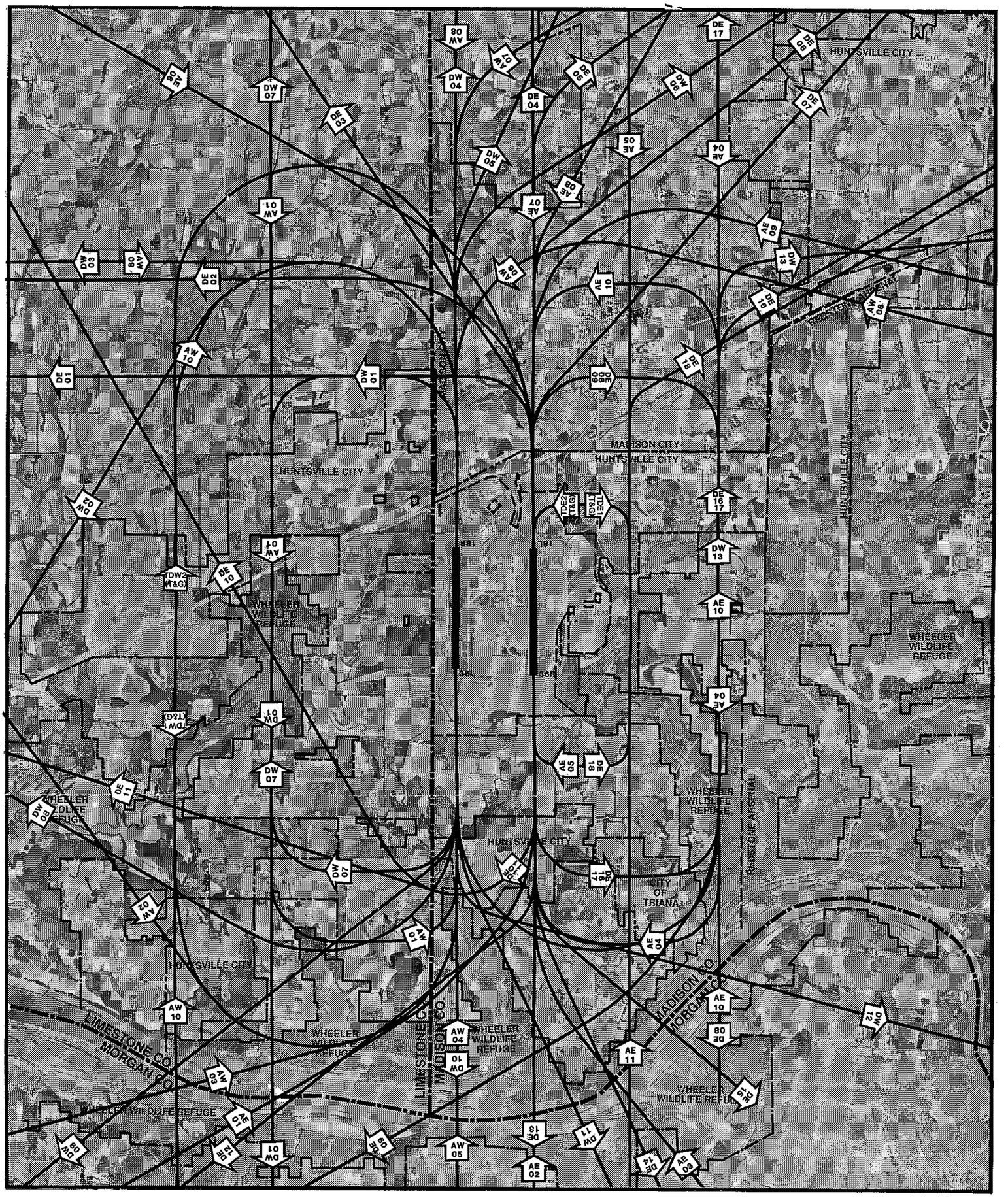
EXISTING AND ASSUMED ANNUAL RUNWAY USES
WITH PASSENGER AND ALL-CARGO AIRLINE HUBBING
Huntsville International Airport
1988 and 1993

	Existing 1988		Assumed 1993	
Runway	Percent arrivals	Percent departures	Percent arrivals	Percent departures
18R	21.1%	21.1%	17.0%	17.0%
18L	39.0	39.0	42.8	42.8
36R	25.9	25.9	28.7	28.7
36L	14.0	14.0	11.5	11.5
	100.0%	100.0%	100.0%	100.0%

	Existing 1988		Assumed 1993[a]	
Touch-and-go training	Military/ Air carrier	General aviation	Military/ Air carrier	General aviation
18R	60.0%	--%	60.0%	--%
18L	--	60.0	--	60.0
36R	--	40.0	--	40.0
36L	40.0	--	40.0	--
	100.0%	100.0%	100.0%	100.0%

a. Military, air carrier, and general aviation training operations are assumed to constitute 5.5% of total aircraft operations in 1993.

Source: KPMG Peat Marwick, April 1989.



LEGEND

Arrival flight track

Departure flight track

Airport boundary

Note: For noise analysis purposes, flight tracks are shown as a single line, but aircraft actually fly within a wider corridor.

N

3000 0 3000 8000

Graphic Scale in Feet

Exhibit 4-1

GENERALIZED FLIGHT TRACKS

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick February 1990

Table 4-5

FLIGHT TRACK UTILIZATION:
ARRIVALS AND DEPARTURES BY PERCENT OF OPERATIONS
Huntsville International Airport
1988

Departure tracks	Runway	Aircraft type: Air carrier/ commuter	General aviation	Air cargo	Military
DW-1	36L	5.2%	--%	1.5%	--%
DW-2	36L	2.8	--	0.7	--
DW-3	36L	6.8	--	2.0	--
DW-4	36L	2.8	--	0.7	--
DW-5	36L	4.4	--	1.3	--
DW-6	36L	14.0	--	3.8	--
DW-7	18R	10.7	--	3.0	--
DW-8	18R	10.2	--	2.8	--
DW-9	18R	4.2	--	1.2	--
DW-10	18R	8.0	--	2.2	--
DW-11	18R	4.1	--	1.3	--
DW-12	18R	8.3	--	2.2	--
DW-13	18R	8.5	--	2.3	--
DE-1	36R	--	13.3	--	--
DE-2	36R	0.8	--	5.6	--
DE-3	36R	--	13.3	--	--
DE-4	36R	0.4	--	2.4	--
DE-5	36R	0.4	--	3.6	--
DE-6	36R	1.6	--	11.6	--
DE-7	36R	--	13.4	--	--
DE-8	36R	0.4	--	4.4	--
DE-9	36R	0.4	--	2.4	--
DE-10	18L	--	30.0	--	--
DE-11	18L	1.1	--	8.5	--
DE-12	18L	0.5	--	3.5	--
DE-13	18L	0.9	--	6.7	--
DE-14	18L	0.9	--	3.8	--
DE-15	18L	0.5	--	6.5	--
DE-16	18L	0.9	--	7.1	--
DE-17	18L	1.2	--	8.9	--
DE-18	18L	--	30.0	--	--
		100.0%	100.0%	100.0%	--%
Arrival tracks					
AW-1	36L	12.8%	--%	5.2%	--%
AW-2	36L	6.0	--	--	--
AW-3	36L	3.2	--	0.8	--
AW-4	36L	4.8	--	1.2	--
AW-5	36L	9.2	--	2.8	--
AW-6	18R	9.4	--	2.6	--
AW-7	18R	14.0	--	3.3	--
AW-8	18R	4.9	--	--	--
AW-9	18R	9.2	--	2.5	--
AW-10	18R	16.5	--	6.6	--
AE-1	36R	0.4	--	2.7	--
AE-2	36R	0.4	20.0	3.9	--
AE-3	36R	1.2	--	7.9	--
AE-4	36R	2.0	--	15.5	--
AE-5	36R	--	20.0	--	--
AE-6	18L	1.0	--	7.6	--
AE-7	18L	1.3	30.0	9.9	--
AE-8	18L	1.3	--	9.9	--
AE-9	18L	1.1	--	7.8	--
AE-10	18L	1.3	--	9.8	--
AE-11	18L	--	30.0	--	--
		100.0%	100.0%	100.0%	--%
Touch-and-go tracks					
TDW-1	36L	40.0%	--%	--%	40.0%
TDW-2	18R	60.0	--	--	60.0
TDE-1	36R	--	40.0	--	--
TDE-2	18L	--	60.0	--	--
		100.0%	100.0%	--%	100.0%

Sources: Federal Aviation Administration, Huntsville Airport Traffic Control Tower supervisory staff, and Peat Marwick.

Table 4-6

ASSUMED FLIGHT TRACK UTILIZATION:
ARRIVALS AND DEPARTURES BY PERCENT OF OPERATIONS
WITH PASSENGER AND ALL-CARGO AIRLINE HUBBING
Huntsville International Airport
1993

Departure tracks	Runway	Aircraft type: Air carrier/ commuter	General aviation	Air cargo	Military
DW-1	36L	3.6%	--%	0.6%	--%
DW-2	36L	2.0	--	0.3	--
DW-3	36L	0.6	--	0.8	--
DW-4	36L	2.0	--	0.3	--
DW-5	36L	2.6	--	0.5	--
DW-6	36L	9.2	--	1.5	--
DW-7	18R	5.9	--	1.2	--
DW-8	18R	5.6	--	1.1	--
DW-9	18R	2.4	--	0.5	--
DW-10	18R	4.5	--	0.9	--
DW-11	18R	2.3	--	0.5	--
DW-12	18R	4.6	--	0.9	--
DW-13	18R	4.7	--	0.9	--
DE-1	36R	--	13.3	--	--
DE-2	36R	4.0	--	7.5	--
DE-3	36R	--	13.3	--	--
DE-4	36R	1.5	--	2.5	--
DE-5	36R	2.5	--	4.3	--
DE-6	36R	7.5	--	13.9	--
DE-7	36R	--	13.4	--	--
DE-8	36R	3.0	--	5.3	--
DE-9	36R	1.5	--	2.5	--
DE-10	18L	--	30.0	--	--
DE-11	18L	5.6	--	10.2	--
DE-12	18L	2.4	--	4.2	--
DE-13	18L	4.5	--	8.0	--
DE-14	18L	2.2	--	4.5	--
DE-15	18L	4.6	--	7.8	--
DE-16	18L	4.7	--	8.6	--
DE-17	18L	6.0	--	10.7	--
DE-18	18L	--	30.0	--	--
		100.0%	100.0%	100.0%	--%
Arrival tracks					
AW-1	36L	7.1%	--%	1.4%	--%
AW-2	36L	3.4	--	0.7	--
AW-3	36L	1.7	--	0.4	--
AW-4	36L	2.7	--	0.5	--
AW-5	36L	5.1	--	1.0	--
AW-6	18R	5.2	--	1.1	--
AW-7	18R	7.8	--	1.3	--
AW-8	18R	2.7	--	1.3	--
AW-9	18R	5.1	--	1.0	--
AW-10	18R	9.2	--	1.3	--
AE-1	36R	2.0	--	3.2	--
AE-2	36R	7.8	20.0	4.8	--
AE-3	36R	--	--	9.3	--
AE-4	36R	10.2	--	18.7	--
AE-5	36R	--	20.0	--	--
AE-6	18L	5.1	--	9.2	--
AE-7	18L	6.6	30.0	11.9	--
AE-8	18L	6.5	--	11.6	--
AE-9	18L	5.3	--	9.4	--
AE-10	18L	6.5	--	11.9	--
AE-11	18L	--	30.0	--	--
		100.0%	100.0%	100.0%	--%
Touch-and-go tracks					
TDW-1	36L	40.0%	--%	--%	40.0%
TDW-2	18R	60.0	--	--	60.0
TDE-1	36R	--	40.0	--	--
TDE-2	18L	--	60.0	--	--
		100.0%	100.0%	--%	100.0%

Source: KPMG Peat Marwick, January 1989.

In addition to the runway use and flight track information, the following conditions were assumed in developing the noise exposure maps for Huntsville International Airport:

- All air carrier aircraft use the departure procedure described in FAA Advisory Circular 91-53,* commonly known as the Air Transport Association (ATA) procedure.
- Departure profiles for general aviation turbojet aircraft, general aviation and commuter turboprop aircraft, and general aviation single-engine propeller aircraft are those typical of aircraft in each of these classifications.
- All approaches flown by civilian aircraft follow a flight track descending along a 3-degree glide slope with touchdown at a point 1,000 feet beyond the threshold of the runway.
- Noise, thrust, and altitude information for each specific aircraft type is as specified in Data Base No. 9 of the INM.

LAND USE COMPATIBILITY GUIDELINES

Estimates of total noise exposure resulting from aircraft operations, as expressed in Ldn values, can be interpreted in terms of the probable effect on land uses. Suggested compatibility guidelines for evaluating land uses in aircraft noise exposure areas were originally developed by the FAA and are shown in Table 4-7. The guidelines reflect the statistical variability of the responses of large groups of people to noise. Therefore, any particular level might not accurately assess an individual's perception of an actual noise environment. Compatible or incompatible land use is determined by comparing the predicted or measured Ldn level at a site with the values given in the table.

Each generalized land use listed in Table 4-7 includes a wide range of human activities having various sensitivities to noise intrusions. Ldn values in the table should be interpreted only as indications of the effect aircraft noise has on people

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*U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 91-53, "Noise Abatement Departure Profile," October 17, 1978.

Table 4-7

SUGGESTED LAND USE COMPATIBILITY GUIDELINES
IN AIRCRAFT NOISE EXPOSURE AREAS
Huntsville International Airport

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Land use	Ldn 65 to 70	Ldn 70 to 75	Ldn 75 and above
Residential:			
Residential, other than mobile homes and transient lodgings	NLR required[a]	NLR required[a]	Incompatible
Mobile homes	Incompatible	Incompatible	Incompatible
Transient lodgings	NLR required[a]	NLR required[a]	Incompatible
Public use:			
Schools, hospitals, and nursing homes	NLR required[a]	Incompatible	Incompatible
Churches, auditoriums, and concert halls	NLR required[a]	NLR required	Incompatible
Governmental services	Compatible	NLR required	NLR required
Transportation	Compatible	Compatible[b]	Compatible[b]
Parking	Compatible	Compatible[b]	Compatible[b]
Commercial use:			
Offices, business, and professional	NLR required	NLR required	NLR required
Wholesale and retail--building materials, hardware, and farm equipment	Compatible	Compatible[b]	Compatible[b]
Retail trade--general	NLR required	NLR required	NLR required
Utilities	Compatible	Compatible[b]	Compatible[b]
Communication	NLR required	NLR required	NLR required
Manufacturing and production:			
Manufacturing--general	Compatible	Compatible[b]	Compatible[b]
Photographic and optical	Compatible	NLR required	NLR required
Agriculture (except livestock) and forestry	Compatible	Compatible	Compatible
Livestock farming and breeding	Compatible	Compatible	Incompatible
Mining and fishing resources production and extraction	Compatible	Compatible	Compatible
Recreational:			
Outdoor sports arenas and spectator sports	Compatible	Compatible	Incompatible
Outdoor music shells, amphitheaters	Incompatible	Incompatible	Incompatible
Nature exhibits and zoos	Compatible	Incompatible	Incompatible
Amusements, parks, resorts, and camps	Compatible	Compatible	Incompatible
Golf courses, riding stables, and water recreation	Compatible	Compatible	Incompatible

Ldn = Yearly day-night sound level in decibels.

Compatible = Generally, no special noise attenuating materials are required to achieve an interior noise level of Ldn 45 in habitable spaces, or the activity (whether indoors or outdoors) would not be subject to a significant adverse effect by the outdoor noise level.

NLR = Noise Level Reduction. NLR is used to denote the total amount of noise transmission loss in decibels required to reduce an exterior noise level in habitable interior spaces to Ldn 45. In most places, typical building construction automatically provides an NLR of 20 decibels. Therefore, if a structure is located in an area exposed to aircraft noise of Ldn 65, the interior level of noise would be about Ldn 45. If the structure is located in an area exposed to aircraft noise of Ldn 70, the interior level of noise would be about Ldn 50, so an addition NLR of 5 decibels would be required if not afforded by the normal construction. This NLR can be achieved through the use of noise attenuating materials in the construction of the structure.

Incompatible = Generally, the land use, whether in a structure or an outdoor activity, is considered to be incompatible with the outdoor noise exposure, even if special attenuating materials were to be used in the construction of the building.

a. The land use is generally incompatible and should only be permitted in areas of infill in existing neighborhoods or where the community determines that the use must be allowed.

b. NLR required in offices or other areas with noise-sensitive activities.

Source: KPMG Peat Marwick, as derived from the U.S. Department of Transportation, Federal Aviation Administration, Federal Aviation Regulations (FAR) Part 150, "Airport Noise Compatibility Planning," Code of Federal Regulations, Title 14, Chapter I, Subchapter I, Part 150, Table 1, January 18, 1985.

living and working in areas surrounding an airport. Although specific Ldn values are obtained from a noise analysis, they do not dictate certain consequences. They are merely intended to guide a community in land use development.

For a specific site, some adjustments in Ldn values or interpretations may be desirable. Typical influences to be considered include the following:

1. **Local building construction, particularly as influenced by climatic considerations.** In the southeastern region of the United States, wall and roof construction may be lighter or less insulated than in cooler climates, thus increasing the extent of noise leakage paths. On this basis, one might select a lower Ldn value as the boundary for noise compatibility interpretation, rather than a higher Ldn value that might be suitable for a cooler climate where homes are more tightly constructed.

2. **Use of air conditioning.** In areas where air conditioning is extensively used in homes, schools, offices, and public buildings during the warmer times of the year, such as in Huntsville, doors and windows are normally kept closed for these portions of the year, thus reducing exterior-to-interior sound transmission. This factor should be considered when selecting an appropriate Ldn value for noise compatibility interpretation, and it is an appropriate consideration in the Airport environs.

3. **Noise effect on outdoor environments.** Land use compatibility, particularly in regard to residential environments, usually refers to the compatibility of noise with interior environments.

   An important consideration might be the effect of noise on outdoor environments. Although soundproofing a structure can provide a satisfactory interior noise environment, the area where the structure is located may still not be desirable for certain land uses. For example, an existing single-family residence that is soundproofed could have an acceptable interior noise level in areas exposed to noise levels up to Ldn 75. However, the Ldn 75 noise level may interfere with many people's enjoyment of any outdoor activities on the site.

4. **The effect of industrial or surface transportation noise sources on the existing noise environment.** For example, introducing aircraft noise in a rural area where existing background noise levels are very low produces a much more apparent change in noise environment than introducing aircraft operations in more developed areas long exposed to surface traffic and other noises.

5. **Time of land use activities.** In basic Ldn values, daytime and nighttime noise exposure are considered separately. As noted earlier, a weighting factor equivalent to a 10-dB penalty is applied for nighttime operations to account for the increased sensitivity of people to nighttime noise.

NOISE EXPOSURE MAPS AND EFFECTS ON LAND USE

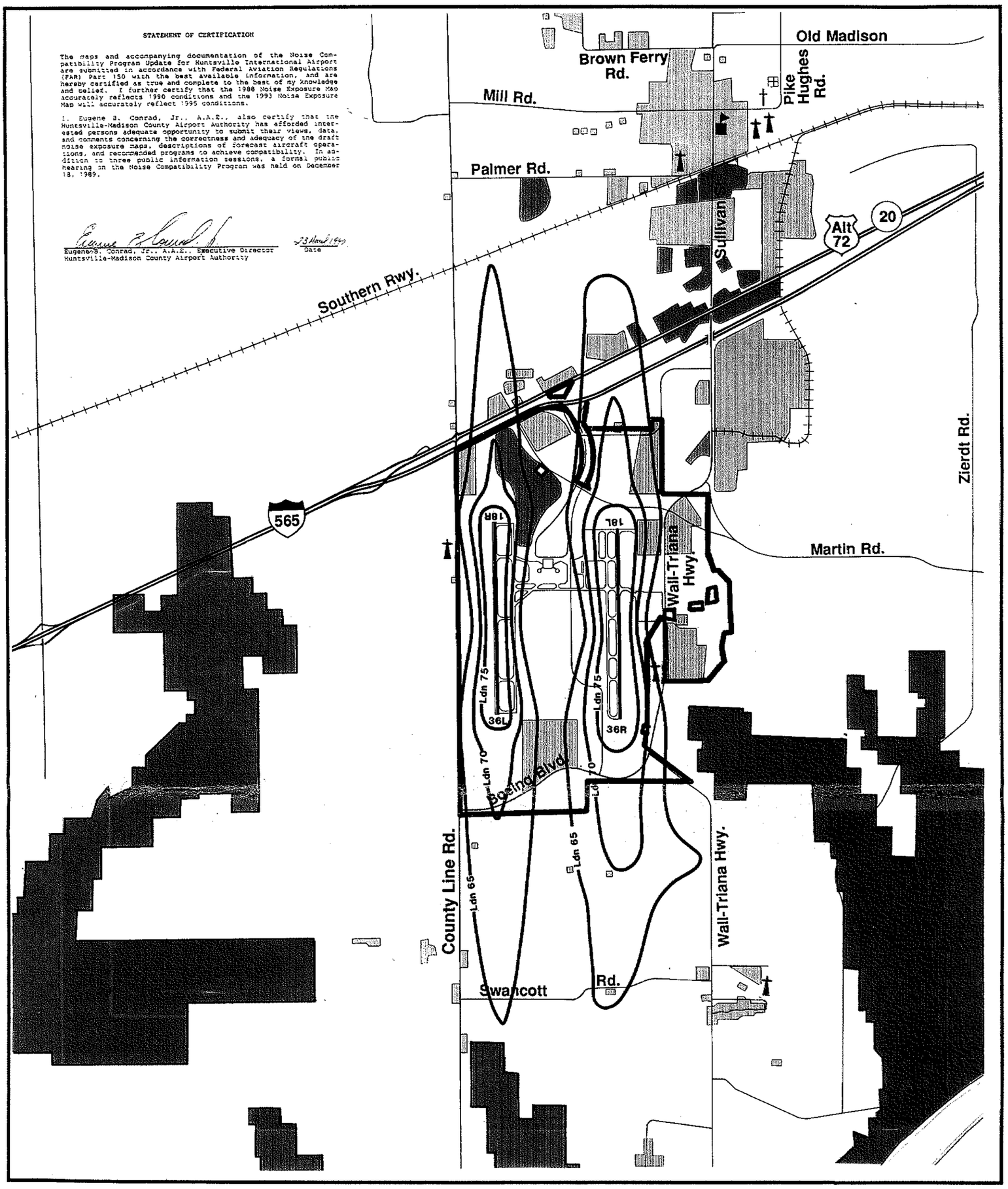
The effect of aircraft noise on existing and future noise-sensitive land uses is important in relation to the growth of the Airport and its environs. The achievement of land use compatibility in the Airport environs is the principal objective of the FAR Part 150 Noise Compatibility Program.

Three noise exposure maps were prepared using all of the assumptions and data described in this chapter and the aviation demand forecasts presented in Chapter 3.

Existing Noise Exposure: 1988

The noise exposure map for 1988 is depicted on Exhibit 4-2 over a base map representing the 1988 generalized land use in the Airport environs. As noted in the Statement of Certification at the beginning of this report, the 1988 Noise Exposure Map accurately reflects 1990 conditions.

The noise exposure map for 1988 depicts the Ldn 75, Ldn 70, and Ldn 65 contours. As shown on the exhibit, the amount of land exposed to aircraft noise of Ldn 65+ is approximately equal north and south of the Airport. Included in this area are a few scattered low-density residential units. Table 4-8 presents the estimated number of existing noise-sensitive land uses and population exposed to aircraft noise of Ldn 65+. The number of acres exposed to Ldn 65+ in 1988 is approximately 2,100 on-Airport and 1,620 off-Airport, totaling 3,720 acres.



LAND USE LEGEND

NOISE SENSITIVE	NOISE COMPATIBLE
Single-family residential	Industrial
Multifamily residential	Commercial
Mobile home park	Park/recreational
Church	Agricultural/vacant
School	Airport boundary
Cemetery	Ldn contour

N

2000 0 2000 6000

Graphic Scale in Feet

Exhibit 4-2

1988 Ldn NOISE EXPOSURE MAP

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick February 1990

Source: October 1988 aerial photograph and January 1989 field verification.

Table 4-8

ESTIMATED NUMBER OF EXISTING NOISE-SENSITIVE LAND USES AND POPULATION EXPOSED TO AIRCRAFT NOISE OF LDN 65+
Huntsville International Airport
1988 and 1993

Noise exposure range (Ldn)[a]	Land area (acres)			Residential units (number)				Population[b]	Religious facilities
	On-Airport	Off-Airport	Total	Single-family	Multi-family	Mobile homes	Total dwelling units		
Existing 1988									
Ldn 75+	540.0	0.0	540.0	0.0	0.0	0.0	0.0	0.0	0.0
Ldn 70-75	650.0	150.0	800.0	1.0	0.0	0.0	1.0	3.0	0.0
Ldn 65-70	910.0	1,470.0	2,380.0	3.0	0.0	0.0	3.0	9.0	1.0
Total Ldn 65+	2,100.0	1,620.0	3,720.0	4.0	0.0	0.0	4.0	12.0	1.0
Estimated 1993 with hubbing									
Ldn 75+	1,050.0	350.0	1,400.0	2.0	0.0	0.0	2.0	6.0	0.0
Ldn 70-75	890.0	1,690.0	2,580.0	2.0	0.0	0.0	2.0	6.0	1.0
Ldn 65-70	950.0	5,040.0	5,990.0	156.0	220.0	91.0	467.0	1,246.0	1.0
Total Ldn 65+	2,890.0	7,080.0	9,970.0	160.0	220.0	91.0	471.0	1,258.0	2.0

a. Ldn = Day-night sound level.
b. Derived from Huntsville 1988 Census.

Source: KPMG Peat Marwick, February 1990.

A total of four residential dwelling units and one religious facility are included in the exposed area. The area exposed to Ldn 75+ is very limited and entirely within the Airport boundary. The Ldn 70 and 75 contours extend slightly beyond the Airport boundary to the north and south from Runway 18L-36R and only slightly to the south from Runway 18R-36L. The off-Airport land exposed to Ldn 70-75 is vacant or agricultural. The area exposed to Ldn 65-70 extends to the north and south of both runways for approximately two miles and includes vacant, agricultural, industrial, and limited low-density residential uses.

Future Noise Exposure

Exhibit 4-3 shows projected Ldn 65, 70, and 75 noise contours for 1993 aircraft operations at Huntsville International Airport with passenger and all-cargo airline hubbing. As noted in the Statement of Certification at the beginning of this report, the 1993 Noise Exposure Map will accurately reflect 1995 conditions.

The flight tracks (Exhibit 4-1) used as input to the INM for the 1993 Ldn calculations are the same as those used for the 1988 Ldn calculations. The input for the 1993 Ldn calculations contained no additional noise abatement changes except for an increase in Stage 3 aircraft (B-737-300, BAe 146, or MD-80)* operations. The percentage of Stage 3 aircraft in the air carrier aircraft mix at the Airport is forecast to increase from approximately 29% in 1988 to about 41% by 1993 with passenger and all-cargo airline hubbing.

Daily air carrier aircraft operations are forecast to increase about 29%, from 40.6 operations in 1988 to 163.3 operations in 1993.

The area exposed to Ldn 75+ from 1993 operations on Runway 18R-36L is entirely within the Airport boundary (Exhibit 4-3). The Ldn 75+ contour for operations on Runway 18L-36R extends north to Highway 20 and south approximately 1.5 miles. Existing land uses within this area include limited industrial uses, vacant land, and a few scattered low-density residential areas.

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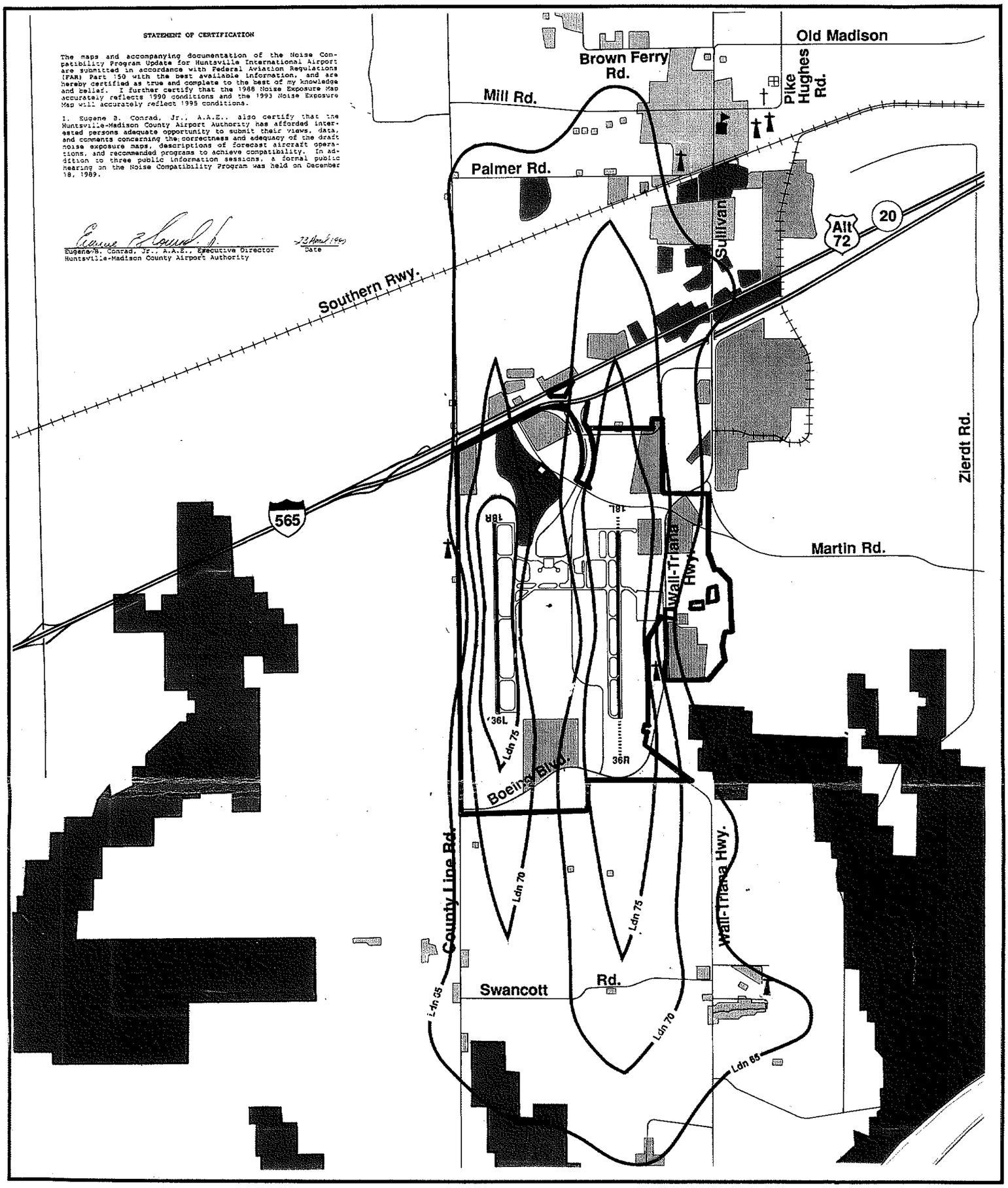
*Aircraft noise characteristics can be classified according to federal noise level standards specified in FAR Part 36 as meeting Stage 1, Stage 2, or Stage 3 standards (Stage 3 being the quietest).



LAND USE LEGEND

NOISE SENSITIVE	NOISE COMPATIBLE
Single-family residential	Industrial
Multifamily residential	Commercial
Mobile home park	Park/recreational
Church	Agricultural/vacant
School	Airport boundary
Cemetery	Ldn contour
	Runway extension

N

2000 0 2000 6000

Graphic Scale in Feet

Exhibit 4-3

1993 Ldn NOISE EXPOSURE MAP WITH PASSENGER AND ALL-CARGO HUBBING

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick

February 1990

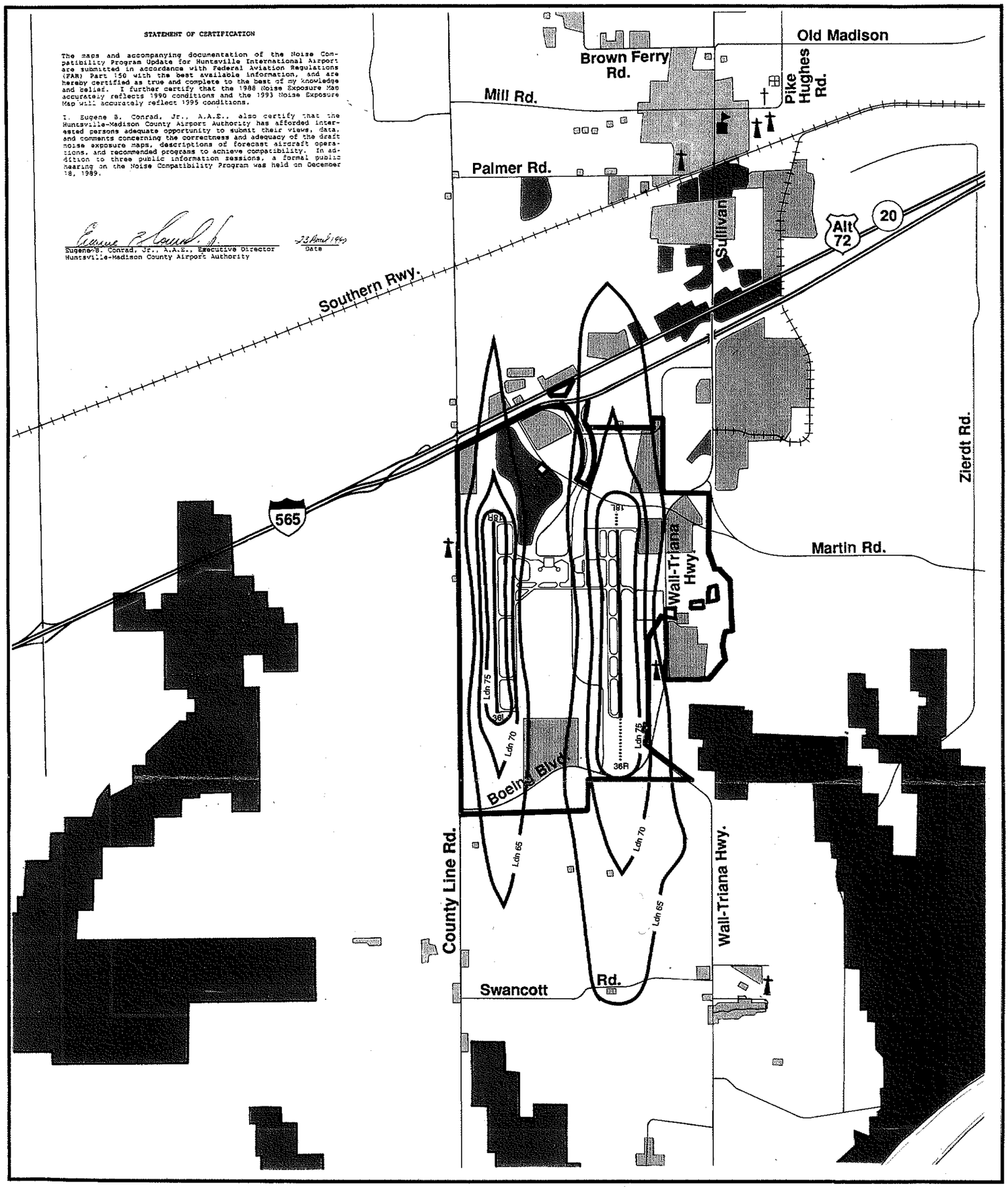
Source: October 1988 aerial photograph and January 1989 field verification.

The area exposed to Ldn 70-75 extends from Runway 18L-36R north almost to the Southern Railway and south past Swancott Road. The Ldn 70-75 contour extends from Runway 18R-36L to the north just beyond Highway 20 and to the south almost to Swancott Road. The area exposed to Ldn 70-75 is primarily vacant, except for some industrial, commercial, and a few scattered low-density residential uses.

The area exposed to Ldn 65-70 extends east to the Wheeler Wildlife Refuge, west to County Line Road, south to the City of Triana, and north past Mill Road in the City of Madison. The areas within the Ldn 65-70 contours are primarily vacant and agricultural, with some industrial commercial development along Highway 20, some single-family and multifamily residential development to the north in Madison, and a few scattered residential areas to the south.

Exhibit 4-3, "1993 Ldn Noise Exposure Map with Passenger and All-Cargo Hubbing," represents the five-year future conditions noise exposure map for which the Huntsville-Madison County Airport Authority desires review and approval by the Federal Aviation Administration as a part of this FAR Part 150 update.

Exhibit 4-4, included for comparative purposes, shows the projected Ldn 65, 70, and 75 noise contours for 1993 aircraft operations at Huntsville International Airport assuming that no passenger or all-cargo airline hubbing occurs. A comparison of the 1993 noise exposure map with hubbing, with that for 1993 without hubbing activities indicates that hubbing activities are expected to increase the amount of land exposed to noise levels of Ldn 65 and above. This increase would result primarily because of the increase in air cargo activity at night. Daily nighttime air carrier and air cargo aircraft operations are forecast to increase from 10.0% of the total without hubbing to 11.8% with hubbing (from 22.3 operations to 42.3 operations).



LAND USE LEGEND

NOISE SENSITIVE	NOISE COMPATIBLE
Single-family residential	Industrial
Multifamily residential	Commercial
Mobile home park	Park/recreational
Church	Agricultural/vacant
School	Airport boundary
Cemetery	Ldn contour
	Runway extension

N

2000 0 2000 6000

Graphic Scale in Feet

Exhibit 4-4

1993 Ldn NOISE EXPOSURE MAP WITHOUT PASSENGER AND ALL-CARGO HUBBING

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick

February 1990

Source: October 1988 aerial photograph and January 1989 field verification.

Noise Compatibility Options

Chapter 5

EVALUATION OF NOISE COMPATIBILITY PLANNING OPTIONS

BACKGROUND

This chapter presents a discussion of the various options that were evaluated for noise abatement and noise mitigation as part of the Noise Compatibility Program Update for Huntsville International Airport. A brief description of each option is presented to show its applicability to the Airport and its environs.

Noise abatement measures can be implemented by HMCAA, the airlines, other Airport users, or the FAA Airport Traffic Control Tower to reduce the amount of noise exposure in the Airport environs. Such measures include changing aircraft operational procedures, changing Airport operations, and/or relocating Airport facilities. Noise mitigation measures, in contrast, are those that would minimize the effects of aircraft noise in affected communities and neighborhoods after all measures to reduce noise at the source have been implemented. Such mitigation measures include comprehensive planning, zoning, acoustical treatment of homes, and the granting of avigation easements.

The noise abatement and noise mitigation options required to be evaluated under FAR Part 150 and measures taken or considered at other airports were reviewed to determine their applicability to the Airport and its environs. In addition, a number of options specific to the Airport were formulated and evaluated.

NOISE ABATEMENT OPTIONS

Noise abatement options reduce noise at the source, that is, in the aircraft itself or at the airport. Typical noise abatement measures include:

- Physical changes to the airport (aircraft landing threshold displacement, runway extensions, new aircraft runup pads, construction of noise barriers).
- Changes in airport operations (preferential runway use, limited operation times, nighttime engine test procedures).

- Changes in aircraft operational measures (takeoff or landing procedures, preferential flight tracks, aircraft noise emission characteristics).

- Periodic monitoring of aircraft noise exposure levels and the regular review of adopted noise remedy programs to ensure implementation.

- Changes in aircraft and engine noise characteristics through advancement in technology.

Table 5-1 lists 24 noise abatement options and their applicability to Huntsville International Airport. The appropriate implementing agencies for the various options described in this section are also listed in Table 5-1. Some of the options have already been implemented, and others, after careful consideration, are not recommended.

Evaluation Criteria

The 24 noise abatement options were evaluated on the basis of seven criteria that the FAA has specified in FAR Part 150 [Section 150.35(b) and Appendix B, Section B150.5]. These seven criteria are:

1. The measure reduces existing incompatible land uses and prevents or reduces the probability of allowing additional incompatible land uses to be developed.

2. The measure does not impose an undue burden on interstate or foreign commerce.

3. The measure can be revised if conditions change.

4. The measure is not unjustly discriminatory.

5. The measure does not derogate aviation safety or adversely affect the safe and efficient use of navigable airspace.

6. The measure meets both the goals and needs of the local community and those of the national air transportation system, to the extent practicable.

7. The measure can be implemented in a manner consistent with all the powers and duties of the FAA Administrator.

Table 5-1

NOISE ABATEMENT OPTIONS
Huntsville International Airport

	Option	Implementation	Implementing agency
1.	Extend runway or displace runway threshold	Yes	HMCAA, FAA
2.	Construct new runway	No	HMCAA, FAA
3.	Construct noise barriers	No	HMCAA
4.	Construct high-speed taxiways	No	HMCAA
5.	Relocate facilities	No	HMCAA
6.	Equalize or rotate runway use	Yes	HMCAA, FAA
7.	Establish preferential runway use	No	HMCAA, FAA
8.	Establish engine runup restrictions	No	HMCAA
9.	Change takeoff, climbout, or landing procedures	No	HMCAA, FAA
10.	Change flight tracks	No	HMCAA, FAA
11.	Fan out departure flight tracks	No	HMCAA, FAA
12.	Restrict ground movement of aircraft	No	HMCAA, FAA
13.	Impose nighttime restrictions or curfews	No	HMCAA, FAA
14.	Restrict training flights	No	HMCAA, FAA
15.	Shift aircraft operations to another airport	No	HMCAA, FAA
16.	Encourage greater use of Stage 3 aircraft	No	HMCAA, FAA
17.	Encourage the tightening of noise emission standards	Yes	HMCAA, FAA, other federal agencies
18.	Limit number or types of operations	No	HMCAA, FAA
19.	Establish noise compatibility staff	No	HMCAA
20.	Establish noise advisory committee	Yes	HMCAA
21.	Impose noise-related landing fees	No	HMCAA
22.	Establish helicopter restrictions	No	HMCAA, FAA
23.	Enforce prescribed flight track use	No	HMCAA, FAA
24.	Acquire noise-monitoring equipment	Yes	HMCAA

FAA = Federal Aviation Administration
HMCAA = Huntsville-Madison County Airport Authority

Source: KPMG Peat Marwick, January 1989.

Those options that did not meet all of these seven criteria were not considered further. The remaining options were evaluated in consideration of the following:

- Effect on airfield capacity and aircraft delay.
- Effect on airspace/air traffic control capability and effects on other airports.
- Effect on fuel consumption and other environmental considerations.
- Effect on Airport users.
- Effect on airfield configuration.
- Operational benefits and costs.
- Ability to monitor conformance with proposed procedures.
- Desirability and feasibility of early implementation.

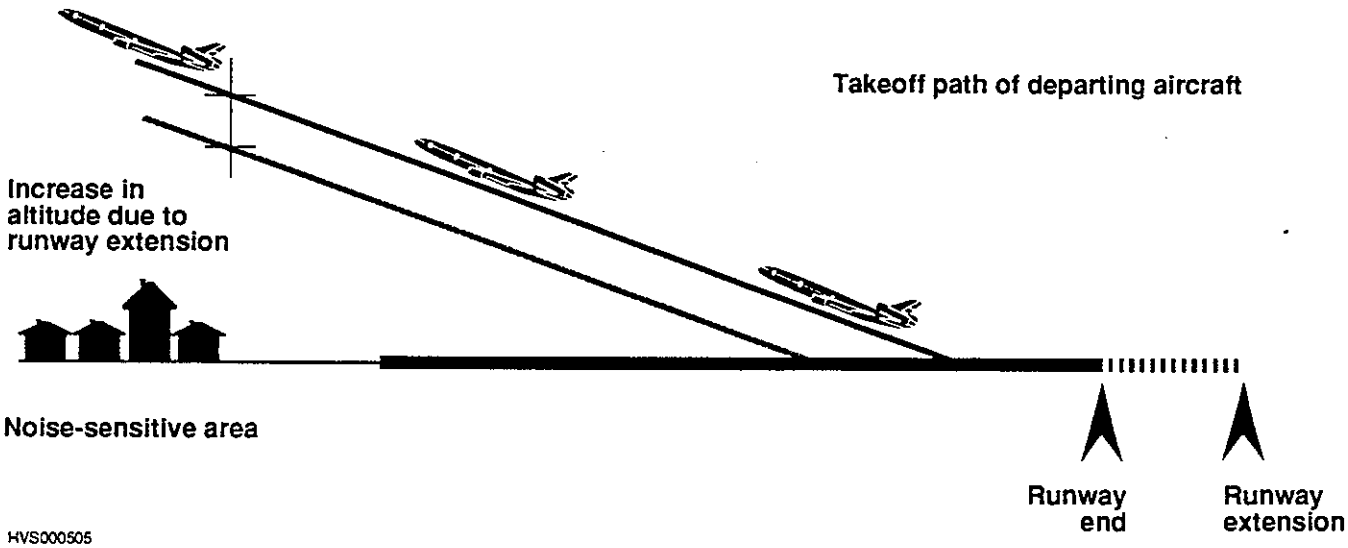
Description and Evaluation of Options

The following presents a discussion of each of the 24 noise abatement options listed in Table 5-1.

1. Extend runway or displace runway threshold.

A runway extension can increase aircraft altitude along approach and departure paths, thereby increasing the altitude of the aircraft over noise-sensitive land uses. Generally, for

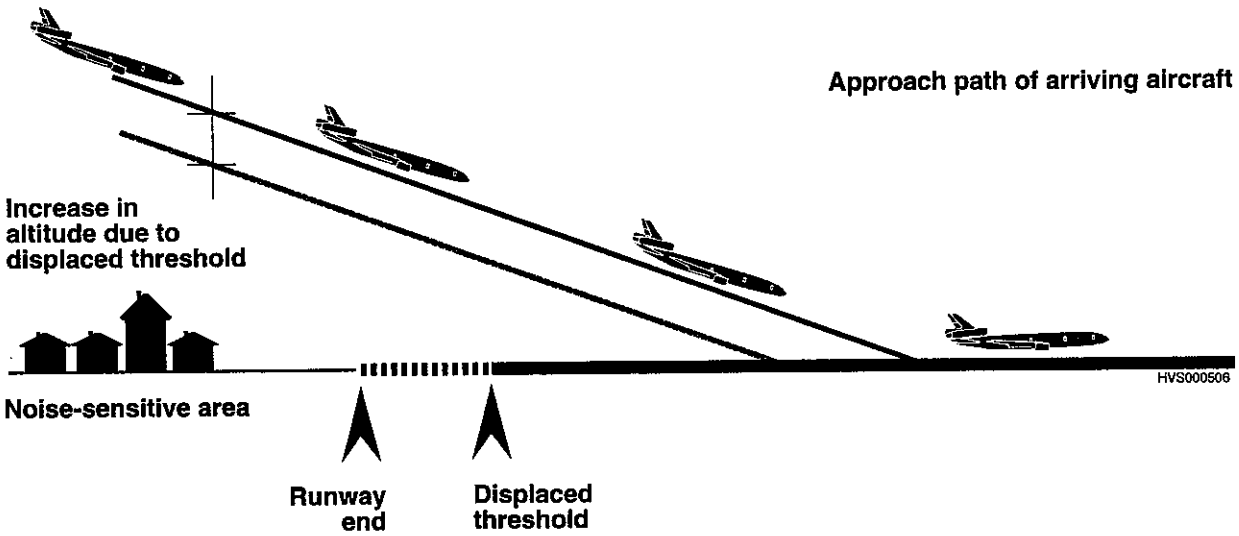
every 1,000 feet of runway extension, the aircraft altitude increases approximately 140 feet, assuming an 8-degree climb angle.



HMCAA plans to extend Runway 18L-36R, 1,500 feet to the south, and 500 feet to the north by 1993. These extensions will reduce noise exposure to the north by allowing departing aircraft to achieve greater altitude by the time they overfly the noise-sensitive communities to the north.

When a runway threshold is displaced, the aircraft approach point is further down the runway, increasing the distance between noise-sensitive land uses and the source of noise (aircraft). Assuming an average aircraft descent along a 3-degree glide slope, for every 1,000 feet of displaced runway, the aircraft altitude increases approximately 52 feet.

Displacing the threshold may be of some benefit to noise-sensitive land uses near the airport.



A 500-foot displaced threshold on an extended Runway 18L was originally considered in response to concerns expressed by elected officials in the City of Madison who were initially opposed to any north extension of Runway 18L-36R toward their community although analyses indicated that displacing the threshold by only 500 feet would result in actual noise exposure reductions of less than 0.05 Ldn. Because of the City of Madison's concerns, the recommendation for a displaced threshold was included in the Noise Compatibility Program Update. Subsequently, the Airport Authority convinced City of Madison representatives that displacing the threshold on an extended Runway 18L would not result in any significant noise reduction and the displaced threshold was deleted from the program.

2. Construct new runway.

The construction of a new runway oriented away from noise-sensitive land uses may permit aircraft to avoid overflying those noise-sensitive areas. The new runway must also be located to provide sufficient access to the terminal complex without long taxiing distances. Other considerations are the costs of a new runway and the associated environmental effects.

New runways are usually constructed in response to needed capacity at an airport; however, Huntsville International Airport has sufficient capacity to accommodate current and forecast levels of operations. The Airport could, in fact, accommodate even greater levels of operations.

Construction of a new runway at Huntsville International Airport is not necessary because of the excess capacity and the small number of noise-sensitive land uses that are, or could be, affected by noise exposure above Ldn 65. Therefore, this option is not economically or environmentally feasible and is not recommended.

3. Construct noise barriers.

A noise barrier or berm may reduce noise in areas immediately adjacent to an airfield, aircraft parking apron, or engine runup areas. Noise barriers and berms are, however, effective only for the first 100 to 150 feet from the barrier. Because of the physical construction of a noise barrier or berm and the associated visual distraction, this option often serves more as a psychological control than an effective noise abatement measure.

Because no noise-sensitive land uses are located within 150 feet of the Huntsville International Airport airfield, this option is not recommended.

4. Construct high-speed taxiways.

High-speed exit taxiways form about a 30-degree angle with the runways they serve, while typical non-high-speed taxiways often require a full 90-degree turn. With the smaller turn, aircraft can taxi at higher than normal speeds and spend less time on the runway during the landing roll. As a noise abatement option, construction of high-speed exit taxiways may lead to less frequent use of thrust reversal and can reduce the need to add the power that is sometimes required to exit via perpendicular taxiways.

High-speed taxiways may reduce noise levels in immediately adjacent area. Because no noise-sensitive land uses are immediately adjacent to the taxiways at Huntsville International Airport, this option is not recommended for noise abatement purposes, although high-speed taxiways are shown on the Airport Layout Plan for capacity enhancement.

5. Relocate facilities.

The relocation of facilities, such as aircraft parking aprons, can sometimes be beneficial, especially when a neighborhood is located off to the side of the major runways or very near the aircraft parking apron (perhaps for cargo or general aviation aircraft). Under such circumstances, residents may be bothered more by ground power units, engine starts, and taxiing operations than by flight operations.

It is unlikely that a facility such as a terminal building or an air cargo building would be relocated solely to reduce the noise from localized ground sources around it. However, the location of these facilities should be considered during the master planning process.

The terminal and apron areas at Huntsville International Airport are sufficiently far from noise-sensitive development, and the noise generated by taxiing aircraft and engine startup does not adversely affect the Airport environs. Therefore, this option is not recommended.

6. Equalize or rotate runway use.

Equalizing runway use redistributes aircraft traffic to reduce the concentration of noise in noise-sensitive areas and increase the amount of noise in areas that are compatible with aircraft operations. The result is that communities share equally in the amount of noise received.

Rotating runway use shifts aircraft operations over compatible land uses, but is highly dependent on weather conditions.

Implementation of this type of option requires a sufficient number of runways to permit operations in different directions during different weather conditions.

Prior to mid-1988, runway use at Huntsville International Airport was not equalized because of the poor condition of Runway 18L-36R. This runway was decommissioned during the latter part of 1988 for reconstruction, which was completed in early 1989. Runway 18L-36R is back in service, and the use of the two parallel runways for air carrier service has been equalized. Therefore, it is recommended that this option be continued.

7. Establish preferential runway use.

Preferential runway use procedures involve the use of specific runway(s) to reduce overflights of noise-sensitive areas. Preferential runway use can also include maximizing or restricting the use of specific runways by particular classes or types of aircraft to reduce aircraft noise exposure. For example, the use of a runway with approach and departure paths over residential areas may be restricted to light general aviation aircraft. Because the prevailing winds are from the south, the preference for departures has been to the south, even with light crosswinds.

As depicted on Exhibit 4-4 in Chapter 4, the areas adjacent to Huntsville International Airport are essentially undeveloped or developed in compatible land uses, such as industrial, commercial, or agricultural, with very few residential uses. Therefore, this option is not deemed necessary at this time and is not recommended.

8. Establish engine runup restrictions.

The noise produced from aircraft engine runups can cause significant annoyance if the runups are performed at night, at high engine settings for long periods of time, or near noise-sensitive areas. Measures to reduce noise from aircraft engine runups include restricting runups to certain hours, minimizing or prohibiting nighttime runups, restricting engine power settings to specific levels, and reducing the length of runup time at various levels. Runup areas can be relocated to shift noise away from noise-sensitive areas, or noise barriers or berms can be constructed around runup areas (see Noise Abatement Option 3).

Because of the lack of noise-sensitive land uses near the runup areas at Huntsville International Airport, this option is not recommended.

9. Change takeoff, climbout, or landing procedures.

According to FAA Advisory Circular 91-53, cited earlier, standards have been established for departure profile procedures to reduce the amount of noise generated. The procedures direct flight crews to perform a steep climb, using full takeoff power, to an altitude of 1,000 feet above ground level, and to allow the aircraft to achieve a relatively high altitude while still close to the airport boundary. After climbing to 1,000 feet, the pilot reduces the rate of climb and the engine power settings, and retracts the wing flaps in increments. Normal en route procedures are resumed after the aircraft reaches an altitude of approximately 3,000 feet. Collectively, this procedure helps to reduce the level of noise perceived in areas below the route of flight.

Aircraft approaches and departures at the Airport are conducted in conformance with the Advisory Circular 91-53 procedure and the National Business Aircraft Association (NBAA) noise abatement procedure. Therefore, this option is not recommended.

10. Change flight tracks.

Changing approach and departure flight tracks could significantly reduce aircraft noise exposure if substantial numbers of the noisiest types of aircraft were routed over areas that are less sensitive to noise or if the amount of time an aircraft flies at low altitudes over noise-sensitive areas could be reduced. Other factors, such as airspace and air traffic control constraints, delays to aircraft on the ground or in flight, and safety, must be considered in determining the feasibility of changing flight tracks.

Currently, aircraft departing on Runway 18L-36R from the Airport maintain runway heading until beyond the Redstone Arsenal restricted area before beginning a turn to the east and southeast. Aircraft making an approach to Runway 18L from the east and southeast are guided north of the Redstone Arsenal before turning on final approach course. No changes in the flight tracks at Huntsville International Airport are necessary. Therefore, this option is not recommended.

11. Fan out departure flight tracks.

The fanning out of departure flight tracks refers to assigning each successive aircraft a different heading after takeoff. The result of fan-out departure tracks is that noise is spread out over a broad area rather than being concentrated along a single flight track. The obvious disadvantage of attempting to fan out departure tracks is that the procedure can increase noise annoyance in communities not currently exposed to aircraft noise.

As depicted on Exhibit 4-1, "Generalized Flight Tracks," aircraft departures at Huntsville International Airport are currently being fanned out to permit the expeditious movement of aircraft traffic. Further fanning of the flight tracks is not necessary and is not recommended.

12. Restrict ground movement of aircraft.

This option is aimed at reducing the need to use ground power units, make engine starts, and taxi. An appropriate regulation might require that an aircraft not be moved to alternate gates under its own power, but that it be towed instead. Hours during which the regulation would be in effect may or may not be specified. Other types of restrictions on ground operations could require pilots to check for delays with ground control

prior to engine start. Such "gate hold" procedures reduce idling time, taxi noise, and fuel consumption. Improvement from implementation of this option would be minimal, noticed only by residents in the immediate vicinity of apron areas.

Ground movement of aircraft is not a noise problem at Huntsville International Airport. Therefore, this option is not recommended.

13. Impose nighttime restrictions or curfews.

Nighttime restrictions or curfews are regulations banning aircraft operations during nighttime hours or restricting the types of aircraft permitted to operate during those hours. A nighttime curfew can significantly reduce aircraft noise exposure resulting from the added annoyance caused by nighttime operations.

The airport operator must be able to demonstrate that a proposed curfew imposes no undue burden on interstate or foreign commerce and does not unjustly or unreasonably discriminate between different categories of airport users. A curfew at a large airport can have a systemwide effect on the national and international air transportation network because it effectively reduces arrival and departure "time windows" at other airports. Nighttime curfews have been imposed at a few air carrier airports where there is another air carrier airport in the region to accommodate the restricted operations.

Currently, an estimated 17.9 aircraft operations occur between 10 p.m. and 7 a.m. at the Airport. This number is estimated to increase to 22.3 operations in 1993. When passenger and all-cargo airline hubbing is added to the 1993 forecast, the estimate of aircraft operations occurring at the Airport between 10 p.m. and 7 a.m. increases to 42.3. Restricting or banning these nighttime operations could result in a significant economic loss to the community, and impose an undue burden on interstate and foreign commerce because no other air carrier airport exists in the region to accommodate the restricted operations. Curfews are, therefore, not recommended at Huntsville International Airport.

14. Restrict training flights.

Restrictions on training flights may include, but are not limited to: (a) restrictions on multiple practice instrument landings or approaches; (b) diversion of training flights to other less noise-sensitive airports; (c) restrictions on altitude for certain aircraft operations or types of aircraft; and (d) in the case of military aircraft, restrictions on formation

approaches or departures, restrictions on overhead landing patterns, and rescheduling of flights to less disturbing times. The "touch-and-go" (continuous takeoff and landing) training operation can be particularly annoying because the aircraft repeatedly flies at low altitudes in the airport traffic pattern.

A high level of training activity at an airport increases the number of overall operations, and can also increase aircraft noise exposure in neighboring communities.

Huntsville International Airport has a small amount of general aviation, military, and air carrier training activity. In 1988, training activity accounted for 5.5% of total operations at the Airport. That percentage is forecast to decrease to 5.2% in 1993 and, if passenger and all-cargo airline hubbing is introduced by 1993, training operations would account for 3.2%, even though the actual number of operations would be relatively the same.

The amount of training activity at Huntsville International Airport is so small that it is not necessary to restrict training flights. Therefore, this option is not recommended.

15. Shift aircraft operations to another airport.

Shifting air carrier operations to another airport or denying airport access to certain types or classes of aircraft is another noise abatement option. A few metropolitan regions have two air carrier airports, but generally other airports serving a region are almost always general aviation or military facilities that are not suitable for air carrier aircraft operations. An alternative would be to build an entirely new airport and shift all air carrier aircraft operations there, but the cost is usually too high and a lead time of at least 10 years is required. The nearest air carrier airports to Huntsville International Airport are in Chattanooga, 105 miles northeast, and Birmingham, 97 miles south.

Huntsville International Airport is the only air carrier airport serving the region. Therefore, shifting operations is not a viable alternative and this option is not recommended.

16. Encourage greater use of Stage 3 aircraft.

Aircraft noise characteristics can be classified according to federal noise level standards specified in FAR Part 36 as meeting Stage 1, Stage 2, or Stage 3 standards (Stage 3 being the quietest). In 1988, approximately 29% of the air carrier

aircraft using the Airport met Stage 3 standards (e.g., B-737-300, B-767, BAe 146, DC-8-70 series, and MD-80). The percentage of Stage 3 aircraft in the air carrier mix at the Airport is forecast to increase to about 41% in 1993 with passenger and all-cargo airline hubbing operations.

At some larger airports with severe noise exposure problems, airport sponsors have adopted policies that discourage the operation of aircraft that are not certificated Stage 3 under FAR Part 36. As a consequence, certain (but not all) airlines have a policy of shifting older, noisier aircraft to routes serving airports where noise complaints have not been as plentiful. The U.S. Congress has enacted legislation requiring the phase-out of Stage 2 noisier aircraft over time. Therefore, the problem of the shifting older, noisier aircraft will be solved by the elimination of all such aircraft from the domestic fleet and no further action is required at Huntsville International Airport.

17. Encourage the tightening of noise emission standards.

The FAA established a time schedule for aircraft compliance with noise emission standards in accordance with FAR Part 36 that required the phase out of Stage 1 aircraft. This requirement has been met. However, no time schedule exists for the phasing out of Stage 2 aircraft.

HMCAA and the local political jurisdictions should support and actively encourage legislation that would establish the phase-out, over time, of Stage 2 aircraft and conversion of the U.S. domestic airline fleet to Stage 3 aircraft. HMCAA and the local jurisdictions should also support programs designed to make general aviation aircraft quieter.

18. Limit number or types of operations.

This option encompasses a wide range of ways to reduce airport noise through regulated limits on operations and on aircraft types. Quotas can be set on the number of annual or daily operations through slot allocations or lease agreements, or regulations can prohibit aircraft that do not meet some specified noise limit from using an airport. There are many other examples--some apply only to operations on a particular runway rather than to all operations at the airport. In all cases, the basic principle behind the limitation is to reduce noisy aircraft operations.

The airport operator is generally responsible for any noise abatement regulation that limits the number or type of operations at the airport. However, the regulatory process typically involves participation from all affected parties, including airport users, members of the community, and representatives of the FAA. A major consideration is whether this option imposes unreasonable burden on interstate or foreign commerce or unjustly discriminates between different categories of airport users. This option is usually used only when airports are at capacity.

Huntsville International Airport is currently underutilized, and it is therefore not necessary to restrict numbers or types of operations. For this reason, and because of potential conflicts with federal laws regarding airline access to airports, this option is not recommended.

19. Establish noise compatibility staff.

An airport operator can establish a staff to (a) process noise complaints, (b) initiate and coordinate operational measures to control and monitor aircraft noise, (c) work with a noise compatibility committee, and (d) work with local governmental agencies to implement noise mitigation measures. A noise compatibility staff can make the public aware of the airport operator's efforts to reduce aircraft noise and may help to improve the airport's relationship with the community.

Currently, a full-time noise compatibility staff at Huntsville International Airport is not necessary. Therefore, this option is not recommended.

20. Establish noise advisory committee.

A noise advisory committee can provide a forum for an airport operator and the community to exchange information, ideas, and progress reports on noise abatement and mitigation. To implement and monitor the progress of a noise compatibility program, such a committee should have broad representation from the affected communities, airport users, special interest groups, and the airport operator. The committee can provide an opportunity for the airport operator to inform the community of its efforts to reduce aircraft noise exposure and can allow the airport operator to hear and respond to community concerns.

The HMCAA has determined that a noise advisory committee is necessary. The HMCAA will establish such a committee with representation from the local communities.

21. Impose noise-related landing fees.

At most airports, landing fees (charges for use of the airfield) are assessed on the basis of aircraft weight. Noise-related landing fees are differential airport user fees designed to charge higher rates for aircraft that make a larger contribution to the overall aircraft noise exposure at the airport. Theoretically, fees would be based on the level of noise an aircraft makes--the noisier the aircraft, the higher the airport user fee for that aircraft. One approach might be to assess aircraft fees in relation to the noise the aircraft produces relative to FAR Part 36 certificated noise levels. Noise-related or time-of-day user fees could encourage airlines to use new equipment, fly fewer nighttime operations, drop out of that airport market, or be used by the airport operator to fund other noise abatement or noise mitigation measures.

Because of the few noise-sensitive land uses exposed to aircraft noise of Ldn 65 or higher in the Airport vicinity, there appears to be no justifiable basis at this time for imposing noise- or arrival-time-related landing fees at the Airport. Therefore, this option is not recommended.

22. Establish helicopter restrictions.

Noise from helicopters is usually more difficult to control than noise from other types of aircraft because helicopters usually do not follow prescribed approach and departure tracks. Noise abatement procedures for helicopters typically include increasing helicopter approach and departure altitudes or corridors.

Little or no helicopter activity occurs at Huntsville International Airport. Therefore, the establishment of noise abatement procedures for helicopters is not recommended.

23. Enforce prescribed flight track use.

Arrival and departure flight tracks, routes, or patterns are established by the FAA, in conformance with accepted procedures, to aid in air traffic control and to enhance safety. Terrain and obstructions, interactions with the airspace of other airports, amount of traffic, and weather and other conditions also play a role in the establishment of specific flight patterns. At some airports, flight patterns are established and enforced by local FAA Tower orders for noise abatement purposes.

It is not necessary to change flight tracks at Huntsville International Airport for noise compatibility purposes. Therefore, this option is not recommended.

24. Acquire noise-monitoring equipment.

A noise-monitoring system can be used to identify individual areas that experience aircraft noise problems and to quantify levels of community noise exposure. Permanent noise-monitoring systems typically cost from about $300,000 for a relatively simple system to more than $1 million for complex installations. Portable noise monitoring equipment can be used to periodically check aircraft noise exposure levels as required. Depending on the complexity of the equipment, portable noise monitors can range in cost from several thousand dollars to over 30,000 dollars.

Although the current noise exposure from aircraft operations is minimal, the potential increase in noise exposure resulting from passenger and all cargo airline hubbing operations has caused concern in communities adjacent to the Airport. It has been found at airports with noise monitoring equipment, that actual noise measurements help the public-at-large better understand the airport noise situation. A permanent noise monitoring system can be used to measure actual annual Ldn values at key locations and verify computer generated values and thus increase public confidence in the noise exposure maps produced for the airport. This has been successful at Lambert-St. Louis International Airport which has had a permanent noise monitoring system since 1984 and at a number of California airports which have had such systems since the early 1970s. The success of any noise compatibility program is dependent upon the credibility of the noise exposure maps with the general public. The best way to ensure public credibility is with actual data collected on a continuous basis.

Therefore, the HMCAA has determined that a small permanent noise monitoring system would be appropriate in order to track potential changes in aircraft noise exposure and keep the public informed of such changes.

NOISE MITIGATION OPTIONS

Noise mitigation options are those that would minimize the effects of aircraft noise in affected communities and neighorhoods. These options include comprehensive planning and the application of local land use controls to limit noise-sensitive development in areas of high noise exposure; acquisition and relocation; acoustical treatment; avigation easements; fair

disclosure; and other measures directly applicable to the neighborhoods.

Twenty-two noise mitigation options were identified and evaluated to determine if they would be suitable for implementation in the environs of Huntsville International Airport. These 22 options are listed in Table 5-2, and those that are recommended for implementation are indicated. The options included in the initial evaluation are those that were (1) recommended for consideration by members of the Project Advisory Committee or the general public; (2) recommended for or successfully implemented in the environs of other air carrier airports; and (3) mandated for review by the FAA under FAR Part 150.

Table 5-2

NOISE MITIGATION OPTIONS
Huntsville International Airport

	Option	Implementation	Implementing agency
1.	Institute acquisition program	No	HMCAA
2.	Establish redevelopment program	No	HMCAA, Cities
3.	Require acoustical treatment for new incompatible structures	Yes	Cities
4.	Provide acoustical treatment for existing incompatible structures	Yes	HMCAA, Cities
5.	Acquire avigation easements	Yes	Cities
6.	Sponsor a property transaction assistance program	No	Cities
7.	Acquire development rights	No	Cities
8.	Transfer development rights	No	Cities
9.	Perform comprehensive planning	Yes	Cities
10.	Rezone land in undeveloped areas	Yes	Cities
11.	Rezone land in developed areas	No	Cities
12.	Develop height/noise/safety zoning overlay ordinance	Yes	Cities
13.	Require fair disclosure	Yes	Cities
14.	Provide tax incentives	No	Cities
15.	Discourage home mortgage insurance	Yes	FHA, VA
16.	Sequence capital improvements	Yes	Cities
17.	Incorporate the noise compatibility program in the regional transportation plan	Yes	TARCOG
18.	Institute a land banking program	Yes	HMCAA
19.	Modify subdivision regulations	Yes	Cities
20.	Adopt height restriction ordinance	No	Cities
21.	Obtain funding for noise mitigation	Yes	HMCAA, FAA
22.	Obtain funding for continued planning	Yes	HMCAA, FAA

FAA = Federal Aviation Administration
FHA = Federal Housing Administration
TARCOG = Top of Alabama Regional Council of Governments
VA = Veterans Administration
HMCAA = Huntsville-Madison County Airport Authority

Source: KPMG Peat Marwick, January 1989.

Evaluation Criteria

The 22 noise mitigation options were evaluated on the basis of the following 10 criteria:

1. The option reduces existing incompatible land uses.
2. The option prevents or reduces the probability of additional incompatible land uses being developed in areas exposed to high levels of aircraft noise.
3. The option is consistent with the policies of the Huntsville-Madison County Airport Authority.
4. The option is consistent with the policies of the affected local jurisdictions.
5. The option would have a positive effect on the existing and planned land use development pattern.
6. The option can be implemented under existing laws.
7. The option is economically feasible.
8. The option is financially feasible.
9. The option is politically feasible.
10. The option is feasible for early implementation.

An option does not necessarily have to meet all of the criteria to be recommended for implementation in the Airport environs. For example, existing laws may not permit an action to be implemented although the action may provide substantial benefit. Therefore, consideration might be given to including the option in the Noise Compatibility Program with the recommendation that enabling legislation be sought to allow implementation.

Description and Evaluation of Options

The following presents a discussion of each of the 22 noise mitigation options listed in Table 5-2.

1. Institute acquisition program.

This option is used to achieve land use compatibility through outright fee simple acquisition of all properties developed in

land uses that are incompatible with aircraft/airport operations. Undeveloped land can also be purchased.

Such land could then be: (a) leased for airport-compatible uses; (b) resold with avigation easements and deed restrictions that would permit only specified compatible land uses; (c) retained by the airport operator for airport purposes or maintained as permanent open space; or (d) used by other governmental agencies for public purposes, such as storage, parks, or similar noise-tolerant uses. The acquisition of residential units must be accompanied by a relocation program when federal funds are involved.

Considerations in an acquisition program include the length of time for acquisition to be completed and financial implications related to the lack of property tax revenues being generated in areas owned by the airport operator.

Acquisition programs can severely disrupt residential neighborhoods and are typically limited to residential areas where noise exposure exceeds Ldn 75, critical locations where other solutions are not feasible, or where the land is not yet developed.

It is estimated that one residence would be located within the Ldn 70 contour for the Airport in 1993. With passenger and all-cargo airline hubbing in 1993, the same residence and one other residence would be located within the Ldn 75 contour and two residences and one church would be located within the Ldn 70-75 noise exposure contour.

HMCAA will consider the acquisition of two residences within the area that would be exposed to Ldn 75 in 1993 with hubbing. HMCAA may also wish to consider the purchase, on a voluntary basis, of the other two residences and the church within the area that would be exposed to Ldn 70 in 1993 with hubbing.

Because there are no existing neighborhoods within noise exposure areas of Ldn 75+, it is not necessary for HMCAA to establish an acquisition program, and therefore is not recommended.

2. Establish redevelopment program.

Redevelopment programs involve removing incompatible land uses and replacing them with compatible ones. Redevelopment can be a viable means of achieving land use compatibility, especially in blighted areas. However, implementation of redevelopment

In an airport environs, the interior of a conventional wood frame structure with windows and doors closed will experience noise exposure levels about 25 dBA less than the exterior. With such a reduction in noise exposure at Ldn 65, no additional acoustical treatment is required. However, central air conditioning would be required to ensure that windows and doors could be kept closed during the warmer summer months.

As noise exposure increases above Ldn 65, however, additional acoustical treatment may be needed. The weather-stripping of windows and doors, the installation of well-sealed storm windows, the installation of solid-core exterior doors, and the placing of baffles in interior-to-exterior vents may be needed to maintain interior cumulative annual noise exposure at or below Ldn 45.

The developer-owner of new residential or other noise-sensitive structures should retain the services of an acoustical engineer to assist in the design and construction of the buildings. A good acoustical engineer can help assure that the recommended interior noise exposure level (Ldn 45) can be reasonably attained.

The City of Huntsville's Airport Obstruction and Noise Exposure District Regulations require that new structures exposed to aircraft noise of Ldn 65+ be soundproofed with acoustical treatment (as appropriate) to be compatible with Airport operations. All building applications must be accompanied by certification, from a duly qualified registered professional engineer or architect, that the proposed use accomplishes the required reduction in exterior-to-interior Ldn values. It is recommended that the City of Madison and the City of Triana adopt similar requirements, either as part of their zoning ordinances or building codes.

4. <u>Provide acoustical treatment for existing incompatible structures</u>.

A program for the acoustical treatment of existing structures should be established in areas where the conversion of land use would destroy a community or where the conversion is prohibitively expensive. Such treatment can be accomplished at the expense of the airport operator or through some form of cost sharing, and is usually provided in exchange for an avigation easement. Acoustical treatment alleviates noise problems in the interior of structures.

Many methods of acoustical treatment are available, including: (a) sealing or weather-stripping windows, doors, vents, and external openings; (b) replacing hollow-core doors with solid doors, thereby eliminating direct paths of exterior-interior noise transmission; (c) installing central air conditioning, acoustically treated ceiling panels, wall panels, and double-glazed windows; and (d) insulating entryways, attics, and crawl spaces. Ventilating systems would be required where windows are sealed. The method of sound insulation should be selected on a case-by-case basis.

As with the acoustical treatment of new structures, the acoustical treatment of existing structures should be undertaken to achieve an interior noise level no greater than Ldn 45. The techniques for acoustically treating an existing structure would be the same as for a new structure, as noted in Noise Mitigation Option 3. However, with existing structures, there will undoubtedly be a wide variation in building construction techniques and in how well a particular structure has been maintained over the years.

Therefore, acoustical treatment of existing structures should be carried out only after the structure is thoroughly inspected to determine its suitability for such treatment and also whether Ldn 45 can be achieved and maintained within. No building should be accepted for an acoustical treatment program if it is not structurally sound and/or capable of meeting all applicable building codes.

As shown on Exhibit 4-3, in 1993, with passenger and all-cargo airline hubbing, the numbers of single-family residences exposed to Ldn 65, 70, and 75 are approximately 156, 2, and 2, respectively. Also, one church would be located in the Ldn 70-75 and one church would be located in the Ldn 65-70 noise exposure areas.

Because of the number of noise-sensitive land uses projected to be exposed to noise, it is recommended that HMCAA initiate a voluntary program for acoustical treatment of existing single-family residences.

5. Acquire avigation easements.

An avigation easement is a form of real estate acquisition that involves less-than-fee purchase of property to compensate property owners for (a) the right to overfly the property and cause noise, vibration, or other possible effects of aircraft operations (an air rights easement); and/or (b) imposition of

restrictions on the use or development of the property to enhance aircraft safety or maintain land use compatibility (deed restrictions).

Easements are permanent and enforceable through the civil courts, and the title is held until sold or released. In some states, noise-sensitive properties covered by avigation easements are considered to be compatible with an airport. As discussed below, some easements can be made a part of the deed and held in perpetuity with the property.

Air Rights Easement. In an air rights easement, the property owner stipulates that the airport operator will not be held legally responsible for the effect of aircraft operations. The easement usually runs in perpetuity with the deed. A review of such easements in effect around the United States indicates that a majority do not set limits on the number of aircraft overflights, time of day of such overflights, or the intensity of the adverse effects.

Deed Restrictions. This type of easement restricts the use or development of the property. One objective is to limit hazards that could pose a danger to air navigation, such as smokestacks, electrical interference, or excessive structural heights. A second objective is to achieve land use compatibility by prohibiting the (a) future development of the property in any use more intensive than that existing at the time of the transaction or (b) the change to a noise-sensitive use. Some easements only restrict hazards; others combine hazard restrictions and land use compatibility. Deed restrictions are similar to development rights acquisition, except that deed restrictions usually include clauses to protect the airport operator from liability, are usually imposed on urban land, and are not necessarily held in perpetuity. Title to this type of easement can be transferred or sold back to the property owner at any time.

Avigation easements are acquired by airport operators in two ways: (a) direct purchase from the property owner either through negotiation of value or through a court-ordered settlement, and (b) dedication at the time of subdivision approval. In some communities where dedication is required, the developer receives no compensation and the easement applies to each unit in the development. In other cases, a minimum compensation is made, either for the entire subdivision or individually for

each unit. The easement dedication area is typically specified in the jurisdiction's subdivision regulations and determined by an aircraft noise exposure area or by a defined airport area of influence.

The major disadvantages of avigation easements are that they do not lessen the noise problem nor do they provide any remedial relief to existing residents, except in the form of monetary compensation. However, in some cases, monetary compensation may be all that the property owner is seeking.

The City of Huntsville currently requires that avigation easements be granted to HMCAA upon application of a building permit for a new structure in the Airport environs. It is recommended that the Cities of Madison and Triana adopt similar ordinances for new structures. It is also recommended that HMCAA offer a voluntary program for the purchase of avigation easements on properties with residences that are not suitable for soundproofing or where owners do not want their homes to be acoustically treated.

6. Sponsor a property transaction assistance program.

Property transaction assistance is a program whereby the airport operator guarantees owners of residential property that, if they decide to sell, their homes will be purchased at fair market value. The program is usually limited to single-family dwellings within areas exposed to relatively high levels of aircraft noise, generally above Ldn 70. However, this criterion may vary depending on the number of dwellings involved and the overall aircraft noise exposure. The goal of a property transaction assistance program is to improve noise-affected residential neighborhoods by (a) stabilizing such areas, (b) protecting the existing (and future) tax base, and (c) enhancing local property values.* The program is solely recommended in residential areas where it is desirable to maintain the residential land use throughout the foreseeable future.

Property transaction assistance programs are offered in neighborhoods exposed to aircraft noise where a majority of the residents choose to remain, but a few may desire to move because they perceive the noise levels to be too high. If

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*Peat, Marwick, Mitchell & Co., "Special White Paper on the Concept of Purchase Assurance as an Airport Noise Remedy," November 1984.

these residents have trouble selling their property, in part because of the noise levels, transaction assistance may be offered. The program should be a purely voluntary one, with no relocation benefits available to the property owner.

Finally, transaction assistance programs should only be offered in the residential areas most severely affected by noise (i.e., where noise exceeds Ldn 70 and is forecast to continue to do so in the future).

Because no residential neighborhoods in the environs of Huntsville International Airport are exposed to Ldn 70 or higher, this option is not necessary at this time and is not recommended.

7. Acquire development rights.

The purchase of development rights is the public acquisition of a landowner's right to develop property in uses incompatible with airport/aircraft operations. This option applies more to undeveloped areas because the purpose is to restrict the ways the property may be used. Maximum heights of structures may also be specified. The airport operator is protected against damage claims, and the landowner is compensated for the limits placed on developing the property and for the effects of continued aircraft operations. In addition, the property remains on the local tax rolls.

The main concern with development rights acquisition is the cost, which can range from 40% to 80% of the appraised property value. As the cost approaches 50% to 60% of appraised value, outright acquisition in fee simple may be more appropriate. For example, if the property rights are a high percentage of the cost of full title because the land has little value for open space use (the land may be unsuitable for agriculture or there may be no demand for commercial recreation in the area), it would be of greater benefit to the airport operator to purchase the parcel in fee simple and either retain it in open space or develop the land in a compatible use. Similarly, if the land cannot provide a reasonable economic return to the owner after the property rights are purchased, it is unlikely that the owner would be willing to sell anything less than full title to the property.

This option is not economically feasible and, therefore, is not recommended.

8. Transfer development rights.

The transfer of development rights allows a property owner to buy all or part of the development rights on a particular property (usually prescribed by zoning or other regulations) and transfer those rights to another property within the same jurisdiction that otherwise would be limited by zoning in less intensive use. (A property owner could also transfer the rights to another parcel owned by the same person or entity.) The transfer of development rights could be applicable in an airport environs, especially if the land is in agricultural use and has a high potential for urbanization. The benefit of a transfer of development rights by an airport operator is that the transfer does not require any airport-related funds.

Because this option is prescribed by zoning or other similar regulations, it is not enforceable at this time in Madison County because of the lack of zoning power.

9. Perform comprehensive planning.

Perhaps the most important element in achieving compatibility between an airport and its environs is the development of a comprehensive plan or plans that take into account both community and airport needs. Comprehensive planning for airport environs must be a coordinated effort to ensure compatibility of aircraft operations with the needs of the people in the airport environs and the region.

Such planning can safeguard the general public welfare by including actions that minimize adverse socioeconomic effects and mitigate unavoidable environmental effects to the maximum extent possible. The purpose of the planning is to seek practical solutions and to formulate and implement compatible short- and long-range land use strategies consistent with airport development. The effectiveness of comprehensive planning may be limited in a multijurisdictional situation. Also, if it is to be successful, a comprehensive plan must be more than just a guide to future growth that can be ignored when development decisions are made.

One technique used in comprehensive planning is urban growth management--a process that identifies the demands on municipal facilities, improvements, or services created by any proposed residential, commercial, industrial, or other type of development. The process is intended to satisfy such demands; to identify any deleterious effects of development; and to protect

residents against such effects by minimizing the costs of municipal facilities, improvements, and services. Growth management is not intended to prevent growth, but rather to avoid free or disorganized development. Policies must be formulated to avoid scattered pockets of isolated development, which can have harmful environmental effects and be incompatible with airport operations. It is also costly to provide services (utilities, roads, school busing, etc.) to support such "leap frog" development.

To be effective, comprehensive planning should involve all jurisdictions in the airport environs. The comprehensive plan(s) should be formally adopted by these jurisdictions so that development decisions are made in accordance with the plan(s). In addition, the plan(s) should be specific enough to serve as a practical guide to development.

The City of Madison has a comprehensive plan that incorporates land use guidelines for areas affected by aircraft noise; however, incompatibilities in land use within the Airport environs still exist. The City of Huntsville currently does not have a comprehensive plan nor does the City of Triana. It is recommended that these two cities work together to develop comprehensive plans, and that the City of Madison amend its plan to reflect the current noise exposure map.

10. Rezone land in undeveloped areas.

Changes in zoning require the cooperation of affected jurisdictions if they are to ensure land use control and compatibility in undeveloped areas that are exposed to high levels of aircraft noise. Such zoning changes are intended to (a) prohibit future incompatible land uses, or (b) restrict noise-sensitive land uses to specified building or population densities. This restriction might be implemented by requiring that the maximum allowable concentrations of employees, customers, or persons in public assembly be specified in the zoning ordinance.

It is recommended that the cities of Huntsville, Madison, and Triana rezone undeveloped parcels to promote compatible land uses such as commercial or industrial.

11. Rezone land in developed areas.

Although changes in zoning are more difficult to implement in developed areas than in undeveloped areas, such changes may effectively preclude or restrict future incompatible land uses. Land use compatibility with aircraft operations may still be a worthwhile endeavor in developed areas.

For parcels of land that have never been improved, the principal differences between developed areas and undeveloped areas are: (a) the size of the vacant parcels, and (b) the location of the parcels in the existing urban pattern. In already developed areas, vacant parcels may range in size from individual residential lots to tracts of 10 to 20 acres that were bypassed during initial development or that are included in the last segment of a larger development program.

The location of the vacant parcel relative to adjacent urban development is as important as its size. Where vacant parcels are completely surrounded by a single type of land use, such as residential, it is very difficult to deny the owner the right to develop the property in a similar use of the same density.

However, where the vacant property is located between two dissimilar uses, such as residential and commercial or industrial, it may be possible to reevaluate the present zoning and change it to a use compatible with aircraft operations. The same holds true with regard to vacant parcels fronting on major thoroughfares. If the parcel is large enough, it might be possible to develop it for commercial use if there is a demand for such use.

The responsibility for zoning changes in developed areas rests with the local political jurisdiction. Because of the typically scattered location of vacant parcels, the need to take into account their compatibility with adjacent land uses, and the economic feasibility of development, each parcel for which rezoning potential exits must be evaluated individually. Even where it may not be feasible to change the zoning, it may be possible to approve the development on a conditional basis--to regulate density or provide acoustical treatment--so that land use compatibility with aircraft operations is achieved to the maximum degree possible.

This option is not recommended because of the lack of affected land uses exposed to Ldn 70-75 around Huntsville International Airport.

12. Develop height/noise/safety zoning overlay ordinance.

Height/noise/safety zoning overlays of airport environs are adopted to (a) ensure aircraft safety by specifying maximum height limits on structures, utility poles, antennas, and trees within the airport environs, (b) restrict noise-sensitive land uses in areas exposed to high levels of aircraft noise, and (c) provide safety areas under the approaches to each runway.

This type of overlay is developed by first determining noise-compatible zones and then combining the noise zones with height restriction criteria. Noise-compatible zones are identified through the use of aircraft noise exposure maps that are based on existing and forecast levels of aircraft operations. Noise exposure information is displayed on a map through the use of contours or grid cells to form noise zones. Noise abatement procedures for aircraft operations (recommended as part of a noise compatibility program) are incorporated into the descriptions of noise-compatible zones.

The noise zone map is then combined with a height restriction map to form a height/noise overlay. The height restriction map is prepared in accordance with FAR Part 77* and depicts the specific height levels over and around the airport that structures, poles, and natural vegetation should not be permitted to exceed. Safety areas (approach and clear zones) off the ends of all runways, in which all forms of development are severely restricted, are then added to the height/noise overlay.

In August 1987, the City of Huntsville adopted an Airport Obstruction and Noise Exposure District Regulations ordinance to ensure compatibility of future land uses around the Airport. This ordinance is based on the Airport's Initial Noise Exposure Map and Land Use Compatibility Program. The City of Madison does not currently have specific zoning regulations for compatible uses around the Airport, nor does the City of Triana.

It is recommended that the City of Huntsville update its ordinance to reflect the 1993 noise exposure areas and that the City of Madison adopt a similar ordinance to ensure that future land uses are compatible with Airport operations. Madison and Limestone counties currently do not have the authority to control land use or zoning to ensure compatible uses in the areas affected by aircraft noise. It is recommended that Madison and Limestone counties request an amendment to their land use and zoning control authority from the Alabama State Legislature in the 1989 session.

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*U.S. Department of Transportation, Federal Aviation Administration, Federal Aviation Regulations Part 77, "Objects Affecting Navigable Airspace," January 1975, as amended.

13. Require fair disclosure.

Fair disclosure allows a prospective buyer of residential property to be made aware of the aircraft noise levels expected at a particular location and of any local requirements for soundproofing. Fair disclosure of this information can be required directly through an ordinance or in the subdivision regulations covering the sale or transfer of property.

Developers and current homeowners may object to fair disclosure requirements on the grounds that the requirements may depress property values. Thus, the effectiveness of fair disclosure requirements largely depends on the strength of the applicable ordinance or regulation and the community's willingness to enforce it. For example, penalties for noncompliance would probably have to be included in the requirements.

It is recommended that an ordinance be adopted by the cities of Huntsville and Madison requiring fair disclosure prior to the sale or lease of any residential unit exposed to existing or forecast aircraft noise of Ldn 65+.

14. Provide tax incentives

Tax incentives are a means of allocating noise reduction costs equitably. Such incentives can be used to induce current and future property owners to comply with performance standards for noise relief contained in the housing and building codes. Lowered property taxes can provide a form of compensation to owners of property exposed to aircraft noise. Tax incentives can also discourage the conversion of facilities, such as golf courses or agriculture, to more intensive uses by offering preferential tax treatment for compatible land uses.

This measure is not recommended for the environs of Huntsville International Airport.

15. Discourage home mortgage insurance.

Improving mortgage policies and practices can involve the denial of insurance for incompatible development adjacent to airports.

The Federal Housing Administration (FHA) and the Veterans Administration (VA) generally do not insure mortgages in locations exposed to cumulative annual average noise above Ldn 75 unless a special clearance and an environmental impact statement are approved by the U.S. Department of Housing and Urban Development (HUD).

The FHA and VA should be encouraged to deny insurance for mortgages for proposed residential construction in areas exposed to aircraft noise of Ldn 75+. Other local policies conforming to the HUD guidelines should be continued and extended, if needed, to cover all incompatible development exposed to aircraft noise of Ldn 65+.

16. Sequence capital improvements.

The timing of capital improvements and public works projects can strongly influence land use trends and demands. Such projects may include constructing or widening roads; developing schools, parks, and recreational facilities; and building water and sewer mains and flood control facilities. The timing of these projects is related to urban growth management because the delay of projects can discourage development, while early completion of such projects encourages development. As an implementation method for achieving land use compatibility, the judicious use of capital improvements related to public works can greatly assist changes in land use or reduce the demand for growth in an area.

Therefore, it is recommended that the local jurisdictions of Huntsville, Triana, and Madison work together to consider land use compatibility policies when determining infrastructure sequencing.

17. Incorporate the noise compatibility program in the regional transportation plan.

The Noise Compatibility Program for Huntsville International Airport should be a regional planning effort because it affects three cities and two counties.

The purpose of the Noise Compatibility Program is to guarantee the longevity of the principal air transportation facility serving the Huntsville metropolitan region by achieving long-term compatibility between the Airport and its neighboring communities.

Therefore, it is recommended that the Top of Alabama Regional Council of Governments (TARCOG) adopt the final recommendations of the Noise Compatibility Program as part of its regional transportation plan. Incorporation of the Program into the regional transportation plan will also help ensure that HMCAA maintains its eligibility for federal funding in support of its noise remedy programs.

18. Institute a land banking program.

Land banking is a means of ensuring the future development rights of an airport to expand or relocate by acquiring land or options to purchase land for future use. Land banking is not often pursued because (a) the airport operator does not want to expend funds for land that may not be needed in the future, and (b) local jurisdictions vigorously protest the loss of taxable land unless the need is immediate. Normally, land banking involves the acquisition--well in advance of actual development--of a new site for an airport, together with sufficient property around the site to protect against future land use incompatibilities.

Much of the environs of Huntsville International Airport is undeveloped; therefore, those portions of land within City of Huntsville jurisdiction can be effectively controlled through the use of zoning regulations. However, land banking would be one means of assuring compatible land uses within Madison and Limestone counties where no zoning authority exists.

Therefore, it is recommended that HMCAA consider acquiring some of these undeveloped land areas, assuming funds are available.

19. Modify subdivision regulations.

Subdivision regulations are ordinances adopted by local jurisdictions to regulate the division of property and its subsequent development. Subdivision regulations can be modified to require that transmission of sound from exterior sources is minimized in new development. To protect the airport, subdivision regulations could require that avigation easements be granted for proposed development within an airport environs. Subdivision regulations could also require fair disclosure or buyer information notices upon the sale or transfer of existing property. Local jurisdictions are responsible for modifying subdivision regulations.

Where noise exposure levels exceed Ldn 65, and it is not feasible for local jurisdictions to rezone the property to a noise compatible use (see Noise Mitigation Options 10 and 11), the affected local jurisdictions should modify their subdivision regulations to require acoustical treatment as specified in local building codes as a condition of approval for all new residential development. Also, it is recommended that avigation easements be granted to HMCAA as a condition of approval for new residential development exposed to noise above Ldn 65 or located in areas where heights are regulated in accordance with FAR Part 77, "Objects Affecting Navigable Airspace."

The rationale for modifying the subdivision regulations, as well as the zoning ordinances of the local jurisdictions, is that, when property is already zoned for residential use, rezoning would not be required for an owner to develop the property. Therefore, acoustical treatment would not be required as a condition of approval for property development as the result of a zoning change.

It is recommended that the requirements for acoustical treatment and avigation easements be included in the subdivision regulations for the cities of Madison and Huntsville to ensure that any new residential development in areas of high noise exposure would have the proper acoustical treatment. It is also recommended that the City of Triana develop a subdivision ordinance compatible with those of Huntsville and Madison in terms of the Airport environs.

20. Adopt height restriction ordinance.

A height restriction ordinance is part of the height/noise/safety zoning overlay described under Noise Mitigation Option 12. If communities in the Airport environs do not want to adopt the complete height/noise/safety zoning overlay, they should at least be encouraged to adopt a height restriction ordinance.

A height restriction ordinance is recommended only when it is impossible to convince a local jurisdiction to adopt the full height/noise/safety zoning overlay. The City of Huntsville has adopted a height/noise/safety zoning ordinance, and the City of Madison has exhibited the willingness to develop a full height/noise/safety zoning overlay. Therefore, this option is not recommended.

21. Obtain funding for noise mitigation.

Funding for noise mitigation programs can come from a wide variety of sources, including the federal government, the airport operator, and local municipalities. The federal government has established procedures, through the Aviation Safety and Noise Abatement Act of 1979 (ASNA), by which airport operators and local communities are authorized to obtain funds for noise compatibility purposes.

ASNA authorizes 80% funding by the federal government for approved noise compatibility programs. The FAA grants funds for noise mitigation purposes authorized under ASNA through the Airport Improvement Program.

The FAA has approved an FAR Part 150 Program for the Airport; thus, HMCAA is eligible for continued funding for noise mitigation programs, if such funds are available. This FAR Part 150 Program update, when approved by the FAA, will modify and expand eligible programs previously approved by the FAA to reflect changes in aircraft operations and passenger and all-cargo airline hubbing plans being pursued by HMCAA.

22. Obtain funding for continued planning.

The funds to carry out this Noise Compatibility Program were provided, in part, by a grant from the FAA under the Airport Improvement Program. On December 30, 1987, the Airport and Airway Safety and Capacity Expansion Act of 1987 was signed into law. This act provides for a specific set-aside for the planning and implementation of noise compatibility programs.

HMCAA should take advantage of these funds when implementing its Noise Compatibility Program.

Noise Compatibility Program

Chapter 6

NOISE COMPATIBILITY PROGRAM

Huntsville International Airport is located in a relatively undeveloped area with very few incompatible land uses in areas of high noise exposure. This location has permitted the Airport to be unconstrained operationally relative to aircraft noise. The Huntsville-Madison County Airport Authority has pursued a policy of continuously improving air service for the Huntsville Metropolitan Area and acting as a catalyst for economic activity through the successful development of the International Air Cargo Center and on-Airport industrial parks. In furtherance of this policy, HMCAA is actively pursuing the possibility of passenger and all-cargo airline hub operations. The presence of such hubs at the Airport would greatly increase air service to Huntsville and attract further economic growth.

To successfully serve as a passenger and all-cargo airline hub, the Airport must be able to operate with few constraints while remaining compatible, particularly from a noise standpoint, with neighboring communities. At present, this is possible because the Airport environs are generally undeveloped and compatible with aircraft operations. Stringent operational constraints would not have to be imposed because there are few, if any, noise incompatibilities to correct.

However, as the Airport acts as a catalyst for economic growth, it also attracts additional urban development, particularly residential development, to serve that growth. Urban growth in the Huntsville area has moved to the west, in part because of the new job opportunities created on or in the vicinity of the Airport. Although the Airport environs are currently used for agriculture, they may not remain undeveloped if strong demands arise for additional residential development. Thus, the dilemma facing HMCAA is how to continue fostering economic growth while ensuring that residential growth does not surround and constrain the Airport.

Control of land use needed to direct and regulate urban growth rests with the local municipalities. Thus, HMCAA must work with its neighboring cities to ensure that the Airport can be expanded to serve the needs of the region and, at the same time, not adversely affect the local communities.

This FAR Part 150 Noise Compatibility Program Update process brings together HMCAA and community representatives to address the primary question of land use regulation.

The following noise abatement and noise mitigation measures are included for implementation as the Noise Compatibility Program for Huntsville International Airport. The measures include those that can help improve the compatibility of existing incompatible land uses and help reduce the probability of future incompatible land uses from being developed in areas exposed to high levels of aircraft noise. The program measures result from the evaluation of the noise abatement and noise mitigation options discussed in Chapter 5, and input from community representatives on the Project Advisory Committee, HMCAA staff, Airport users, the FAA, and the public-at-large. Participation in any of the program measures is voluntary.

The 19 noise compatibility measures are:

Short-term Measures (implementation to commence in first five years)

Noise Abatement

1. Extend Runway 18L-36R 1,500 feet to the south and 500 feet to the north
2. Equalize runway use

Noise Mitigation-Remedial

1. Provide acoustical treatment for existing incompatible structures
2. Acquire avigation easements

Noise Mitigation-Preventative

1. Perform comprehensive planning
2. Rezone land in undeveloped areas
3. Develop height/noise/safety zoning overlay ordinance
4. Require fair disclosure
5. Discourage home mortgage insurance
6. Sequence capital improvements
7. Incorporate the Noise Compatibility Program in the regional transportation plan
8. Institute a land banking program

9. Modify subdivision regulations

10. Encourage the tightening of noise emission standards

11. Require acoustical treatment for new incompatible structures

12. Obtain funding for noise mitigation

13. Obtain funding for continued planning

14. Establish a Noise Advisory Committee

15. Acquire noise monitoring equipment

Long-Term Measures (implementation to continue beyond the five-year time frame)

Noise Mitigation-Remedial

1. Provide acoustical treatment for existing incompatible structures

2. Acquire avigation easements

The following is a detailed description of the 19 noise compatibility measures.

SHORT-TERM MEASURES (implementation to commence in first five years)

Noise Abatement

1. **Extend Runway 18L-36R 1,500 feet to the south and 500 feet to the north.**

   If the FAA determines that it is practical and feasible, the south end of Runway 18L-36R will be extended 1,500 feet, and the north end of the runway will be extended 500 feet, for a total runway length of 10,000 feet. The 1,500-foot extension to the south would put departures to the north at higher altitudes when passing over residential areas in the City of Madison, thus reducing aircraft noise exposure. If passenger and all-cargo airline hubbing occurs by 1993 and Runway 18L-36R is not extended 1,500 feet to the south, approximately 520 additional persons residing in 186 additional dwelling units would be exposed to noise levels above Ldn 65.

2. Equalize runway use.

HMCAA will encourage the FAA and the Huntsville Airport Traffic Control Tower to continue equalizing the use of the two parallel runways to disperse the noise generated by aircraft equally and to eliminate single areas from being exposed to higher levels of noise.

Noise Mitigation-Remedial

1. Provide acoustical treatment for existing incompatible structures.

HMCAA will establish an acoustical treatment program for single-family residential structures existing as of the date of approval of this document by the Huntsville-Madison County Airport Authority and located in areas exposed to present or future noise above Ldn 65. Participation in the program will be voluntary on the part of the property owner.

A program for acoustical treatment, if necessary, can be carried out either by HMCAA or by the local jurisdiction in which the structures are located. Acoustical treatment should be performed only on homes that were constructed prior to the date of approval of this document by the Huntsville-Madison County Airport Authority, that are in sound structural condition, where there is a reasonable expectation that interior noise of Ldn 45 can be achieved, and in exchange for an avigation easement.

In the short-term, this program will be limited to the three farm houses in the current Ldn 65-70 noise exposure range and the one farm house in the Ldn 70-75 noise exposure range.

Under the FAA's current Airport Improvement Program, local jurisdictions are eligible to receive federal funding for acoustical treatment programs, provided that such programs are in accordance with an accepted FAR Part 150 Noise Compatibility Program. Implementation of an acoustical treatment program will be dependent upon the availability of funding.

2. Acquire avigation easements.

HMCAA will offer a program for the purchase of avigation easements in areas exposed to present or future noise levels above Ldn 65 on properties with noise-sensitive

land uses that were constructed prior to the date of approval by HMCAA of this document and are not suitable for soundproofing or where owners do not want their homes to be acoustically treated. Participation in the program by property owners will be voluntary. It should be noted that Article XLVII of the City of Huntsville Zoning Ordinance already requires the dedication of avigation easements in connection with new construction in the Airport environs.

Noise Mitigation-Preventative

1. Perform comprehensive planning.

The City of Madison has a comprehensive plan, which was adopted in July 1987 and amended in June 1988, to incorporate land use planning measures within noise exposure areas. The noise exposure maps are now outdated and should be amended to reflect the new 1993 noise exposure map with passenger and all-cargo airline hubbing. HMCAA will encourage and work with the cities of Huntsville and Triana to develop comprehensive plans that are compatible with the City of Madison's Comprehensive Plan.

2. Rezone land in undeveloped areas.

A range of land uses compatible with Airport noise exposure zones is provided in Table 4-7. The compatible land uses are based on the suggested land use compatibility guidelines developed by the FAA. The Huntsville-Madison County Airport Authority will work with and encourage the cities of Madison, Triana, and Huntsville to amend their zoning maps to reflect a change in potential residential land uses in areas exposed to Ldn 65 or higher to commercial-industrial uses, as appropriate, given the adjacent uses and any overall area plans. (Rezoning to compatible uses would not apply to areas already rezoned for more intensive residential development unless construction does not occur within a specified period of time.)

Inasmuch as the control of land uses is solely the responsibility of local municipalities in Alabama (not even the counties have land use control powers), the Huntsville-Madison County Airport Authority is limited to working with and encouraging local cities to adopt compatible land use controls. This the Airport Authority has been doing. However, the Airport Authority lacks any legal authority to force the municipalities to establish a

3. Develop height/noise/safety zoning overlay ordinance.

The City of Huntsville currently has a zoning ordinance that regulates the height of structures and objects and ensures compatible land uses within Airport hazard areas and noise exposure areas. The cities of Madison and Triana currently do not have ordinances that reflect noise exposure or structural height limitations with respect to the Airport. HMCAA will work with and encourage the cities of Madison and Triana to consider the development of overlay ordinances. Also, HMCAA will work with and encourage the City of Huntsville to amend its overlay ordinance to reflect the new noise exposure map.

4. Require fair disclosure.

Fair disclosure requirements would not, in themselves, reduce the number of people exposed to aircraft noise. However, the residents moving into an area should be made aware of existing and projected noise exposure. HMCAA will work with and encourage the cities of Huntsville, Madison, and Triana to pass fair disclosure ordinances that require notification prior to the sale or lease of any residential property or structure exposed to existing or forecast aircraft noise of Ldn 65+. A draft fair disclosure statement is provided in Appendix A.

5. Discourage home mortgage insurance.

HMCAA will work with the Federal Housing Administration (FHA) and the Veterans Administration (VA) to discourage the issuance of insurance for mortgages on proposed residential construction in areas exposed to aircraft noise of Ldn 75+. Other local policies conforming to the U.S. Department of Housing and Urban Development guidelines should be continued and extended, if needed, to discourage incompatible development in areas exposed to aircraft noise of Ldn 65+.

6. Sequence capital improvements.

Most of the area surrounding the Airport, except portions to the north, is primarily undeveloped or developed with a few scattered low density residential uses. Therefore, HMCAA will work with and encourage the local jurisdictions to consider land use compatibility policies when determining infrastructure sequencing.

7. Incorporate the Noise Compatibility Program in the regional transportation plan.

HMCAA will request the Top of Alabama Regional Council of Governments to adopt the noise compatibility measures as part of its regional transportation plan. Incorporation into the regional transportation plan will also help ensure that HMCAA maintains its eligibility for federal funding in support of its noise remedy programs.

8. Institute a land banking program.

About 311 acres of undeveloped land in the Airport environs are forecast to be exposed to aircraft noise of Ldn 75 or greater in 1993 with passenger and all-cargo airline hubbing. Therefore, HMCAA will consider acquiring some of the following undeveloped land, if the necessary funds are available:

- Parcels north and south of Runway 18L-36R adjacent to existing residential uses and exposed to aircraft noise of Ldn 75+.
- Land within the clear zones--such as the areas south of Boeing Boulevard within the future clear zones for Runways 18R-36L and 18L-36R.

Before acquiring undeveloped property, HMCAA will consider the effectiveness of the other noise compatibility measures (such as rezoning) in limiting the development of noise-sensitive land uses.

9. Modify subdivision regulations.

Where noise exposure exceeds Ldn 65, and it is not feasible for local jurisdictions to rezone the property to a noise-compatible use (see Measure 2), HMCAA will work with and encourage affected local jurisdictions to modify their subdivision regulations to require acoustical treatment, as specified in local building codes as a condition of approval for all new residential development.

10. Encourage the tightening of noise emission standards.

HMCAA will support the FAA, other federal agencies (such as the National Aeronautics and Space Administration), and aircraft manufacturers to continue their research into new technology for designing quieter aircraft and thereby reducing aircraft noise at the source and assisting airports and local communities in solving their noise problems.

11. Require acoustical treatment for new incompatible structures.

HMCAA will encourage the City of Huntsville to continue enforcing its zoning code, which requires that the average cumulative interior noise resulting from exterior noise sources not exceed Ldn 45 in any habitable room. The zoning code also requires that an acoustical analysis be performed on new residential structures within an area exposed to annual noise levels of Ldn 65, showing that the structure has been designed to limit intrusive noise to no more than Ldn 45*. HMCAA will encourage the cities of Madison and Triana to adopt similar ordinances requiring acoustical treatment for new incompatible structures.

12. Obtain funding for noise mitigation.

Funding for noise mitigation programs can come from a wide variety of sources, including the federal government, the airport operator, and local municipalities. The federal government has established procedures, through the Aviation Safety and Noise Abatement Act of 1979, by which airport operators and local communities are authorized to obtain funds for noise compatibility purposes.

ASNA authorizes 80% funding by the federal government for approved noise compatibility programs. The FAA grants funds for noise mitigation purposes authorized under ASNA through the Airport Improvement Program. Provided that the FAA approves a completed FAR Part 150 Program for the Airport, HMCAA will be eligible for continued funding for other noise mitigation programs if such funds are available.

13. Obtain funding for continued planning.

The funds to carry out this Noise Compatibility Program Update were provided, in part, by a grant from the FAA under the Airport Improvement Program. On December 30, 1987, the Airport and Airway Safety and Capacity Expansion Act of 1987 was signed into law. This act provides for a specific set-aside for the planning and implementation of noise compatibility programs. HMCAA will use these funds as they become available when implementing its program.

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*City of Huntsville, "Zoning Ordinance," Ordinance No. 87-364, Article XLVII, August 27, 1987.

14. Establish Noise Advisory Committee.

The HMCAA will establish a noise advisory committee to advise the Board of Directors and staff of the Airport Authority on matters related to aircraft noise and to maintain a channel of communication between the HMCAA and local jurisdiction on matters of mutual concern. Representatives of the cities of Huntsville, Madison, and Triana, Madison and Limestone counties, airport users, and others, as appropriate, will be invited to serve on the committee.

15. Acquire noise-monitoring equipment.

The HMCAA will acquire and install one or more noise monitors, as appropriate, for use in checking aircraft Ldn noise exposure levels in locations where aircraft noise is perceived to be a problem.

LONG-TERM MEASURES (implementation to continue beyond the five-year time frame)

Passenger and all-cargo airline hubbing at Huntsville International Airport is being vigorously pursued by the Huntsville-Madison County Airport Authority and is anticipated to commence within the five-year time frame of this FAR Part 150 Noise Compatibility Program Update. The forecasts level of hubbing activity will greatly increase the noise exposure footprint for the Airport and result in a number of existing dwelling units in the Cities of Madison and Triana to be exposed to noise levels in excess of Ldn 65+. The following two measures for acoustical treatment and avigation easements are a continuation of the same measures recommended in the short-term program but would not be implemented until the forecast hubbing actually occurs.

Noise Mitigation-Remedial

1. Provide acoustical treatment for existing incompatible structures.

HMCAA will establish an acoustical treatment program for single-family residential structures existing as of the date of approval of this document by the Huntsville-Madison County Airport Authority and located in areas exposed to present or future noise above Ldn 65. Participation in the program will be voluntary on the part of the property owner.

A program for acoustical treatment, if necessary, can be carried out either by HMCAA or by the local jurisdiction in which the structures are located. Acoustical treatment should be performed only on homes that were constructed prior to the date of approval of this document by the Huntsville-Madison County Airport Authority, that are in sound structural condition, where there is a reasonable expectation that interior noise of Ldn 45 can be achieved, and in exchange for an avigation easement. Of the 154 single-family residences that would be exposed to noise levels of Ldn 65 or greater when hubbing occurs, two are farm houses in the Ldn 70-75 noise exposure range.

Under the FAA's current Airport Improvement Program, local jurisdictions are eligible to receive federal funding for acoustical treatment programs, provided that such programs are in accordance with an accepted FAR Part 150 Noise Compatibility Program. Implementation of an acoustical treatment program will be dependent upon the availability of funding.

2. **Acquire avigation easements.**

HMCAA will offer a program for the purchase of avigation easements in areas exposed to present or future noise levels above Ldn 65 on properties with noise-sensitive land uses that were constructed prior to the date of approval by HMCAA of this document and are not suitable for soundproofing or where owners do not want their homes to be acoustically treated. Participation in the program by property owners will be voluntary. It should be noted that Article XLVII of the City of Huntsville Zoning Ordinance already requires the dedication of avigation easements in connection with new construction in the Airport environs.

ANTICIPATED BENEFITS OF NOISE COMPATIBILITY MEASURES

The relative contribution of the noise compatibility measures to reduce incompatibilities is, in some instances, difficult to quantify. The majority of the measures included herein are intended to reduce noise exposure throughout the Airport environs.

Also, the implementation of some measures that could significantly reduce the effects of noise exposure (such as a time schedule for the phasing out of Stage 2 aircraft in the domestic airline fleet) is dependent upon Congressional action that may or may not occur.

Where measures could be quantified, they have been, as have costs associated with specific measures, as applicable. Although the costs and benefits of the noise compatibility program have been provided, the preparation of a cost/benefit analysis is an engineering sense is very difficult because many of the benefits are subjective in nature. Thus the cost of extending Runway 18L-36R to the south to provide noise relief for the City of Madison to the north when airline and all-cargo airline hubbing occurs must be weighted against the adverse community reaction to any hubbing at all if no ameliorative measures were provided. Because hubbing has not yet occurred, the economic benefits to the region from hubbing cannot be quantified with any degree of precision. Yet strong adverse public reaction could cause the Airport Authority to abandon its stated policy to promote Huntsville International Airport as a hub (see the discussion on page 6-1).

Other program measures and associated costs, such as acoustical treatment for existing incompatible structures or the acquisition of avigation easements (the choice to be left to the property owners) are to provide mitigation for residents not currently inside the Ldn 65 that would be when hubbing occurs. The Airport Authority has accepted the responsibility to provide mitigation options for existing residents who could be adversely affected by the Authority's efforts to attract hubbing. It should be noted that these mitigation measures do not apply to new incompatible uses that may be permitted by local jurisdictions after adoption of the noise compatibility program by the Huntsville-Madison County Airport Authority (the program was adopted by the Authority Board on April 10, 1990).

The 20 noise compatibility measures and comments on the relative contribution of each--to the extent that such individual effectiveness can be quantified--are provided in Table 6-1.

Table 6-1

ANTICIPATED BENEFITS OF NOISE COMPATIBILITY MEASURES
Huntsville International Airport

Measure	Benefit
SHORT-TERM MEASURES (implementation to commence in first five years)	
Noise Abatement	
1. Extend Runway 18L-36R 1,500 feet to the south and 500 feet to the north	Permits departing aircraft to achieve higher altitudes over residential neighborhoods north and south of the Airport. The runway extension would reduce the number of persons potentially affected by noise levels above Ldn 65 by 520 and the number of dwelling units by 186.
2. Equalize runway use	Ensures equal or even distribution of noise, thereby eliminating single points of high noise exposure. Current procedure.
Noise Mitigation-Remedial	
1. Provide acoustical treatment for existing incompatible structures	Gives the owners of four homes exposed to Ldn 65 or greater the option of having their homes acoustically treated by HMCAA in exchange for an avigation easement.
2. Acquire avigation easements	Reduces the potential for noise-related litigation. Four homes exposed to noise of Ldn 65 to 75 and potentially eligible for this program.
Noise Mitigation-Preventative	
1. Perform comprehensive planning	Promotes compatibility, but contribution cannot be quantified.
2. Rezone land in undeveloped areas	Would prevent the construction of approximately 1,483 homes in areas forecast to be exposed to noise above Ldn 65.
3. Develop height/noise/safety zoning overlay ordinance	Eliminates the possibility of constructing residential units in areas of Ldn 75+ and would promote compatibility in Madison and Triana.
4. Require fair disclosure	Reduces the potential for noise-related litigation. Contribution cannot be quantified.
5. Discourage home mortgage insurance	Promotes compatibility, but contribution cannot be quantified.
6. Sequence capital improvements	Promotes compatibility, but contribution cannot be quantified.

Table 6-1 (page 2 of 2)
ANTICIPATED BENEFITS OF NOISE COMPATIBILITY MEASURES
Huntsville International Airport

Measure	Benefit
7. Incorporate the Noise Compatibility Program in the regional transportation plan	Gives regional recognition to local noise remedy programs. Contribution cannot be quantified.
8. Institute a land banking program	Approximately 311 acres of land would be acquired.
9. Modify subdivision regulations	Ensures that all new noise-sensitive structures provide sufficient acoustical insulation and secures the granting of avigation easements.
10. Encourage the tightening of noise emission standards	Ensures that aircraft manufacturers use the best technology available for designing quieter aircraft, thereby reducing aircraft noise at the source.
11. Require acoustical treatment for new incompatible structures	Ensures that all future noise-sensitive development will have interior noise levels compatible with Airport operations.
12. Obtain funding for noise mitigation	Aids in implementing noise mitigation measures, but contribution cannot be quantified.
13. Obtain funding for continued planning	Promotes compatibility, but contribution cannot be quantified.
14. Establish noise advisory committee	Creates a formal channel of communications between the HMCAA and local communities to discuss noise issues.
15. Acquire noise-monitoring equipment	Permits the HMCAA to take measurements of Ldn noise levels in areas where aircraft noise is perceived to be a problem.
LONG-TERM MEASURES (implementation to continue beyond the five-year time frame)	
Noise Mitigation-Remedial	
1. Provide acoustical treatment for existing incompatible structures	A continuation of the short-term program. Gives the owners of approximately 154 residential properties exposed to Ldn 65 or greater when hubbing occurs the option of having their homes acoustically treated by HMCAA in exchange for an avigation easement.
2. Acquire avigation easements	A continuation of the short-term program. Reduces the potential for noise-related litigation. About 154 single-family homes would be exposed to noise of Ldn 65 to 75 with hubbing and potentially eligible for this program.

Source: KPMG Peat Marwick, September 1989.

Costs Funding Schedule

Chapter 7

PROGRAM COSTS, SOURCES OF FUNDING, IMPLEMENTATION SCHEDULE, AND GENERAL CONDITIONS

PROGRAM COSTS

The cost of extending Runway 18L-36R (Noise Compatibility Measure 10) is budgeted at $3,811,000. The cost of acquiring and installing a small permanent noise monitoring system has been budgeted at $350,000. The estimated cost of providing sound insulation and/or acquiring avigation easements for approximately 160 homes that are presently or anticipated to be inside the CNEL 65 noise exposure area was calculated to be about $1,600,000 if all owners were to request sound insulation. This cost figure is very approximate because (1) if the assumptions on passenger and all-cargo airline hubbing using in this FAR Part 150 study are not realized, the number of noise impact residences will be far fewer, and (2) it is not known at this time how many of the property owners may wish to participate in the noise compatibility program in the event that hubbing is realized.

SOURCES OF FUNDING

Sources of funding for implementation of the Noise Compatibility Program will be Airport funds and FAA grants-in-aid for airfield improvements for noise compatibility purposes. The actual amount expended in any given year will depend on the availability of funds from these sources.

IMPLEMENTATION SCHEDULE

The measures in this Noise Compatibility Program will be implemented through 1993. The Program will be updated at that time or sooner if an increase in aircraft operations at the Airport or changes in the airfield layout result in an increase in CNEL value of 1.5 or greater or new residential neighborhoods and other noise-sensitive uses not identified in this Program are exposed to noise levels in excess of CNEL 65.

GENERAL CONDITIONS

The Airport Layout Plan has been revised to reflect the extension of Runway 18L-36R.

The Program has been designed to reduce existing noncompatibility and to prevent, or reduce the probability of, establishing new incompatibilities.

As can be seen from the evaluation of alternatives, actions that could (1) impose an undue burden on interstate or foreign commerce, (2) be considered unjustly discriminatory, or (3) derogate safety or adversely affect airspace efficiency were not recommended.

The Program meets both local needs and the needs of the national air transportation system and can be implemented in a manner consistent with the powers and duties of the FAA Administrator.

Public Consultation

Chapter 8

PUBLIC AND AIRPORT USER CONSULTATION

The Noise Compatibility Program Update for Huntsville International Airport was prepared with the help of HMCAA staff, local planning officials, FAA air traffic control personnel, and local citizens affected by aircraft operations.

Data were presented monthly, as they were developed, to the Huntsville International Airport Project Advisory Committee for review and comment. Meetings were held with the Committee on January 18, February 15, March 30, May 17, and October 4, 1989.

The Project Advisory Committee, established in January 1989, is composed of representatives from HMCAA and the following municipalities, airlines, and associations:

Top of Alabama Regional Council of Governments
Federal Aviation Administration
Huntsville Planning Department
Limestone County Commission
Madison County Board of Supervisors

Huntsville Aviation
CF AirFreight
Huntsville Mayor's Office
Madison County Commission
American Airlines

Atlanta Southeast Airlines
Eastern Air Lines
Eastern Metro Express
Northwest Airlines
United Airlines

United Express
City of Madison
City of Triana

The Project Advisory Committee functions as the formal link between the local jurisdictions, the airlines, and HMCAA on matters of mutual concern. The Airport Manager represents HMCAA on the Committee.

HMCAA also held public information meetings in which presentations were made describing the FAR Part 150 Noise Compatibility Program update. Regular meetings were held with residents on February 15, and March 30, 1989, and a special public information session was held on December 11, 1989. The meetings were open to everyone and the opportunity was given at each meeting for comments and questions from the public in attendance.

A formal public hearing for the FAR Part 150 noise exposure maps and noise compatibility program was held on December 18, 1989. The meeting provided an opportunity for the public to comment on the proposed runway extension and its associated noise exposure.

A summary of the Project Advisory Committee meetings and public information sessions is as follows.

PROJECT ADVISORY COMMITTEE MEETINGS

The first meeting was held on January 18, 1989, at Huntsville International Airport in the Madison meeting room. The consultant explained what an FAR Part 150 Noise Compatibility Program is and stated the reasons for the preparation of these documents at this time. Noise exposure maps depicting areas and land uses exposed to high levels of aircraft noise due to 1988 operations and forecast operations for 1993 and 2008 were presented. The implications of each map and the assumptions it represents were discussed. See Appendix B for the meeting agenda, minutes, and list of questions and responses.

The second meeting was held on February 15, 1989, at Huntsville International Airport in the Madison meeting room. The consultant presented the five noise exposure maps depicting present and future levels of noise based on forecast information. The five maps showed 1988 noise exposure levels, 1993 and 2008 projected noise exposure levels assuming passenger and all-cargo airline hubbing, and 1993 and 2008 projected noise exposure levels if passenger and all-cargo airline hubbing does not occur. The agenda, minutes, and list of questions and responses from this meeting are also provided in Appendix B.

The third Project Advisory Committee meeting was held on March 30, 1989, at Huntsville International Airport in the Redstone meeting room. The purpose of this meeting was to solicit final questions about the FAR Part 150 Noise Compatibility Program update which had been submitted to the HMCAA for review, and to present a summary evaluation of the environmental consequences of the runway extension under consideration in the Environmental Assessment. A summary of the environmental

categories considered and the ensuing questions and answers are presented in Appendix B.

The fourth Project Advisory Committee meeting was held on May 17, 1989. At the meeting, the recommended noise compatibility measures were described as were the anticipated benefits of each. The environmental impacts associated with the proposed airfield improvements were also explained. It was pointed out that because all proposed improvements would be constructed on property currently owned by the HMCAA, the environmental impacts, with the exception of near-term (1993) noise exposure would be minimal. See Appendix B for the meeting agenda, minutes, and summary of the anticipated benefits of the noise compatibility measures.

The fifth Project Advisory Committee meeting was held on October 4, 1989. The purpose of the meeting was to explain to the Committee the changes in the proposed runway extensions made at the request of the City of Madison. The Committee was informed that runway extensions would be to the south with the exception of a 500-foot north extension of Runway 18L. The northern extension of Runway 18L would include a 500-foot displaced threshold to the south effectively leaving the landing threshold for this runway in its present location. It was further explained that approximately 50 to 60 additional homes would be included in noise exposure areas of Ldn 65 or higher with the runways extended primarily to the south only instead of the original proposal to extend the runways both to the north and to the south. The additional homes would be south of the Airport in the City of Triana. The minutes and a list of question and responses from the meeting are provided in Appendix B.

PUBLIC INFORMATION SESSIONS

The first public information session was held February 15, 1989, in the Madison Recreation Center at Bob Jones High School, 1282 Hughes Road, before approximately 20 residents and 2 television news crews. The purpose of the meeting was to acquaint the residents of surrounding communities with the FAR Part 150 Program, and to elicit questions. The consultant gave a presentation using a series of viewgraphs, which are included in Appendix C. Maps showing the flight tracks and the noise exposure areas for existing and future conditions were displayed on the walls. After the presentation, the meeting was opened to comments and questions, which are provided in Appendix C.

The second public information session was held on March 30, 1989, in the Madison Recreation Center at Bob Jones High School, 1282 Hughes Road, before approximately 25 residents, 3 newspaper reporters, and 1 television news crew. The purpose of the meeting was to continue the discussion of the FAR Part 150 Noise Compatibility Program update and Environmental Assessment for Runway Extensions. As in the first meeting, the consultant gave a presentation using viewgraphs and questions were asked and answered. Toward the end of the meeting, a representative of the City of Madison submitted a list of recommendations for noise reduction in the Airport environs. The list of questions and the viewgraphs are included in Appendix C.

A special public information session was held on December 11, 1989 in the Madison Recreation Center at Bob Jones High School at the request of the City of Madison. The Madison City Council and approximately 25 residents of Madison were in attendance as well as representatives of the Huntsville-Madison County Airport Authority and its consultants. Mr. Sid Saucier, Chairman of the Board of Directors of the HMCAA, described the development programs proposed for the Airport and the economic benefits currently generated by the Airport as well as future economic benefits. Mr. Eugene B. Conrad, Executive Director of the HMCAA, described the environmental and noise impacts that would result if the proposed projects were implemented.

The questions from the Madison City Council members and the public focused on the issue of aircraft noise. Increased use of Runway 18R-36L by the all-cargo airlines, particularly at night was recommended. The HMCAA representatives explained that the cargo handling facilities were located adjacent to Runway 18L-36R which was the preferred runway for all-cargo aircraft operations. The question was also asked as to what an Ldn 65 noise exposure level sounded like and could some examples be given. It was explained that Ldn methodology represented a cumulative average of all aircraft noise events and could not be described by comparison to a single noise event.

FORMAL PUBLIC HEARING

The formal public hearing for FAR Part 150 noise exposure maps and noise compatibility program for Huntsville International Airport and the environmental assessment for runway extensions at the Airport was held on December 18, 1989 in the Council Chambers at the Huntsville City Hall. A legal notice announcing the date, time, location, and purpose of the hearing was published in the Huntsville Times on November 16, 23, and 30, 1989 and December 7 and 14, 1989. A copy of the legal notice is presented in Appendix D.

The hearing for the environmental assessment and the FAR Part 150 were combined deliberately because the only adverse impact identified in the environmental assessment was aircraft noise. To hold two separate hearings on aircraft noise would have been extremely confusing to the public who would not have made any distinction between the environmental and FAR Part 150 processes.

The Huntsville-Madison County Airport Authority, throughout both studies, which were conducted concurrently, wanted to be completely open and above board in its relations with the public, the airlines, and other airport users. The Airport Authority was, and still is, pursing a policy of attracting airlines to hub at Huntsville International Airport and wanted all parties of interest to be aware of the consequences of this policy before the hubbing occurred rather than after the fact. This would permit the local jurisdictions to take probable airport impacts into account as they conducted their own community planning.

Also, at Huntsville, the environmental and FAR Part 150 processes are merged because the consequences of hubbing affect runway length (thus the need for the environmental assessment) and the overall noise footprint for the airport (thus the need for the FAR Part 150 update). It is not unusual for the measures recommended in an FAR Part 150 noise compatibility program to be the mitigation for adverse noise impacts identified in an environmental assessment of airfield improvements.

The hearing was called to order at 7:00 p.m. by Mr. John D. Snodgrass, a retired judge, who had been designated by the Huntsville-Madison County Airport Authority as the hearing officer. Judge Snodgrass explained that the purpose of the hearing was to afford an opportunity for the public to be heard, to comment on the extension of the runway, and to comment on the noise exposure that might come from the extension of the runway. He requested that the attendees sign the sign-in sheet (a copy of which is included in Appendix D) in the lobby and he pointed out that the attendees could make written presentations up to and through December 22, 1989.

Judge Snodgrass informed the public that a verbatim transcript of the hearing was being prepared and would be available. He then introduced the members of the Board of Directors of the HMCAA and HMCAA staff members in attendance. He explained that there would first be a presentation of what is expected to be done and that, following the presentation, public comment would be taken on anything the public wished to comment about.

Judge Snodgrass then turned the hearing over to Sid Saucier, Chairman, Board of Directors, HMCAA, for the formal presentation. Mr. Saucier briefly explained the nature of the runway extension project proposed by the HMCAA, the need for the project, and the economic benefits that would result from the continued operation and development of Huntsville International Airport. He then introduced Mr. D. Michael Cullivan of KPMG Peat Marwick who was the consultant responsible for the FAR Part 150 Program Update and the Environmental Assessment for the runway extension project.

Mr. Cullivan explained that the update of the FAR Part 150 program was necessary because the previously approved program did not include an analysis of the potential for passenger airline or air cargo airline hubbing operations at Huntsville International Airport. The Environmental Assessment was required for federal aid for major runway extensions. He then described the public consultation process that included regular meetings with a project advisory committee of representatives from the local jurisdictions, school districts, airport users, the airlines, and the Federal Aviation Administration as well as three public information sessions in the City of Madison.

Mr. Cullivan then gave a viewgraph presentation (copies of the viewgraphs are in Appendix D) covering the forecasts of aviation demand with and without passenger and all-cargo airline hubbing, the environmental impact categories covered in the analysis, and the aircraft noise exposure contours for the recommended development actions and alternatives considered for 1989, 1993, and 2008. He pointed out that if passenger and

all-cargo airline hubbing did not occur, the aircraft noise exposure impacts would be minimal--a few scattered farmhouses would be subjected to noise levels above Ldn 65. However, if passenger and all-cargo airline hubbing were to occur before 1993, the worst case scenario, the number of dwelling units exposed to Ldn 65 or greater would increase. For this case, some 467 dwelling units would be affected of which 156 would be single-family residences, 220 would be multi-family apartments and 91 would be mobile homes. Approximately 1,200 persons would be affected. By 2008, even with hubbing, the noise footprint would shrink dramatically because of the increased use of quieter Stage 3 aircraft. Only two homes would be exposed to noise levels of Ldn 65 or greater in 2008.

Mr. Cullivan then outlined the 19 noise abatement and noise mitigation measures recommended to alleviate adverse noise exposure. He also pointed out that two additional measures had been included as a result of meetings with local communities since the report was made available for public review. These measures were: (1) acquisition by the HMCAA of portable noise monitoring equipment to periodically check actual noise levels in the Airport vicinity and (2) the establishment of a noise advisory committee with representatives from the local communities that could meet on a regular basis to discuss the noise problems and what might be done to help solve them.

At the conclusions of his presentation, Mr. Cullivan turned the hearing back to Judge Snodgrass.

Judge Snodgrass then asked if there was anyone who had questions or wished to make a statement.

Mr. Edward Zompa indicated that he wished to speak. He also forwarded a written statement to the HMCAA after the hearing which is presented in Appendix D.

A summary of the issues raised by Mr. Zompa and the responses thereto are presented below:

Issue: The Huntsville-Madison County Airport Authority is imposing a 10% tax (called a fee) on the off-Airport rental car agencies. In assessing its tax on these agencies, the Authority is directly subsidizing the on-site operators by destroying cost competition.

Response: Fees for off-Airport rental car agencies are not a proper subject for consideration in either the FAR Part 150 Noise Compatibility Program Update or the Environmental Assessment of Runway Extensions. It

is recommended that Mr. Zompa raise this issue at a regularly scheduled meeting of the Board of Directors of the HMCAA.

Issue: The total number of aircraft operations in 1993 differs by 3% between the draft FAR Part 150 report and the draft environmental assessment.

Response: The forecast numbers have been corrected in the final reports.

Issue: One volume reports no general aviation touch-and-go operations on Runway 18R-36L during 1988. These operations have been going on almost daily for the last two to two and a half years.

Response: Almost all air carrier training operations (listed under the general aviation category) occur on Runway 18R-36L. Some light (less than 12,500 pounds) general aviation aircraft training operations did occur on Runway 18R-36L in 1988 when Runway 18L-36R was closed for reconstruction. However, the noise exposure generated by light general aviation aircraft is masked by the much greater noise exposure generated by air carrier aircraft so there would be no change in noise contours.

Issue: The computer model does not reflect any consideration of variations in terrain elevation beneath the sound footprint of the offending aircraft.

Response: The integrated noise model does not take terrain elevation into consideration. However, the area within the Ldn 65 contour for the worst case scenario (1993 with passenger and all-cargo airline hubbing) is relatively flat and differences in noise levels due to elevation would not be noticeable. For areas of higher elevation farther from the Airport and well outside the Ldn 65 or greater area, specific noise measurement can be taken when the HMCAA acquires portable noise monitoring equipment.

Issue: At the December 11, 1989 meeting in the City of Madison, neither the Executive Director [of the HMCAA] or the consultant could provide either a technical or nontechnical explanation of the noise analysis methodology that was comprehensible.

Response: An explanation of the noise analysis methodology is presented in Chapter 4 of this report.

Issue: In tonight's presentation it was erroneously stated that an aircraft operating at night was counted as ten operations. The report states that a ten-decibel penalty is assessed against an airplane operating at night.

Response: A ten-decibel increase represents a ten-fold increase in the relative sound energy which in turn is equivalent to a ten-times increase in operations. It is easier for the public to understand increases in aircraft operations than increases in decibel levels.

Mr. Woody Sanderson, a local attorney and City Attorney for the City of Madison, then indicated that he wished to speak. Mr. Sanderson also submitted for the record a number of letters sent over the course of the project to the HMCAA and FAA. Copies of these letters are presented in Appendix D.

A summary of the issues raised by Mr. Sanderson and the responses thereto are presented below:

Issue: The insistence of the Airport on use of the eastern runway [Runway 18L-36R] for almost all of its cargo traffic, much of which are nighttime flights, tends to expand the noise footprint associated with that runway. The Airport Authority shows larger and more obtrusive noise footprints on the eastern as opposed to the western runway. We believe that it is both advantageous for a noise mitigation proposal and not obtrusive to Airport Authority operations to reverse that [move all-cargo airline operations to Runway 18R-36L].

Response: The air cargo facilities are located on the eastern side of the Airport adjacent to Runway 18L-36R. The shifting of all-cargo airline operations to Runway 18R-36L would result in increased taxiing distances of over a mile for aircraft arrivals and departures. The increased noise impacts on the City of Madison would occur if passenger and all-cargo airline hubbing were to occur in the short-term (by 1993), the worst case scenario. Because the HMCAA is actively pursuing airline hubbing, it was felt necessary to show the noise impacts associated with

it although no passenger airline or all-cargo airline has yet indicated a desire to hub at Huntsville International Airport.

Issue: It is our [the City of Madison] understanding from the noise exposure maps presented and from the Environmental Assessment of Runway Extensions that those issues having to do with airport hubbing are not before this public hearing. We must add this caveat to our qualified support for the extension of these runways: our acquiescence in the proposed runway extension in no way may be construed as acquiescence in a significant change of operation without further public hearing.

Response: For the purposes of the Environmental Assessment and the FAR Part 150 Noise Exposure Maps and Noise Compatibility Program Update, passenger and all-cargo airline hubbing was assumed. See page B-15, Appendix B of the Environmental Assessment and page 3-15, of the FAR Part 150 Noise Exposure Maps and Noise Compatibility Program Update.

Mr. Zompa then asked to speak again and raised the following issues:

Issue: There is a statement in the report that says "Not all aircraft that will use this airport have been considered in the analysis." Please explain.

Response: It is difficult, if not impossible, to forecast each specific aircraft type that might use the airport in the future. However, the numbers of operations of each aircraft class (4-engine widebody, 3-engine widebody, 2-engine narrowbody, etc.) have been forecast and are indicated by a representative aircraft in each class.

Issue: On an August day with a temperature of 90 degrees plus and a pressure altitude of 1,000 feet for a fully loaded B-747 taking off to the north for the conditions that exist in terms of runway length, temperature, pressure, and altitude, what would the ground roll be? Where will the footprint sound analysis start? Will it begin at the break ground point, at the end of the runway, or where?

Response: When calculating noise exposure using the FAA's Integrated Noise Model, the noise analysis commences at the start of takeoff roll and continues through acceleration to takeoff speed, rotation, and climbout. B-747 aircraft on long stage lengths to Europe were modeled as a part of the study.

Mr. Saucier, in his closing remarks again stated that written comments would be accepted up to 5 p.m., December 22, 1989 at the HMCAA offices.

Appendix A

Appendix A

SAMPLE FAIR DISCLOSURE STATEMENT

Appendix A

SAMPLE FAIR DISCLOSURE STATEMENT

INTRODUCTION

As called for in the Noise Compatibility Program, fair disclosure ordinances should be enacted by the cities of Huntsville, Triana, and Madison. The ordinance would require realtors and lessors to inform homebuyers and lessees that the property is now, or in the future is expected to be, within an area exposed to high levels of aircraft noise. The areas affected by a fair disclosure ordinance are those that would be exposed to aircraft noise levels of Ldn 65+ in 1988 or 1993.

This appendix includes a sample fair disclosure statement that would be provided to the buyer or lessee after the appropriate ordinances are adopted. After the statement is signed, it would be attached and made part of the deed of trust or lease. Noise exposure maps would be presented to the buyer or lessee along with the fair disclosure statement.

The ordinances establishing fair disclosure should include penalties for violation. For real estate transactions, it would be the responsibility of the title company to ensure that fair disclosure is followed. It may be more difficult to verify that disclosure laws are followed in rental transactions and violators may only be uncovered when the lessee complains.

SAMPLE FAIR DISCLOSURE STATEMENT

Applicability: All areas now exposed, or expected to be exposed, to aircraft noise of Ldn 65 or higher. (Ldn means the day-night sound level.)

NOTICE TO PROSPECTIVE BUYERS OF REAL PROPERTY OR LESSEES OF RENTAL PROPERTY WITHIN AIRCRAFT NOISE ZONES

1. An aircraft noise zone has been established in the environs of Huntsville International Airport. All land within the zone was in 1988, or is expected to be by 1993, exposed to aircraft noise levels of Ldn 65 or higher. Noise levels of Ldn 65 can be annoying or disturbing when doors or windows are open. The noise levels were based on actual 1988 aircraft operations at the Airport and reasonable forecast aircraft operations for such a potential situation.

2. Whenever property within the aircraft noise zone is offered for sale or lease, the cities of Madison, Huntsville, and Triana require, by ordinance, that the seller, lessor, broker, or agent shall notify the prospective buyers, lessees, and tenants, in writing, that the property is located in such a zone, and that the seller, lessor, broker, or agent shall display to the prospective buyers, lessees, and tenants the noise exposure maps for 1988 and 1993.

3. No person who acquires property or an interest therein, or who leases property or an interest therein within the aircraft noise zone after the date on which this statement is signed, shall be entitled to recover damages with respect to the noise attributable to aircraft operations at Huntsville International Airport unless, in addition to any other elements for recovery of damages, such person can show that said damage occurred as a result of one or more of the following, any one or all of which occurred after the date of the acquisition or lease of such property or interest therein:

   A. A significant change in the type or frequency of aircraft operations at the Airport that would cause a change in the location of the aircraft noise exposure area.

B. A significant change in the Airport layout.

C. A significant change in flight patterns.

D. A significant change in nighttime operations.

5. The undersigned acknowledges that he or she has been informed that the property being considered for (purchase) (lease) at

_____
address

_____
City State ZIP Code

is within the aircraft noise zone for Huntsville International Airport. He or she further acknowledges that he or she has been shown the noise exposure maps and that, according to the maps, said property was in an area with a noise level value of Ldn ___ in 1988, or may be in an area with a noise level value of Ldn __ by 1993.

6. The undersigned also acknowledges that he or she has been informed that the property is covered by an avigation easement duly recorded with the County Assessor. The easement allows for the unobstructed passage of all aircraft in the airspace above the property to an infinite height, together with the right to cause in all airspace above said property such noise, vibration, fumes, dust, fuel particles, and all other effects that may be caused by aircraft landing at, taking off from, or operating at or on Huntsville International Airport.*

The undersigned has read and fully understands all of the provisions relating to this Fair Disclosure Statement.

IN WITNESS WHEREOF, the parties have executed this statement as of the day and year written below.

Date: _____, 19___

_____ _____

_____

*This clause only pertains to disclosure statements to be signed by prospective buyers and only if the property is covered by an avigation easement. The clause would be deleted for prospective lessees for properties not covered by an easement.

PRINT NAME OF BUYER OR LESSEE	PRINT NAME OF SELLER, LESSOR, BROKER
Current address	Company
City State ZIP Code	Address
	City State ZIP Code
Signature	Signature

Appendix B

Appendix B

PROJECT ADVISORY COMMITTEE

CONTENTS

PROJECT ADVISORY COMMITTEE

ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
HUNTSVILLE INTERNATIONAL AIRPORT
January 18, 1989

The first meeting of the Huntsville International Airport Project Advisory Committee was called to order at 10 a.m., January 18, 1989.

Attendees: Eugene B. Conrad, Jr., Executive Director, Huntsville-Madison County Airport Authority
Dirk Vanderleest, Airport Manager, Huntsville-Madison County Airport Authority
Michael W. Price, Councilman, City of Madison
Donald W. Ridenour, United Airlines
Lloyd Alley, FAA Airport Traffic Control Tower
Billy Reed, FAA Airport Traffic Control Tower
Michael J. McCarty, Air Transport Association
Brenda Martin, Huntsville Mayor's Office
Bill Whatley, Huntsville Aviation
Gary Daly, Limestone County Commission
Tillman Hill, Madison County Commission
Marilyn K. Lands, Huntsville-Madison County Airport Authority
Juergen Paetz, Huntsville Planning Department
D. Michael Cullivan, Manager, Peat Marwick
Robin M. Kipke, Consultant, Peat Marwick

Mr. Conrad opened the meeting by expressing appreciation for the high turn-out and emphasizing the importance of full participation by all in the Part 150 process. Mr. Cullivan began with a presentation explaining what the Part 150 program is and why the previously prepared Part 150 and Noise Compatibility Program needed to be updated for Huntsville International Airport

Mr. Cullivan explained that the Part 150 is a 5-year projection into the future of noise exposure levels, and since plans have changed for the airport in terms of development and aircraft activity, it was necessary to update the Part 150 program.

The specific reasons for the update are as follows:

1. The east runway is proposed to expand from a length of 8,000 feet to 12,500 feet.

2. The west runway is proposed to expand from a length of 8,000 feet to 11,000 feet.

3. To incorporate the possibility of an airline and air cargo hub at the airport.

4. Numbers and types of aircraft operations have changed.

Also, the FAA has required that an Environmental Assessment (EA) be completed and submitted for review in order to respond to potential effects on the environment, such as noise and air quality, from the changes in aircraft activity. The EA looks 20 years into the future.

Mr. Cullivan presented a series of maps developed by using the Integrated Noise Model and Peat Marwick's computer program to determine the following:

1. Existing noise exposure levels from 1988 data

2. Assumed noise exposure levels for 1993 using forecast data

3. Assumed noise exposure levels for 2008 using forecast data

4. Assumed noise exposure levels for 1993 using forecast and airline and air cargo hubbing data

5. Assumed noise exposure levels for 2008 using forecast and airline and air cargo hubbing data

All of the above maps were presented in contour form representing the 65-70, 70-75, and 75+ Ldn noise exposure levels.

Also shown were two maps representing the following in grid form:

1. Existing 1988 and assumed 1993 and 2008 noise exposure levels

2. Assumed 1993 and 2008 noise exposure levels incorporating airline and air cargo hubbing activity

The maps also identified noise-sensitive land uses with red and orange colors, and depicted jurisdictional boundaries for cities and counties.

Mr. Cullivan explained that the contours represented average daily aircraft events, and that they also include a tenfold penalty weighing for night-time operations (between 10:00 p.m. and 7:00 a.m.).

Mr. Cullivan stated that the Federal Aviation Authority (FAA) required that Day-Night Level (Ldn) be used in describing aircraft noise exposure. He explained that the Ldn metric represented the cumulative annual noise exposure represented by an average day of the year. The interpretation of Ldn 65 was that it was the level at which an average person may find aircraft noise exposure objectionable and the Airport sponsor should consider possible noise abatement and noise mitigation measures, such as acoustical treatment for structures. Ldn 70 is more objectionable and Ldn 75 is considered not suitable for noise sensitive land uses.

Mr. Cullivan gave brief descriptions of Stage 3 aircraft versus Stage 2 aircraft, flight tracks, and operations.

Mr. Cullivan then explained that the 1993 hubbing noise contours were the largest in terms of land area exposed to noise, due to increases in the number of operations and especially due to the increase in number of night time operations. Approximately 415 residences were exposed to 65 Ldn noise levels in this scenario.

The 2008 hubbing noise contours were drastically reduced in size due to the incorporation of all Stage 3 aircraft, plus some military training and air carrier training.

Mr. Cullivan also stated that the five noise exposure maps were not modified to include any noise abatement or noise mitigation measures.

The following questions were responded to:

1. Do the currently existing 8,000-foot runways accommodate cargo activity?

   Yes, but longer runways are needed for the larger loaded aircraft traveling longer distances that would be associated with an air cargo hubbing operation. A minimum 12,500-foot length is necessary.

2. Are aircraft instructed as to which takeoff flight procedure (profile) to follow?

   The departure procedure for all air carrier aircraft is described in FAA Advisory Circular 91-53, commonly known as the Air Transport Association (ATA) procedure.

3. Does the T-38 aircraft fit into Stage 2 or Stage 3?

   Military aircraft are not classified as Stage 2 or 3; these designations are for civil aircraft.

4. Did you compare noise contours from the previous Part 150 program?

   The contours can't really be compared because the information used in developing the contours such as mix of aircraft and numbers of operations has changed.

5. Do 1988 noise contours reflect no usage of one runway for three months?

   Yes.

6. Were the same assumptions for 1988 runway use used for 1993 and 2008?

   No, the noise exposure maps for 1993 and 2008 reflect how the airfield would be normally used with both runways in commission.

7. What is the scale of the maps?

   1" = 2,000'

8. Have you done surveys of the number of complaints about aircraft noise?

   No, we didn't feel it was necessary due to the very low number of noise-sensitive uses exposed to noise.

9. What happened to ordinance development recommended by the previous Part 150?

   Huntsville has adopted an ordinance to deal with noise sensitive land uses. The Counties currently have no authority to zone land.

A tentative date for the next meeting was set for Wednesday, February 15, 1989 at 10:00 a.m.

The meeting was adjourned at 11:45 a.m.

ADVISORY COMMITTEE - HUNTSVILLE INTERNATIONAL 1989 B-6

NAME		ORGANIZATION
MICHAEL W. PRICE	772-0111 544-8224	CITY OF MADISON COUNCIL PLC #4
DONALD W. RIDENOUR	772-0377 859-3721	UNITED AIRLINES
Lloyd Alley	772-9603	FAA Control Tower
BILLY REED	772-9603	FAA Control Tower
Michael J. McCarty	(404) 767-8614	Air Transport Assc
Brenda Martin	532-7304	Mayor's Office
Bill Whatley	772-9341	Huntsville Aviation
Gary Daly	233-6400	Limestone Co. Comm.
TILLMAN HILL	8280726	MADISON CO Com
Marilyn K. Lands	461-8521	Airport Authority
JUERGEN PAETZ	532-7353	H'VILLE PLANNING DEPT.

PROJECT ADVISORY COMMITTEE
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBLITY PROGRAM UPDATE
Huntsville International Airport
February 15, 1989

This is the second meeting of the Huntsville International Airport Project Advisory Committee, held at 10 a.m. in the Madison Room at the Skycenter Hotel, 2nd Floor of the Airport Terminal Building.

AGENDA

1. Meeting called to order at 10 a.m.
2. Noise Compatibility Options
3. Noise Abatement Measures
4. Noise Mitigation Measures
5. Call for Questions
6. Schedule Next Meeting
7. Meeting Adjourns

PROJECT ADVISORY COMMITTEE

ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
February 15, 1989

The second meeting of the Huntsville International Airport Project Advisory Committee was called to order at 10:20 a.m., Wednesday, February 15, 1989.

Attendees: Dirk Vanderleest, Airport Manager,
Huntsville-Madison County Airport Authority
Tim Barnes, City of Huntsville
Roger Sameck, American Airlines
Billy Reed, FAA Airport Traffic Control Tower
Michael Price, City of Madison
Mike Gillespie, Madison County Commission
Kathleen A. Wells, Madison Mayor's Office
D. Michael Cullivan, Manager, Peat Marwick
Robin M. Kipke, Consultant, Peat Marwick

Mr. Cullivan began the meeting with a brief overview of the (five) noise contour maps for the benefit of those who were not in attendance at the January 18, 1989, meeting. Those maps were the 1988, 1993, and 2008 noise exposure maps using historical and forecast information, as well as noise exposure maps for 1993 and 2008 using forecast data for possible airline and air cargo hubbing. The remainder of the presentation focused on the Noise Compatibility Options. Mr. Cullivan went through the list of Noise Abatement and Noise Mitigation Measures that made up the Noise Compatibility Options. The lists of Noise Compatibility Options used at the meeting are included in Appendix A. The following is a summary of questions asked.

1. Do you anticipate an increase in aircraft training activity with the Airport expansion?

   No. In fact, if the hubbing operations really do develop, the military and airline training activities would decrease.

2. Do you anticipate a higher degree of nighttime operations of cargo flights?

   Yes, if Huntsville were selected as an air cargo hub.

3. Are you anticipating a lot of direct flights from Huntsville to international destinations.

   Depending on the cargo operation, it's possible to have direct flights to South America or other international locations.

4. Do you foresee large 747-400s going from Huntsville to Europe?

   Yes, it's possible.

5. What is a hush kit?

   A hush kit is a modification made to aircraft engines to change the aircraft from a Stage 2 to Stage 3 noise emission level. Stage 3 is quieter than Stage 2.

6. How are existing residents dealt with in terms of acoustical treatment?

   A program could be established whereby the property owner could, on a voluntary basis, opt for acoustical treatment of his structure in exchange for an easement. The property owners may also wish to only sell an avigation easement. There may be other cases where residences are exposed to noise exposure levels of Ldn 70 and above. In such cases, a home owner may receive property transaction assistance which helps him sell the property without loss to himself.

7. Is it correct that the runway extension of 4,500 feet is required for air cargo hubbing?

   Yes.

The next project Advisory Committee meeting was set for March 15, 1989.

Meeting was adjourned at 11:50 a.m.

APPENDIX A

Table A

NOISE ABATEMENT OPTIONS
Huntsville International Airport

	Option	Implementation	Implementing agency
1.	Displace runway threshold.		County, FAA
2.	Construct new runway.		County, FAA
3.	Construct noise barriers.		County
4.	Construct high-speed taxiways.		County
5.	Relocate facilities.		County
6.	Equalize or rotate runway use.		County, FAA
7.	Establish preferential runway use.		County, FAA
8.	Establish engine runup restrictions.		County
9.	Change takeoff, climbout, or landing procedures.		County, FAA
10.	Change flight tracks.		County, FAA
11.	Fan out departure flight tracks.		County, FAA
12.	Restrict ground movement of aircraft.		County, FAA
13.	Impose curfews.		County, FAA
14.	Reschedule nighttime flights.		County, FAA
15.	Shift aircraft to another airport.		County, FAA
16.	Encourage use of Stage 3 aircraft.		County, FAA
17.	Limit number or types of operations.		County, FAA
18.	Establish noise compatibility staff.		County
19.	Establish noise compatibility committee.		County
20.	Impose noise-related landing fees.		County
21.	Establish noise abatement procedures for helicopters.		County, FAA
22.	Enforce prescribed flight track use.		County, FAA
23.	Install noise-monitoring system.		County

Table B

NOISE MITIGATION OPTIONS
Huntsville International Airport

Option	Implementation	Implementing agency
1. Institute acquisition program.		County
2. Establish redevelopment program.		County, Cities
3. Require acoustical treatment for new incompatible structures.		Cities
4. Provide acoustical treatment for existing incompatible structures.		County, Cities
5. Acquire avigation easements for existing structures.		Cities
6. Sponsor a property transaction assistance program.		Cities
7. Acquire development rights.		Cities
8. Transfer development rights.		Cities
9. Perform comprehensive planning.		Cities
10. Rezone land in undeveloped areas.		Cities
11. Rezone land in developed areas.		Cities
12. Develop height\noise\safety zoning ordinance.		Cities
13. Require avigation easements for future development.		Cities
14. Require fair disclosure.		Cities
15. Provide tax incentives.		Cities
16. Insure home mortgage.		FHA, VA
17. Sequence capital improvements.		Cities
18. Incorporate the noise compatibility program in the regional transportation plan.		TARCOG
19. Institute a land banking program.		County
20. Modify subdivision regulations.		Cities
21. Adopt height restriction ordinance.		Cities
22. Obtain funding for noise mitigation.		County
23. Obtain funding for continued planning.		County

Meeting
Project Advisory Committee
Huntsville International Airport
February 15, 1989

	Name	Phone #	Representing
1.	BILLY REED	772 9603	ATC
2.	Tim Barnes	532-7353	City of Huntsville
3.	Rocca Sanick	772-9276	AMECOM
4.	MICHAEL PRICE	772-0111	CITY OF MADISON
5.	KATHLEEN A. WELLS	772-0111	Aide to Mayor - Madison
6.	MIKE GILLESPIE	532-3492	MADISON COUNTY COMMISS
7.	DIRK B. VANDERLEEST	772-9395	AIRPORT AUTHORITY
8.			
9.			
10.			

PROJECT ADVISORY COMMITTEE
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
March 30, 1989

This is the third meeting of the Huntsville International Airport Project Advisory Committee, held at 10:00 a.m. in the Madison Room at the Sky Center Hotel, 2nd Floor of the Airport Terminal Building.

AGENDA

1. Call to order at 10:00 a.m.
2. Discussion of Noise Compatibility Program
3. Environmental Assessment Findings
4. Call for Questions
5. Schedule Next Meeting
6. Meeting Adjourns

PROJECT ADVISORY COMMITTEE

ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
March 30, 1989

The third meeting of the Huntsville International Airport Project Advisory Committee was called to order at 10:15 a.m., March 30, 1989.

Attendees: Dirk Vanderleest, Airport Manager, Huntsville-Madison County Airport Authority (HMCAA)
Roger Sameck, American Airlines
Richard Chapman, Madison County Board of Education
Marilyn K. Lands, HMCAA
Billy K. Reed, FAA Airport Traffic Control Tower
Tim Barnes, Huntsville Planning Department
Kathy Wells, Madison Mayor's Office
D. Michael Cullivan, Manager, Peat Marwick
Robin M. Kipke, Consultant, Peat Marwick

Mr. Vanderleest brought the meeting to order at 10:15 and turned the presentation over to Mr. Cullivan.

Mr. Cullivan stated that the preliminary draft of the FAR Part 150 Noise Compatibility Program Update had been submitted to the HMCAA for review. Upon asking, there were no questions on the draft from the Committee.

Mr. Cullivan then presented a summary evaluation of the environmental consequences reviewed in the Environmental Assessment. Categories in the summary were as follows:

A. Aircraft Noise

B. Compatible Land Use

C. Social Impacts

D. Induced Socioeconomic Impacts

E. Water Quality

F. Parks, Recreation Areas, and Wildlife Refuges

G. Historic, Architectural, Archaeological, and Cultural Resources

H. Biotic Communities (Flora and Fauna)

I. Endangered and Threatened Species of Flora and Fauna

J. Wetlands

K. Floodplains

L. Solid Waste Impacts

M. Construction Impacts

N. Air Quality

O. Farmland

Mr. Cullivan gave brief summaries of each category, noting that all the appropriate federal, State, and local agencies had been notified, reviewed the project, and returned statements of no significant impact. The only category where any impact was found was aircraft noise; however, the impacts weren't significant.

The following questions were asked at the meeting:

1. Why are the runway extensions being made to the north and not exclusively to the south?

   Because Boeing Boulevard lies to the south and serves as a physical barrier to any further extension of the runways in that direction, so the necessary remaining 3,000 feet must be extended to the north.

2. Would extensions exclusively to the south reduce noise to the north?

   Yes, to some degree but that amount is not known.

After the questions, the next meeting was tentatively scheduled for Wednesday, April 12, 1989.

The meeting adjourned at 11:00 a.m.

ENVIRONMENTAL ASSESSMENT
SUMMARY EVALUATION
Huntsville International Airport
March 30, 1989

ENVIRONMENTAL CONSEQUENCES

The following is a first draft summary of the environmental consequences related to extending both runways at Huntsville International Airport. As indicated in the summary, the environmental impacts will be minimal.

1. Aircraft Noise

   There would be no significant aircraft noise impact, however, refer to the FAR Part 150 Noise Compatibility Program for discussion.

2. Compatible Land Use

   Based on the conclusion that there will be no significant noise impact whether or not the proposed project is implemented, it is similarly concluded that the proposed project would have no significant impact with respect to compatible land uses.

3. Social Impacts

   No need has been shown to relocate existing residential or commercial uses except for one residence that will be located in the future clear zone of Runway 18L-36R. Surface transportation patterns will be altered, as a portion of James Record Road will no longer be accessible. Traffic will be re-routed, and affects to transportation patterns will be minimized.

4. Induced Socioeconomic Impacts

   Induced impacts would not be significant.

5. Water Quality

   The Huntsville International Airport is not located within the aquifer recharge area of the Williams Well, which is the primary source of water for the Airport. The proposed project is not anticipated to result in contamination of the well. The Alabama Department of Environmental Management's Water Division made minor

recommendations for the construction phase and the Fish and Wildlife Service was also contacted and expressed no environmental concern.

6. Department of Transportation Section 4(f)--Parks, Recreation Areas, and Wildlife Refuges

The proposed project will not require the use of any publicly-owned land from a public park, recreation area, a wildlife and waterfowl refuge, or land of an historic site.

7. Historic, Architectural, Archaeological, and Cultural Resources

The State Historic Preservation Officer was contacted regarding the proposed project. The review concluded with the Alabama Historical Commission's concurrence with the project, as there are no known structures or archaeological sites on or eligible for the National Register of Historic Places within the boundaries of the proposed activities.

8. Biotic Communities (Flora and Fauna)

The USDI Fish and Wildlife Service, the Department of Conservation and Natural Resources, and the Alabama Forestry Commission were requested to review the proposed project for possible impacts on biotic communities.

As stated earlier, the Fish and Wildlife Service voiced no concern. The Department of Conservation and Natural Resources found it doubtful that any endangered or threatened species currently exist on the site, however, a list of endangered and threatened species was included, and mitigation measures were suggested. These included "minimizing disturbances to waste areas along drainage and fencerows" and "maintaining the existing vegetation in these areas . . .." The Alabama Forestry Commission comments have not yet been received.

9. Endangered and Threatened Species of Flora and Fauna

No impact upon these resources has been indicated by the three agencies that reviewed the proposed project.

10. Wetlands

The reviews of the Fish and Wildlife Service and the Soil Conservation Service indicated that no wetlands would be impacted by the proposed project.

11. Floodplains

There are no floodplains within the project area according to the Federal Emergency Management Agency's floodplain map.

12. Solid Waste Impacts

No significant impact to these resources and related resources is anticipated.

13. Construction Impacts

Incorporated into the project specifications will be the Advisory Circular 150/5370-10 Standards for Specifying Construction of Airports, Item P-156 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control.

14. Air Quality

The Air Pollution Control Department of the City of the Huntsville reviewed the proposal and concluded that "no violation of any ambient air quality standard is expected and the project is thus consistent with the State Implementation Plan."

The Environmental Protection Agency was informed of the project, and replied that the project will not require an air quality modeling analysis.

15. Farmland

The Soil Conservation Service reviewed the proposed project and concluded that the proposed improvements would have no impact on prime farmland, therefore Farm Protection Policy Act (FPPA) is not applicable.

HUNTSVILLE-MADISON COUNTY AIRPORT AUTHORITY

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PROJECT ADVISORY COMMITTEE
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
March 30, 1989

NAME	ORGANIZATION	TELEPHONE
Roger Spencer	American Air	772-9276
Richard Chapman	Madison Co. Bd of Ed	532-3540
Marilyn K Lands	Airport Authority	461-8521
Billy K Reed	Air Traffic Control	772-9603
Tim Barnes	Huntsville Planning	532-7353
Kathy Wells	Madison Mayor's Office	772-0111

PROJECT ADVISORY COMMITTEE
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
May 17, 1989

This is the fourth meeting of the Huntsville International Airport Project Advisory Committee, held at 10:00 in the Madison Room at the Sky Center Hotel, 2nd Floor of the Airport Terminal Building.

AGENDA

1. Call to order at 10:00 a.m.
2. Discussion of Noise Compatibility Program
3. Environmental Assessment Findings
4. Call for questions
5. Schedule next meeting (if necessary)
6. Meeting adjourns

PROJECT ADVISORY COMMITTEE
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
May 17, 1989

The fourth meeting of the Huntsville International Airport Project Advisory Committee was called to order at 10:15 a.m., May 17, 1989.

Attendees: Dirk Vanderleest, Airport Manager
Huntsville-Madison County Airport Authority (HMCAA)
Tim Barnes, Huntsville Planning Department
Kathy Wells, Madison Mayor's Office
Michael McCarty, Air Transport Association
D. Michael Cullivan, Manager, Peat Marwick
Robin M. Kipke, Consultant, Peat Marwick

Mr. Vanderleest brought the meeting to order at 10:15 a.m. and turned the presentation over to Mr. Cullivan.

Mr. Cullivan distributed copies of Table 6-1, "Anticipated Benefits of Noise Compatibility Measures," from the "Preliminary Draft, FAR Part 150 Noise Exposure Maps and Noise Compatibility Program Update" (copy attached). He then described the measures and the anticipated benefits of each.

Mr. Cullivan also reviewed the environmental impacts associated with the proposed airfield development program.

The following question was asked at the meeting:

1. Could the air cargo operations be moved to the west runway instead of concentrating them on the east runway?

   The air cargo terminal has been developed on the east side of the Airport. The requirement that air cargo aircraft operations be limited to the west runway would add over a mile of additional taxiing distance to each operation.

The meeting adjourned at 11:30 a.m.

Table 6-1

ANTICIPATED BENEFITS OF NOISE COMPATIBILITY MEASURES
Huntsville International Airport

Measure	Benefit
1. Perform comprehensive planning	Promotes compatibility, but contribution cannot be quantified.
2. Rezone land in undeveloped areas	Would prevent the construction of approximately 1,483 homes in areas forecast to be exposed to noise above Ldn 65.
3. Develop height/noise/ safety zoning overlay ordinance	Eliminates the possibility of constructing residential units in areas of Ldn 75+ and would promote compatibility in Madison and Triana.
4. Require fair disclosure	Reduces the potential for noise-related litigation. Contribution cannot be quantified.
5. Discourage home mortgage insurance	Promotes compatibility, but contribution cannot be quantified.
6. Sequence capital improvements	Promotes compatibility, but contribution cannot be quantified.
7. Incorporate the Noise Compatibility Program in the regional transportation plan	Gives regional recognition to local noise remedy programs. Contribution cannot be quantified.
8. Institute a land banking program	Approximately ___ acres of land would be acquired.
9. Modify subdivision regulations	Ensures that all new noise-sensitive structures provide sufficient acoustical insulation and secures the granting of avigation easements.
10. Extend Runway 18L-36R 4,500 feet	Permits departing aircraft to achieve higher altitudes over residential neighborhoods.

Table 6-1 (page 2 of 2)
ANTICIPATED BENEFITS OF NOISE COMPATIBILITY MEASURES
Huntsville International Airport

Measure	Benefit
11. Equalize runway use	Ensures equal or even distribution of noise, thereby eliminating single points of high noise exposure.
12. Encourage greater use of Stage 3 aircraft	Reduces noise exposure substantially. Because the timing of the phase-out of Stage 2 aircraft is uncertain, the contribution cannot be quantified for a specific year. An increase in Stage 3 aircraft consistent with FAA fleet mix forecasts was assumed in the noise exposure maps for 1993.
13. Encourage the tightening of noise emission standards	Ensures that aircraft manufacturers use the best technology available for designing quieter aircraft, thereby reducing aircraft noise at the source.
14. Require acoustical treatment for new incompatible structures	Ensures that all future noise-sensitive development will have interior noise levels compatible with Airport operations.
15. Provide acoustical treatment for existing incompatible structures	Gives the owners of approximately 111 residential properties (exposed to Ldn 65 in 1993 with hubbing) the option of having their homes acoustically treated by HMCAA in exchange for an avigation easement.
16. Acquire avigation easements	Reduces the potential for noise-related litigation. About 111 single-family homes would be exposed to noise of Ldn 65 to 75 and potentially eligible for this program.
17. Obtain funding for noise mitigation	Aids in implementing noise mitigation measures, but contribution cannot be quantified.
18. Obtain funding for continued planning	Promotes compatibility, but contribution cannot be quantified.

Source: Peat Marwick, April 1989.

PROJECT ADVISORY COMMITTEE
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
October 4, 1989

The fifth meeting of the Huntsville International Airport Project Advisory Committee was called to order at 10:15 a.m., October 4, 1989.

Attendees: Dirk Vanderleest, Airport Manager
Huntsville-Madison County Airport Authority (HMCAA)
Michael McCarty, Air Transport Association
Billy Reed, FAA Air Traffic Control, Huntsville
Lloyd Alley, FAA Air Traffic Control, Huntsville
Richard Chapman, Madison County Board of Education
Roger Sameck, American Airlines
Juergen Paetz, Huntsville Planning Department
Mike Bush, City of Huntsville
Kathy Wells, Madison Mayor's Office
D. Michael Cullivan, Manager, Peat Marwick

Mr. Vanderleest brought the meeting to order and turned the presentation over to Mr. Cullivan.

Mr. Cullivan explained that the Committee had been called together again because there had been substantive changes made to the proposed airfield improvements since the last Committee meeting. Therefore, it was appropriate that the Committee be apprised of the changes before the draft Part 150 Update and Environmental Assessment reports were distributed for public review prior to the public hearing.

He went on to explain that the changes were made at the request of the City of Madison and consisted of deleting the proposed extensions to the north of Runways 18L-36R and 18R-36L and constructing the extensions to the south instead. The current plan now is to extend Runway 18L-36R 500 feet to the north and 1,500 feet to the south in the first phase (by 1993) and an additional 2,000 feet to the south in the second phase (by 2008). There would be a 500-foot displaced threshold on Runway 18L so that the landing threshold for this runway would remain in its current location. Runway 18R-36L would not be extended in the first phase but would be extended 3,000 feet to the south in the second phase if the growth in traffic warranted it.

The noise exposure impacts associated with extensions would tend to increase. There would be no appreciable changes to the north in the near term (1993) but there would be an increase in areas exposed to Ldn 65 or greater to the south. An additional 50-60 homes in the City of Triana would be inside the Ldn 65 contour with the runway extensions to the south only. By 2008, the area exposed to Ldn 65 or greater would decrease significantly because of the conversion of the aircraft fleet to Stage 3 aircraft by that time.

The noise compatibility measures discussed at the previous meeting would remain essentially the same, only the number of homes eligible for mitigation programs would change with the increase in the Ldn 65 noise exposure area.

Copies of the draft FAR Part 150 Noise Compatibility Program Update and Environmental Assessment reports were distributed to the Committee members.

The following question was asked at the meting:

1. Was the 500-foot displaced threshold on Runway 18L recommended to avoid incurring increased costs to move the ILS?

   The displaced threshold was recommended to keep aircraft arriving on Runway 18L at the same altitude over the City of Madison.

The meeting adjourned at 11:00 a.m.

HUNTSVILLE-MADISON COUNTY AIRPORT AUTHORITY

ENVIRONMENTAL ASSESSMENT/FAR PART 150 UPDATE
ADVISORY COMMITTEE MEETING
OCTOBER 4, 1989

NAME	ORGANIZATION	TELEPHONE #
MICHAEL CALLAHAN	PEAT, MARWICK, MAIN & CO.	415-571-7722
Ike McCarty	Air Transport Assoc	(404) 767-8614
Billy REED	HUNTSVILLE AIR TRAFFIC	772-9603
Loyd Alley	" " "	" "
Richard Chapman	Madison Co. Bd of Educ.	532-3540
[illegible]	AMERICAN AIRLINES	772-9275
JUERGEN PAETZ	CITY OF H'VILLE	532-7353
Mike Bush	City of Huntsville	535-4933
Tony Wells	City of Madison	772-0111
[illegible]	FAA/AAA	772-8728

Appendix C

Appendix C

PUBLIC INFORMATION SESSIONS

CONTENTS

Dirk C-1

HUNTSVILLE-MADISON COUNTY AIRPORT AUTHORITY

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FOR MORE INFORMATION CONTACT:
Marilyn K. Lands
(205) 461-8521

Airport Authority Holds Public Information Meeting on Environmental Assessment and Noise Compatibility Program

The Huntsville-Madison County Airport Authority plans to hold a Public Information Meeting on Wednesday, February 15, 1989 at 6:00 pm in the Madison Recreation Center, 1282 Hughes Road, Madison, Alabama. Members of the Airport Authority and the Project Advisory Committee will present an overview of the Environmental Assessment and Noise Compatibility Program in conjunction with the airport expansion. All interested parties are urged to attend.

PUBLIC INFORMATION MEETING
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
February 15, 1989

This is the first public information meeting for the Huntsville International Airport Environmental Assessment and Noise Compatibility Program Update, held February 15, 1989, at 6 p.m. in the City of Madison Recreation Center.

AGENDA

1. Purpose of a Noise Compatibility Program and Environmental Assessment
2. Proposed Airport Improvements
3. Definitions of Terms
4. Existing/Future Noise Conditions
5. Noise Compatibility Options Under Consideration
6. Environmental Assessment Categories Under Consideration
7. Call for Questions
8. Schedule Next Meeting
9. Meeting Adjourns

PUBLIC INFORMATION MEETING
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
February 15, 1989

The first public information meeting was held February 15, 1989, at 6:00 p.m. at the Madison Recreation Center at Bob Jones High School, 1282 Hughes Road, before approximately 20 residents and two television news crews. The purpose of the meeting was to acquaint the residents of surrounding communities with the FAR Part 150 Program and the Environmental Assessment and to elicit questions.

The consultant gave a presentation using a series of viewgraphs depicting present and forecast aircraft operations at the Airport, generalized existing land use, noise exposure maps for existing and future conditions and an outline of noise compatibility programs to be considered during the next phase of the FAR Part 150 program. Also shown was a list of Environmental Assessment categories under consideration. Copies of the viewgraphs and handouts used at the public information session are included in Appendix A.

Displayed on the walls were maps showing the flight tracks as well as noise exposure maps for existing and future conditions.

After the viewgraphs presentation, the meeting was opened to comments and questions from the audience. The following is a summary of questions asked and comments made.

1. What is the reason for extending the runways so far?

   The purpose is to attract air cargo activities, particularly air cargo operators that might wish to operate to distant destinations such as to Europe or South America. When a fully loaded cargo aircraft takes off, particularly on a hot day, the longer runway length is necessary.

2. Why is the east runway proposed to be longer than the west runway?

   All air cargo facilities are developed on the east side of the Airport, so it was a logical progression to expand the east runway further to allow for air cargo hubbing at the Airport. There are also other problems associated with extending the west runway to accommodate air cargo

operations, such as the possible relocation of roads and impacts on sensitive wetlands.

3. Suggestion was made to extend the west runway to accommodate air cargo activities. Suggestion was also made to keep all expansion of the Airport as far west as possible.

4. How far back did you go in projecting growth?

   Our forecasting staff go back 20 years and look at the trends, and look at the economy. And they talk with people here in the area: bankers, Chamber of Commerce, and other people that are keeping track of the economy and where it's going. The forecasts are based on that type of growth that reflects this area.

5. Have cities been sued for allowing development in areas where the City knew of high noise exposure?

   Yes, however, under Federal Aviation Regulations Part 150, the law relieves the Airport from legal responsibility after the noise exposure map is submitted to and approved by the FAA. Therefore, the jurisdictions responsible for allowing noise sensitive development to occur in noise exposure areas could be sued.

6. If the City of Madison approved the development of residential uses north of the runways and in high noise exposure areas, would the City be subject to lawsuits?

   Its highly dependent on the people who moved into those residences, and what their reaction was. There is a potential that the City might.

7. At what Ldn noise exposure level does legal liability occur?

   According to the law, it's 65 Ldn and above.

8. Has there been consideration of constructing a runway in an east-west direction?

   Runways are oriented so that approaches and departures take place into the prevailing wind, so this eliminates any possibility of constructing an east-west runway.

9. If all takeoffs would occur to the south, would noise exposure be reduced to the north?

   Yes, but approaches and departures are governed by the wind velocity and direction. Currently, takeoffs to the south occur about 60% of the time. Takeoffs to the north and landings from the south occur about 40% of the time due to the prevailing wind patterns.

10. How do avigation easements apply to existing residential uses?

    A program can be started by the Airport Authority whereby the homeowner may wish to sell an avigation easement to the Airport on a voluntary basis.

11. Could you describe what Ldn 45 sounds like?

    An example would be outdoors in the countryside on an average day.

12. Can you explain what 65 decibels is?

    Sound decibels measure a single event of noise, compared to Ldn which measures noise on an average over a period of time.

13. Could instances occur where peaks of noise may be higher than the Ldn value?

    Yes, as well as times when the noise levels may be less than the Ldn value. This is why night-time noise has a penalty weighting when Ldn is calculated. Each operation that occurs between the hours of 10 p.m. and 7 a.m. is counted as 10 operations.

14. Are industrial and office uses compatible with aircraft noise exposure?

    Those uses are compatible in areas exposed to aircraft noise. Golf courses are also viewed as acceptable uses in noise exposure areas. The types of uses that are generally not compatible are residential uses, libraries, schools, hospitals, churches, and other places of public assembly.

15. What are the procedures for acquiring avigation easements and what type of easement is acquired for vacant land?

Currently, the Airport Authority acquires avigation easements within the City of Madison at the time and as part of the building permit process. The easements are particularly important in instances where a compatible commercial and industrial use may revert to an incompatible use at some point in the future. Avigation easements may be acquired by the Airport Authority for parcels of vacant land on a voluntary basis from the property owner. The Airport Authority may decide to purchase the easement at the time the landowner offers, or, may wait until the easement is acquired through the building permit process.

ANNUAL AIRCRAFT OPERATIONS
Huntsville International Airport

	Air carrier	Commuter	General aviation	Military	Total
Historical					
1980	16,015	1,969	58,396	2,773	79,153
1985	12,329	10,034	32,524	3,899	58,786
1988	15,348	10,201	32,011	3,524	61,084
Forecast					
1993	19,600	16,500	39,600	4,000	79,700
2008	29,000	27,000	59,700	4,000	119,700
With airline/air cargo hubbing					
1993	68,875	16,500	39,600	4,000	128,975
2008	105,650	27,000	59,700	4,000	196,350

Stage III Aircraft
FAR PART 150 NOISE COMPATIBILITY PROGRAM
Huntsville International Airport

Year	Percent of air carrier aircraft in the mix
1988	29%
1993	50
2008	99
1993 hubbing	41
2008 hubbing	83

Table A

NOISE ABATEMENT OPTIONS
Huntsville International Airport

Option	Implementation	Implementing agency
1. Displace runway threshold.		County, FAA
2. Construct new runway.		County, FAA
3. Construct noise barriers.		County
4. Construct high-speed taxiways.		County
5. Relocate facilities.		County
6. Equalize or rotate runway use.		County, FAA
7. Establish preferential runway use.		County, FAA
8. Establish engine runup restrictions.		County
9. Change takeoff, climbout, or landing procedures.		County, FAA
10. Change flight tracks.		County, FAA
11. Fan out departure flight tracks.		County, FAA
12. Restrict ground movement of aircraft.		County, FAA
13. Impose curfews.		County, FAA
14. Reschedule nighttime flights.		County, FAA
15. Shift aircraft to another airport.		County, FAA
16. Encourage use of Stage 3 aircraft.		County, FAA
17. Limit number or types of operations.		County, FAA
18. Establish noise compatibility staff.		County
19. Establish noise compatibility committee.		County
20. Impose noise-related landing fees.		County
21. Establish noise abatement procedures for helicopters.		County, FAA
22. Enforce prescribed flight track use.		County, FAA
23. Install noise-monitoring system.		County

Table B

NOISE MITIGATION OPTIONS
Huntsville International Airport

	Option	Implementation	Implementing agency
1.	Institute acquisition program.		County
2.	Establish redevelopment program.		County, Cities
3.	Require acoustical treatment for new incompatible structures.		Cities
4.	Provide acoustical treatment for existing incompatible structures.		County, Cities
5.	Acquire avigation easements for existing structures.		Cities
6.	Sponsor a property transaction assistance program.		Cities
7.	Acquire development rights.		Cities
8.	Transfer development rights.		Cities
9.	Perform comprehensive planning.		Cities
10.	Rezone land in undeveloped areas.		Cities
11.	Rezone land in developed areas.		Cities
12.	Develop height\noise\safety zoning ordinance.		Cities
13.	Require avigation easements for future development.		Cities
14.	Require fair disclosure.		Cities
15.	Provide tax incentives.		Cities
16.	Insure home mortgage.		FHA, VA
17.	Sequence capital improvements.		Cities
18.	Incorporate the noise compatibility program in the regional transportation plan.		TARCOG
19.	Institute a land banking program.		County
20.	Modify subdivision regulations.		Cities
21.	Adopt height restriction ordinance.		Cities
22.	Obtain funding for noise mitigation.		County
23.	Obtain funding for continued planning.		County

CATEGORIES UNDER CONSIDERATION IN THE ENVIRONMENTAL ASSESSMENT

- Aircraft Noise
- Compatible Land Use
- Social Impacts
- Induced Socioeconomic Impacts
- Water Quality
- DOT Section 4(f)--Parks, Recreation Areas, Wildlife Refuges
- Historic, Architectural, Archaeological, and Cultural Resources
- Biotic Communities (Flora and Fauna)
- Endangered and Threatened Species of Flora and Fauna
- Wetlands
- Floodplains
- Solid Waste Impacts
- Construction Impacts

HUNTSVILLE-MADISON COUNTY AIRPORT AUTHORITY

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Intermodal Center (205) 772-7084
FAX: (205) 461-8252

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PUBLIC INFORMATION MEETING
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
February 15, 1989

Attendance

Name	Company	Telephone
Jill Stallcup		772-8401
		837 448
Blair Conrad	HMCAA	772 9395
Marilyn Lands		461-852
		539-7405
Rick Tucker	HMCAA	772-9395
	HMCAA	772-9396
	Self	883-7114
	PDQ	539-2436
MICHAEL W PRICE	CITY OF MADISON	772-0111
Tim D. Hall	WAAY TV	
		830-2468
	self	721-4032
ED ZOMPA	SELF	830-8473

PUBLIC INFORMATION MEETING
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
March 30, 1989

This is the second public information meeting for the Huntsville International Airport Environmental Assessment and Noise Compatibility Program Update, held March 30, 1989, at 7 p.m. in the City of Madison's Recreation Center.

AGENDA

1. Purpose of a Noise Compatibility Program Update and Environmental Assessment
2. Proposed Airport Improvements
3. Definitions of Terms
4. Existing/Future Noise Conditions
5. Noise Compatibility Options Under Consideration
6. Environmental Assessment Categories Under Consideration
7. Call for Questions
8. Schedule Next Meeting
9. Meeting Adjourns

PUBLIC INFORMATION MEETING

ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport
March 30, 1989

The second public information meeting of the Huntsville International Airport Environmental Assessment and Noise Compatibility Program Update was held on March 30, 1989, at the Madison Recreation Center at Bob Jones High School, 1282 Hughes Road, before approximately 25 residents, one television crew, and three newspaper reporters. The purpose of the meeting was to acquaint the residents of surrounding communities with FAR Part 150 Program and the Environmental Assessment and to elicit questions.

The consultant gave a presentation using a series of view-graphs depicting present and forecast aircraft operations at the Airport, generalizing existing land use, noise exposure maps for existing and future conditions and an outline of noise compatibility program options being considered. Also shown was a list of environmental assessment categories under consideration.

Displayed on the walls were maps showing flight tracks as well as noise exposure maps for existing and future conditions.

Below is a summary of questions asked and comments made:

1. Do all aircraft take off to the north?

   No, the prevailing wind direction dictates whether a north or south departure or arrival will take place. The percent of departures and arrivals taking place to and from the north is 40%.

2. Are the two runways used equally?

   Yes, they are currently being used equally.

3. Which runway will be used for cargo activity?

   Predominantly the east runway.

4. What times of day will the cargo operations take place?

   50% will occur during the day and 50% will occur at night (10:00 p.m. - 7:00 a.m.).

5. Why are you expanding cargo operations on the east runway when there is already existing residential development north of the east runway?

   Currently existing facilities on the east side of the airport were developed many years ago. It would not be feasible to move all of these facilities over to the west side of the Airport.

6. Are noise exposure levels to the north higher during the summer months?

   It depends on where the prevailing winds are coming from. The noise levels would be higher when aircraft are taking off into a north wind.

7. I've seen aircraft flying over areas that are not represented on the flight tracks exhibit. Why?

   Because flight tracks are drawn in a line but actually represent a wide corridor in which aircraft fly.

8. What are the possibilities of developing a criss-cross runway that would lie in a east-west direction?

   Impossible because wind direction dictates where a runway will be oriented, and the Redstone Arsenal to the east has restricted airspace for a good portion of the time, therefore, aircraft could not arrive from and depart to the east.

9. How about extending the west runway first and then in 2008 extend the east runway?

   It would cost an additional $8 million to develop the necessary facilities and runway on the west side to accommodate an all-cargo hubbing facility.

10. Can flight tracks be enforced?

    It is possible in extreme cases where severely impacted noise-sensitive land uses exist, but this does not apply to the Huntsville International Airport environs.

11. Is it possible for all aircraft to follow one flight track straight to and from the north?

    No, this would extremely restrict the capacity of the airport.

Toward the end of the meeting a list of recommendations was submitted by a representative of the City of Madison.

February 26,1989

TO: Mayor Cuddeback
Don Spencer
Ann van Leeuwen
David Roberts
Fred Wills

FROM: Michael W. Price

SUBJECT: Project Advisory Committee activities on the Environmental Assessment and Noise Compatibility Program for the Jetplex expansion program.

The Huntsville-Madison County Airport Authority is currently engaged in updating the noise compatibility program for the Huntsville International airport and preparing an environmental assessment of proposed airfield improvements at the airport. These studies are being conducted in accordance with FAA Part 150 rules and regulations.

The purpose of the advisory committee is to provide input to, and help guide the course of the studies by being given the opportunity to review and comment on all study products. Since the formation of the Advisory Committee back in January, Two committee meetings have been held (January 18 and February 15, 1989) along with a public awareness session which has been sponsored by the Airport Authority on February 15 at the Madison Recreation Center. Enclosed find the minutes of the January Advisory Committee meeting which lists the members of the committee along with significant items associated with the subject meeting.

The Huntsville-Madison County Airport Authority has contracted with Peat Marwick to perform the study on the airport expansion. The specific reasons for the update of the Part 150 process and the noise compatibility program are:

1. The east runway is proposed to expand from a length of 8,000 feet to 12,000 feet (1,500 to the south and 2,500 to the north).

2. The west runway is proposed to expand from a length of 8,000 feet to 11,000 feet (2,000 to the south and 1,000 to the north).

3. To incorporate the possibility of an airline and air cargo hub at the airport.

4. Numbers and types of aircraft have changed.

The purpose of the runway expansions is to accommodate large long range freighter type aircraft (Boeing 747-400 Series) if the Jetplex were to be selected as an International Cargo and Passenger Hub. Peat Marwick's study so far has shown a decrease in aircraft activity since 1980, but shows a significant increase in aircraft operations if the Jetplex were to become an airline/air cargo hub.

The environmental assessment being submitted covers noise and air quality due to changes in aircraft activity over the next twenty years. The Ldn noise exposure maps enclosed show that the largest noise impact would be achieved in the 1993 timeframe, with a significant decrease in impact by the year 2008. The increased noise is due to the more frequent use of existing aircraft which generate more noise than the aircraft currently rolling off the assembly lines. The average operational lifetime of an aircraft of the classification being discussed is twenty years. So as time passes, the more efficient aircraft will replace the older aircraft, thus reducing the noise impact.

ISSUES AND CONCERNS

1.) Using the eastern runway for takeoffs and landings effects Madison more than using the western runway. Air cargo operations are anticipated to be done at night.

2.) The airport authority views the solution for any incompatibility as proper comprehensive city planning of land use within the noise box. What will the airport authority be willing to cover as far as noise mitigation options are concerned, and what noise abatement options are they willing to undertake?

3.) The airport authority has asked for avigation easements for existing development within the noise box, and for future development as it is being developed. What is the airport authority willing to do for the constituents within the City of Madison and the City itself in exchange for these easements?

RECOMMENDATIONS

1.) As a point of departure, the airport authority may want to consider paying for acoustical treatment of existing structures or to pay for the difference in property values as determined by a licensed MAI appraiser for the avigation easements they are requesting within the City of Madison.

2.) Since cargo operations would be occurring through the night, the airport authority could reduce the impact upon the City of Madison by using the western runway for departures and arrivals of aircraft and by instructing the aircraft to execute noise abatement maneuvers for approaches and departures over the city.

FRIDAY, MARCH 31, 1989 HUNTSVILLE NEWS

Airport holds public hearing

MADISON — About 20 residents turned out for a public information session on noise assessment and noise compatibility for the Huntsville International Airport's expansion last night at the Madison Recreation Center.

Eugene B. Conrad Jr., executive director of the Airport Authority, spoke with residents and members of Madison's city council about the effects of the airport's expansion.

Conrad said noise would be concentrated in the northern and southern boundaries and noted that Madison County's proposed school will be in a flight path and needed to be sound proofed.

Included in the airport's changes are expansion of the east runway from a length of 8,000 feet to 12,000 feet; expansion of the west runway fron 8,000 feet to 11,000 feet and incorporate the possibility of an airline and air cargo hub at the airport.

FAR PART 150
NOISE COMPATIBILITY PROGRAM
AND
ENVIRONMENTAL ASSESSMENT

Huntsville International Airport

Prepared by

KPMG Peat Marwick
Airport Consulting Services

March 30, 1989

KPMG Peat Marwick

FAA GRANTS
Huntsville International Airport

The preparation of this study is being financed in part through an Airport Improvement Program grant from the Federal Aviation Administration (FAA) as provided under Section 505 of the Airport and Airway Safety and Capacity Expansion Act of 1987.

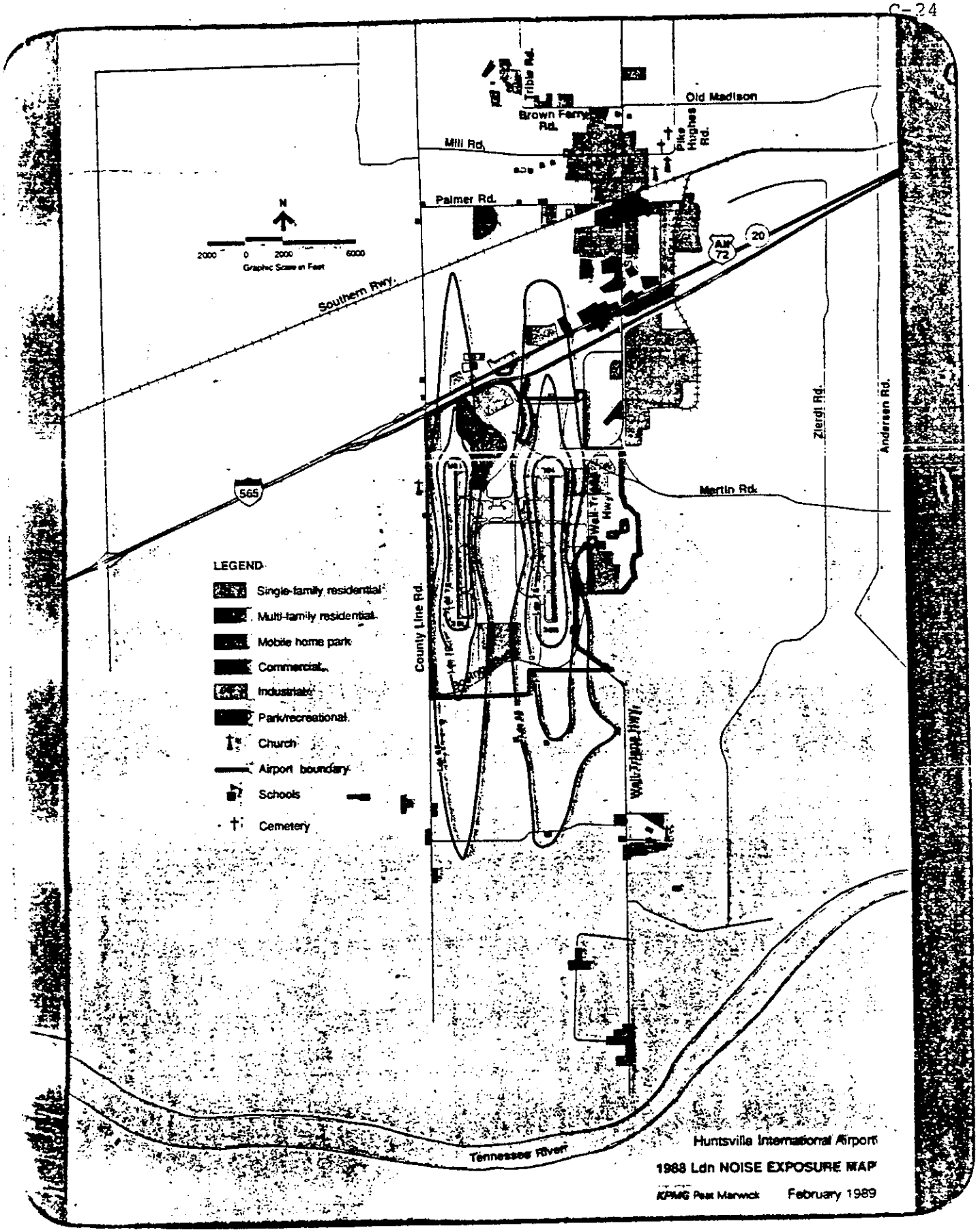
CONSULTATION PROCESS

- Technical Advisory Committee
- Public information sessions
- Public hearing
- Coordination with Federal Aviation Administration

Pratt Marwick

STAGE 3 AIRCRAFT IN THE MIX

Year	Percent of Stage 3 air carrier aircraft in the mix
1988	29%
1993	50%
2008	99%
With airline and air cargo hubbing	
1993	41%
2008	83%


Old Madison
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Mill Rd.
Palmer Rd.
Pike Hughes Rd.
Tribble Rd.
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Graphic Scale in Feet
Southern Rwy.
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Andersen Rd.
Martin Rd.
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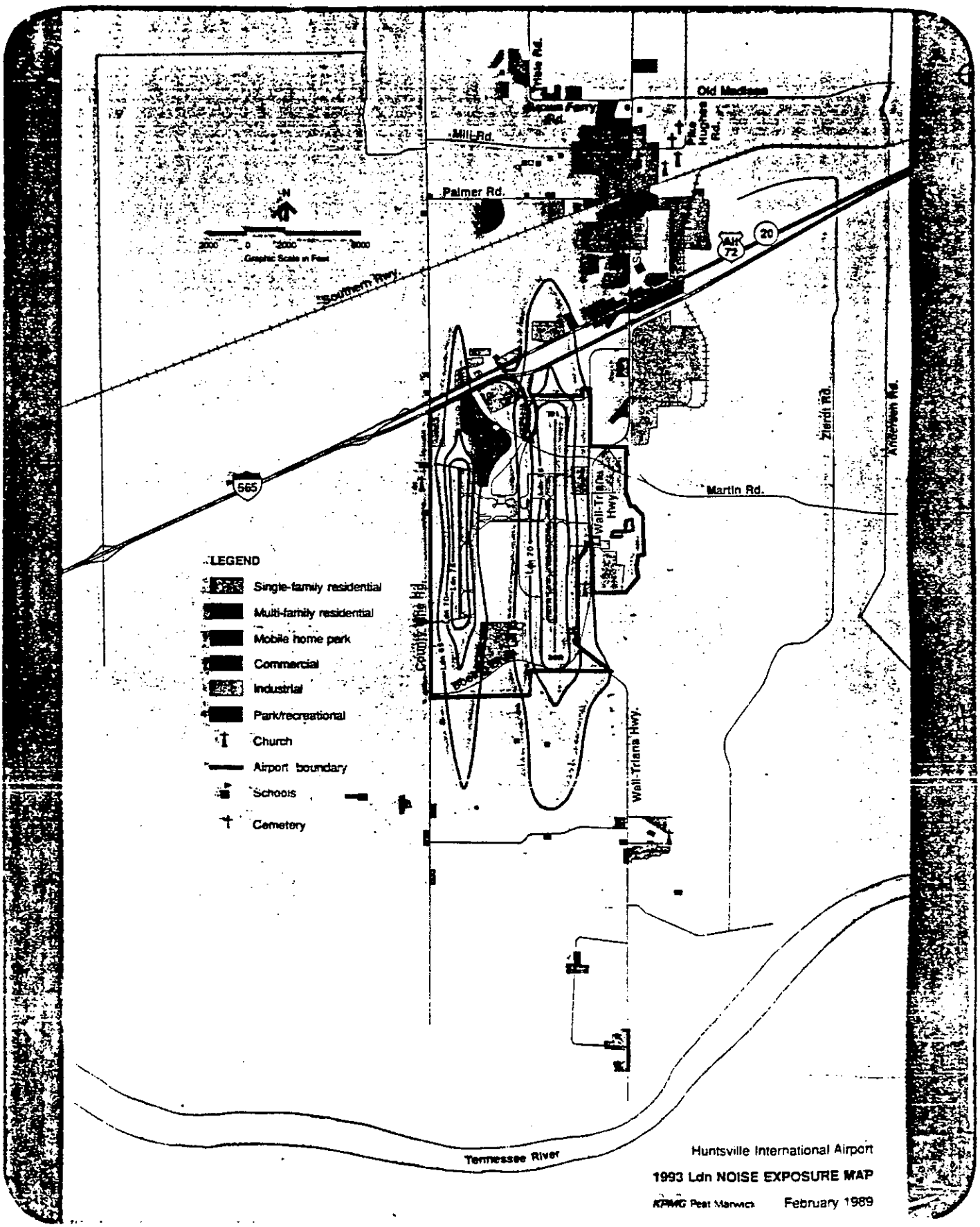
LEGEND
Single-family residential
Multi-family residential
Mobile home park
Commercial
Industrial
Park/recreational
Church
Airport boundary
Schools
Cemetery
Tennessee River
Huntsville International Airport
1988 Ldn NOISE EXPOSURE MAP
KPMG Peat Marwick
February 1989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Wall-Triana Hwy.
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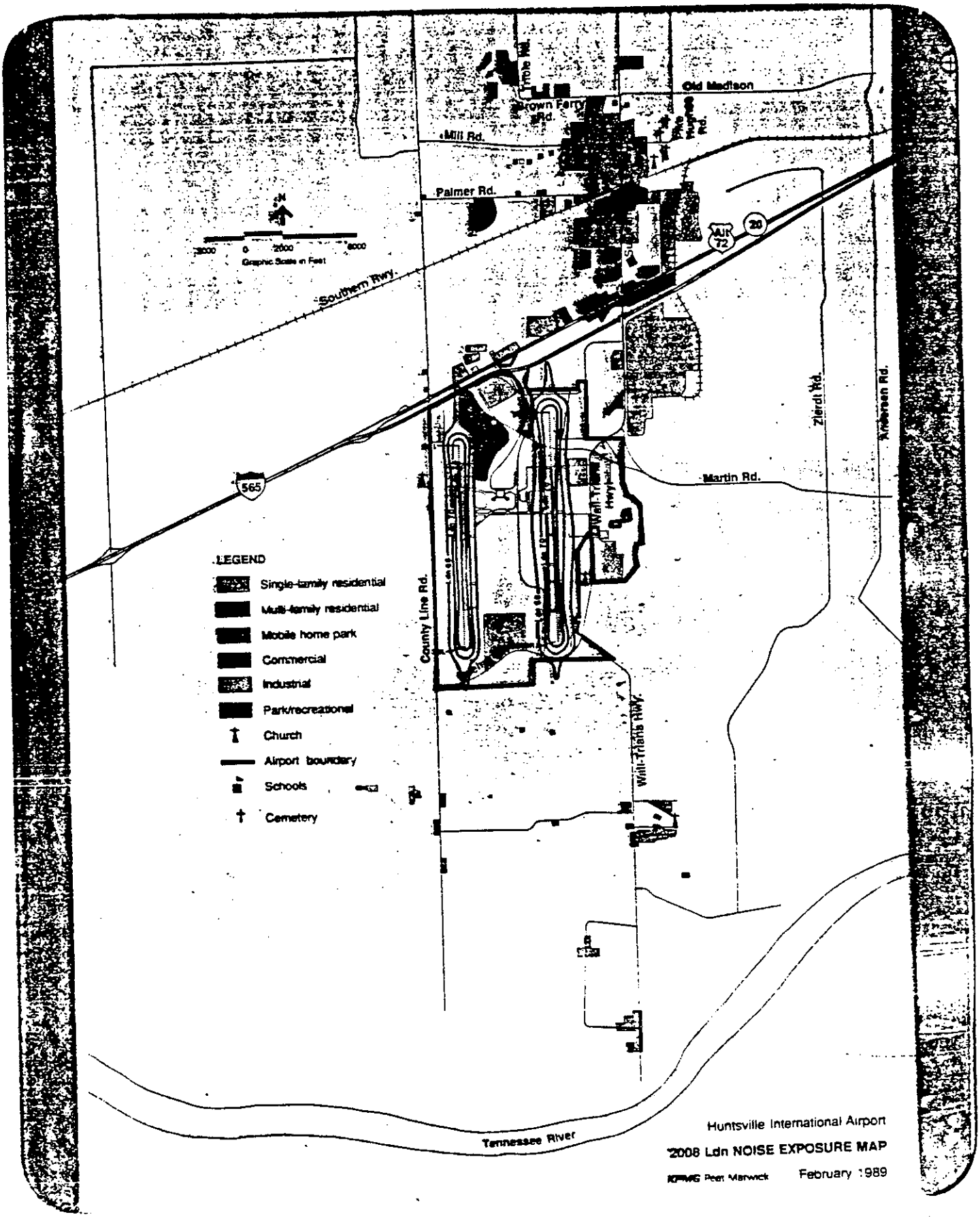
1993 Ldn NOISE EXPOSURE MAP
KPMG Peat Marwick
February 1989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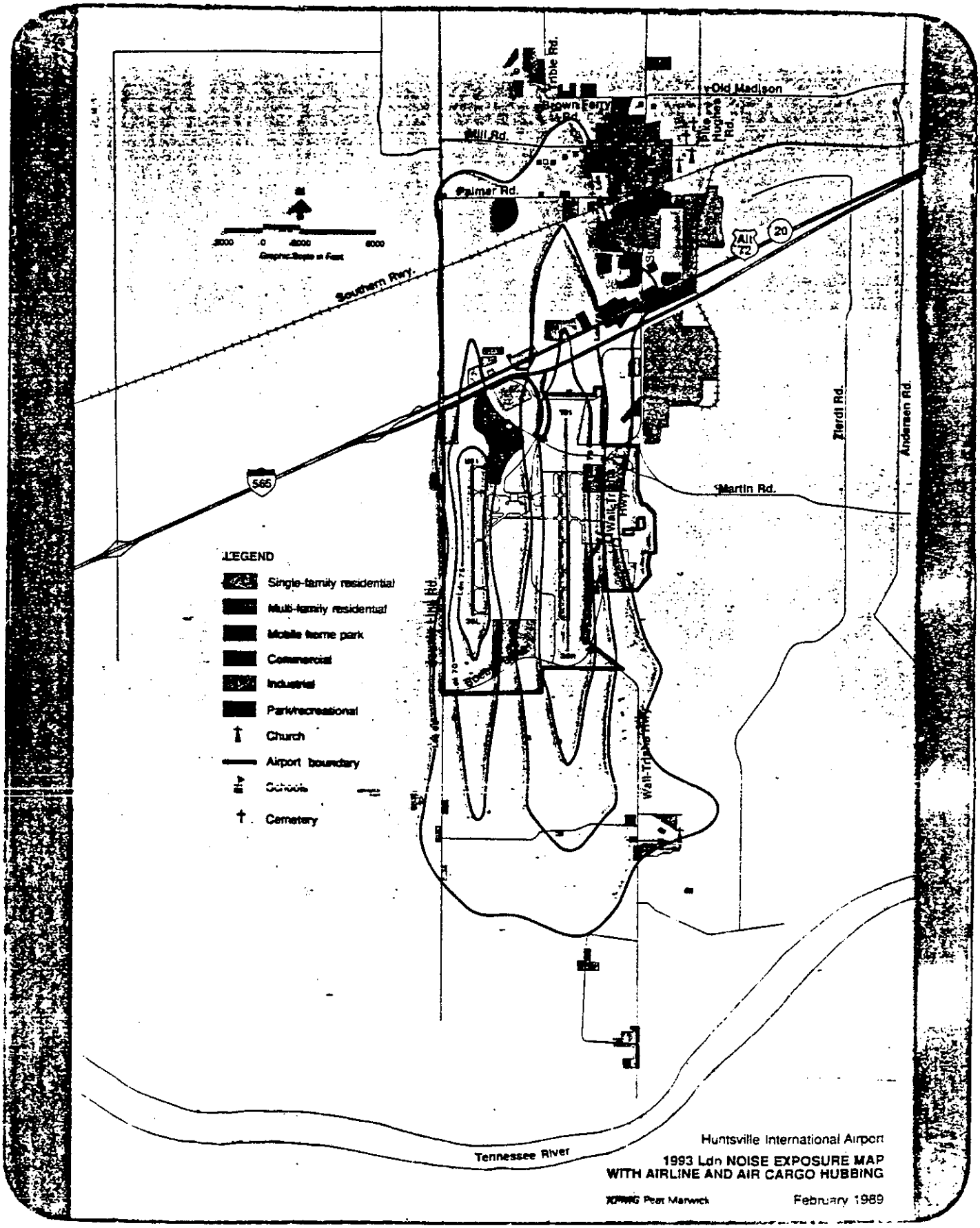
2008 Ldn NOISE EXPOSURE MAP
KPMG Peat Marwick
February 1989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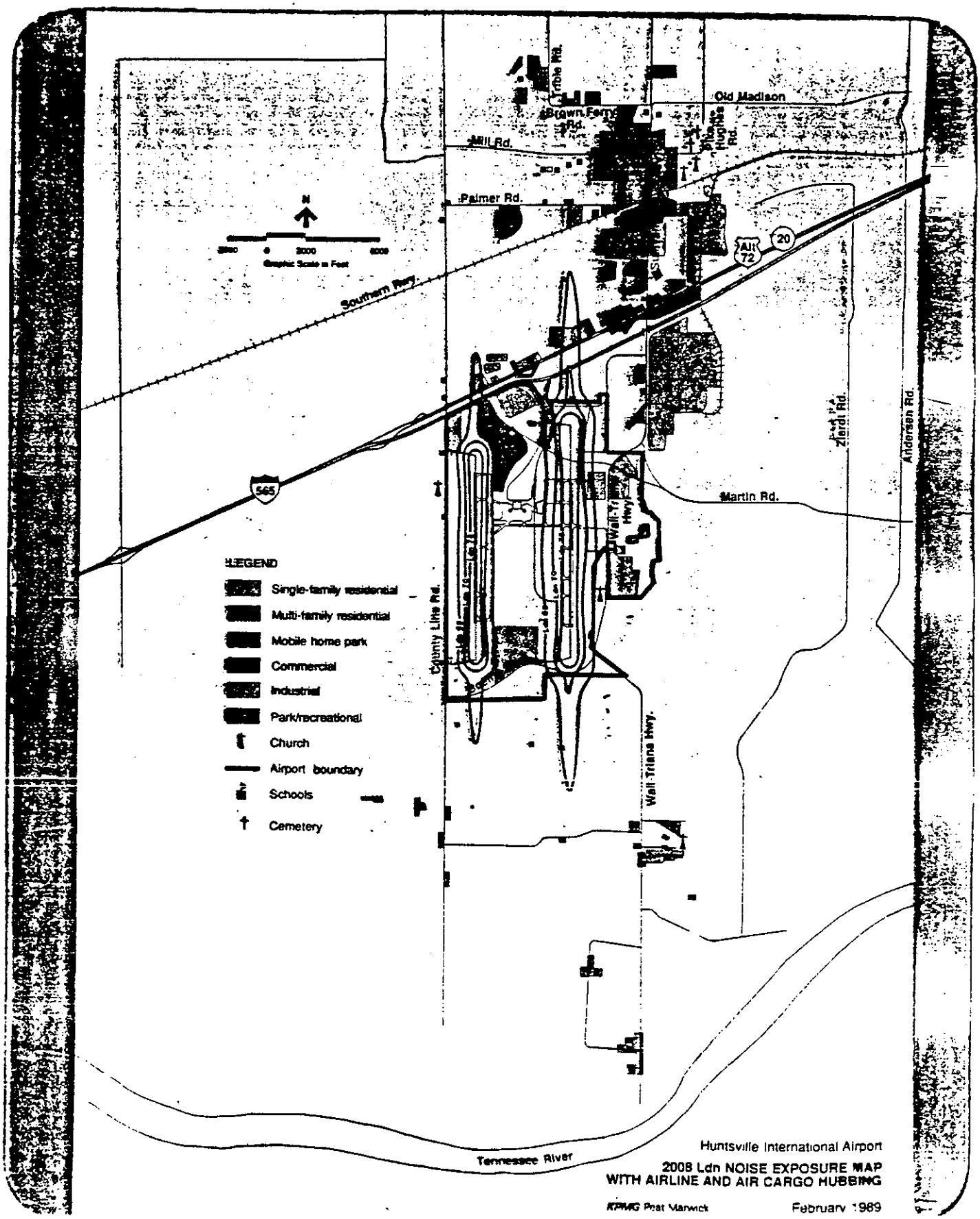
1993 Ldn NOISE EXPOSURE MAP
WITH AIRLINE AND AIR CARGO HUBBING
Peat Marwick
February 1989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2008 Ldn NOISE EXPOSURE MAP
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KPMG Peat Marwick
February 1989

k/Hub Fleet Marwick

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NOISE COMPATIBILITY OPTIONS

- Noise abatement
- Noise mitigation

NOISE ABATEMENT OPTIONS

- **On-Airport improvements**
  - **Nighttime engine testing**
  - **Power back**
  - **Noise barriers or berms**

- **Operational changes**
  - **Aircraft flight tracks**
  - **Runway use**
  - **Restriction on types of aircraft**
  - **Restriction on time of operations**

NOISE MITIGATION OPTIONS

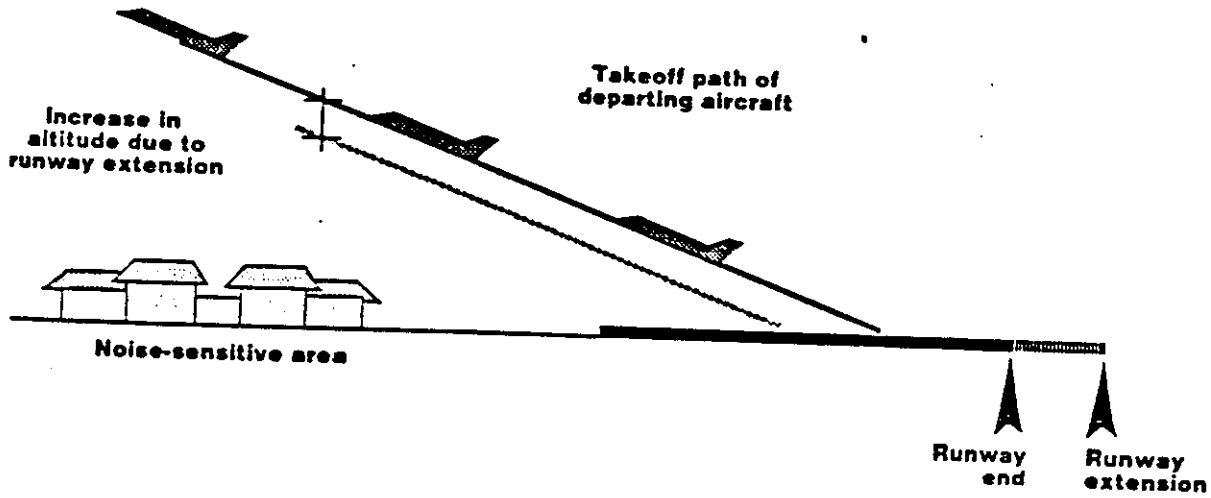
- **Preventive**
- **Remedial**

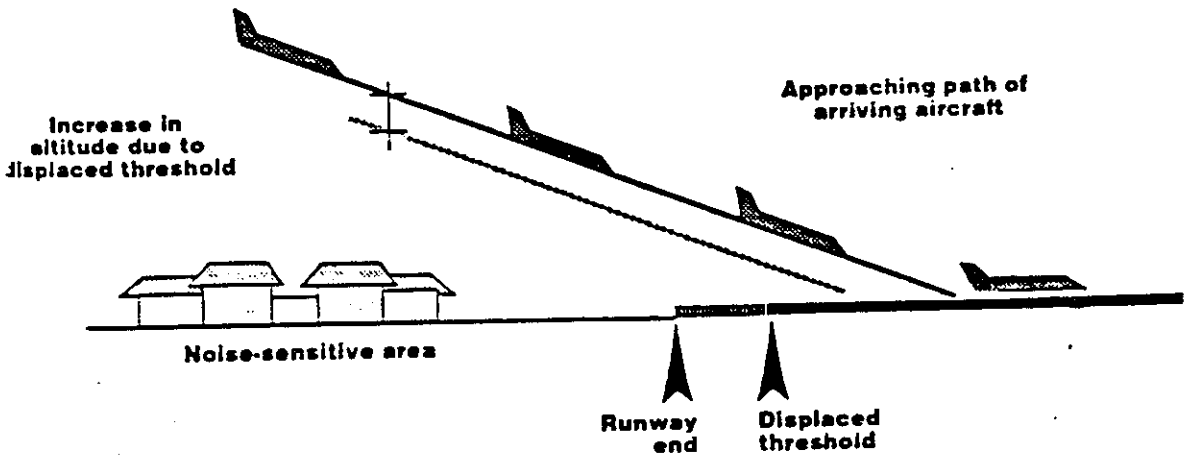
PREVENTIVE MEASURES

- **Airport sponsor activities**
  - **Acquisition**
- **Jurisdictional activities**
  - **Comprehensive planning**
  - **Land use controls**
  - **Fair disclosure**
  - **Urban growth management**
- **Airport sponsor or jurisdictional activities**
  - **Soundproofing new structures**
  - **Avigation easements**

REMEDIAL MEASURES

- **Airport sponsor activities**
  - **Acquisition and relocation**
  - **Avigation easements**
  - **Transaction assistance**
- **Jurisdictional activities**
  - **Rezoning**
- **Airport sponsor or jurisdictional activities**
  - **Redevelopment**
  - **Soundproofing existing stuctures**


Takeoff path of departing aircraft
Increase in altitude due to runway extension
Noise-sensitive area
Runway end
Runway extension


Increase in
altitude due to
displaced threshold
Approaching path of
arriving aircraft
Noise-sensitive area
Runway
end
Displaced
threshold

Kimley-Horn and Associates, Inc.

CATEGORIES UNDER CONSIDERATION IN THE ENVIRONMENTAL ASSESSMENT

- ☐ **Aircraft noise**
- ☐ **Compatible land use**
- ☐ **Social impacts**
- ☐ **Induced socioeconomic impacts**
- ☐ **Water quality**
- ☐ **DOT Section 4(f) — parks, recreation areas, wildlife refuges**
- ☐ **Historic, architectural, archaeological, and cultural resources**
- ☐ **Biotic communities (flora and fauna)**
- ☐ **Endangered and threatened species of flora and fauna**
- ☐ **Wetlands**
- ☐ **Floodplains**
- ☐ **Solid waste impacts**
- ☐ **Construction impacts**

HUNTSVILLE-MADISON COUNTY AIRPORT AUTHORITY

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PUBLIC AWARENESS MEETING
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport

City of Madison Recreational Center

March 30, 1989

NAME	ORGANIZATION	TELEPHONE
RICKY GRISSOM		772-3766
Steven Gordon		772-0022
Minetta Gordon		772-0022
Charlene Croy		464-9063
Mike Bahn	Madison Resident/Homeowner	
David Holden	Huntsville Times	
Marilyn Lands	Airport Authority	461-2521
WAYNE NEALE	—	461-2446
Curtis L. Rusby Jr.	Madison Resident MPD	772-9212
Cindi Sanderson	Madison Resident	772-3570
Joe Myrick	Rep	772-9085
Fred Doherty	Resident	772-3795
Blair Conrad	HMCAA	
Preston Kelly	Resident	464-9731
Ann van Leeuwen	City of Madison	461-8787
Deagon Cuddeback	Mayor/Madison	772-0111 x22

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FOREIGN-TRADE ZONE NO. 83
INTERNATIONAL INTERMODAL CENTER

Jetplex®
INDUSTRIAL PARK

PUBLIC AWARENESS MEETING
ENVIRONMENTAL ASSESSMENT AND
NOISE COMPATIBILITY PROGRAM UPDATE
Huntsville International Airport

City of Madison Recreational Center

March 30, 1989

NAME	ORGANIZATION	TELEPHONE
Willie Noel	Madison Co. Record	
Kathy Wells	Mayor's Aide	772-0111 Ext 22
Robert E Lawley		772 1546

Appendix D

Appendix D

PUBLIC HEARING AND WRITTEN COMMUNICATIONS RECEIVED

CONTENTS

ABAMA)
UNTY)

Gladys R. Oakes, a Notary Public State and County, personally appEchols, known to me, who being by worn, deposes and says she is Legal Advertising Manager of The Huntsville Times, a newspaper published and printed at Huntsville, Madison County, Alabama, and that the attached legal notice was published in said newspaper on November 16, 23, 30 December 7 & 14, 1989

Ida Mae Echols
Legal Advertising Manager

Sworn to before me this the 15th day of December, 1989

Gladys R. Oakes
Notary Public

My commission expires September 25, 1990.

NOTICE OF OPEN PUBLIC HEARING CONCERNING PROPOSED RUNWAY EXTENSIONS AND UPDATE OF THE FAR PART 150 NOISE EXPOSURE MAPS AT HUNTSVILLE INTERNATIONAL AIRPORT

TIME AND PLACE OF HEARING - On December 18, 1989, at 7:00 p.m. at City of Huntsville Municipal Building, in Council Chambers, 308 Fountain Circle, Huntsville Alabama 35801, an open public hearing will be held on the proposed extensions of Runways 18L-36R, 18R-36L, and the update of the Federal Aviation Regulations (FAR) Part 150 noise exposure maps and noise compatibility program at Huntsville International Airport.

PURPOSE OF HEARING - to afford interested persons, groups, agencies, and the general public an opportunity for public consideration of extending Runway 18L-36R (east parallel runway) 1,500 feet to the south and 500 feet to the north by 1993 and an additional 2,500 feet to the south in the post 1993 period for an ultimate length of 12,500 feet and the extension of Runway 18R-36L (west parallel runway) 3,000 feet to the south for an ultimate length of 11,000 feet in the post-1993 period and their consistency with the goals and objectives of such urban planning for the area.

In addition, interested persons, groups, agencies, and the general public will be afforded the opportunity for public consideration of the updated FAR Part 150 noise exposure maps and noise compatibility program for Huntsville International Airport reflecting existing (1988) noise exposure conditions and future (1993) noise exposure conditions assuming passenger and air cargo airline hubbing.

CONDUCT OF THE HEARING - Representatives of the Huntsville-Madison County Airport Authority will be at the outset present a summary of their views concerning the proposed runway extensions and updated FAR 150 noise exposure maps and noise compatibility program's social, economic, and environmental impacts and their consistency with locally carried out urban planning.

Other persons present and desiring to do so will be afforded the opportunity to present written and oral views (whether in favor of, in opposition to, or by way of proposed revision to the proposed projects).

All oral comments will be recorded and a verbatim transcript of the hearing will be prepared.

Parties unable or desiring not to appear at the public hearing are urged to file a signed statement presenting their views on the proposed runway extensions and/or updated FAR Part 150 noise exposure maps and noise compatibility program. Such statements may be submitted up to and including December 18, 1989, and should be addressed to Executive Director, Huntsville-Madison County Airport Authority, P.O. Box 6006, Huntsville, Alabama 35824-0006.

AVAILABILITY OF ENVIRONMENTAL ASSESSMENT AND UPDATED FAR PART 150 NOISE EXPOSURE MAPS AND NOISE COMPATIBILITY PROGRAM - The Huntsville-Madison County Airport Authority is required under the provisions of the National Environmental Policy Act of 1969, the Airport and Airway Safety and Capacity Expansion Acts of 1987, the Aviation Safety and Noise Abatement Act of 1979 (as amended), and Federal Aviation Administration requirements to prepare an environmental assessment (EA) for the proposed runway extensions and to periodically update its FAR Part 150 noise exposure maps and noise compatibility program. Consultants for the Huntsville-Madison County Airport Authority have prepared an EA describing the environmental impacts the proposed extensions are expected to have and have prepared a report describing and up dated FAR Part 150 noise exposure maps and noise compatibility program. Any person desiring to review the EA and Far Part 150 may do so during normal working hours at the following locations:

Huntsville-Madison County Airport Authority
Suite 204
Airport Terminal Building
Huntsville International Airport
Huntsville, AL 35824

City of Madison
City Hall
4192 Sullivan Street
Madison, Alabama 35758

City of Huntsville
Planning Department
308 Fountain Circle
Huntsville, Alabama 35801

City of Triana
City Hall
640 Sixth Street
Madison, Alabama 35758

Top of Alabama Regional Council of Governments
115 Washington Street
Huntsville, Alabama 35801

Huntsville-Madison County Public Library
915 Monroe Street
Huntsville, AL 35801

Madison County Courthouse
Commission-Room 700
Huntsville, AL 35801

Limestone County Commission
310 W. Washington Street
Athens, AL 35611

Organizations or individuals desiring their own copies of the EA and/or FAR Part 150 report may request one from the Executive Director, Huntsville-Madison County Airport Authority, P.O. Box 6006, Huntsville, Alabama 35824-0006. Please be advised that the number of copies is limited and there may not be sufficient copies to satisfy all requests.

Interested persons are urged to attend the open hearing or file signed statements presenting their reviews on the environmental assessment and/or the updated FAR Part 150 noise exposure maps and noise compatibility program to Executive Director, Huntsville-Madison County Airport Authority, P. O. Box 6006, Huntsville, Alabama 35824-0006.

Eugene B. Conrad, Jr.
A.A.E.
Executive Director
Huntsville-Madison County Airport Authority
Huntsville, Alabama
November 16, 23, 30,
December 7, 14, 1989

FORMAL PUBLIC HEARING

FAR Part 150 Noise Compatibility Program

&

Environmental Assessment

Huntsville International Airport

December 18, 1989

NAME (Please Print)	ADDRESS
Anne Marie Lemistre	Madison, Al.
Lynn Smith	Athens AL
Bob Hall	% City of Madison, Alabama
ED 2 MDA	121 Secure Dr, MADISON
Ron Hamby	513 Brenda Madison, AL
Barbie Pack	2004 Woodlawn Dr Huntsville, AL
Marilyn Sands	206 Millstone Lane, Madison, AL
DICK B MADISON COUNTY	1601 BIG COVE RD HUNTSVILLE AL
Arthur Halvorsen	504 Stella Dr. Madison, AL
JOHN CHASE	817 TANNAHILL DR SE HUNTSVILLE,
MORRIS DYER	10108 CAHABA DR SW. HSV AL
ARTHUR CAMP	2004 FLAGSTONE, MADISON, AL 35758
Ben Ferrell	Huntsville Planning Dept.
STEVE FINNELL	2024 Memorial Pky apt J-8 Huntsville 35
Steve Dinges	10308 Melanie Dr. HSV. AL 3580
Ken Newberry	1006 Drake Ave HSV AL 3580

FORMAL PUBLIC HEARING
FAR PART 150
NOISE COMPATIBILITY PROGRAM
AND
ENVIRONMENTAL ASSESSMENT

Huntsville International Airport

Prepared by

KPMG Peat Marwick
Airport Consulting Services

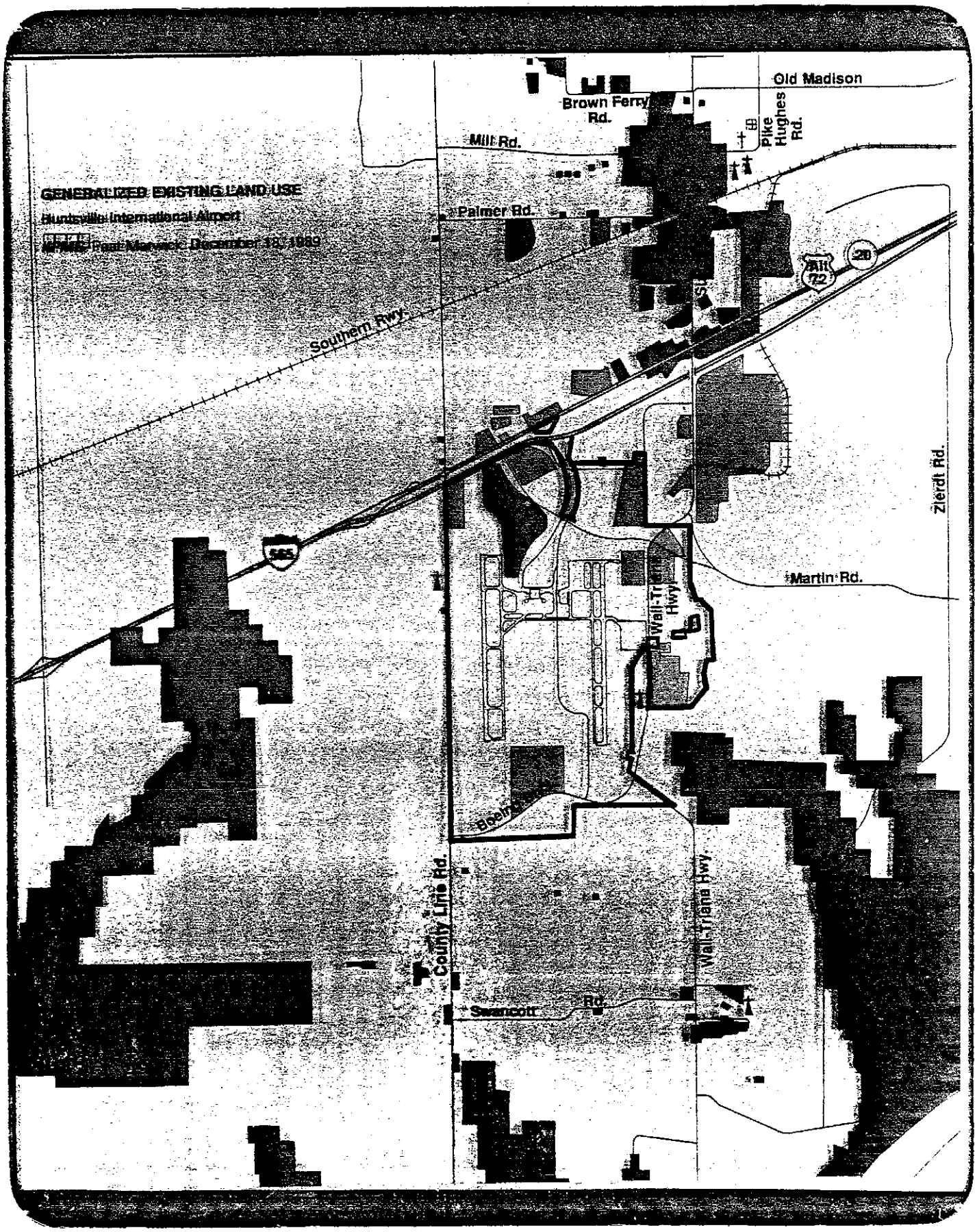
December 18, 1989

FAA GRANTS

The preparation of this study is being financed in part through an Airport Improvement Program grant from the Federal Aviation Administration (FAA) as provided under Section 505 of the Airport and Airway Safety and Capacity Expansion Act of 1987.

CONSULTATION PROCESS

- Project Advisory Committee
- Public information sessions
- Public hearing
- Coordination with Federal Aviation Administration


GENERALIZED EXISTING LAND USE
Huntsville International Airport
Base Map: Real Mapping, December 18, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Southern Rwy.
565
72
20
Zierdt Rd.
Martin Rd.
Wall-Triana Hwy.
Boeing
County Line Rd.
Swancott Rd.

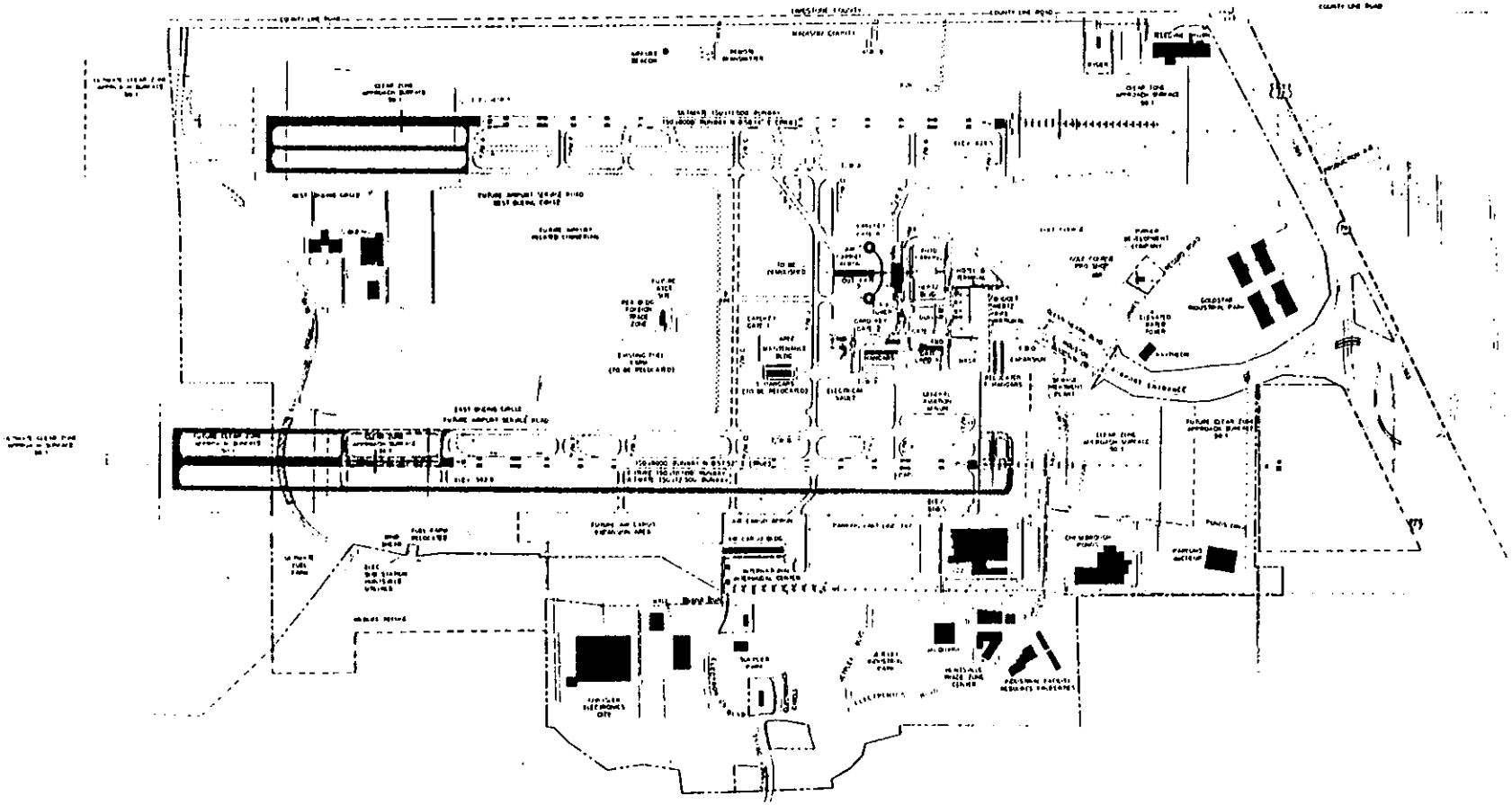


Exhibit 2-2

EXISTING AND PLANNED AIRPORT FACILITIES

FAR Part 150 Noise Compatibility Program
Huntsville International Airport

KPMG Peat Marwick October 1989

CATEGORIES UNDER CONSIDERATION IN THE ENVIRONMENTAL ASSESSMENT

- Aircraft noise
- Compatible land use
- Social impacts
- Induced socioeconomic impacts
- Water quality
- DOT Section 4(f) — parks, recreation areas, wildlife refuges
- Historic, architectural, archaeological, and cultural resources
- Biotic communities (flora and fauna)
- Endangered and threatened species of flora and fauna
- Wetlands
- Floodplains
- Solid waste impacts
- Construction impacts

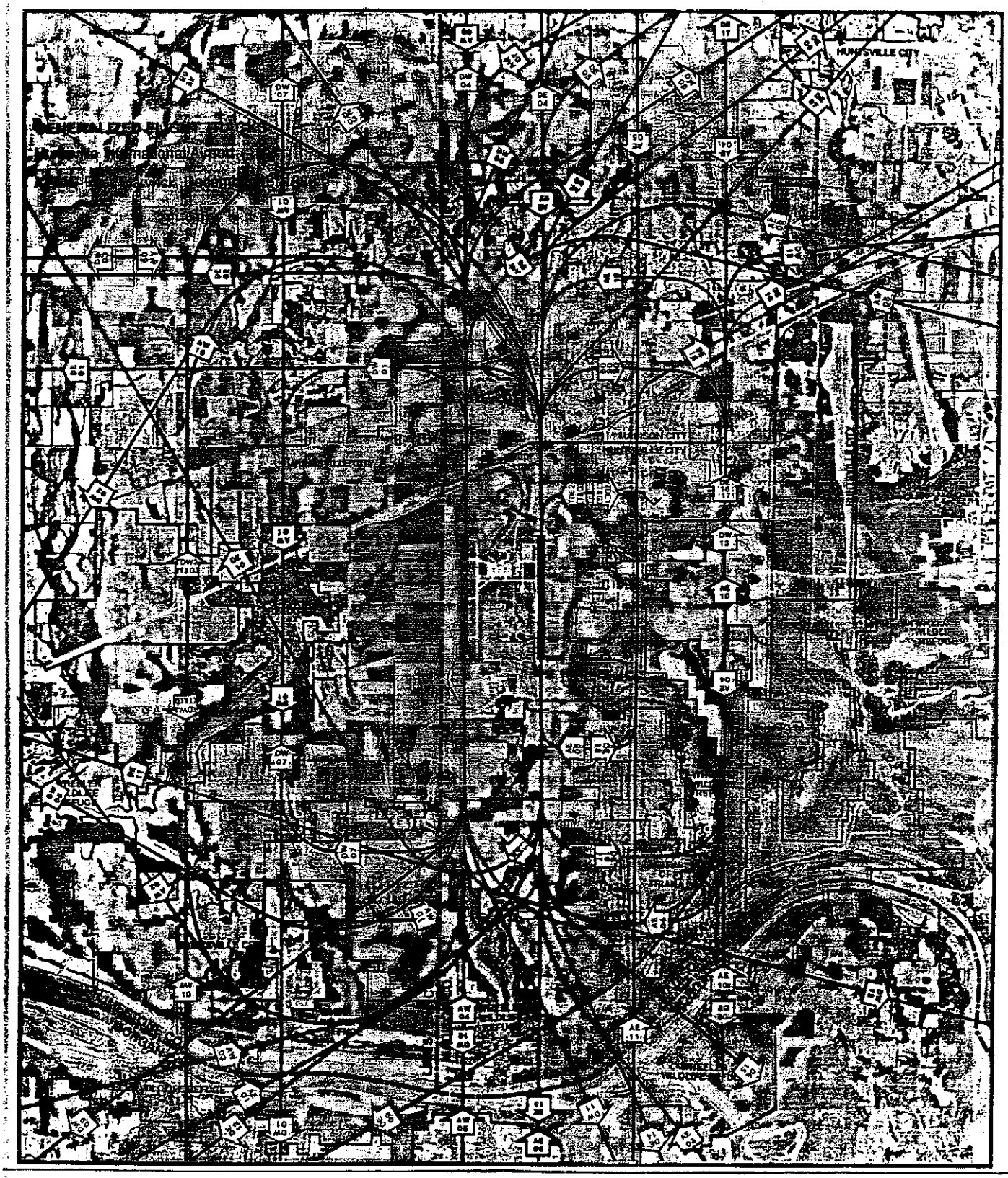
FAA Fleet Harvick

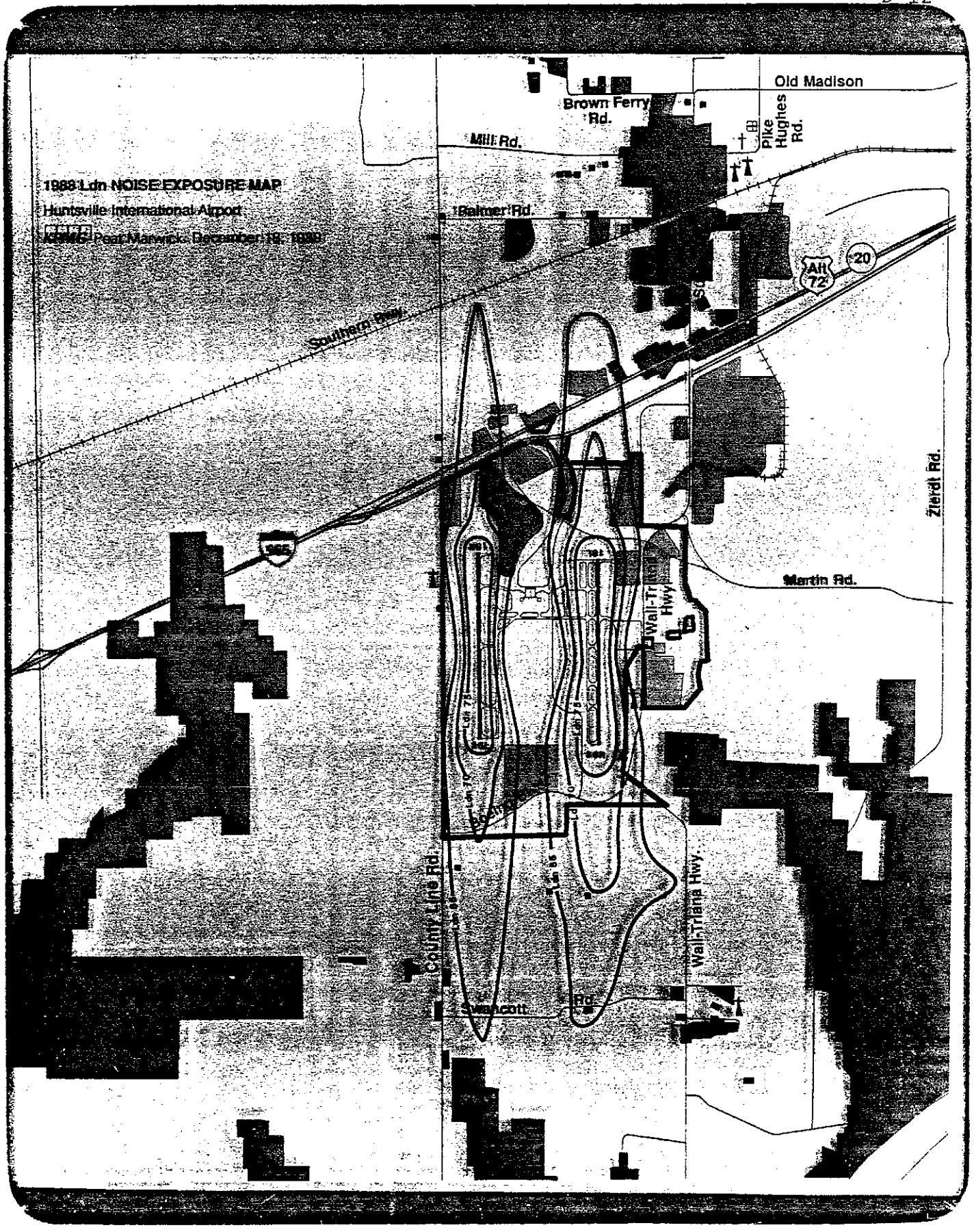
ANNUAL AIRCRAFT OPERATIONS

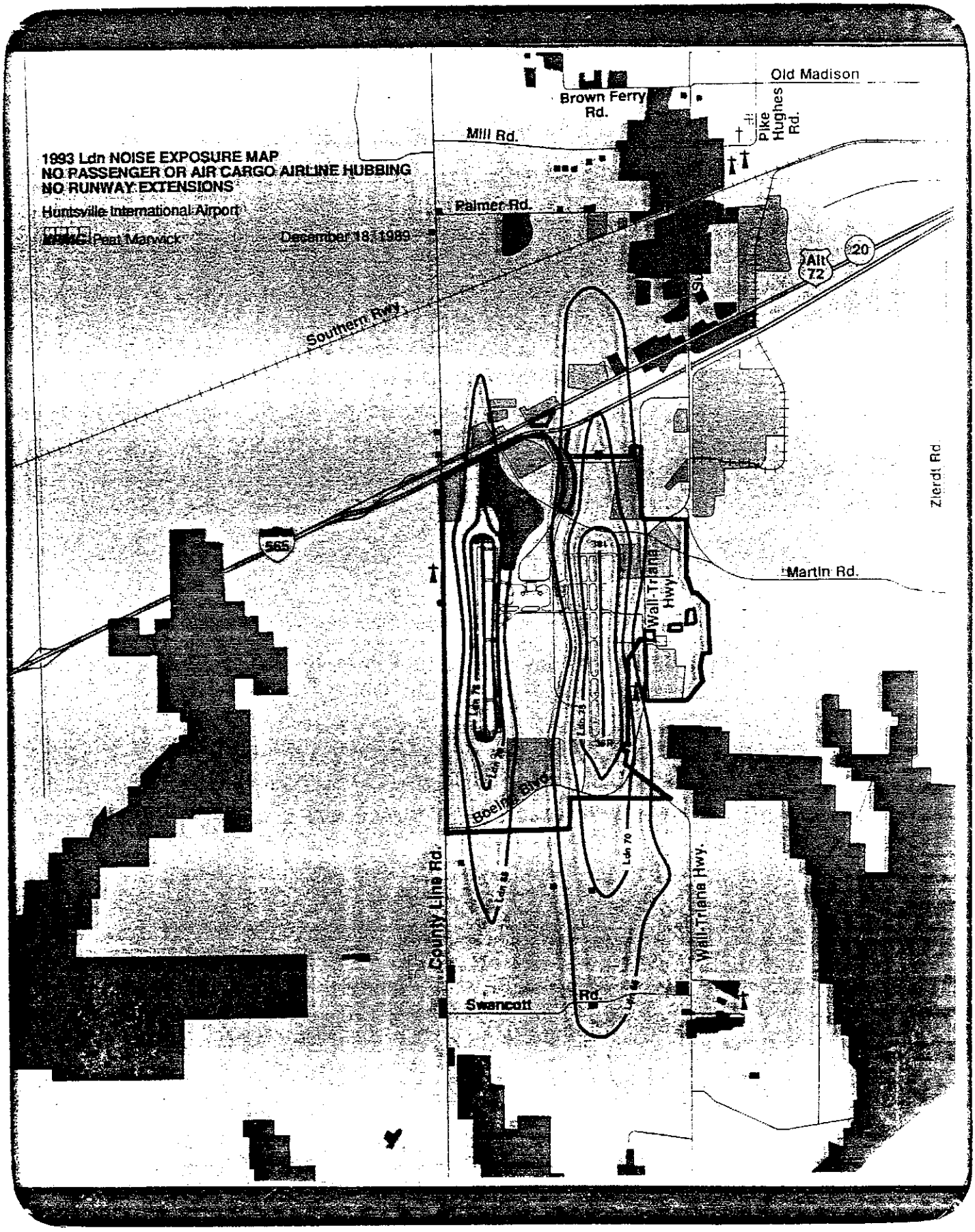
	Air carrier	Commuter	General aviation	Military	Total
Historical					
1980	16,015	1,969	58,396	2,773	79,153
1985	12,329	10,034	32,524	3,899	58,786
1988	15,348	10,201	32,011	3,524	61,084
Forecast					
1993	19,600	16,500	39,600	4,000	79,700
2008	29,000	27,000	59,700	4,000	119,700
With airline and air cargo hubbing					
1993	68,875	16,500	39,600	4,000	128,975
2008	105,650	27,000	59,700	4,000	196,350

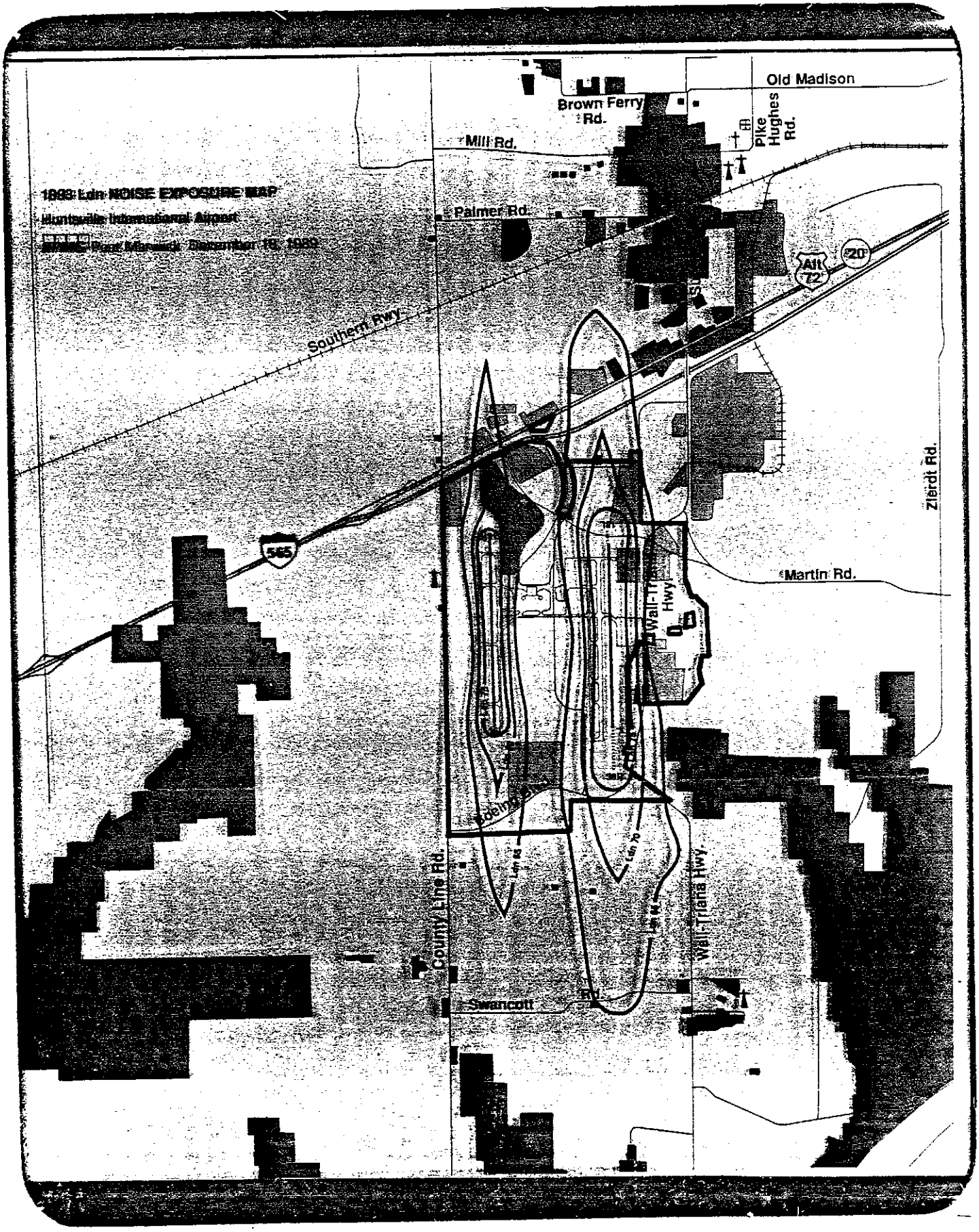
STAGE 3 AIRCRAFT IN THE MIX

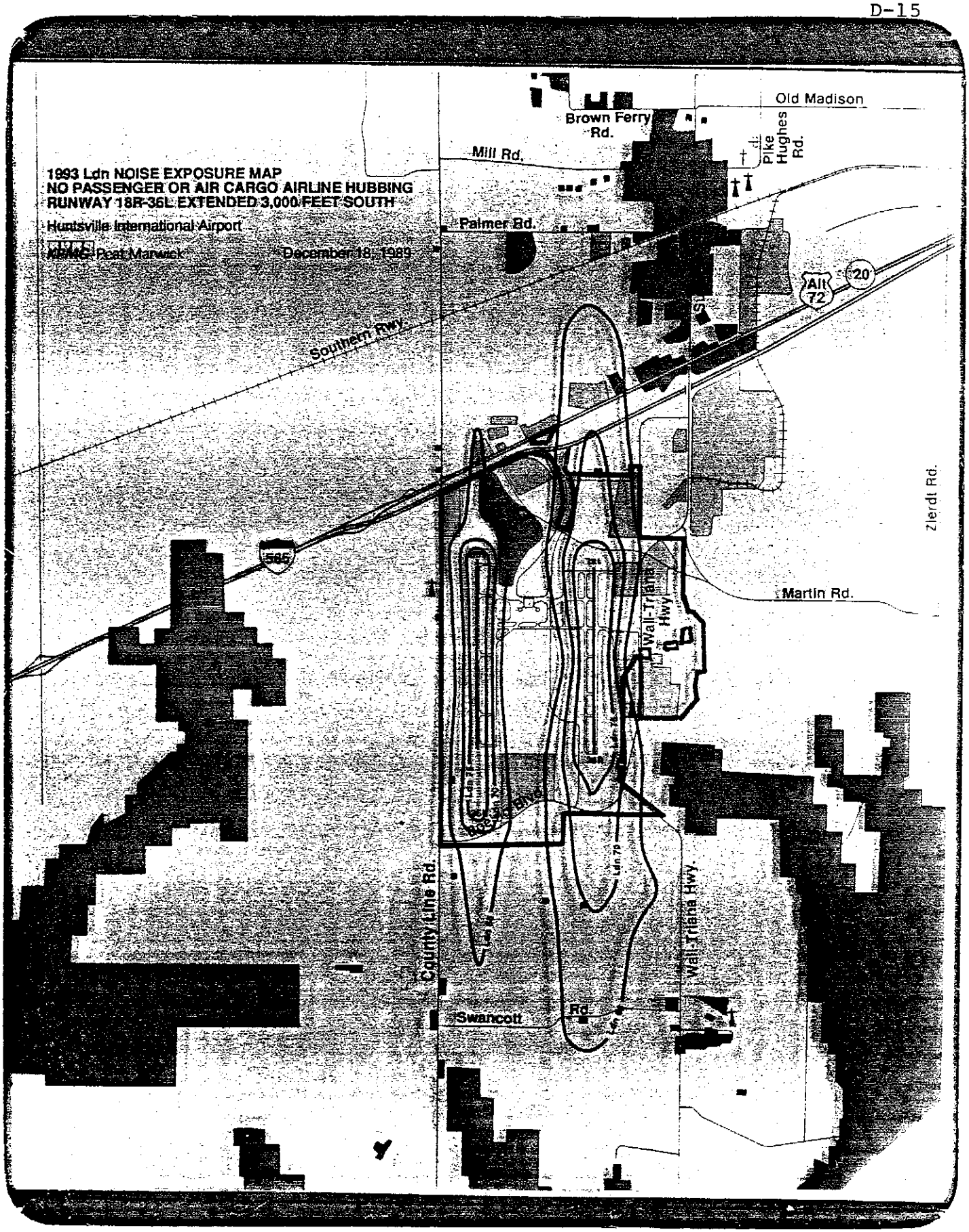
Year	Percent of Stage 3 air carrier aircraft in the mix
1988	29%
1993	50%
2008	99%
With airline and air cargo hubbing	
1993	41%
2008	83%

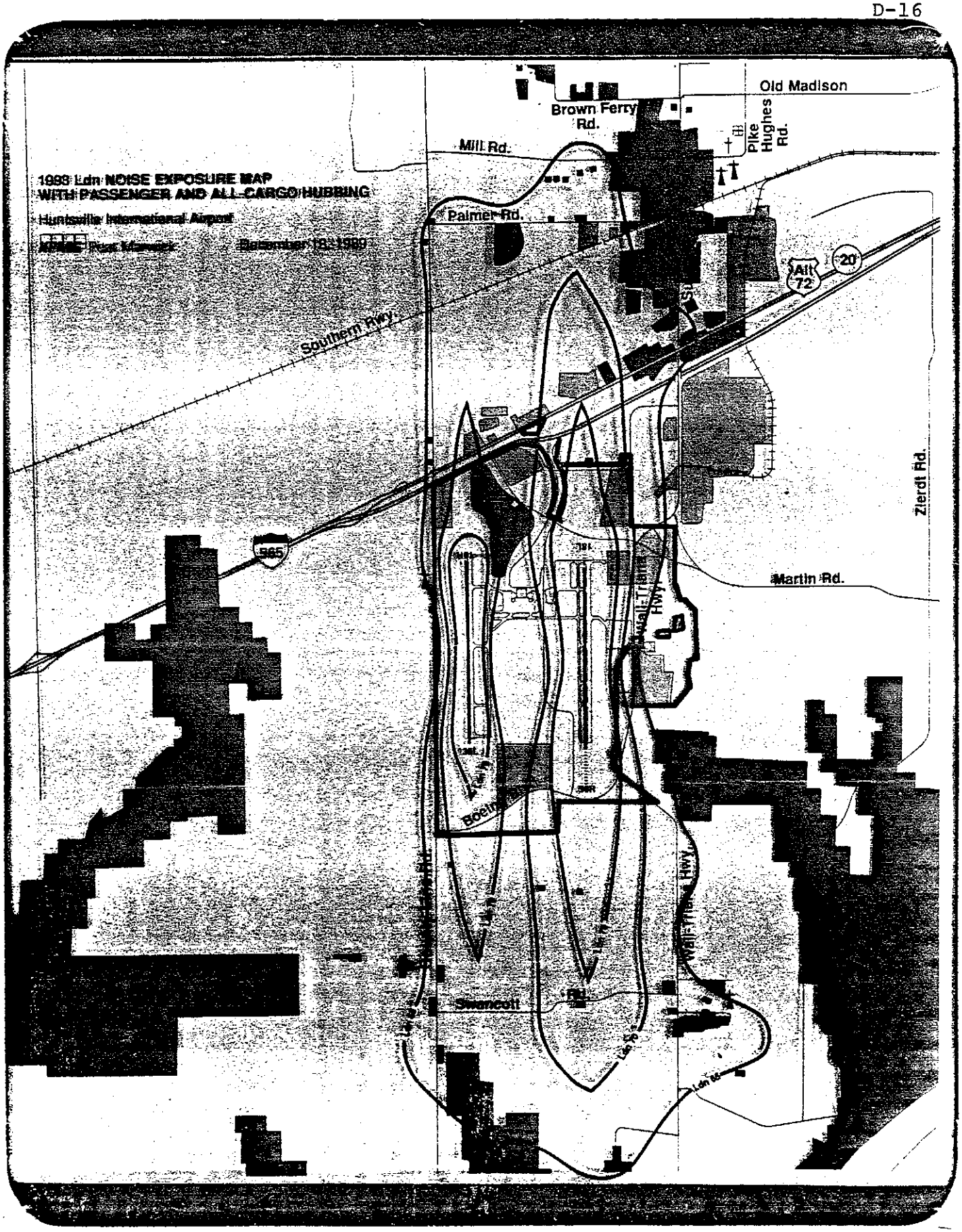

HUNTSVILLE CITY

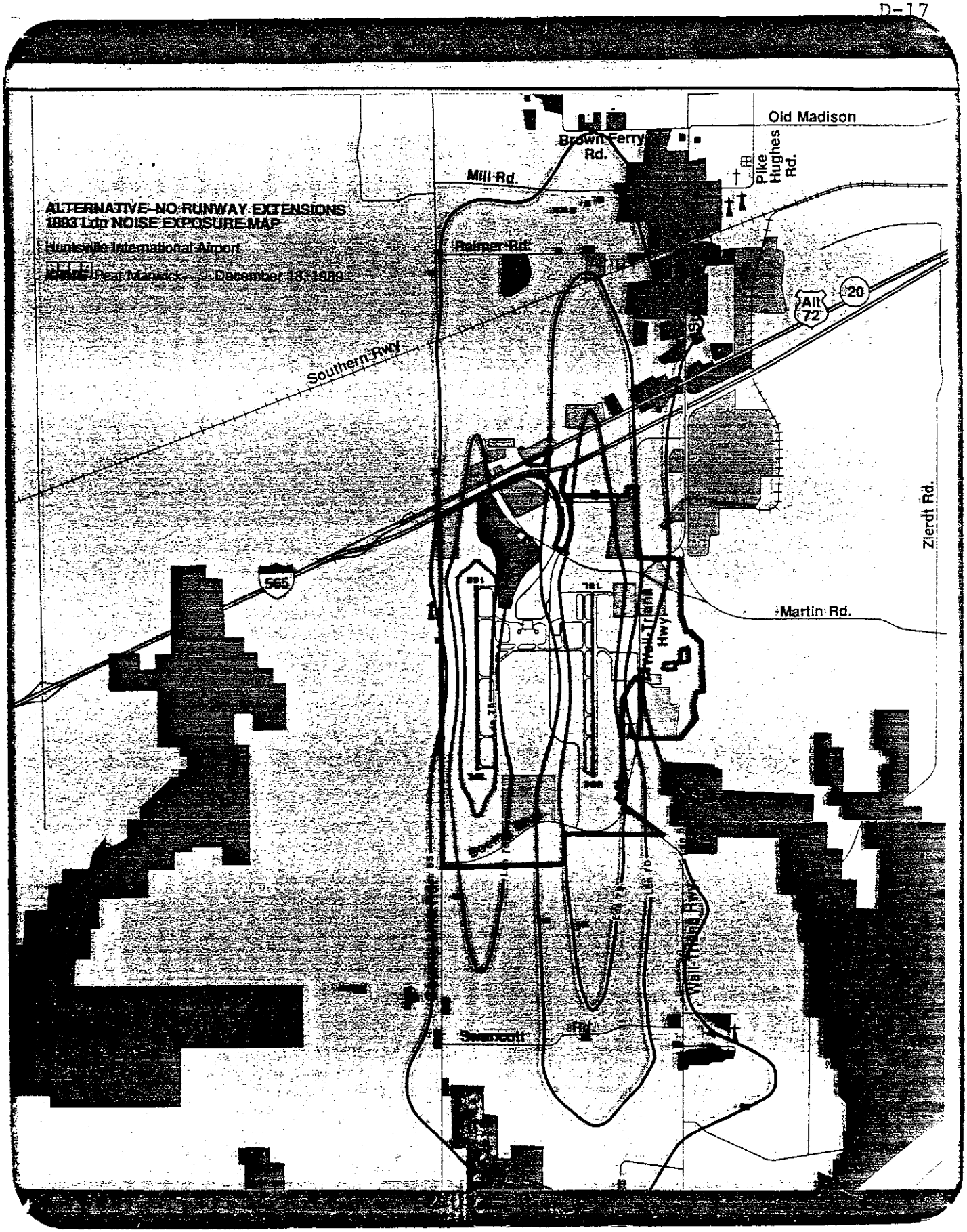

1988 Ldn NOISE EXPOSURE MAP
Huntsville International Airport
Source: Peat Marwick, December 19, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Balmer Rd.
Alt 72
20
Southern Rail
565
Ziegler Rd.
Martin Rd.
Wall-Triana Hwy.
Cell 78
Cell 79
County Line Rd.
Wall-Triana Hwy.
Rd.

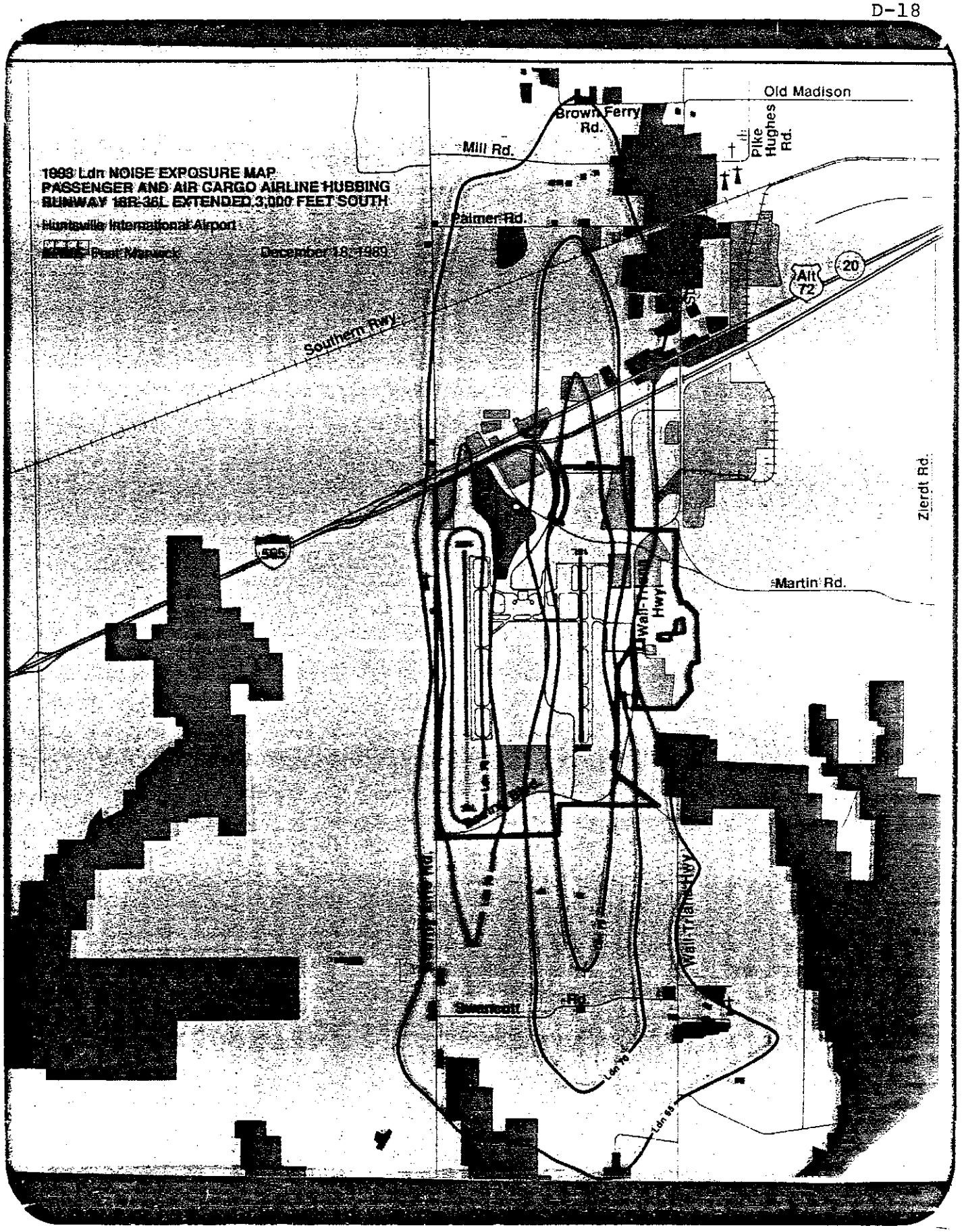

1993 Ldn NOISE EXPOSURE MAP
NO PASSENGER OR AIR CARGO AIRLINE HUBBING
NO RUNWAY EXTENSIONS
Huntsville International Airport
Prepared by: Peat Marwick
December 18, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy.
Zierdt Rd
565
Martin Rd.
Wall-Triana Hwy.
Ldn 75
Ldn 70
Ldn 65
Boeing Blvd.
County Line Rd.
Swancott Rd.

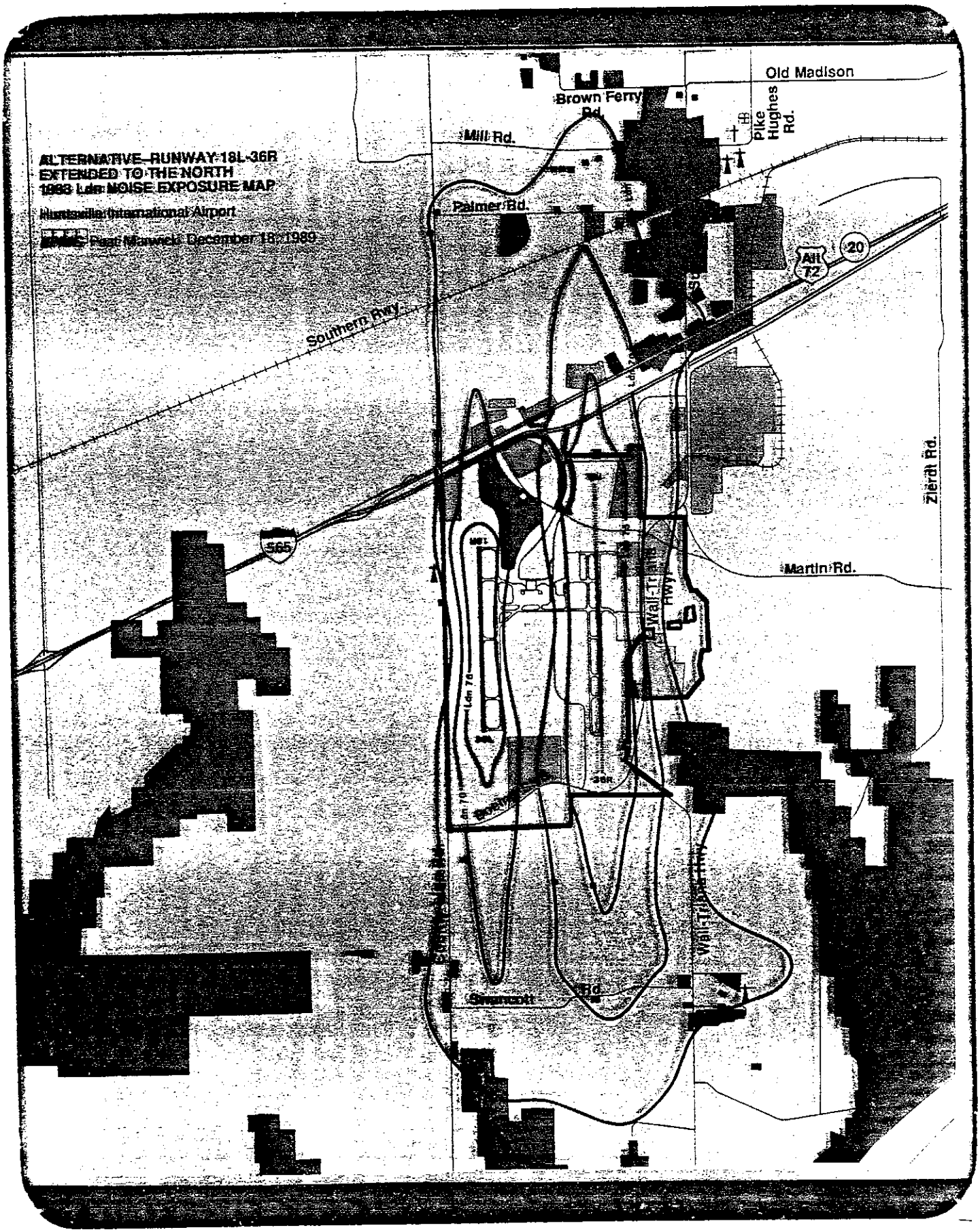

1993 Ldn NOISE EXPOSURE MAP
Huntsville International Airport
Base Mission: December 15, 1993
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy
565
Zierdt Rd.
Martin Rd.
Wall-Triana Hwy.
County Line Rd.
Swancott Rd.

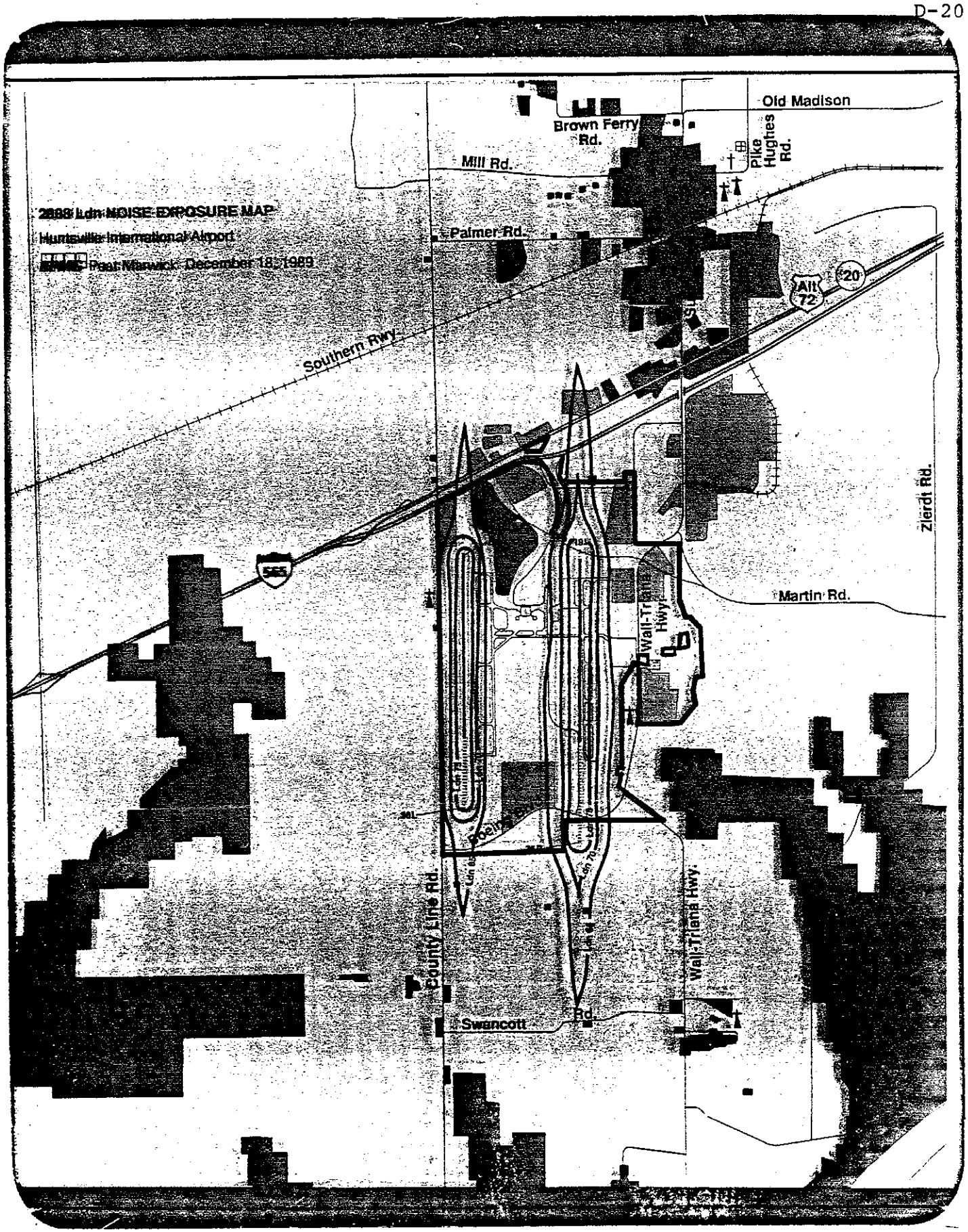

1993 Ldn NOISE EXPOSURE MAP
NO PASSENGER OR AIR CARGO AIRLINE HUBBING
RUNWAY 18R-36L EXTENDED 3,000 FEET SOUTH
Huntsville International Airport
Prepared by: Peat Marwick
December 18, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy
565
Zierdt Rd.
Martin Rd.
Wall-Triana Hwy
Rocket Blvd
County Line Rd.
Swancott
Rd.
Ldn 75
Ldn 70

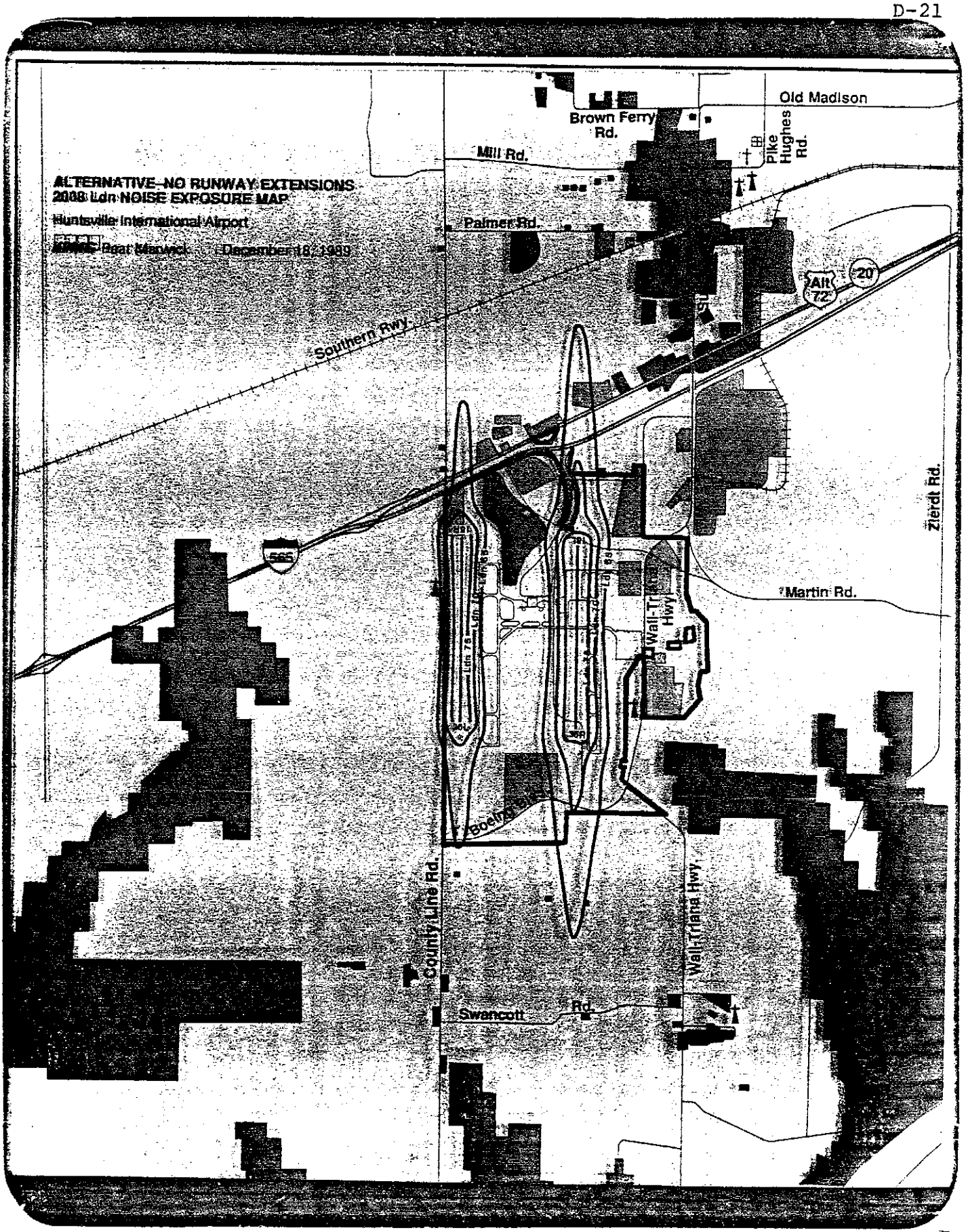

1998 Ldn NOISE EXPOSURE MAP
WITH PASSENGER AND ALL CARGO HUBBING
Huntsville International Airport
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy
565
Zierdt Rd.
Martin Rd.
Swancott Rd.

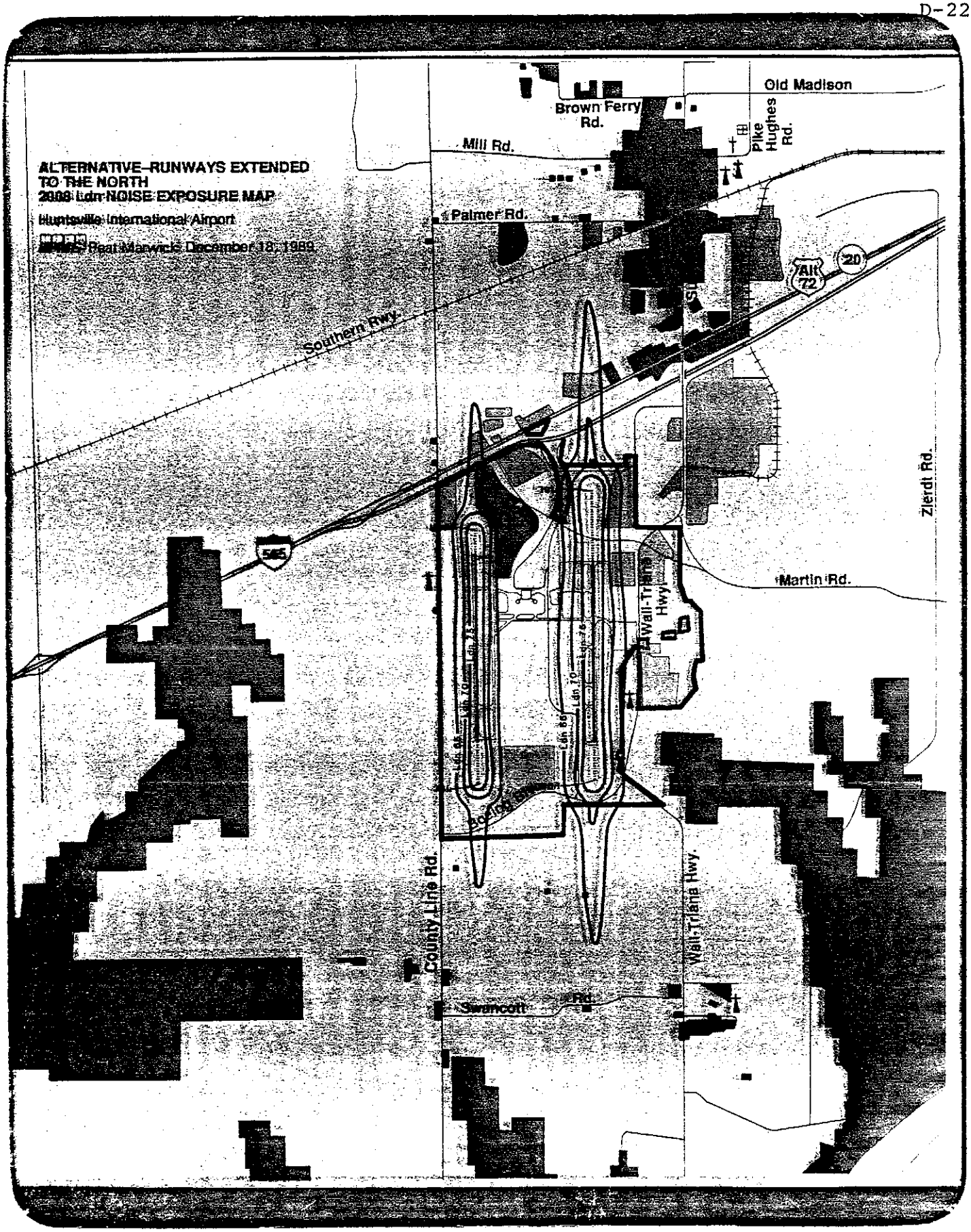

ALTERNATIVE NO RUNWAY EXTENSIONS
1993 Ldn NOISE EXPOSURE MAP
Huntsville International Airport
Peat Marwick December 13, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy
Zierdt Rd.
565
Martin Rd.
Hwy
Swancott Rd


1993 Ldn NOISE EXPOSURE MAP
PASSENGER AND AIR CARGO AIRLINE HUBBING
RUNWAY 18R-36L EXTENDED 3,000 FEET SOUTH
Huntsville International Airport
Prepared by: Planning Systems Inc.
December 18, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy
565
Zierdt Rd.
Martin Rd.
Wall-Triana Hwy
Ldn 75
Ldn 70
Ldn 65


ALTERNATIVE RUNWAY 18L-36R
EXTENDED TO THE NORTH
1993 Ldn NOISE EXPOSURE MAP
Huntsville International Airport
Prepared December 18, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Southern Rwy
AIR 72
20
565
Zierdt Rd.
Martin Rd.
Wall Triana Hwy
Ldn 70
Ldn 75
18L
36R
Swancott Rd.


2888 Ldn NOISE EXPOSURE MAP
Huntsville International Airport
Peat Marwick December 18, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy
Zierdt Rd.
Martin Rd.
Wall-Triana Hwy
County Line Rd.
Swancott Rd.
Wall-Triana Hwy.


ALTERNATIVE-NO RUNWAY EXTENSIONS
2008 Ldn NOISE EXPOSURE MAP
Huntsville International Airport
Boat Marwick - December 18, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy
565
Zierdt Rd.
Martin Rd.
Wall-Triana Hwy
Ldn 75
Ldn 70
Ldn 65
Boeing
County Line Rd.
Wall-Triana Hwy
Swancott
Rd.


ALTERNATIVE–RUNWAYS EXTENDED TO THE NORTH
2006 Ldn NOISE EXPOSURE MAP
Huntsville International Airport
Prepared by Peat Marwick December 18, 1989
Old Madison
Brown Ferry Rd.
Mill Rd.
Pike Hughes Rd.
Palmer Rd.
Alt 72
20
Southern Rwy
Zierdt Rd.
565
Martin Rd.
Wall-Triana Hwy
Ldn 75
Ldn 70
Ldn 65
Ldn 80
Ldn 70
Ldn 75
Boeing
County Line Rd.
Wall-Triana Hwy
Swancott Rd.

NOISE COMPATIBILITY MEASURES

1. Perform comprehensive planning
2. Rezone land in undeveloped areas
3. Develop height/noise/safety zoning overlay ordinance
4. Require fair disclosure
5. Discourage home mortgage insurance
6. Sequence capital improvements
7. Incorporate the Noise Compatibility Program into the regional transportation plan
8. Institute a land banking program
9. Modify subdivision regulations
10. Extend Runway 18L-36R 1,500 feet to the south

NOISE COMPATIBILITY MEASURES (Cont.)

11. Displace the Runway 18L arrival threshold by 500 feet after runway extension to the north
12. Equalize runway use
13. Encourage greater use of Stage 3 aircraft
14. Encourage the tightening of noise emission standards
15. Require acoustical treatment for new incompatible structures
16. Provide acoustical treatment for existing incompatible structures
17. Acquire avigation easements
18. Obtain funding for noise mitigation
19. Obtain funding for continued planning

12/21/89

Blair,

These are my written comments to supplement my inputs at the 12/18/89 Public Hearing. I have also provided a copy to the Madison Mayor's office and one to Bill Noel of the Madison County Record.

Ed Jones

C/2)

D-26

12/20/89

To: Administrator
Federal Aviation Agency
Washington, DC

Dear Sir,

This letter is submitted to you as part of the public hearing process related to two documents:

Environmental Assessment
Runway Extensions
Huntsville International Airport, Oct, 1989
and
FAR Part 150 Noise Exposure Maps and
Noise Compatibility Program Update
Huntsville International Airport, Oct, 1989

Both documents (draft) were prepared for the Huntsville-Madison County Airport Authority, Huntsville, Alabama and briefed at a formal public hearing on December 18, 1989 in Huntsville, Alabama.

I have had access to these documents for about three weeks and have reviewed them in great detail. These documents are inaccurate, inconsistent, incomplete; and, therefore, uninformative to the public for purposes of document approval and/or project approval. As it is my basic support for the runway extension project being proposed, I make the strongest possible recommendation to you that you withhold your

approval until the deficiencies I will describe for you have been remedied. When these remedies are applied, I believe another public hearing would be of great value.

To conserve space, I will refer to the documents as EA (for Environmental Assessment) and FAR150 (for FAR Part 150). I will discuss the documents separately except as necessary to compare or contrast them to each other.

FAR150 Page 3-21. It is stated that passenger and all-cargo airline operations were assumed for the program update. The impact of hubbing for aircraft operations is shown on page 3-22, last paragraph. There is no impact shown (from hubbing) on passenger growth. Appendix A of EA repeats the same data. It is impossible to determine if EA considers impacts on the airport and immediate Huntsville region from the increased number of passengers associated with hubbing. There is also an absence of any assessment on the impact of greater cargo volume on the local transportation systems (roads, highways, railroads, local traffic disruption). This omission occurs in EA also.

FAR150 Page 3-17. The term "aircraft operations" is used throughout both FAR150 and EA. The absence of this definition may deteriorate the credibility of noise analyses and other interpretations of operations data. Examples will be shown in later items.

FAR150 Page 3-22, last sentence shows total operations in 1993 forecast to be 125,300. The EA on page 8, last paragraph, the total 1993 operations forecast to be 128,975 – a difference of 3675, nearly 3% or 10 operations per day. The existence of this discrepancy and the absence of any explanation offered by the preparers or the authority forces one to question all data in the report – either the preparer didn't care about the discrepancy or or didn't check the data.

FAR150 Pages 4-16 (table 4-2) and 4-18 (table 4-3) list aircraft types presently using the airport. Per page 4-15, middle paragraph, the tables are not meant to constitute the full range of aircraft that will use the airport. This is a tragic and deceitful omission if all-cargo hubbing becomes a reality because many cargo operators use noisier stage 1 and 2 aircraft. The fact that this usage is not included in the noise analysis offered to the public makes the sound footprints overly optimistic if not completely unreliable. The public hearing data offered to the public on this data was presented as worst case; clearly it was not. It may well have been best case.

FAR150 Page 4-7, second paragraph discusses day-night sound level, Ldn, and states that during the night time period (10 PM to 7 AM), the average sound levels are increased by a 10-decibel weighting

penalty before the 24-hour average is computed. On page 4-20, first paragraph, it is stated that each nighttime operation is equivalent to 10 daytime operations in the INM. According to the explanation of DNL on page 4-8, last paragraph, a night time sound, with its 10 decibel weighting penalty, would count as 10 times stronger than a daytime sound; it is still a single event and not equivalent to 10 daytime operations as stated on page 4-20. This apparent conflict is either a gross error or a completely unnecessary confusion factor.

NOTE: The Huntsville-Madison County Airport Authority held a public information session in Madison, Alabama on December 11, 1989. The City of Madison is immediately to the north of the airport. The audience at the hearing included many highly qualified technical personnel. Neither the briefing consultant nor the authority's Executive Director was able to provide a satisfactory or comprehensible explanation of the noise analysis methodology. The outstanding deficiency of the noise analysis is that it provides no familiar basis of comparison for the public. Also, it deals in averages. Most people correlate to the "sound of a freight train at 50 yards" or an overhead "clap of thunder", but an Ldn of 65 means nothing, especially as an

FAR 150 Page 4-24, first paragraph states that Exhibit 4-3 is to be presented later; [redacted]. This paragraphs also assumes that flight tracks (noise exposure) for 1993 will be the same as experienced in 1988. This assumption is invalid because runway extension construction will probably diminish, if not prohibit, operations on the runway being extended, and for extended periods.

FAR 150 Page 4-29, second paragraph and third paragraph discuss Ldn and adjustments. It appears that Ldn does not consider variations in terrain elevation beneath offending aircraft. Flight tracks AE10, AW06, AE09, and AE08 pass over Rainbow Mountain, a prime residential area in Madison, on what amounts to a pattern altitude base leg (VFR) for landings on runways 18R and 18L. These tracks are shown on page 4-23, Exhibit 4-1.

FAR 150 Page 5-19, second paragraph states that with hubbing in 1993 that training operations would account for 3.2% of total operations. Yet on page 4-22, table 4-4, note a states that training operations are assumed to constitute 10.5% of total operations in 1993. This is a 328% discrepancy in two data items that should be the same. If the preparer and airport authority don't explain or eliminate these discrepancies, what can the public believe; how can there be public confidence, where is the authority's credibility?

FAR 150 Page 4-16, table 4-2, Air Carrier category, total operations for 1988 for B-727-100/200 shown at 8.2 per day and B-737-100/200+DC-9 shown at 25.8 per day. These are older, noisier aircraft. In the 1993 forecast on page 4-18, these aircraft operations increase to B-727-100/200, 53.0 and B-737-100/200+DC-9, 47.0. More specifically, operations for noisier aircraft increase from 34.0 per day (8.2+25.8) in 1988 to 100 per day (53.0+47.0) in 1993! This is an increase in noise production of nearly 300% for the whole day and over 800% for the nighttime period. In spite of data in the tables, the text on page 4-15, last paragraph emphasizes that the number of Stage 3 operations increases to 41% in 1993 from 29% in 1988. This aspect of data was presented at the formal public hearing as an improvement! The words used were, "It actually gets better". This is another case of how the averages in the [redacted] approach disguise a situation that is actually deteriorating [redacted] from a noise perspective.

FAR 150 Page 3-18, table 3-7, note a indicates that the General Aviation Category includes airline training operations (touch-and-go). Page 4-22, table 4-4 now creates a separate air carrier/military category for listing touch-and-go operations. It is next to impossible to correlate data in these two tables.

I believe that no responsible public official, after a thorough review of these documents, could ever issue an approval without first requiring correction of these deficiencies and then mandating an additional public hearing.

Further, the economic and total population center of the area of the study is probably located in Huntsville, Alabama. But the population and geography that will bear the brunt of the noise in expanded operations is undoubtedly the City of Madison, Alabama. For that reason, I strongly urge you to specify that at least one formal public hearing be rescheduled in Madison, Alabama. People in Huntsville will be more attracted to the economic advantages of the expansion and will overwhelm the voices of those who voice concern over the noise issues. Alternatively, people in Madison are less likely to travel approximately 12 miles to the hearing site in Huntsville, an area they may perceive to be hostile to their concerns over noise.

Please feel free to contact me directly for additional discussion on any of my comments.

Sincerely,

Edward A. Zompa

EDWARD A. ZOMPA, Col, USAF (RET)
121 SCENIC DRIVE
MADISON, AL 35758
205 461-3334 (W)
205 830-8473 (H)

Response to Mr. Edward Zompa's letter of December 20, 1989

The page numbers in Mr. Zompa's letter refer to the October 1989 draft reports. The appropriate page numbers in this final report have been included in brackets for ease of reference.

- FAR Part 150 Page 3-21 [page 3-15]. The increased numbers of passengers associated with passenger airline hubbing will remain on-Airport. The same is true for increased cargo tonnages. The function of a hub is to transfer passengers and/or cargo from one airplane to another at a central location. The number of passengers or cargo tonnage that originates or has its destination in the Huntsville region will be governed by local market conditions rather than the presence or absence of a hub.

- FAR Part 150 Page 3-17 [page 3-12]. An aircraft operation is either a takeoff or a landing as illustrated in Tables 4-2 [pages 4-11 and 4-12] and 4-3 [pages 4-13 and 4-14] of FAR Part 150 report.

- FAR Part 150 Page 3-22 [page 3-16]. The differences in the numbers have been corrected.

- FAR Part 150 Page 4-16 [page 4-11] Table 4-2 and page 4-18 [page 4-13] Table 4-3. It is not possible to forecast precisely each aircraft type and model that would use the Airport in future years. However, estimates were made of the aircraft types that most probably would operate at Huntsville International Airport including older all-cargo aircraft. These aircraft types are included in Tables 4-2 and 4-3.

- FAR Part 150 Page 4-7 [page 4-5]. As Mr. Zompa states a 10 decibel increase is a tenfold increase in the sound energy. This in turn would be equivalent to increasing the aircraft operations by a factor of ten.

- FAR Part 150 Page 4-17 [page 4-12] Table 4-2. Airline training as reflected by the inclusion of the L-1011 and B-757 in the average daily operations table was a part of the overall noise analysis.

- FAR Part 150 Page 3-18 [page 3-13] Table 3-7 and Page 4-25 [page 4-18] Table 4-5. Although airline training operations are classified by FAA air traffic control as general aviation operations as stated in note a., they were assigned to touch-and-go tracks TDW-1 and TDW-2 on Runway 18R-36L under the air carrier/commuter column to distinguish them from the small general aviation aircraft which conduct their training on Runway 18L-36R.

- FAR Part 150 Page 4-16 [page 4-11] Table 4-2. Mr. Zompa is correct in pointing out that B-727, B-737-100/200, and DC-9 operations increase between 1988 and 1993 with passenger and all-cargo airline hubbing. The decrease in the percent of Stage 2 aircraft in 1993 will decrease because of the even greater increase projected for Stage 3 aircraft. A comparison of the 1988 Ldn Noise Exposure Map (Exhibit 4-2) with that of the 1993 Ldn Noise Exposure Map with Passenger and All-Cargo Airline Hubbing (Exhibit 4-3) illustrates that the noise exposure footprint for the Airport also increases significantly, thus there has been no attempt to ". . . disguise a situation that is actually deteriorating from a noise perspective."

- FAR Part 150 Page 3-18 [page 3-13] Table 3-7 and Page 4-22 [page 4-16] Table 4-4. See response to FAR Part 150 Page 3-18 [page 3-13] Table 3-7 and Page 4-25 [page 4-18] Table 4-5 above.

- FAR Part 150 Page 4-24 [page 4-15]. Use of the same flight tracks for 1993 as for 1988 does not equate to similar noise exposure for these years because of the greatly increased operations in 1993. Also, the extension of a runway can be accomplished without diminishing the use of the runway.

- FAR Part 150 Page 4-29 [page 4-20]. The Ldn methodology does not include adjustments for differences in terrain elevation. However, the noise analysis for 1993 with passenger and all-cargo airline hubbing indicates that noise exposure levels for the Rainbow Mountain area would be Ldn 55 and below. The difference of approximately 500 feet in elevation between the highest point on Rainbow Mountain and the Airport field elevation would not appreciably increase the Ldn levels.

- FAR Part 150 Page 5-19 [page 5-12]. The discrepancy has been corrected in the final report.

The eastern runway is almost one mile closer to Madison and includes flight patterns that travel over most of the City. Increased traffic on that runway impacts noise exposure for Madison more significantly than traffic from the west runway. While we support growth and development of the HIA, we are not convinced that adequate bases exist for proceeding with this development in the order proposed by the HIA. It is our understanding that the western runway and the area to the south of it is more readily adaptable to expansion than is the eastern runway. We would prefer to see the western runway developed and made subject to increased traffic in preference to the eastern runway.

It is our understanding that the Airport Authority proposes to extend the eastern runway (which has closer proximity to HIA's air-cargo terminal) first so that it may be used by an international air-cargo carrier in the event such use is approved for the HIA. The Airport Authority Executive Director has assured the Mayor that if such a carrier could be secured, the increase in traffic would not amount to more than three-to-five flights per week.

The expansion in use of the eastern runway for a few international air-cargo flights is not the primary concern of Mayor Cuddeback. The Environmental Assessment draft, however, plainly indicates that expansion is "undertaken to accommodate the establishment of passenger and all-cargo hubbing operations at Huntsville International Airport." See Page 5. The noise exposure maps provided by the HIA with passenger and air-cargo cargo hubbing show that significant areas of Madison would be made subject to noise exposure beyond the 65 Ldn levels if such hubbing occurs. While the current Environmental Assessment is offered only on the issue of runway expansion, we believe it appropriate for the Authority to respond to environmental concerns about development goals of the HIA.

Because so many airport development proposals seem to be on the table, the Mayor is concerned with the possibility of not having sufficient information to enable the City Planner to conduct meaningful land use planning in the southwest sector of the City. Consequently, we would request a complete Environmental Impact Study prior to establishment of air passenger or all air-cargo hubbing or to a substantial change in the operation of the airport or use of the two existing runways at the HIA, specifically with respect to increases in cargo activity concentrated on the eastern runway.

Let me hasten to add that Mayor Cuddeback's concern for protecting the environmental quality of life of Madison's

citizens is in no way indicative of opposition to growth and development of the HIA. We have offered support to the Executive Director of the Airport Authority in studying compatible land use planning and developing a plan for acooperative relationship with the HIA. We hope that our pledge of support and cooperation will be reciprocated by a recognition of the environmental interests of the residents of Madison.

Sincerely,

William W. Sanderson, Jr.

WWSjr/cq

cc: Mayor Teague Cuddeback,
Madison, Alabama

Members, Madison City Council

The Hon. Donald Spencer
The Hon. Ann Van Leeuwen
The Hon. Kurt Keene
The Hon. Mike Price
The Hon. Fred Wills
The Hon. Cynthia McCollum

Mr. Bob Atallo, City of Madison

Mr. Blair Conrad, Executive Director
Huntsville-Madison County Airport Authority

Members, Huntsville-Madison County
Airport Authority

Mr. Henry N. Oldham
Dr. Richard C. Burnside
Mr. Frank Mickle
Mr. Sidney P. Saucier
Mr. W. D. Dinges

City of

MADISON, Alabama

INC. 1869

November 17, 1989

Mr. Blair J. Conrad
Executive Director
Huntsville-Madison County
Airport Authority
Post Office Box 6006
Huntsville, AL 35824

RE: Huntsville International Airport

Dear Mr. Conrad:

In recent days I have learned that despite a number of meetings which I and our City Attorney have attended with you, you harbor a basic misunderstanding of my position with regard to expansion of the Huntsville International Airport. It is with hope of putting such misunderstanding to rest that I write this letter.

Your misunderstanding is apparent from clear misstatements of my position to my Director of Community Development and to various Madison City Council Members in your recent meetings with them. I refer specifically to your statement that "The Mayor is not going to be happy until we shut down the east runway."

Accordingly, once again please let me give you my concerns about the development of this area including simultaneous compatible development of the airport and the City of Madison. They are as follows:

1. Execution of an agreement between the Huntsville-Madison County Airport Authority and the City of Madison that would demonstrate the commitment of the airport to do whatever possible to reduce and mitigate noise exposure of the City of Madison caused by airport operations and the commitment of both parties to compatible land-use planning and enforcement of flight pattern guidelines for arrivals and departures.

2. Promotion of growth and development of the airport operations in a manner consistent with the best interests of the airport and the City of Madison. In my view, this would include careful consideration of the environmental impact of future passenger or air cargo hub operations and noise abatement that may be accomplished by development of the use of the western runway in preference to (but not to the exclusion of) the use of the eastern runway.

3. Development of a working relationship with the Airport Authority to facilitate appropriate land use planning and development of the area north of the airport in a manner consistent with the best interests of Madison.

I have a continuing concern with the environmental impact of your plans for future expansion of operations. Your most recent environmental assessment and noise exposure maps include unacceptable noise exposures by 1993 assuming passenger and air cargo hub operations. The noise exposure levels associated with those maps would create significant incompatible land use in the City of Madison. This "worst case" scenario is magnified by your insistence on concentrating all of your cargo operations on the east runway. An air cargo operation with night landing and departures would have a significant negative impact on Ldn levels affecting Madison. Concentration of all of those landings and departures on a runway closest to Madison only exacerbates this problem.

I have never suggested that I believe the eastern runway should be abandoned. I am quite interested, however, in an agreement on the part of the airport that the western runway be used whenever possible to mitigate the effect of increased noise levels resulting from hub operations or from significant increases in airport traffic.

In our meetings you have suggested that the "worst case" scenario suggested in your noise exposure maps will not occur. Unless this can be reduced to a written commitment on the part of the airport, we must assume the "worst case" to be a real possibility.

The fact that I am concerned about noise exposure of the citizens of Madison should in no way suggest that I oppose healthy economic development of the airport or expansion of its operations. I am committed to successful expansion and development of our airport consistent with the quality of life expected and deserved by citizens of Madison.

While you have talked with most council members individually, I believe it would be beneficial for you to meet them in a public forum where you may explain your plans for expansion and may hear and respond to concerns of the council and the citizens of Madison. Bob Atallo will arrange such a public forum with you in the near future. Hopefully this forum will give us an opportunity to work together toward the goals I have expressed in all our previous conversations.

Sincerely,

Mayor Teague Cuddeback

TC/cq

cc: Members, Madison City Council

The Hon. Donald Spencer
The Hon. Ann Van Leeuwen
The Hon. Kurt Keene
The Hon. Mike Price
The Hon. Fred Wills
The Hon. Cynthia McCollum

Mr. Bob Atallo, City of Madison
William W. Sanderson, Jr., City Attorney

Members, Huntsville-Madison County
Airport Authority

Mr. Henry N. Oldham
Dr. Richard C. Burnside
Mr. Frank Mickle
Mr. Sidney P. Saucier
Mr. W. D. Dinges

Mr. Elton Jay
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EARLE R. FORD (1890-1973)
RALPH H. FORD (1916-1986)

REPLY TO:
P.O. BOX 2087
HUNTSVILLE, AL 35804

November 8, 1989

The Honorable Jeffrey N. Shane
Assistant Secretary for Policy and
International Affairs
Department of Transportation
Office of the Secretary
Washington, D.C. 20590

RE: In the Matter of Expanding International Air Service Opportunities to More U.S. Cities
Docket 46534

Dear Sir:

Reference is made to your DOT Proposal for Expanding International Air Cargo Service Opportunities to More U.S. Cities, dated October 10, 1989. On behalf of the City of Madison, Alabama, the following comments on your proposal are offered.

The City of Madison, Alabama is a rapidly growing community in the center of a North Alabama corridor with potential for enormous economic growth. Madison, along with the adjacent City of Huntsville and indeed all of Madison County, has been fortunate to benefit from a growing economy, tied closely to the interests of our country's space and defense programs. At the same time, we have preserved a quality of life which we believe is unequalled in most communities in our country.

While Madison has suffered growing pains as a consequence of a population explosion that has more than tripled its numbers in ten years, its people and its government welcome growth and the economic opportunity it can mean for its families and its future.

The Huntsville International Airport (HIA) and the future of that facility is key to the economic development of Madison, as well as other communities of North Alabama. Madison borders the HIA and most of its citizens live just minutes from the airport. As a consequence, Madison has a great interest in being a good neighbor to our airport and assuring that it will be a good

neighbor to Madison. We have actively sought to represent Madison's views to the HIA relative to land use planning and noise abatement programs and will continue to do so.

It is in this vein that we first examined your above-referenced proposal. Our airport, and indeed our entire community, have worked diligently toward establishment of a Port of Entry and Free Trade Zone status that would enhance the ability of our cosmopolitan industrial base to participate in world markets. Madison is a vocal supporter of these programs and the economic growth they may bring to our community provided that the growth and expansion of airport facilities and operations are planned and implemented in a manner which protects the quality of life which we so zealously protect.

Our community is very interested in international airline operations which may facilitate the use of our Port of Entry and Free Trade Zone status if this can be accomplished without negative impact on noise exposure patterns in Madison. The HIA is particularly interested in an all-cargo operation such as the European Cargo Lux. It is thought that while Huntsville may not support substantial direct international air passenger travel at the present time, an international all air-cargo operation may find a sphere of operation in our community that would give our industries exposure to European markets otherwise unavailable to them.

It is for this reason that we must express our disappointment at the limitation of your proposal to "scheduled <u>combination</u> nonstop international air service." In principle we support attraction of an international air cargo operation for the HIA. We support amendment of your proposal to make the proposed exemption available to international all air-cargo carriers as well as combination carriers, provided that this or any additional cargo operation utilizes HIA's western runway for these operations due to the proximity of its eastern runway to the City of Madison. On balance we believe that a limited number of international direct air cargo flights would benefit the economic growth of the region and would offer support to the growing international industrial base located here.

Sincerely,

William W. Sanderson, Jr.
City Attorney for the
City of Madison, Alabama

WWSjr/cq

cc: Mayor Teague Cuddeback, City of Madison
Blair Conrad, Executive Director of
Huntsville-Madison County Airport Authority
Michael Fees, Esq.

Members, Huntsville-Madison County
Airport Authority

Mr. Henry N. Oldham
Dr. Richard C. Burnside
Mr. Frank Mickle
Mr. Sidney P. Saucier
Mr. W. D. Dinges

Mayor Steve Hettinger, Huntsville, Alabama

Huntsville
Madison County
Airport Authority

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FAX: (205) 772-0305

July 17, 1989

William W. Sanderson, Jr.
Attorney At Law
200 West Court Square, Suite 500
Huntsville, AL 35801

Dear Mr. Sanderson:

As a follow up to our phone conversation last week, I would like to assure you that we will be responding to all the issues as set forth in your May 18, 1989 letter concerning the noise study and environmental assessment for proposed runway extensions at Huntsville International Airport.

As I explained to you, we are essentially redoing approximately 30% of the noise study project which will be costing the Airport Authority in excess of $60,000.00 dollars. This is a long drawn out process to redo the noise exposure maps, the layout plan, and the supporting documentation that will be included in the environmental assessment and the noise compatibility plan.

I can assure you that we are doing everything possible to have this work completed in as short a time span as possible. We cannot go forward with any additional public information meetings or hold the final public hearing prior to submitting the documents to the FAA for review until we have addressed the concerns of the City of Madison. Please be patient with us. There are alot of other things going on here at the Airport that take our time and energies as we develop to meet the needs of the future.

I will keep you informed as to the progress we are making on developing the information you have requested and we will make it all available to you in one package for your review prior to any proposed meetings that we would have. I thank you for your cooperation and patience in this matter and trust we will be able to demonstrate our sincere desire to be a good neighbor with

the City of Madison and develop the Airport to its fullest potential for the benefit of the entire region.

Sincerely,

Eugene B. Conrad, Jr.

Eugene B. Conrad, Jr.
Executive Director

cc: HMCAA Board of Directors
Mayor Teague Cuddeback
City of Madison
Michael Fees of Watson
Gammons and Fees
Elton Jay, FAA
L. S. Pickard, FAA

EBC/mrb

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REPLY TO:
P.O. BOX 2087
HUNTSVILLE, AL 35804

July 7, 1989

Michael L. Fees, Esq.
WATSON, GAMMONS & FEES, P.C.
107 North Side Square
Huntsville, Alabama 35801

RE: Huntsville International Airport

Dear Mike:

As I am sure you are aware, I have sent correspondence to Mr. Blair Conrad on May 18, 1989 and June 9, 1989 requesting a series of documents and information concerning the Huntsville International Airport. While our requests were quite specific and detailed, and, to my knowledge, requested only public documents, we have received nothing from the Airport Authority.

Since it is now approaching almost two months since we initiated our request, I believe that it is important that I respectfully repeat our request to you for these public documents. If there is some reason why the Airport Authority does not wish to provide these documents to us, we would like to have that reason communicated to us immediately.

As I am sure you are aware from reviewing my previous correspondence, the plans to extend airport runways are of the utmost concern to the City of Madison. We are becoming somewhat distressed that the Airport Authority has not been more responsive to our concerns.

I trust that you will encourage the Airport Authority to gather the documents that we have requested and, after an appropriate interval, to allow us to review those documents, to schedule another meeting at which we may exchange views on extension of the airport runways.

As I have done before, let me express the full support of the Mayor of the City of Madison for the growth and expansion of operations of the Huntsville International Airport to the extent that such growth and expansion of operations is consistent with the best interest of the City of Madison.

Sincerely,

William W. Sanderson, Jr.

WWSjr/cq
cc: Mayor Teague Cuddeback, City of Madison

Mr. Elton E. Jay
Principal Engineer, Planning & Safety
U.S. Department of Transportation
Federal Aviation Administration
Airports District Office
FAA Building, Jackson International Airport
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Ms. Lynne S. Pickard APP 600
Manager of Community & Environmental
Needs Division
Federal Aviation Administration
800 Independence Avenue, S.W.
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Members, Huntsville-Madison County
Airport Authority

Mr. Eugene B. Conrad, Jr.
Mr. Henry N. Oldham
Dr. Richard C. Burnside
Mr. Frank Mickle
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Mr. W. D. Dinges

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REPLY TO:
P.O. BOX 2087
HUNTSVILLE, AL 35804

June 9, 1989

Mr. Blair J. Conrad
Executive Director
Huntsville-Madison County
Airport Authority
2010 Wooddale Drive, NE
Huntsville, AL 35811

RE: Huntsville International Airport

Dear Mr. Conrad:

It was good to see you at your public hearing on public financing yesterday. As you mentioned, I understand that you are gathering the documents I requested on behalf of the City of Madison in my letter to you of May 18, 1989. I look forward to receiving those documents soon and then arranging an appointment to discuss them. Kathy Wells has informed me that Mr. Dinges cancelled our scheduled meeting of June 6 to give you more time to gather the documents we requested. I trust you will reschedule soon.

As I noted to you, we remain convinced that southern extensions of the airport runways are in Madison's interests. We are further of the firm belief that since only one runway will be extended initially, the west runway of the airport (Runway 18R/36L) should be chosen for that extension. This is true for several reasons, among which are the following:

1. 18R/36L is 5,000 feet further west from the heart of the City of Madison and thus noise contours from that runway have a lessened impact on the City.

2. Unlike the eastern runway, 18R/36L has ample room for a 2,000 foot southern expansion without a costly overpass over Boeing Boulevard.

3. The 2,000 feet south of 18R/36L is already compacted and laid out for southern extension eliminating the need for costly fill dirt and compaction that will be required on the eastern runway.

4. 18R/36L is equipped with an instrument landing system/approach light system sequence flasher (ILS/ALSF) and centerline and touchdown zone lighting (CL & TDZL) which provide a Category II (Cat II) landing system insuring operational efficiency under extreme instrument flight rule (IFR) conditions. With relatively minor modification, the 18R/36L could be upgraded to Cat III capability providing for automatic or blind landings. This instrumentation and a 10,000 foot runway is certainly very attractive for a commercial carrier hub operation (a stated objective of the Airport Authority).

5. The eastern runway has only ILS/medium approach light system covering approaches to the south and only Precision Approach Path Identifier (PAPI) equipment for approaches to the north. Certainly the west runway presently has more complete instrumentation.

6. No evidence has been presented to indicate that the present eastern runway cannot accommodate all existing all-air cargo operations except under extreme weather conditions. Under such conditions (even with cargo hubbing), an extended and fully instrumental west runway would be available for cargo operations requiring a longer runway.

7. Eastern runway extension entirely to the south could be undertaken later when available funds coincide with the airport's needs.

8. Any 2,000 foot extension of the eastern runway at present would require either an overpass over Boeing Boulevard (incurring additional expense) or some northern extension of the eastern runway.

9. Any northern extension of the eastern runway, in our view,

a) does not meet the goal of <u>reducing</u> existing non-compatible land uses;
b) introduces additional noncompatible land uses; and
c) derogates current 100:1 glide slope runway approaches.

We have not seen any reasonable justification for favoring extension of the east runway over the west runway in any plan presented by the airport. Further, we have seen nothing that justifies abandonment of twenty-five years of public notice regarding only southern extension of the airport runways. In light of all of the foregoing advantages of western runway extension and the coinciding interest of the City of Madison in reducing noncompatible land uses and unacceptable noise levels in the City, initial extension of the west runway is clearly preferable.

cc: Herman Watson, Jr., Esq.
Counsel for Huntsville-Madison County
Airport Authority
Watson, Gammons & Fees, P.C.
107 North Side Square
Huntsville, Alabama 35801

Members, Huntsville-Madison County
Airport Authority

Mr. Henry N. Oldham
Dr. Richard C. Burnside
Mr. Frank Mickle
Mr. Sidney P. Saucier
Mr. W. D. Dinges

Response to Mr. William Sanderson's submittal.

Responses to the letters submitted by Mr. Sanderson at the Formal Public Hearing were prepared by the Huntsville-Madison County Airport Authority and submitted to the City of Madison prior to the Formal Public Hearing. Because of the volume of material making up the responses, they have not been included in this FAR Part 150 report. Copies may be obtained directly from the HMCAA.

EMO TRANS INC.
INTERNATIONAL FREIGHT FORWARDERS

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22 December 1989

Mr. Eugene B. Conrad, Jr., AAE
Executive Director
Huntsville-Madison County Airport Authority
PO Box 6006
Huntsville, Alabama 35824-0006

Subject: Environmental Assessment
Noise Study Update Hearing

Dear Mr. Conrad:

Thank you for your memorandum of 13 December announcing the public hearing on 18 December. I am writing to express the support of Emo Trans for the expansion of the east runway as currently proposed. We as a company recognize the importance the airport has played in the economic growth and prosperity of this area and are committed to assisting in anyway possible with future expansion.

I personally have been fortunate enough to witness first-hand the impact Hartsfield International Airport has had upon the greater Atlanta area in the last nine years. Atlanta's commitment to provide the necessary facilities for domestic and international passenger and cargo traffic has paid handsome dividends for that city. I firmly believe that Atlanta could never have attained its status as one of the world's busiest airports and achieved the number of international arrivals and departures they now experience if it were not for the vision of Atlanta's city fathers as they planned and built the new Hartsfield International. Growth has so exceeded expectations that they are now ten years ahead of schedule with the international passenger facilities. I also firmly believe that this same kind of growth pattern awaits the Huntsville area if the airport authority is allowed to pursue its ambitious plans for further expansion. This is a dynamic area of our country and one which I continue to be excited about as my family and I settle in.

Thank you again for keeping me informed. Please do not hesitate in contacting me if I can assist the authority in any way.

Sincerely,

Marty Alexander
District Manager