

2006 Air Installations Compatible Use Zones (AICUZ) Update for Naval Air Station Jacksonville and Outlying Field Whitehouse, Florida

November 2006



Prepared for:

Southern Division
Naval Facilities Engineering Command
2006 AICUZ Update NAS Jacksonville and OLF Whitehouse November 2006

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List of Acronyms and Abbreviations

AGL above ground level

AICUZ Air Installations Compatible Use Zones AIRLANT Naval Air
Forces Atlantic Fleet

APZ Accident Potential Zone

ASW anti-submarine warfare

ATAA Air Traffic Activity Analyzer

ATC Air Traffic Control

ATIS Air Traffic Information System

BASH Bird-Aircraft Strike Hazard

CNATRA Chief of Naval Training

CNET Commander, Naval Education and Training CNR Composite Noise
Rating

dB decibel

DNL day-night average sound level

DoD United States Department of Defense Du/Ac dwelling units per
acre

EA environmental assessment

EIS environmental impact statement

EMI electromagnetic interference

FAA Federal Aviation Administration

FACSFAC Fleet Area Control Surveillance Facility FAR floor area ratio

FCLP field carrier landing practice

FHA Federal Housing Administration

GCA ground-controlled approach

GPI Ground Point Intercept

HH Hush House

HPTA High-power Turn-up Area

HUD Department of Housing and Urban Development IFR Instrument Flight
Rules

LSO Landing Signals Officer

List of Acronyms and Abbreviations, continued

MSL mean sea level

NADEP naval aviation depot

NAS Naval Air Station

NATOPS Naval Air Training Operating Procedures and Standards Navy United States

Department of the Navy NEPA National Environmental Policy Act

NLR Noise Level Reduction

NLR Noise Level Reduction

NS Naval Station

OLF Outlying Field

OPNAVINST Office of the Chief of Naval Operations Instruction PPA Practice

Precautionary Approaches

PUD Planned Unit Development

SEL Sound Exposure Level

SLUCM Standard Land Use Coding Manual

SOUTHNAVFACENCOM Southern Division, Naval Facilities Engineering Command

STC Sound Transmission Class

TACAN tactical air navigation

TDR Transfer of Development Rights

TS1 Test Stand One

TWYD Taxiway Delta

VA Department of Veterans Affairs

VFR Visual Flight Rules

1 Introduction

1.1 Purpose and Scope

This report updates separate air installations compatible use zones (AICUZ) studies for Naval Air Station (NAS) Jacksonville, Florida, and Outlying Field (OLF) Whitehouse. OLF Whitehouse was formerly an asset of NAS Cecil Field, but now is comprised within NAS Jacksonville collectively with John Towers Field. In this report, the two airfields generally are discussed separately, but all discussion of NAS Jacksonville is intended to take both airfields into account.

The foundation of the AICUZ Program is an active local command effort, working with the host community, to prevent incompatible development of land adjacent to military airfields. Incompatible land use, which is a form of encroachment, has become detrimental to the mission and operations of many military air installations. The potential for such encroachment is aggravated in built-up urban areas, those which are rapidly developing, and those with attractive environmental resources in proximity to such military facilities.

This AICUZ Update involves several basic steps:

- Quantification of Aircraft Noise Exposure Zones and Accident Potential Zones (APZs);
- Development and implementation of a noise reduction strategy for affected land, both on and off-station;
- Preparation of a Compatible Land Use Program for the installation and surrounding civilian areas;
- Identification of strategies to promote compatible land use development within those areas;
- Analysis of the impact that potential future military missions will have on AICUZ implementation;
- Coordination with federal, state, and local officials to maintain public awareness of AICUZ; and
- Identification and programming of property rights acquisition in critical areas where action to achieve compatibility through AICUZ and regulatory controls is either impossible or has been attempted and proven unsuccessful.

Reason for AICUZ Update

This study is an update of the 1978 AICUZ study for NAS Jacksonville and the 1986 AICUZ study for OLF Whitehouse (which was included in the NAS Cecil Field Master Plan). This 2005 AICUZ Report Update for NAS Jacksonville and OLF Whitehouse was performed to incorporate the

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revised land use compatibility guidelines contained within the updated Office of the Chief of Naval Operations Instruction (OPNAVINST) 11010.36B dated 19 December 2002, and to pose changes to recommended land usage within the vicinity of NAS Jacksonville and OLF Whitehouse.

This AICUZ study is based upon noise contour data provided in the *Noise Study for NAS Jacksonville and NOLF Whitehouse*, August 2003 report (Wyle Laboratories [Wyle] 2003). Wyle collected the required data inputs for the NOISEMAP computer program during a site visit to NAS Jacksonville on 26 February 2003.

1.2 Authority and Summary

Authority for the AICUZ Update for NAS Jacksonville is found in three separate federal references. This document is authorized by:

- U.S. Department of Defense (DoD) Instruction 4165.57; “Air Installations Compatible Use Zones,” dated 8 November 1977;
- OPNAVINST 11010.36B; “Air Installations Compatible Use Zones (AICUZ) Program,” dated 19 December 2002; and
- Department of Transportation; Federal Aviation Regulations, Part 77; “Objects Affecting Navigable Airspace,” dated 1975.

1.3 Location

NAS Jacksonville is located in northeast Florida, approximately 8 miles south of downtown Jacksonville, Florida, on the west bank of the St. Johns River. The air station is 18 miles inland of the Atlantic Ocean, and lies 3 miles north of the Duval and Clay County line (Figure 1-1). Access to NAS Jacksonville is provided by United States Highway (U.S.) 17 (Roosevelt Boulevard), which is a major north/south local arterial and important intrastate highway.

Land use in the vicinity of the air station is a mix of strip commercial and residential development, along with commercial and recreational properties abutting the air station’s northern perimeter fence line. On the west side of the air station, across U.S. 17 on heavily wooded land owned by the United States Department of the Navy (Navy) and leased to the City of Jacksonville, is Westside Regional Park, an active recreation area.

OLF Whitehouse is located approximately 14 miles northwest of NAS Jacksonville and 3 miles north of U.S. 90. OLF Whitehouse is located in a rural and low-density residential area of Duval County that includes large tracts of planted pine forests under the ownership of several large paper companies. However, the character of this area is changing due to the growth of new home

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Figure 1-1

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construction in and around the Crystal Springs area (3 miles southeast of OLF Whitehouse) and accompanying commercial development.

1.4 Mission

NAS Jacksonville is a master anti-submarine warfare (ASW) base, supporting the United States, the North Atlantic Treaty Organization (NATO), and allied forces worldwide. The installation is home to the P-3C Orion long-range anti-submarine reconnaissance and patrol aircraft, the SH-60F Seahawk ASW helicopter, and the S-3B Viking sea control jet aircraft, as well as the MH-60R/S helicopters.

The oldest of three Navy installations in the area (the others being Naval Station [NS] Mayport located in Jacksonville and Naval Submarine Base Kings Bay, Georgia) and the third largest Naval Air Station in the United States, NAS Jacksonville occupies approximately 3,896 acres along the St. Johns River and employs or is host to more than 23,000 active duty, reserve, and civilian personnel.

In addition to the employees, NAS Jacksonville services thousands of retirees and dependents resulting in nearly \$2.5 billion being infused annually into the local community.

More than 100 tenants support the mission of NAS Jacksonville, including an airfield for pilot and aircrew training and a Naval aviation depot (NADEP). NADEP Jacksonville employs approximately 3700 people to conduct maintenance, repair, and modifications on various aircraft, engines and aeronautical components, including the P-3 Orion, EP-3E Aries II, T-2 Buckeye, F/A-18 Hornet, F-14 Tomcat and EA-6B Prowler. In addition, the NADEP serves as the Cognizant Field Activity for the TF-34 engine, which is used on A-10 and S-3 aircraft.

OLF Whitehouse was previously an asset of NAS Cecil Field, which was closed in 1999 under the recommendation of the Defense Base Closure and Realignment Commission of 1995. Ownership of OLF Whitehouse has been transferred to NAS Jacksonville. The airfield is currently utilized for field carrier landing practice (FCLP) operations, as well as other flight training operations.

1.5 Airfield Facilities

Figure 1-2 depicts the layout of John Towers Field and its aircraft engine maintenance run-up locations. John Towers Field has two intersecting runways, Runway 09/27 and Runway 14/32, which are 8,000-by-200 and 5,977-by-200 feet in length, respectively. Runway 14/32 is rarely used by fixed-wing aircraft, but is frequently used for pattern work by helicopters. Runway 14 has a 2,539-foot landing threshold displacement, although its full length is available for takeoff (Note: the runway number [e.g. Runway 14] is the number you read as the aircraft approaches the runway).

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Figure 1-2

2006 AICUZ Update NAS Jacksonville and OLF Whitehouse November 2006

Field elevation is 22 feet above mean sea level (MSL). All maps in this report depict a north arrow pointing to true north.

Aircraft activity at NAS Jacksonville has historically been dominated by the P-3 Orion. Other aircraft activity varies widely and includes both rotary and fixed-wing arrivals, departures, and patterns, as well as maintenance operations. Transient aircraft include the F/A-18 Hornet, the AV-8 Harrier and the T-2 Buckeye. Additionally, NADEP Jacksonville conducts major overhaul work on various aircraft. Other types of fixed-wing aircraft operating at NAS Jacksonville include five squadrons of S-3 aircraft, C-12 and C-40 Clipper, while helicopter activity primarily consists of H-3 and M/H-60R/S aircraft operations. In addition to the above, the U.S. Customs Service operates P 42s, Jetrangers, MD-500, and C-210 aircraft at NAS Jacksonville.

The runway configuration at OLF Whitehouse is shown on Figure 1-3. Field elevation is 99 feet above MSL. Facilities consist of a single runway, Runway 11/29, two areas of blast pavement (BP-1 t and BP-29), and simulated carrier deck approach lighting. There is no approach radar. The dimensions of Runway 11/29 are 8,000 feet-by-150 feet of useable runway surface. All other runway surfaces are unusable.

1.6 Goals and Objectives

The specific goals and objectives of the AICUZ Program at NAS Jacksonville are directed at encouraging land use compatibility between the military air facility and local communities, while maintaining the operational integrity of the air station. Specific objectives of the AICUZ Update program are to:

- Protecting the health, safety, and welfare of civilians and military personnel by encouraging land use that is compatible with aircraft operations;
- Protecting Navy and Marine Corps installation investment by safeguarding the installation's operational capabilities;
- Reducing noise impacts caused by aircraft operations while meeting operational, training, and flight safety requirements, both on and in the vicinity of air installations; and
- Informing the public about the AICUZ Program and seeking cooperative efforts to minimize noise and aircraft accident potential impact by promoting compatible development in the vicinity of military air installations.

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Figure 1-3

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1.7 Responsibility for Compatible Land Use

Military installations and local government agencies with planning and zoning authority share the responsibility for preserving land use compatibility near the military installation. Cooperative action by both parties is essential to prevent land use incompatibility and encroachment.

NAS Jacksonville has a two-fold responsibility within the AICUZ Program. First, there is the responsibility to limit aircraft noise, to the extent feasible, through operational guidance and procedures. Second, it is the responsibility of the Air Station Commanding Officer to actively work with state and local planning and regulatory officials to implement the objectives of the AICUZ Program, and to continuously strive to educate and inform the local civilian community of the mutual benefit of an effective AICUZ Program. Local governments, in this case the consolidated City of Jacksonville (to a lesser extent, Clay, Baker, and Nassau Counties; see Section 1-8), also share in the responsibility to protect the health, safety, and welfare of their respective residents.

1.8 City/County Authority

NAS Jacksonville is located in Duval County, one of the few consolidated local governments in the United States. In 1969, the Florida legislature merged the City of Jacksonville and Duval County governments into one operational entity. Legislative authority to plan and implement zoning regulations throughout the county, with the exceptions of the Beaches communities and the Town of Baldwin, rests entirely with City government. The preparation, update and enforcement of land use regulations are delegated to the Planning and Development Department and Zoning Department. The Town of Orange Park is a nearby municipality, just south of the Jacksonville city limits. Orange Park lies in Clay County, but enacts and enforces its own development regulations and zoning ordinance. A portion of the Federal Aviation Regulations, Part 77, “Objects Affecting Navigable Airspace,” pertaining to NAS Jacksonville, falls within the jurisdiction of the Town of Orange Park. Clay, Baker, and Nassau Counties, are responsible for enforcing aspects of Part 77 regulations for NAS Jacksonville and OLF Whitehouse. These county governments operate quite differently from one another, with respect to land use decisions. While Clay and Baker counties have no specific ordinances or procedures other than referral of applicants to the local authorities of the Federal Aviation Administration (FAA), Nassau County has established zoning regulations (Article 28 Section 28.01), which identify land use controls in and around airport use zones throughout the county. While Clay and Nassau Counties have a comprehensive planning and zoning program and can be characterized as a “managed-growth” area, Baker County has much less restrictive

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development guidelines. Much of the long range planning for Baker County is delegated to the Northeast Florida Regional Planning Council and/or Florida Department of Community Affairs, while enforcement of regulations is handled by the County.

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2 Airspace

2.1 Vicinity Airspace

The NAS Jacksonville Control Tower provides air traffic control services to all aircraft operating in the Class D airspace, which is defined as that airspace below 2,600 feet MSL within a 5.3-nautical mile radius of the Air Station. The Class D airspace at OLF Whitehouse is similarly controlled, but the tower is not operated on a continuous basis.

Jacksonville Terminal Radar Approach Control, located at Jacksonville International Airport, provides approach control service for both John Towers Field and OLF Whitehouse within the airspace delegated by Jacksonville Air Route Traffic Control Center.

2.2 Airport Control Zones and Flight Procedures

Within the airspace controlled by NAS Jacksonville Tower very specific flight procedures have been developed that must be adhered to by military pilots. Table 2-1 provides a summary of pertinent flight procedures and “course rules” that dictate flight tracks and profiles of military aircraft operating in the vicinity of NAS Jacksonville.

Similar restrictions for OLF Whitehouse are in effect and are provided in Table 2-2.

Table 2-1
Summary Flight Procedures and Course Rules
John Towers Field, NAS Jacksonville

General
<ul style="list-style-type: none">• The airport reference point is LATITUDE 30 degrees 14.1 minutes North, LONGITUDE 81 degrees 40.6 minutes West. The Class "D" Surface Area is defined as a 5.3 nautical mile radius of NAS Jacksonville up to and including 2,600 feet mean sea level (MSL).• The maximum airspeed within the Class "D" Surface Area will be as specified in Federal Aviation Regulation 91.70.• Unless specified, all patterns are left traffic, except the radar approach pattern for Runway 9.• All aircraft requiring a run-up will notify Ground Control prior to taxi.• Field carrier landing practice will be conducted at OLF Whitehouse.
Landing
<ul style="list-style-type: none">• The primary approach for tactical jet aircraft at NAS Jacksonville is the overhead approach.• Unless otherwise authorized by the Control Tower, aircraft not utilizing the overhead 360 approach will enter the airport traffic pattern on the downwind leg of the runway in use at an angle of 45 degrees.• All Visual Flight Rules (VFR) aircraft will contact the tower prior to entering Class "D" surface area and report call sign, type aircraft, position, landing intentions and the current Air Traffic Information System (ATIS) code.

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**Table 2-1
Summary Flight Procedures and Course Rules
John Towers Field, NAS Jacksonville**

<ul style="list-style-type: none"> ▪ An aircraft executing an overhead maneuver is considered VFR and Instrument Flight Rule (IFR) services are cancelled upon reaching the initial. A "Carrier Break" is available to locally based SEACONWINGLANT aircraft during daylight hours on a case-by-case basis based on traffic. ▪ Practice Precautionary Approaches (PPA) may be authorized for locally based SEACONWINGLANT aircraft ▪ Transient aircraft are authorized practice instrument approaches from 0800-2200(L) Monday through Saturday and 1200-2200(L) Sunday. Practice approaches may be limited due to noise abatement constraints, runway configuration and traffic load.
<p>Turn-Ups</p> <ul style="list-style-type: none"> ▪ All aircraft turn-ups shall be conducted per NAS Jacksonville's Air Operations Manual and Naval Air Training Operating Procedures and Standards (NATOPS), squadron directives, and proper maintenance procedures. ▪ Due to the impact of noise on the neighboring community, personnel are requested to limit high power turn ups to not more than five continuous minutes.
<p>Departures</p> <ul style="list-style-type: none"> ▪ Departing aircraft will climb as rapidly as practicable to assigned altitude and maintain runway heading until reaching the upwind numbers. ▪ For noise abatement purposes, all fixed-wing aircraft in the VFR traffic pattern will climb to 500 feet MSL prior to turning downwind unless otherwise directed by Air Traffic Control (ATC). ▪ Aircraft will not conduct practice aborted, or obstruction clearance take offs without prior ATC approval.
<p>Helicopters</p> <ul style="list-style-type: none"> ▪ Helicopters utilizing runway 14/32 shall: <ul style="list-style-type: none"> - Remain south of taxiway "D" and north of runway 9/27 to minimize the impact of noise on the neighboring community; - Confine operations to two helicopters; and - Maintain 500 feet or below. ▪ Helicopters may enter the fixed-wing practice landing pattern, but will make roll-on landings unless specifically cleared by the tower for a hover landing. ▪ Except in emergencies, no aircraft will be authorized to operate over the NAS Magazine Area at an altitude of less than 500 feet above ground level.

Source: Navy 2004.

**Table 2-2
Summary, Flight Procedures and Course Rules
OLF Whitehouse, NAS Jacksonville**

<p>General</p>

- **Location and Use.** OLF Whitehouse is located at 30 21'N, 81 52'W, 13 NM northwest of NAS Jacksonville, and is under the jurisdiction of the Commanding Officer, Naval Air Station, Jacksonville. This Outlying Field (OLF) is used primarily for field carrier landing practice (FCLP) and visual flight rule (VFR) Touch-and-Go operations. The airfield elevation is 99 feet mean sea level (MSL).
- **Runways.** The usable runway (runway 11/29) is 8,000 by 150 feet. All other runways are closed. Two hundred feet of asphalt overrun area is located at the end of runway 11 and 1,500 feet at the end of runway 29. Runway distance remaining markers are installed. Runway 11 is the calm wind runway.

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**Table 2-2
Summary, Flight Procedures and Course Rules
OLF Whitehouse, NAS Jacksonville**

- **Class "D" Surface Area.** The OLF Whitehouse class "D" surface area is that airspace extending upward from the surface to and including 2,600 feet MSL within a 5 NM radius of OLF Whitehouse; excluding that airspace within Cecil Field class "D" surface area.
- **FCLP Scheduling.** FCLP operations are scheduled, coordinated, and promulgated by Air Operations/Air Traffic Control (ATC).

Course Rules (Patterns, Fixed-Wing)

- The FCLP pattern shall be flown at an altitude in accordance with CV Naval Air Training Operating Procedures and Standards (NATOPS).
- Runway 11 shall be left hand traffic for all aircraft at all times.
- Authorized Runway 29 left-hand traffic shall remain inside the red obstruction light (power lines) located approximately 1-3/4 miles southeast of the Runway 29 threshold.
- All FCLP briefs shall include specific emphasis on procedures for left-hand traffic on Runway 29; i.e., the importance of maintaining a tight pattern for noise abatement.

Course Rules (Patterns, Rotary-Wing)

- **Entry Procedures.** Entry to the OLF Whitehouse airport traffic pattern will normally be made via the OLF Whitehouse One route from NAS Jacksonville or the OLF Whitehouse Two route from Naval Station Mayport as described in FACSFACJAXINST 3000.1(series).
- Pattern altitude for spot and runway operations shall be 600 feet MSL (500 feet above ground level [AGL]).
- All runway patterns shall be oriented north of the runway. Precision patterns shall be oriented east and west of the arresting gear, not to overfly the Control Tower.

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3 Aircraft Operations

3.1 Changes Requiring AICUZ Update

Under the AICUZ Program, each plan must be tailored to the specific characteristics of that installation's air operations. Numerous variables are included in the calculations for determining the noise contours, including aircraft type and mix, flight patterns, altitude and power settings, and the time of day in which these noise generating activities take place. Considerable change to any of these variables could affect a change in the installation's noise contours. Other characteristics, such as a change in training mission can have an effect on total air operations within a given flight path and, therefore, further affect the configuration of APZs.

This study is an update of the 1978 AICUZ Report. The basis of the update is the *Noise Study for NAS Jacksonville and NOLF Whitehouse, Florida* (Wyle 2003). The 2003 noise study includes collection of available operations data and the development of noise exposure contours, which were validated by the most recent available operations. Noise exposure contours reflect existing aircraft operations data.

Aircraft currently located at NAS Jacksonville include the P-3, S-3B, ES-3A, C9B, DC-9, C 12 and H-60 aircraft. The U.S. Customs Service utilizes Beechcraft 200, Cessna 210, HU-500, P-3, PA-31, PA-42, and PH-57 aircraft. A number of general aviation single-engine, piston aircraft from the NAS Jacksonville Flying Club conducted practice approaches (without full stops), but were relocated off base as of the last quarter of 2001 due to security measures taken in the wake of the September 11th terrorist attacks. Single-engine piston aircraft operations were not included in the noise contour data and total modeled operations for the 2003 noise study.

OLF Whitehouse is utilized primarily for FCLPs and Visual Flight Rules (VFR) Touch-and-Go operations by aircraft from NAS Jacksonville; Chief of Naval Air Training (CNATRA); Naval Air Forces Atlantic Fleet (AIRLANT); and NS Mayport. These aircraft include the S-3 (A&B), T-2, T-45C, EA-6B, F/A-18 (A-D), and SH-60 (B-F; see Table 3-1).

**Table 3-1
Aircraft Assigned to
John Towers Field, NAS Jacksonville**

Unit	Type	Number
Patrol Squadron Five (VP-5)	P-3	9
Patrol Squadron One Six (VP-16)	P-3	15
Patrol Squadron Three Zero (VP-30)	P-3	25
Patrol Squadron Four Five (VP-45)	P-3	7
Patrol Squadron Six Two (VP-62)	P-3	8

**Table 3-1
Aircraft Assigned to
John Towers Field, NAS Jacksonville**

Unit	Type	Number
HS-3		7
HS-5		7
HS-7		7
HS-11		7
HS-15		7
HS-75		8
VR-58	C-9B DC-9	3 1
Ops	C-12	2
U.S. Customs	Cessna 210 HU-500 PA-42 AS350	1 3 5 1
VS-22	S3-B	7
VS-24	S3-B	8
VS-30	S3-B	6
VS-31	S3-B	7
VS-32	S3-B	9

Source: Mooney 2004.

3.2 Survey Methodology

Analyses of aircraft noise exposures around Navy facilities are normally accomplished using the NOISEMAP computer program, which was developed by the United States Air Force. NOISEMAP consists of BASEOPS, OMEGA 10, OMEGA 11, NOISEMAP version 6.4, NMPLOT and NOISEFILE. The results of the NOISEMAP suite of computer programs provide a relative measure of noise levels around airfield facilities. The new NOISEMAP 7.2 update incorporates newly developed F/A-18 flight profiles, and is most accurate and useful for comparing “before and after” noise levels which would result from proposed aircraft changes or alternative noise control actions when calculations are made in a consistent manner. It allows noise predictions for such proposed actions without actual implementation of noise monitoring of those actions. NOISEMAP also has the flexibility of calculating sound levels at any specified point so that noise levels at representative locations around an airfield can be obtained directly.

To develop noise contours, NOISEMAP requires the number of daily operations at the airfield. This calculation is based on the number of operations on an “average busy day” (defined as a typical day when the airfield is in full operation) rather than the “average annual day.” A day is considered to be “busy” when its total operations are at least 50% of the average annual daily operations. The average busy day number of operations is then determined by calculating the mean of the operations on all of the busy days over a period of one year. As determined by the existing data, 213 days out of the 321 days for which there were data were “busy.” Scaling to 365 days (one year)

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yields 242 busy days. Average busy-day operations for each modeled aircraft type can be calculated by scaling operations by a factor of 98%, then by dividing annual operations by 242 busy days.

3.3 Flight Operations

A flight operation refers to any takeoff or landing at John Towers Field or OLF Whitehouse. The takeoff and landing may be part of a training maneuver (or pattern) associated with the air station runway, or may be associated with a departure or arrival of an aircraft to or from defense-related special-use airspace. Certain flight operations are conducted as patterns (e.g., Ground-Controlled Approach [GCA] Box, Touch-and-Go, Field Carrier Landing Practice [FCLP]). A pattern consists of two flight operations.

Basic flight operations at NAS Jacksonville are described below:

- **Departure.** An aircraft taking off to a local training area, a non-local training area, or as part of a training maneuver (i.e., touch-and-go).
- **Straight-In/Full-Stop Arrival.** An aircraft lines up 6 to 10 NM from the field on runway centerline. The aircraft descends gradually, lands, comes to a full stop, and then taxis off the runway.
- **Overhead Arrival.** An expeditious arrival using visual flight rules. An aircraft approaches the runway 500 feet above the altitude of the landing pattern. Approximately halfway down the runway, the aircraft performs a 180-degree turn to enter the landing pattern. Once established in the pattern, the aircraft lowers landing gear and flaps and performs a 180-degree descending turn to land on the runway.
- **Ground-Controlled Approach (GCA) Box.** A radar or “talk down” approach directed from the ground by Air Traffic Control personnel. Air Traffic Control personnel provide pilots with verbal course and glideslope information, allowing them to make an instrument approach during inclement weather. The GCA box actually is counted as two operations – the landing is counted as one operation and the takeoff is counted as another.
- **Touch-and-Go Operation.** An aircraft lands and takes off on a runway without coming to a full stop. After touching down, the pilot immediately goes to full power and takes off

again. The touch-and-go actually is counted as two operations – the landing is counted as one operation and the takeoff is counted as another.

- **Field Carrier Landing Practice (FCLP).** An aircraft practices simulated carrier landings. FCLPs are required training for all pilots before landing on a carrier. The number of FCLPs performed is determined by the length of time that has elapsed since the pilot's last landing on a carrier. The FCLP actually is counted as two operations – the landing is counted as one operation and the takeoff is counted as another.
- **Low Approach.** An approach to a runway in which the pilot does not make contact with the runway.

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3.3.1 John Towers Field

Flight operations at John Towers Field are recorded by local Air Traffic Control (ATC) on an Air Traffic Activity Analyzer (ATAA). The ATAA is a device used by ATC personnel to count the number of operations conducted by various types of aircraft. It also records operation type, runway usage, and whether the operations take place during daytime (0700 to 2200) or nighttime (2200 to 0700) hours. The tower is manned 24 hours a day. Table 3-2 lists the modeled annual flight operations for 2003 at John Towers Field.

**Table 3-2
Modeled Annual Flight Operations for 2003
John Towers Field, NAS Jacksonville**

Aircraft Type	Operation Type	Day	Night	Total
P-3	Departures to North	1,008	23	1,031
	Departures to South	1,806	9	1,815
	Departure Straight-Out ^b	2,149	47	2,196
	GCA Departures	4,552	129	4,681
	Straight-In Arrivals	11,210	482	11,692
	Overhead Arrivals	276	2	278
	Touch-and-Go's ^a	46,481	918	47,399
C-9	Departures to North	290	13	303
	Departures to South	106	2	108
	Departure Straight-Out ^b	475	13	488
	GCA Departures	233	5	237
	Straight-In Arrivals	962	123	1,085
	Overhead Arrivals	3	1	5

	Touch-and-Go's ^a	1,083	34	1,117
Air Carrier (C-9)	Departures to North	81	44	125
	Departures to South	43	0	43
	Departure Straight-Out ^b	145	65	210
	GCA Departures	63	0	63
	Straight-In Arrivals	364	78	441
	Overhead Arrivals	0	0	0
	Touch-and-Go's ^a	14	0	14
AV-8 (Navy/Marine Jet)	Departures to North	8	0	8
	Departures to South	56	1	57
	Departure Straight-Out ^b	49	1	50
	GCA Departures	157	2	160
	Straight-In Arrivals	259	5	263
	Overhead Arrivals	38	0	38
	Touch-and-Go's ^a	130	0	130
F/A-18 (Navy/Marine Jet)	Departures to North	10	0	10
	Departures to South	75	1	76
	Departure Straight-Out ^b	65	1	66
	GCA Departures	210	2	212
	Straight-In Arrivals	344	6	350
	Overhead Arrivals	51	0	51
	Touch-and-Go's ^a	173	0	173

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**Table 3-2
Modeled Annual Flight Operations for 2003
John Towers Field, NAS Jacksonville**

Aircraft Type	Operation Type	Day	Night	Total
T-2 (Navy/Marine Jet)	Departures to North	4	0	4
	Departures to South	32	0	32
	Departure Straight-Out ^b	27	1	29
	GCA Departures	89	1	90
	Straight-In Arrivals	147	3	150
	Overhead Arrivals	21	0	21
	Touch-and-Go's ^a	73	0	73

A-7	Departures to North	0	0	0
	Departures to South	128	0	128
	Departure Straight-Out ^b	114	0	114
	GCA Departures	0	0	0
	Straight-In Arrivals	0	0	0
	Overhead Arrivals	242	0	242
	Touch-and-Go's ^a	0	0	0
H-3	Departures to North	0	0	0
	Departures to South	2,042	67	2,109
	Departure Straight-Out ^b	0	0	0
	GCA Departures	321	44	365
	Arrivals	2,335	219	2,554
	Overhead Arrivals	0	0	0
	Touch-and-Go's ^a	6,517	70	6,587
H-60	Departures to North	0	0	0
	Departures to South	681	22	703
	Departure Straight-Out ^b	0	0	0
	GCA Departures	107	15	122
	Arrivals	779	73	852
	Overhead Arrivals	0	0	0
	Touch-and-Go's ^a	2,173	23	2,196
S-3	Departures to North	0	0	0
	Departures to South	3,733	115	3,848
	Departure Straight-Out ^b	0	0	0
	GCA Departures	560	17	577
	Arrivals	1,307	40	1,347
	Overhead Arrivals	2,986	92	3,078
	Touch-and-Go's ^a	6,271	194	6,465
	FCLP ^a	1,956	60	2,016
Summary				
P-3		67,482	1,610	69,092
C-9		3,153	190	3,343
Air Carrier (C-9)		709	187	896
AV-8		697	9	706
F/A-18		929	10	939

T-2		393	6	398
A-7		484	0	484
H-3		11,215	400	11,615
H-60		3,740	133	3,873
S-3		16,813	518	17,331
TOTAL		105,614	3,063	108,677

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**Table 3-2
Modeled Annual Flight Operations for 2003
John Towers Field, NAS Jacksonville**

Aircraft Type	Operation Type	Day	Night	Total
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Notes:

^a Patterns counted as two operations.

Fixed-wing operations on Runway 14/32 were not modeled since only 2% of military aircraft operations occurring on it were military jets.

Overflights were not counted.

^b For purposes of this report, Runway 27 departures to a 300-degree heading were considered "Straight-Out."

Key:

FCLP = Field carrier landing practice.

GCA = Ground-controlled approach.

Based on the noise contribution and activity level of aircraft at NAS Jacksonville, eight types of fixed-wing aircraft and two types of helicopters were modeled. The remaining operations were considered insignificant, having less than a 1-decibel (dB) impact on the noise contours. It is estimated that approximately 3% of total modeled operations would occur at night (2200 to 0700). (A full description of the modeled flight operations at NAS Jacksonville is contained in Wyle 2003).

Flight data for F/A-18C/D aircraft (Wyle 2003) that have caused significant changes in profile data include:

- Afterburner power settings were changed from using 100% NC, reflected in WR-96-4, (Wyle 1996) to using 96.7%NC and
- Touch-and-go operations were changed from being conducted at an altitude of 1,000 feet above ground level (AGL) 100% of the time, to being conducted at 1,000 feet AGL only 10% of the time and at 600 AGL the remaining 90% of the time. Because there were no FCLP operations modeled previously, this change actually enables the modeling of both Touch-and-Go operations (at 1,000 AGL) and FCLP operations (at 600 feet AGL) using the updated 2003 F/A-18C/D profiles.

3.3.2 OLF Whitehouse

For the purpose of this study, the S-3 A/B, T-2C, T-45, EA-6B, F/A-18A/B/C/D fixed-wing aircraft and SH-60B/F rotary-wing aircraft were modeled. The S-3 aircraft from NAS Jacksonville,

together with CNATRA and AIRLANT's S-3, T-2, and T-45 with over 23,000 combined annual operations, are the operationally dominant aircraft at OLF Whitehouse. The noise-dominant aircraft using OLF Whitehouse are the AIRPAC F/A-18C/D Hornet and EA-6B Prowler with over 3,000 combined annual operations. The F/A-18C/D Break Arrivals category consists of Carrier Break Arrivals 95% of the time and Overhead Break Arrivals 5% of the time. Similarly, the F/A-18C/D FCLP category consists of FCLPs 95% of the time and Touch-and-Go's 5% of the time. Approximately 13% of all operations are conducted during the nighttime period. Table 3-3 lists the modeled annual flight operations for 2003 at OLF Whitehouse.

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**Table 3-3
Modeled Annual Flight Operations for 2003
OLF Whitehouse, NAS Jacksonville**

Aircraft Type	Operation Type	Day	Night	Total
F/A-18 (Navy/Marine Jet)	Departures	101	67	168
	Arrivals	101	67	168
	FCLP ^a	1,613	1,075	2,688
T-2C	Departures	50	0	50
	Arrivals	50	0	50
	FCLP ^a	400	0	400
T-45	Departures	400	0	400
	Arrivals	400	0	400
	FCLP ^a	3200	0	3,200
EA-6B	Departures	42	28	70
	Arrivals	42	28	70
	FCLP ^a	672	448	1,120
H-60	Departures	546	182	728
	Arrivals	546	182	728
	Touch-and-Go's ^a	5,460	1,820	7,280
S-3A/B	Departures	1,316	78	1,394
	Arrivals	1,316	78	1,394
	FCLP ^a	18,541	1,171	19,712
Summary				
F/A-18		1,815	1,209	3,024

T-2C		500	0	500
T-45		4,000	0	4,000
EA-6B		756	504	1,260
H-60		6,552	2,184	8,736
S-3A/B		21,173	1,327	22,500
Total		34,796	5,224	40,020

Source: Wyle 2003.

Notes:

^a Patterns counted as two operations.

Fixed-wing operations on Runway 14/32 were not modeled since only 2% of military aircraft operations occurring on it were military jets.

Overflights were not counted.

Key:

FCLP = Field carrier landing practice.

3.4 Field Carrier Landing Practice Operations

Approximately 2,000 FCLP operations are conducted at John Towers Field by S-3 aircraft. All other aircraft use OLF Whitehouse for FCLP operations. All other FCLPs, including S-3ABs from NAS Jacksonville, T-2C and T-45 from C-NET, S-3B, EA-6B and F/A-18A/B/C/D aircraft, and any other transient aircraft, use OLF Whitehouse.

3.5 Pre-flight and Maintenance Run-up Operations

3.5.1 John Towers Field

For the F/A-18C/D, pre-flight run-ups were modeled at the threshold of the runway at a power setting of 85% NC (Engine Core Speed) for 30 seconds. Pre-flight run-ups were not modeled for any other aircraft. Annual maintenance run-up data for S-3 operations at John Towers Field are

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listed in Table 3-4 along with event durations and power settings. S-3 aircraft typically conduct a 15-second pre-flight run-up prior to each departure. S-3 aircraft would conduct high-power maintenance run-up operations at NADEP (Location ID SEAW) and low-power maintenance run-up operations at the S-3 flight line (location IDs S3L1 and S3L2).

Table 3-4
Modeled Single Engine Maintenance Run-Up Operations for S-3
John Towers Field, NAS Jacksonville

Location	Locati	Magnetic	Power Setting	Annual Events	Event
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Name	Location ID	Heading (degrees)		Day	Night	Duration (minutes)
High-Power Turn Area	SEAW	270	64.7% NC	333	83	3
			80% NC	333	83	5
			96% NC	333	83	5
Flight Line	S3L1	90	64.7% NC	1,040	260	20
			80% NC	1,040	260	15
Flight Line	S3L2	270	64.7% NC	1,040	260	20
			80% NC	1,040	260	15

Source: Wyle 2003.

All other aircraft would conduct maintenance run-ups as depicted in the run-up locations on Figure 1-2. In-frame, out-of-frame and hush-house maintenance run-ups were analyzed as indicated in Table 3-5. Table 3-5 lists the run-up locations, aircraft and engine types, headings, power settings, and annual number of run-ups, including duration of each run-up. Busy-day run-up operations were calculated by dividing the annual number of run-ups by the number of busy days.

The Aircraft Intermediate Maintenance Department conducts high power out-of-frame T-56 engine run-ups on a test stand (TS1) located on the north side of the airfield. In-frame high power P-3 maintenance run-ups occur at the High Power Turn-Up Area (HPTA) located at the approach end of Runway 09 and on Taxiway Delta (TWYD). P-3 aircraft conduct high-power run-ups at night on the flightline near Hangar 1000 (FL). All run-ups in the hush house (HH) and at the seawall are conducted by the NADEP.

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**Table 3-5
Modeled Single-Engine Run-Up Operations
John Towers Field, NAS Jacksonville**

Aircraft Type	Engine Type	Location Name	Location ID	Magnetic Heading	Power Setting	Annual Events	Event Duration (minutes)
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						Day	Night	
P-3 (OOF)	T-56	Test Stand One	TS1	270	170 ESHP 3800 ESHP	515 515	5 5	60 10
P-3	T-56	High Power Turn-Up	HPTA	90	170 ESHP 1850 ESHP 3800 ESHP	20 7 20	78 78	45 7.5 10.3
		Area	FL	270	170 ESHP 3800 ESHP	7 20		20 7.5
		Flight				7		
		Line				51 51		
		Seawall	SEAW	270	170 ESHP 200 ESHP 1900 ESHP 1500 ESHP 2500 ESHP 3800 ESHP 200 ESHP	156 156 156 156 156 156 156		10 5 5 5 5 2 5
Taxiway Delta	TWYD	90	170 ESHP 3800 ESHP	255 255		25 5		
Taxiway Delta	TWYD	270	170 ESHP 3800 ESHP	109 109		25 5		
F-18	F-404	Hush House Seawall	HH SEAW	360 270	95.1% RPM 70% RPM	44 129	7	15 60
T-2	J-85	Hush House Seawall	HH SEAW	360 270	100% RPM 70% RPM	44 129	7	10 30
A-7	TF-41	Hush House Seawall	HH SEAW	360 270	99% RPM 70 % RPM	44 129	2	90 30

Source: Wyle 2003.

Key:

ESHP = Engine shaft horsepower.

3.5.2 OLF Whitehouse

Generally, aircraft do not conduct pre-flight run-up operations at OLF Whitehouse. All maintenance run-up operations are conducted at NAS Jacksonville; therefore, no run-up operations were modeled for OLF Whitehouse.

3.6 Runway and Flight Track Utilization

Data for runway usage are evaluated based upon total annual operations by runway, as well as average busy-day operations. For the purpose of noise assessment, the average busy-day figure, which is higher than the annualized daily average, is used as an indicator of probable community reaction to aircraft noise.

Frequency of runway usage affects both the noise model for determining the acoustical footprint and the delineation of APZs within a given flight “shadow.” Flight tracks are usually depicted as

single lines representing the median flight track of all flights along that track, although considerable variation on either side of the flight path may be expected. The variations could be due

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to weather conditions, geographical features, the level of pilot proficiency, or the number of aircraft on a particular flight track.

Average busy-day operations for each flight track are calculated by combining the runway utilization percentages and flight track utilization percentages, then dividing by 242 busy days.

3.6.1 John Towers Field

Usage of Runway 14/32 primarily consists of Touch-and-Go operations for the H-3 and H-60 and MH/6-R/S helicopters and is rarely used by fixed-wing aircraft. Consistent with the 2003 noise study (Wyle 2003), only 2% of all military aircraft operations occurring on Runway 14/32 were fixed-wing aircraft; therefore, fixed-wing operations were not modeled. The contribution of these military operations was considered insignificant when compared to the overall noise environment. While operations primarily include pattern work by helicopters, usage of Runway 14/32 increases during the three weeks a year (two weeks at Christmas and one week during a time of low runway usage) when routine annual maintenance is conducted on Runway 09/27 (such that no aircraft operations can be conducted on Runway 09/27). Major runway maintenance takes place every 12 to 15 years, and is next scheduled to occur between 2005 and 2006.

Figures 3-1 through 3-3 indicate flight tracks at NAS Jacksonville for, departure, arrival, Touch-and-Go, Helicopter, and Ground-Controlled Approach (GCA) operations, respectively. These flight tracks were derived from analysis of NAS Jacksonville radar data, and verified by ATC to be representative of existing operations.

3.6.2 OLF Whitehouse

Flight tracks for runways 11 and 29 were provided by personnel at NAS Jacksonville. Figure 3-4 shows the flight tracks for arrivals, departures, FCLPs, and Touch-and-Go operations at OLF Whitehouse. With the exception of the SH-60 helicopters, arrival operations are modeled as overhead break arrivals. The rotary-wing arrivals from NAS Jacksonville utilize track 29A2, whereas rotary wing arrivals from NS Mayport utilize Track 11-A2. Figure 3-4 also shows the FCLP and Touch-and-Go flight tracks. The fixed-wing patterns 11F1 and 29F1 are the same size and shape with left traffic on both runways. The rotary-wing patterns 11T1 and 29T1 overlay each other on the north side of the airfield. Rotary-wing departures to NAS Jacksonville and NS Mayport utilize 11D2 and 29D2, respectively.

The runway utilization at OLF Whitehouse was obtained through discussion with S-3 pilots. S-3 aircraft use Runway 11 and Runway 29 in an approximate 70%/30% split, respectively. Flight

tracks for the S-3 aircraft were provided by NAS Jacksonville ATC. Only one flight track is used for each operation type on each runway.

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Figure 3-1

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Figure 3-2

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Figure 3-3

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Figure 3-4

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4 Noise

Aircraft noise is of concern to many in the surrounding community. The impact of aircraft noise is a critical factor in the planning of future land use near air facilities. Because the noise from these operations significantly impacts surrounding land use, the Navy has defined certain areas as high noise zones under the AICUZ Program.

Noise is unwanted sound. Sound is all around us; sound becomes noise when it interferes with normal activities, such as sleep or conversation.

Sound or noise levels are measured in A-weighted decibels (dBA), a unit of sound pressure adjusted to the range of human hearing, with an intensity greater than the ambient or background sound pressures. Normal speech has a noise level of approximately 60 dBA; sound levels above 110 dBA begin to be felt inside the human ear as discomfort, and 120 dBA is considered the threshold of pain.

Noise exposure is measured using the day-night average sound level (commonly referred to as DNL or DNL). The DNL noise metric averages noise events that occur over a 24-hour period. Aircraft operations conducted at night (10:00 p.m. to 7:00 a.m.) are weighted with a 10-decibel penalty because people are more sensitive to noise during normal sleeping hours when ambient noise levels are lower. DNL has been determined to be a reliable measure of community sensitivity to aircraft noise and has become the standard metric used throughout the United States (except California, which uses a similar metric for aircraft noise).

When airfield operations are concentrated over a certain period each week, the airfield may use an “average busy day” in the calculation of DNL. An average busy day represents a typical busy day based on average operations for a full year. A day is considered “busy” when its total operations are at least 50% of the annual average. The average “busy day” number of operations is then determined by calculating the mean of the operations on all of the busy days over a period of one year. As described in the Wyle noise study (2003), there were 242 busy days at NAS Jacksonville throughout the duration of modeled events. The DNL is depicted as a contour connecting points of equal value, usually in 5-decibel increments. Calculated noise contours do not represent exact scientific noise measurements. Noise levels inside a contour may be similar to those outside a contour line. The area between two specific contours is known as a noise zone. The noise zones used in this study are:

- Noise Zone 1 (less than 65 DNL);
- Noise Zone 2 (65-75 DNL); and

- Noise Zone 3 (greater than 75 DNL).

Noise Zone 1 is essentially an area of little or no impact where almost all land uses are considered compatible. Noise Zone 2 is an area of moderate impact where some land use controls are necessary for noise sensitive uses. Noise Zone 3 is the most heavily impacted zone and requires the greatest degree of land use regulatory control to assure compatibility with air station operations. In addition to the noise zones, areas of concern may be defined where noise levels are considered to be objectionable and should be considered in land use planning (such as areas under flight tracks used for repetitive work).

4.1 Noise Complaints

The origin and nature of noise complaints within a geographic region is the most tangible barometer of the success or failure of noise abatement procedures. For the period January 2000 through July 2002, 40 complaints were received for John Towers Field, while none were received for OLF Whitehouse.

As shown on Figure 4-1, a number of complaints originate on the east side of the St. Johns River, in the San Jose/Beauclerc areas. Although generally not within the 65-DNL contour (Figure 4-2), these areas lie in the path of the extended centerline of Runway 09/27, beneath the arrival and departure flight tracks.

Additional complaints were concentrated in the Timuquana and Ortega neighborhoods north of the air station. These areas lie beyond the departure end of Runway 14/32, partially within the 65-DNL contour (Figure 4-2) and beneath the arrival, departure, and Touch-and-Go flight tracks. These complaints originated from single-family residences and the Timuquana Country Club located near the clear zone of runway 14/32.

Although any noise complaint received from civilian communities are of concern to military authorities, a total of 40 complaints within a 30-month period indicates relatively few noise conflicts with local residents, especially in view of the large number of air operations conducted within the same period and the large number of people residing within the NAS Jacksonville area of operation.

Figure 4-1

Figure 4-2

4.2 Noise Abatement/Flight Procedures

In recognition of community response to aircraft noise at NAS Jacksonville, noise abatement procedures have been prepared to provide strict guidance to pilots and air traffic controllers. Table 4-1 provides a list of noise abatement/turn-up procedures currently in effect at NAS Jacksonville. Although typically implemented in response to community noise complaints, many of these procedures serve a dual purpose by minimizing accident potential hazards.

One operational change has been instituted specifically to accommodate residents of the Timuquana Country Club area, a heavily populated community located just beyond the departure end of Runway 14. Runway 14 has a displaced landing threshold of 2,539 feet, with the usable landing area of 3,438 feet. Its full length, 5,977 feet, is available for takeoff. Landing operations are restricted to use by helicopters during daylight hours only. Helicopters must remain south of taxiway "D" and north of Runway 09/27 to minimize the impact of noise on the neighboring community, and confine operations to two helicopters. An exception to this rule occurs during the three weeks a year (two weeks at Christmas and one week during a time of low runway usage) that routine annual maintenance is conducted on Runway 09/27 (such that no aircraft operations can be conducted on Runway 09/27).

4.3 Noise Contours

Noise contours for John Towers Field and OLF Whitehouse are shown on Figures 4-2 and 4-3, respectively. The basis for these DNL contours are the flight patterns shown on Figures 3-1 through 3-4, further defined by data from Tables 3-2 and 3-3.

Noise contours are presented as a tool for land use planning. The change in noise level does not change abruptly at each contour; rather the change may be imperceptible within a zone of several hundred feet of a particular contour line. Furthermore, the true level of aircraft noise projected across large bodies of water, such as the St. Johns River or to a lesser extent the Ortega River, is unknown. Water acts as a hard surface and has the tendency to propagate noise over longer distances. Land uses on the eastern shore of the St. Johns River are expected to be compatible with projected aircraft noise levels, although individual aircraft events may be detected at greater distances from the airfield.

**Table 4-1
Noise Abatement/Turn-up Procedures
John Towers Field, NAS Jacksonville**

Aircraft Noise Abatement/Turn-up Procedures.

- All aircraft turn-ups shall be conducted per NAS Jacksonville's Air Operations Manual, Naval Air Training Operating Procedures and Standards (NATOPS), squadron directives, and proper maintenance procedures.
 - All aircraft will be properly tied down prior to performing a high power turn-up.
 - Personnel are requested to limit high power turn-ups to not more than five continuous minutes.

The following aircraft turn-up areas are available at the times prescribed below:

Location Time of Day Availability

NADEP Hush House bldg. 777 7AM-10PM Daily
Call 542-3345 to schedule 1200PM-10PM Sundays

Suppressors 7AM-10PM Daily

1200PM-10PM Sundays

Blast Fences (Seawall) 7AM-10PM Daily

1200PM-10PM Sundays

S3 High Power Spot 7AM-10PM Daily
(Runway 14/32) 1200PM-10PM Sundays

- Primary areas available for squadron aircraft to perform turn-ups shall be assigned by the Control Tower. VR-58 will schedule the CALA for high power turns through the ODO (542-2511/12).
- PATRON 30 aircraft parking spots 112 - 116 are designated high power turn-up spots between the hours of 7AM and 10PM. • Any movement area may be utilized for aircraft turn-ups at the discretion of the Control Tower.
- All aircraft shall notify the Control Tower prior to commencing high power turn-ups, maintain continuous radio communications during the turn and advise the Control Tower when complete.
- Jet aircraft will perform turn-ups only on concrete portions of movement areas. After-burner turn-ups are prohibited. • Turn-ups from 10PM-7AM require ODO approval.
- Deviations from the above procedures must be approved by the ODO.
- Helicopters utilizing runway 14/32 shall remain south of taxiway "D" and north of runway 9/27.
- Simultaneous hover checks on taxiway "D" will be kept to a minimum.

Quiet Hours

- On Sunday, during divine services, (9AM-12PM) aircraft operations shall be limited to promote quiet in the Chapel area. The following shall apply:
 - Full stop landings only for fixed-wing aircraft.
 - Helos will not be authorized Golf Course departures or arrivals. Operations utilizing the patterns are authorized.

Noise Complaints

- Aircraft noise complaints shall be handled as follows:
 - Inside Class "D" Surface Area call Base Operations at 542-2511.
 - All other noise complaints call Fleet Area Control Surveillance Facility (FACSFAC) at 542-2524 or 1-800-874-5059.

Source: Navy 2004, as modified.

4.3.1 Noise Footprint for John Towers Field

As shown on Figure 4-2, approximately 401 acres or 86% of the total area within the 65-DNL contour lies over base property or water (this number includes all lands within the 65-DNL contour, not just those between the 65-DNL and 70-DNL contours). As calculated in the 2003 noise study (Wyle 2003), approximately 366 acres (off base and excluding water) would lie within the 65-DNL contour. A total of 96 acres would be impacted by the 70-DNL (and above) contour. Lands within the 75-DNL contour would encompass approximately 4 acres off base, while lands above the 80-DNL contour would be entirely contained within the boundary of NAS Jacksonville.

4.3.2 Noise Footprint for OLF Whitehouse

The noise footprint for OLF Whitehouse is shown on Figure 4-3. The noise contours for OLF Whitehouse are significantly larger than those calculated in the 1996 Noise Study because the previous study considered only S-3 operations, whereas the revised study (Wyle 2003) considers additional, noisier aircraft such as the F/A-18 and EA-6B. The shape of the 75-DNL contour reflects the primary FCLP activity.

At its widest point, the 65-DNL contour is approximately 9 miles long and nearly 3 miles wide. As calculated in the 2003 noise study, approximately 7,674 land acres (off base) are located within this contour.

The 85-DNL contour extends beyond the OLF Whitehouse property boundary by 0.5 mile to the west and 1/3 mile to the east. This contour impacts 365 acres and a small number of single-family residential housing units. A total of 3,213 off-base acres are impacted by high noise (75 DNL and above).

Figure 4-3

5 Safety

5.1 General

In addition to community noise exposure, the potential for aircraft accidents near the military airfield is an important consideration of the AICUZ Program. Although impossible to predict an aircraft accident event, a rational thought process has been applied in developing AICUZ to establish geographic limits of the probable impact area, should an accident occur.

In planning for the protection of both civilian and military communities, both the Navy and local government entities share the responsibility to enact all reasonable safeguards. This chapter discusses the safety of pilots and their aircraft within the vertical airspace, as well as the protection of life and property on the ground from potential aircraft accidents.

5.2 Imaginary Surfaces

Aircraft operations are always constrained by the surrounding natural terrain and manmade features such as buildings, towers, poles, and other potential vertical obstructions to navigation. Acceptable limitations on the height of manmade structures are dictated through the application of “imaginary surfaces.” These zones radiate at variable, increasing heights from the airfield runway. Such height limitations are discussed in both NAVFAC P-80.3 and Federal Aviation Regulations Part 77. Separate criteria exist for fixed-wing and helicopter operations. The imaginary surfaces for helicopter operations at NAS Jacksonville, however, are completely encompassed within the criteria for fixed-wing aircraft.

The following imaginary surfaces are defined for fixed-wing aircraft. Both John Towers Field and OLF Whitehouse have a Class B runway classification.

- **Primary Surface.** A surface on the ground or water centered lengthwise on the runway and extending 200 feet beyond each end of that runway. The width of the primary surface is 1,500 feet for a Class B runway constructed prior to June 1981.
- **Clear Zone Surface.** A surface on the ground or water beginning at the runway end and symmetrical about the runway centerline extended. The length of the clear zone is 3,000 feet. For Class B runways, the DoD AICUZ Program allows a rectangular clear zone with a 3,000-foot width; however, Navy accident data indicates that a fan-shaped clear zone is adequate for Class B runways at Navy installations. The width of the clear zone is the same as the approach-departure clearance surface, or 2,284 feet.
- **Approach-Departure Clearance Surface.** An inclined plane or combination inclined and horizontal plane, symmetrical about the runway centerline extended. The inclined

plane flares outward and upward from the primary surface, beginning with the same width as the primary surface and starting with the centerline elevation at the runway end.

For a Class B runway, the slope ratio of the inclined plane is 50 to 1 until it reaches an elevation of 500 feet above the established airfield elevation. It then continues horizontally at this elevation to a point 50,000 feet from the point of beginning. The outer width is 16,000 feet.

- **Inner Horizontal Surface.** An oval-shaped plane at a height of 150 feet above the established airfield elevation. It is constructed by scribing an arc with a radius of 7,500 feet about the centerline at each end of each runway and interconnecting these arcs with tangents.
- **Conical Surface.** An inclined plane that extends from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.
- **Outer Horizontal Surface.** A plane located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.
- **Transitional Surface.** Inclined planes that connect the primary surface and the approach departure clearance surface to the inner horizontal surface, conical surface, outer horizontal, or other transitional surfaces. The slope is 7 to 1 outward and upward at right angles to the runway centerline and runway centerline extended. To determine the elevation for the beginning of the transitional surface slope at any point along the lateral boundary of the primary surface, draw a line from the point perpendicular to the runway centerline or to the runway centerline extended. The elevation of the runway, or of the runway centerline extended, at that intersection is the elevation for the beginning of the 7 to 1 slope.

Figures 5-1 and 5-2 depict the thresholds and elevations of these surfaces, as measured in feet above the runways, for John Towers Field and OLF Whitehouse, respectively.

5.2.1 Helicopters

The following imaginary surfaces are defined for helicopters. The airspace clearances for helicopter facilities differ for VFR and Instrument Flight Rules (IFR). At NAS Jacksonville, the helipads are VFR and the helicopter runway is IFR.

- **Primary Surface.** A horizontal plane symmetrically centered on the helicopter runway or helipad at the established elevation of the landing surface. The area beneath the primary surface (referred to as the primary surface area) shall be free of obstructions. The dimensions of the primary surface are:
 - *VFR Helipad.* 150 feet (length) by 150feet (width).

Figure 5-1

Figure 5-2

- *IFR Runway (Double GPI)*. 7,427 feet (length) by 750 feet (width). For an IFR Runway, the length of the primary surface is dependent upon the Ground Point Intercept (GPI), which is the point on the centerline of the landing surface where the straight-line extension of the glide slope intersects the approach surface baseline. For planning purposes, the GPI can be considered to be the helicopter touchdown point. For a runway with two GPIs, the GPI located is 50 feet from the runway end; the primary surface extends 775 feet from the GPI.
- **Horizontal Surface (IFR Only)**. A circular or oval level plane, located 150 feet above the established runway or helipad elevation, defined by scribing an arc with a 4,600-foot radius from the GPI. For multiple GPIs, connect with tangents.
- **Transitional Surface**. Planes that connect the primary surface and the approach departure clearance surface and horizontal surface. Each surface is outward and upward from the edge of the primary surface or approach-departure clearance surface at a specified slope measured perpendicular to the runway centerline or helipad longitudinal centerline.
 - *VFR Helipad*. For helipads, the surface rises at a 2:1 slope until it reaches a horizontal distance of 250 feet from the centerline of the pad; it then rises vertically to an elevation of 150 feet above the established elevation of the landing surface.
 - *IFR Runway*. The slope ratio is 4 to 1 and rises to the horizontal surface. At the intersection of the horizontal surface and the approach-departure surface, it continues adjacent to the approach-departure clearance surface for the entire length, at which point an elevation of 375 feet above the approach-departure clearance surface is reached.
- **Approach-Departure Clearance Surface**. An inclined plane that flares outward and upward above the runway or helipad longitudinal centerline extended. It starts at the end of the primary surface with the same width as the primary surface at the established elevation of the landing surface. The area under this surface is referred to the approach departure zone.
 - *VFR Helipad*. Width at start is 150 feet. Width at end is 500 feet. Length is 1,200 feet and slope is 8:1.
 - *IFR Runway*. Width at start is 750 feet. Width at end is 8,000 feet. Length is 24,225 feet and slope is 25:1.
- **Take-off Safety Zone**. A take-off safety zone is required under the first 400 feet of VFR approach-departure clearance surfaces and has the same width as the approach-departure clearance surface. Take-off safety zones are not required at IFR facilities due to the extensive primary surface provided for these facilities.

At NAS Jacksonville, these surfaces are encompassed within the imaginary surfaces for fixed-wing aircraft, which are more restrictive.

5.2.2 Airfield Waivers

In general, man-made structures may be constructed to higher elevations as distance from the runway surface increases. However, as one approaches the operational runway and its corresponding flight path, height limitations are appropriately imposed.

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Within the boundaries of NAS Jacksonville and OLF Whitehouse, a number of waivers have been granted to allow certain structures and uses not customarily permitted within the vicinity of an airfield. These structures and uses were deemed necessary to accomplish the mission of the air station and thus were granted waivers. A description of the waivers is presented in Table 5-1. Although waivers J-02, J-05, J-09a-b, J-11, J-12, J-13a-I, J-17, J-18, J-20, J-26, J-27, and J-30 have either expired or have been canceled, they are nonetheless presented for historical records.

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Table 5-1
Summary of Waivers

Station	Waiver	Date Granted	Date Expires	Date Cancelled	Description
NAS Jacksonville	J-01	02/07/61			Power check facilities
NAS Jacksonville	J-02	09/12/61		01/27/76	GCA shop
NAS Jacksonville	J-03	09/12/61			Loft bombing towers
NAS Jacksonville	J-04	02/07/71			Taxi guidance sign
NAS Jacksonville	J-05	02/14/63		01/27/76	Rake tower at Stevens Lake
NAS Jacksonville	J-05	02/14/63		01/27/76	Target layout
NAS Jacksonville (Townsend)	J-06	09/24/63			Putnam bombing range
NAS Jacksonville	J-07	04/21/64			Antenna (quadrant array)
NAS Jacksonville	J-08				Use of impact areas
NAS Jacksonville	J-09a	01/28/71	01/31/79		Various obstructions, etc.
NAS Jacksonville	J-09b	01/28/71	01/31/79		Sewage pipeline
NAS Jacksonville	J-10a	01/27/71			Building structure (various)
NAS Jacksonville	J-10b	01/27/76			Structures 296, 243, 478, and 479
NAS Jacksonville	J-10c1	01/27/76			Wash rack power station
NAS Jacksonville	J-10c2	01/27/76			Hangars 13, 114, 115, 116, and 117
NAS Jacksonville	J-10c3	01/27/76			Air Operations (Building 118)
NAS Jacksonville	J-10d	01/27/76			Radar tower (Building 221)
NAS Jacksonville	J-10e				Fuel storage facilities
NAS Jacksonville	J-10f				Fuel storage facilities
NAS Jacksonville	J-10g				Approach lighting system
NAS Jacksonville	J-10h1				Jet engine test facility
NAS Jacksonville	J-10h2				Jet blast deflector
NAS Jacksonville	J-10h3				Aircraft parking
NAS Jacksonville	J-10h4				Runway visual range equipment
NAS Jacksonville	J-10h5				Antennas, transmitter, and receiver
NAS Jacksonville	J-11	04/21/71	07/01/72		Parking apron
NAS Jacksonville	J-12	04/11/73	06/30/76		AN/FPN-36 GCA
NAS Jacksonville	J-13a	01/16/76	10/31/84		Interior taxiway width

NAS Jacksonville	J-13b	01/16/76	10/31/84		No peripheral taxilane
NAS Jacksonville	J-13c	01/16/76	10/31/84		Parking apron clearance
NAS Jacksonville	J-13d	01/16/76	10/31/84		Clearance FM obstruction
NAS Jacksonville	J-13e	01/16/76	10/31/84		Peripheral taxilane
NAS Jacksonville	J-13f	01/16/76	10/31/84		Width of access apron
NAS Jacksonville	J-13g	01/16/76	10/31/84		Taxiway clearance
NAS Jacksonville	J-13h	01/16/76	12/31/87		Taxiway clearance
NAS Jacksonville	J-13i	01/16/76	12/31/87		Hangar 124
NAS Jacksonville	J-14a	01/27/76			Obstructions (various)
NAS Jacksonville	J-14b	01/27/76			Trees in approach zone

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**Table 5-1
Summary of Waivers**

Station	Waiver	Date Granted	Date Expires	Date Cancelled	Description
NAS Jacksonville	J-14c	01/27/76			Trees in 7:1 LTS
NAS Jacksonville	J-14d	01/27/76			Buildings 173, 1846, and piers
NAS Jacksonville	J-14e	01/27/76			Obstruction poles 78 and 119
NAS Jacksonville	J-14f	01/27/76			Traffic signal
NAS Jacksonville	J-15a	01/23/78			AN/FPN-63 and reflectors
NAS Jacksonville	J-15b	01/23/78			Reflector

NAS Jacksonville	J-15c	01/23/78			Reflector
NAS Jacksonville	J-15d	01/23/78			Reflector
NAS Jacksonville	J-15e	01/23/78			Reflector
NAS Jacksonville	J-15f	01/23/78			Reflector
NAS Jacksonville	J-15g	01/23/78			Reflector
NAS Jacksonville	J-16	03/06/79			Threshold Displacement
NAS Jacksonville	J-17	12/02/81	04/30/82	05/10/82	Dredging
NAS Jacksonville	J-18	11/21/83	01/14/84		Threshold Displacement
NAS Jacksonville	J-19	08/27/84			Anemometer (14 feet)
NAS Jacksonville	J-20	02/14/85	04/30/86		Threshold Displacement
NAS Jacksonville	J-22	11/12/86			Fence and shelter
NAS Jacksonville	J-23	03/11/87			TACAN and fuel tanks
NAS Jacksonville	J-24	06/18/87			OLS power transformer
NAS Jacksonville	J-25	06/29/87			Security fence
NAS Jacksonville	J-26	11/24/87	02/29/88		Displaced threshold
NAS Jacksonville	J-27	03/23/88	12/31/88		Runway resurface
NAS Jacksonville	No. 1	05/15/62			Holding post markers
NAS Jacksonville	J-28	02/08/90			Security fence, 8 feet high (Building)
NAS Jacksonville	J-29	01/15/91			Installation of precision approach p
NAS Jacksonville	J-30	01/15/91	04/30/91		Temporary displacement of thresho
NAS Jacksonville	J-31	02/20/92			Construction of 10-foot by 16-foot centerline of Runway 13/31
OLF Whitehouse	W-5	07/27/95			Permits LSO shelters on the primary fixed-wing operations

Key:

GCA = Ground-controlled approach.

LSO = Landing signal operators.

LTS = Laser tracking system.

OLS = Optical landing system.

TACAN = Tactical air navigation.

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5.2.3 Obstructions

Beyond the boundaries of NAS Jacksonville and OLF Whitehouse and the limits of their respective AICUZ composite footprints, other land uses may have a bearing on flight safety. These uses may produce smoke, glare, or electrical emissions, or pose hazards due to height of structures. Table 5-2 identifies such local obstructions in the vicinity of NAS Jacksonville; none have been identified in the vicinity of OLF Whitehouse. Any objects over 200 feet in height or within the imaginary surfaces must be coordinated with the FAA before approval.

**Table 5-2
Local Height Obstructions, NAS Jacksonville**

Obstruction	TACAN Bearing	Distance	Height (Feet Mean Sea Level)
TV Tower	018	4.7 NM	996
TV Tower	022	5.5 NM	1,003
Water Tower	030	3.3 NM	300
TV Tower	039	3.0 NM	433
Water Tower	057	2.3 NM	180
TV Tower	064	6.3 NM	1,097
Radio Tower	074	2.9 NM	200
Water Tower	078	2.3 NM	180
Water Tower	083	2.9 NM	180
Water Tower	084	3.8 NM	180
Water Tower	088	3.0 NM	200
Water Tower	105	4.5 NM	180
Radio Tower (WAPE)	196	6.2 NM	505
Radio Tower (WAYR)	223	6.1 NM	352
Radio Tower	309	4.9 NM	615
Radio Tower	318	5.8 NM	334
Radio Towers	320	5.0 NM	410
Radio Towers	332	8.5 NM	432
Commander Apt Building	334	3.7 NM	200

Radio Tower	338	8.0 NM	400
Independent Life (MODIS) Bldg	8	5.5 NM	635
Antenna Poles	ENE on Station		102
Antenna Poles	NNE on Station		82
1 Microwave Tower	On Station adjacent to Control Tower (south)		150
1 Water Tower	SSW on Station		180
1 Radio Tower	SSW on Station		185
3 Water Towers	SW on Station		180
Hospital	SSW on Station		120

Source: NAS JACKSONVILLE INSTRUCTION 3710.1U, NAS Jacksonville Air Operations.

Key:

TACAN = Tactical air navigation.

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5.2.4 Other Safety Considerations

Other hazards to flight safety that should be avoided in the vicinity of the airfield

include:

- Uses that would attract birds, especially waterfowl;

- Lighting (direct or reflected) that would impair pilot vision;

- Uses that would generate smoke, steam, or dust; and

- Electromagnetic interference with aircraft communication, navigation or other electrical systems.

Bird Aircraft Strike Hazard (BASH)

Wildlife represents a significant hazard to flight operations. Birds, in particular, are drawn to the open, grassy areas and warm pavement of the airfield. Although most bird and animal strikes do not result in crashes, they may involve extensive structural and mechanical damage to aircraft.

Between 1987 and 1997, the military services reported 29,263 collisions with birds and other wildlife, totaling more than \$447 million in structural and mechanical damage. Most collisions occur when the aircraft is at an elevation less than 1,000 feet.

To reduce the hazards of bird and animal strikes, the FAA and the military recommend that certain land uses that attract birds be located at least 10,000 feet from the airfield. These land uses include:

- Waste disposal operations;
- Wastewater treatment facilities;
- Landfills;
- Golf courses;
- Wetlands;
- Dredge disposal sites;
- Seafood processing plants; and
- Stormwater ponds.

Design modifications can also be used to reduce the attractiveness of these types of land uses to birds and other wildlife.

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Lighting

Bright lights, either direct or reflected, in the vicinity of an airfield can impair a pilot's vision especially at night. A sudden flash from a bright light causes a spot or "halo" to remain at the center of the visual field for a few seconds or more, rendering a person virtually blind to all other visual input. This is particularly dangerous at night when the flash can destroy the eye's adaptation to darkness, typically requiring 40 to 45 minutes for partial recovery. Several recent pilot encounters with laser flashes from outdoor light shows at concerts, fairs, theme parks, and casinos have increased the awareness of this hazard. Spotlights and reflected light from glass exterior buildings can also impair pilot vision.

Smoke, Dust, and Steam

Industrial or agricultural sources of smoke, dust and steam in the vicinity of an airfield could obstruct the pilot's vision during takeoff, landing, or other periods of low altitude flight.

Electromagnetic Interference

New generations of military aircraft are highly dependent on complex electronic systems to perform critical flight and mission-related functions. This dependence on digital electronics,

combined with higher clock rates, power conserving signal levels, increased use of composite materials, onboard radar, communications transmitters and lasers, increases the susceptibility of aircraft communication, navigation and other electrical systems to electromagnetic interference (EMI). EMI is defined by the American National Standards Institute as any electromagnetic disturbance which interrupts, obstructs or otherwise degrades or limits the effective performance of electronics/electrical equipment. It can be induced intentionally, as in forms of electronic warfare, or unintentionally, as a result of spurious emissions and responses, such as high tension line leakage. Additionally, EMI may be caused by atmospheric phenomena, such as lightning and precipitation static and non-telecommunication equipment, such as vehicles and industrial machinery.

5.3 Accident History

The Operations Officer at NAS Jacksonville keeps extensive records on the incidence of military aircraft accidents. If necessary, this information can be used to impose stricter than normal accident potential zone criteria within the AICUZ planning area. Only two accidents involving military aircraft have occurred at NAS Jacksonville since the 1978 AICUZ. In April 1983, a C-131 crashed near the air station. In September 2005, a S-3B crashed on approach, killing two crewmembers.

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Accident information regarding aircraft operations at John Towers Field and OLF Whitehouse was obtained from NAS Jacksonville Air Operations.

5.4 Accident Potential Zones

The accident potential concept describes the probable impact area if an accident were to occur and not the probability of an accident occurring. APZs are based upon the review of historical accident and operations data throughout the military, and the application of reasonable margins of safety within those areas. General guidance regarding the delineation of APZs is outlined in OPNAVINST 11010.36B, Section 3.

5.4.1 Fixed-Wing Aircraft

APZs are unique to military airfields. As early as the 1950s, a Presidential Commission determined that, to protect airfield operations from obstructions, an area “free and clear of obstructions” should be set aside at the end of a runway. In the early 1970s, recognizing the need to identify areas of accident potential, the military conducted a tri-service investigation of fixed-wing aircraft accidents occurring near military airfields. This study showed that most mishaps occur on or

near the runway or along the extended centerline of the runway, diminishing in likelihood with distance.

While the possibilities of an aircraft mishap are remote, the development of APZs gives local planners a tool to promote development compatible with airfield operations. APZs are not predictors of aircraft mishaps. Instead, they identify areas where a mishap is likely to occur if one should occur. DoD fixed-wing runways are separated into two classes for the purpose of defining accident potential areas - Class A and Class B. Both the primary and crosswind runways at John Towers Field and OLF Whitehouse are Class B.

The Navy recognizes three APZs for Class B Runways: the Clear Zone, APZ I, and APZ II, which are defined as follows:

- **Clear Zone.** The trapezoidal area lying immediately beyond the end of the runway and outward along the extended runway centerline for a distance of 3,000 feet. For Navy installations, the dimensions are 1,500 feet in width at the runway threshold and 2,284 feet in width at its outer edge. The Clear Zone is required for all active runway ends and represents the highest potential for aircraft accidents.
- **APZ I.** The rectangular area beyond the Clear Zone, which still has a measurable potential for aircraft accidents relative to the Clear Zone. This zone is typically provided under flight tracks that experience 5,000 or more annual operations. APZ I is typically 3,000 feet in width by 5,000 feet in length, and may be either rectangular or curved to conform to the shape of the predominant flight track.

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- **APZ II.** The rectangular area beyond the APZ I (or Clear Zone if APZ I is not used) which has a measurable potential for aircraft accidents relative to APZ I or the Clear Zone. APZ II is provided whenever an APZ I is required. The dimension of this zone is typically 3,000 feet in width by 7,000 feet in length and as with APZ I may be curved to correspond with the predominant flight track.

Figures 5-3 and 5-4 depict APZs for John Towers Field and OLF Whitehouse, respectively, as determined by runway usage and flight track data found in Section 3 "Aircraft Operations." While there are Clear Zones established for all runways in accordance with OPNAVINST 11020.36B, APZ I and APZ II were established only for those flight tracks or combinations of closely aligned flight tracks which are projected to experience 5,000 or more operations.

OPNAVINST 11010.36B allows modification of APZ I and APZ II at air stations, OLFs and auxiliary landing fields under the following circumstances: 1) to align the zones to follow the projections of the aircraft flight track on the ground 2) to adjust the length of the APZ where the flight track departs the runway centerline prior to crossing the Clear Zone 3) to adjust the length of the APZ where the flight track passes through the side of the Clear Zone 4) where multiple flight

tracks exist, cross the runway centerline and are in excess of 5,000 operations 5) where unusual conditions exist. In the case of FCLPs, APZ II may be extended to form a closed-loop pattern encompassing the aircraft flight pattern beyond APZ I. At OLF Whitehouse, APZ II was modified in this manner to reflect a closed loop for the entire pattern.

5.4.2 Helicopters

The DoD provides separate guidance for rotary-wing aircraft (helicopters) for the purpose of defining accident potential areas. The guidelines are as follows:

- **Clear Zone.** The take-off safety zone for VFR rotary-wing facilities shall be used as the clear zone. The take-off safety zone is that area under the VFR approach-departure surface until that surface is 50 feet above the established landing area elevation.
- **APZ I.** An area beyond the Clear Zone for the remainder of the approach-departure zone, which is defined as the area under the VFR approach/departure surface until that surface is 150 feet above the established landing area elevation,
- **APZ II.** Normally not applied to helicopter flight paths unless the local accident history indicates the need for additional protection.

Figure 5-3 includes the APZs for the helipads and Runway 14/32 at NAS Jacksonville. Clear Zones are established for all helicopter runways and pads, regardless of number of annual operations. APZ I is provided only for the VFR helipads, due to extensive IFR primary surface area. The APZs for helicopters are encompassed by the APZs for fixed-wing aircraft, with the exception of helipad 2, which lies outside the primary Surface of Runway 09/27.

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6 AICUZ

6.1 AICUZ Footprint

The AICUZ footprint is a combination of the modeled noise contours and APZs. Figures 6-1 and 6-2 show the composite AICUZ footprint for John Towers Field and OLF Whitehouse, respectively.

6.2 Land Use Compatibility in Noise Zones

In conjunction with the analysis of noise exposure and anticipated community response, a designation of land uses compatible with the various noise zones has been made. The compatibility of a particular land use with different levels of sound is a function of the sensitivity to noise of the various human activities that occur in that land use. The compatibility of a residential land use in an area, for example, depends upon the sensitivity to sound of a variety of human activities such as sleeping, eating, and casual conversation.

The federal government has developed guidelines for land uses that are acceptable within noise exposure zones. These guidelines are contained in the Federal Interagency Committee on Urban Noise “Guidelines for Considering Noise in Land Use Planning and Control” (June 1980). This document is used by the DoD, Department of Transportation, Environmental Protection Agency, Department of Housing and Urban Development (HUD), and Department of Veterans Affairs (VA). Table 6-1 shows the land uses best suited in various noise zones. This table is derived from OPNAVINST 11010.36B, and can be used to identify the incompatibilities of existing and projected land uses in the affected area.

Table 6-1
Suggested Land Use Compatibility in Noise Zones

Land Use		Suggested Land Use Compatibility						
		Noise Zone 1 (DNL or CNEL)		Noise Zone 2 (DNL or CNEL)		Noise Zone 3 (DNL or CNEL)		
SLUCM NO	LAND USE NAME	< 55	55 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85+
10 Residential								
11	Household Units	Y	Y ¹	N ¹	N ¹	N	N	N
11.11	Single units: detached	Y	Y ¹	N ¹	N ¹	N	N	N
11.12	Single units: semidetached	Y	Y ¹	N ¹	N ¹	N	N	N
11.13	Single units: attached row	Y	Y ¹	N ¹	N ¹	N	N	N
11.21	Two units: side-by-side	Y	Y ¹	N ¹	N ¹	N	N	N
11.22	Two units: one above the other	Y	Y ¹	N ¹	N ¹	N	N	N
11.31	Apartments: walk-up	Y	Y ¹	N ¹	N ¹	N	N	N

11.32	Apartment: elevator	Y	Y ¹	N ¹	N ¹	N	N	N
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**Table 6-1
Suggested Land Use Compatibility in Noise Zones**

Land Use		Suggested Land Use Compatibility						
		Noise Zone 1 (DNL or CNEL)		Noise Zone 2 (DNL or CNEL)		Noise Zone 3 (DNL or CNEL)		
SLUCM NO	LAND USE NAME	< 55	55 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85+
12	Group quarters	Y	Y ¹	N ¹	N ¹	N	N	N
13	Residential Hotels	Y	Y ¹	N ¹	N ¹	N	N	N
14	Mobile home parks or courts	Y	Y ¹	N	N	N	N	N
15	Transient lodgings	Y	Y ¹	N ¹	N ¹	N ¹	N	N
16	Other residential	Y	Y ¹	N ¹	N ¹	N	N	N
20 Manufacturing								
21	Food and kindred products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
22	Textile mill products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
23	Apparel and other finished products; products made from fabrics, leather and similar materials; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
24	Lumber and wood products (except furniture); manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
25	Furniture and fixtures; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
26	Paper and allied products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
27	Printing, publishing, and allied industries	Y	Y	Y	Y ²	Y ³	Y ⁴	N
28	Chemicals and allied products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
29	Petroleum refining and related industries	Y	Y	Y	Y ²	Y ³	Y ⁴	N
30 Manufacturing (continued)								
31	Rubber and misc. plastic products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
32	Stone, clay and glass products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N

33	Primary metal products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
34	Fabricated metal products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
35	Professional scientific, and controlling instruments; photographic and optical goods; watches and clocks	Y	Y	Y	25	30	N	N
39	Miscellaneous manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
40 Transportation, Communication and Utilities								
41	Railroad, rapid rail transit, and street railway transportation	Y	Y	Y	Y ²	Y ³	Y ⁴	N
42	Motor vehicle transportation	Y	Y	Y	Y ²	Y ³	Y ⁴	N
43	Aircraft transportation	Y	Y	Y	Y ²	Y ³	Y ⁴	N
44	Marine craft transportation	Y	Y	Y	Y ²	Y ³	Y ⁴	N
45	Highway and street right-of-way	Y	Y	Y	Y ²	Y ³	Y ⁴	N
46	Automobile parking	Y	Y	Y	Y ²	Y ³	Y ⁴	N
47	Communication	Y	Y	Y	25 ⁵	30 ⁵	N	N
48	Utilities	Y	Y	Y	Y ²	Y ³	Y ⁴	N
49	Other transportation, communication and utilities	Y	Y	Y	25 ⁵	30 ⁵	N	N

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**Table 6-1
Suggested Land Use Compatibility in Noise Zones**

Land Use		Suggested Land Use Compatibility						
		Noise Zone 1 (DNL or CNEL)		Noise Zone 2 (DNL or CNEL)		Noise Zone 3 (DNL or CNEL)		
SLUCM NO	LAND USE NAME	< 55	55 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85+
50 Trade								
51	Wholesale trade	Y	Y	Y	Y ²	Y ³	Y ⁴	N
52	Retail trade – building materials, hardware and farm equipment	Y	Y	Y	Y ²	Y ³	Y ⁴	N
53	Retail trade – shopping centers	Y	Y	Y	25	30	N	N
54	Retail trade - food	Y	Y	Y	25	30	N	N
55	Retail trade – automotive, marine craft, aircraft and accessories	Y	Y	Y	25	30	N	N

56	Retail trade – apparel and accessories	Y	Y	Y	25	30	N	N
57	Retail trade – furniture, home, furnishings and equipment	Y	Y	Y	25	30	N	N
58	Retail trade – eating and drinking establishments	Y	Y	Y	25	30	N	N
59	Other retail trade	Y	Y	Y	25	30	N	N
60 Services								
61	Finance, insurance and real estate services	Y	Y	Y	25	30	N	N
62	Personal services	Y	Y	Y	25	30	N	N
62.4	Cemeteries	Y	Y	Y	Y ²	Y ³	Y ^{4,11}	Y ^{6,11}
63	Business services	Y	Y	Y	25	30	N	N
63.7	Warehousing and storage	Y	Y	Y	Y ²	Y ³	Y ⁴	N
64	Repair Services	Y	Y	Y	Y ²	Y ³	Y ⁴	N
65	Professional services	Y	Y	Y	25	30	N	N
65.1	Hospitals, other medical facilities	Y	Y ¹	25	30	N	N	N
65.16	Nursing Homes	Y	Y	N ¹	N ¹	N	N	N
66	Contract construction services	Y	Y	Y	25	30	N	N
67	Government Services	Y	Y ¹	Y ¹	25	30	N	N
68	Educational services	Y	Y ¹	25	30	N	N	N
69	Miscellaneous	Y	Y	Y	25	30	N	N
70 Cultural, Entertainment and Recreational								
71	Cultural activities (and churches)	Y	Y ¹	25	30	N	N	N
71.2	Nature exhibits	Y	Y ¹	Y ¹	N	N	N	N
72	Public assembly	Y	Y ¹	Y	N	N	N	N
72.1	Auditoriums, concert halls	Y	Y	25	30	N	N	N
72.11	Outdoor music shells, amphitheaters	Y	Y ¹	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	Y	Y	Y ⁷	Y ⁷	N	N	N
73	Amusements	Y	Y	Y	Y	N	N	N
74	Recreational activities (include golf courses, riding stables, water rec.)	Y	Y ¹	Y ¹	25	30	N	N
75	Resorts and group camps	Y	Y ¹	Y ¹	Y ¹	N	N	N
76	Parks	Y	Y ¹	Y ¹	Y ¹	N	N	N
79	Other cultural, entertainment and	Y	Y ¹	Y ¹	Y ¹	N	N	N

	recreation							
80 Resource Production and Extraction								
81	Agriculture (except live stock)	Y	Y	Y ⁸	Y ⁹	Y ¹⁰	Y ^{10,11}	Y ^{10,11}
81.5	Livestock farming	Y	Y	Y ⁸	Y ⁹	N	N	N
81.7	Animal breeding	Y	Y	Y ⁸	Y ⁹	N	N	N
82	Agriculture related activities	Y	Y	Y ⁸	Y ⁹	Y ¹⁰	Y ^{10,11}	Y ^{10,11}

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**Table 6-1
Suggested Land Use Compatibility in Noise Zones**

Land Use		Suggested Land Use Compatibility						
		Noise Zone 1 (DNL or CNEL)		Noise Zone 2 (DNL or CNEL)		Noise Zone 3 (DNL or CNEL)		
SLUCM NO	LAND USE NAME	< 55	55 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85+
83	Forestry Activities	Y	Y	Y ⁸	Y ⁹	Y ¹⁰	Y ^{10,11}	Y ^{10,11}
84	Fishing Activities	Y	Y	Y	Y	Y	Y	Y
85	Mining Activities	Y	Y	Y	Y	Y	Y	Y
89	Other resource production or extraction	Y	Y	Y	Y	Y	Y	Y

Notes:

- ¹ a) Although local conditions regarding the need for housing may require residential use in these zones, residential use is discouraged in DNL 65-70 and strongly discouraged in DNL 70-75. The absence of viable alternative development options should be determined and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the residential use would not be met if development were prohibited in these zones.
- b) Where the community determines that these uses must be allowed, measures to achieve and outdoor to indoor Noise Level Reduction (NLR) of at least 25 decibels (dB) in DNL 65-70 and NLR of 30 dB in DNL 70-75 should be incorporated into building codes and be in individual approvals; for transient housing a NLR of at least 35 dB should be incorporated in DNL 75-80.
- c) Normal permanent construction can be expected to provide a NLR of 20 dB, thus the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation, upgraded Sound Transmission Class (STC) ratings in windows and doors and closed windows year round. Additional consideration should be given to modifying NLR levels based on peak noise levels or vibrations.
- d) NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, design and use of berms and barriers can help mitigate outdoor noise exposure NLR particularly from ground level sources. Measures that reduce noise at a site should be used wherever practical in preference to measures that only protect interior spaces.
- ² Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- ³ Measures to achieve NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- ⁴ Measures to achieve NLR of 35 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- ⁵ If project or proposed development is noise sensitive, use indicated NLR; if not, land use is compatible without NLR. ⁶ No buildings.
- ⁷ Land use compatible provided special sound reinforcement systems are installed.
- ⁸ Residential buildings require a NLR of 25
- ⁹ Residential buildings require a NLR of 30.
- ¹⁰ Residential buildings not permitted.
- ¹¹ Land use not recommended, but if community decides use is necessary, hearing protection devices should be worn.

Key:

25, 30, or 35 = The numbers refer to Noise Level Reduction levels. Land Use and related structures generally compatible however, measures to achieve NLR of 25, 30 or 35 must be incorporated into design and construction of structures. However, measures to achieve an overall noise reduction do not necessarily solve noise difficulties outside the structure and additional evaluation is warranted. Also, see notes indicated by superscripts where they appear with one of these numbers.

CNEL = Community Noise Equivalent Level (Normally within a very small decibel difference of DNL)

DNL = Day-Night Average Sound Level.

N = No. Land Use and related structures are not compatible and should be prohibited.

NLR = Noise Level Reduction. Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

N* = No with exceptions. The land use and related structures are generally incompatible. However, see notes indicated by the superscript.

SLUCM = Standard Land Use Coding Manual, U.S. Department of Transportation.

Y = Yes. Land Use and related structures compatible without restrictions.

Y* = Yes with Restrictions. The land use and related structures are generally compatible. However, see note(s) indicated by the superscript.

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Figure 6-1

6.3 Land Use Compatibility in Accident Potential Zones

The compatibility of land uses in accident potential zones is primarily a function of type and intensity of use - in terms of the number of people potentially exposed. Those uses more compatible in an APZ are those that do not result in significant population concentrations. In the Clear Zone, only uses free of obstruction are desirable; in APZ I, uses which do not have a high concentration of density or activity are acceptable although there may be some above-ground improvements; in APZ II, the risk of exposure to accidents is less, allowing a greater range of compatible activities.

Table 6-2 can be used to identify, the incompatibilities of existing and projected land uses in the affected area. The degree to which each of the specified uses is compatible is determined by an evaluation of the characteristics of the use, including dwelling unit and population density, and ground coverage.

Table 6-2

Suggested Land Use Compatibility in Accident Potential Zones ¹

SLUCM NO.	Land Use Name	Recommendation			
		Clear Zone	APZ-I	APZ-II	Density
10	Residential				
11	Household Units				
11.11	Single units: detached	N	N	Y ²	Maximum density of 1-2 Du/Ac
11.12	Single units: semidetached	N	N	N	
11.13	Single units: attached row	N	N	N	
11.21	Two units: side-by-side	N	N	N	
11.22	Two units: one above the other	N	N	N	
11.31	Apartments: walk-up	N	N	N	
11.32	Apartment: elevator	N	N	N	
12	Group quarters	N	N	N	
13	Residential Hotels	N	N	N	
14	Mobile home parks or courts	N	N	N	
15	Transient lodgings	N	N	N	
16	Other residential	N	N	N	
20	Manufacturing ³				
21	Food and kindred products; manufacturing	N	N	Y	Maximum FAR 0.56
22	Textile mill products; manufacturing	N	N	Y	Same as above

23	Apparel and other finished products; products made from fabrics, leather and similar materials; manufacturing	N	N	N	
24	Lumber and wood products (except furniture); manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I and 0.56 in APZ II
25	Furniture and fixtures; manufacturing	N	Y	Y	Same as above
26	Paper and allied products; manufacturing	N	Y	Y	Same as above
27	Printing, publishing, and allied industries	N	Y	Y	Same as above
28	Chemicals and allied products; manufacturing	N	N	N	
29	Petroleum refining and related industries	N	N	N	

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Table 6-2

Suggested Land Use Compatibility in Accident Potential Zones ¹

SLUCM NO.	Land Use Name	Recommendation			
		Clear Zone	APZ-I	APZ-II	Density
30	Manufacturing ³ (continued)				
31	Rubber and misc. plastic products; manufacturing	N	N	N	
32	Stone, clay and glass products; manufacturing	N	N	Y	Maximum FAR 0.56
33	Primary metal products; manufacturing	N	N	Y	Same as above
34	Fabricated metal products; manufacturing	N	N	Y	Same as above
35	Professional scientific, and controlling instrument; photographic and optical goods; watches and clocks	N	N	N	
39	Miscellaneous manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I and 0.56 in APZ II
40	Transportation, communication and utilities ⁴				See Note 3 below.
41	Railroad, rapid rail transit, and street railway transportation	N	Y ⁵	Y	Same as above.
42	Motor vehicle transportation	N	Y ⁵	Y	Same as above
43	Aircraft transportation	N	Y ⁵	Y	Same as above
44	Marine craft transportation	N	Y ⁵	Y	Same as above
45	Highway and street right-of-way	N	Y ⁵	Y	Same as above
46	Auto parking	N	Y ⁵	Y	Same as above
47	Communication	N	Y ⁵	Y	Same as above

48	Utilities	N	Y ⁵	Y	Same as above
485	Solid waste disposal (Landfills, incineration, etc.)	N	N	N	
49	Other transport, comm. and utilities	N	Y ⁵	Y	See Note 3 below
50	Trade				
51	Wholesale trade	N	Y	Y	Maximum FAR of 0.28 in APZ I. and .56 in APZ II.
52	Retail trade – building materials, hardware and farm equipment	N	Y	Y	Maximum FAR of 0.14 in APZ I and 0.28 in APZ II
53	Retail trade – shopping centers	N	N	Y	Maximum FAR of 0.22.
54	Retail trade - food	N	N	Y	Maximum FAR of 0.24
55	Retail trade – automotive, marine craft, aircraft and accessories	N	Y	Y	Maximum FAR of 0.14 in APZ I and 0.28 in APZ II
56	Retail trade – apparel and accessories	N	N	Y	Maximum FAR 0.28
57	Retail trade – furniture, home, furnishings and equipment	N	N	Y	Same as above
58	Retail trade – eating and drinking establishments	N	N	N	
59	Other retail trade	N	N	Y	Maximum FAR of 0.22
60	Services⁶				
61	Finance, insurance and real estate services	N	N	Y	Maximum FAR of 0.22 for "General Office/Office park"
62	Personal services	N	N	Y	Office uses only. Maximum FAR of 0.22.
62.4	Cemeteries	N	Y ⁷	Y ⁷	
63	Business services (credit reporting; mail, stenographic, reproduction; advertising)	N	N	Y	Max. FAR of 0.22 in APZ II
63.7	Warehousing and storage services	N	Y	Y	Max. FAR 1.0 APZ I; 2.0 in APZ II
64	Repair Services	N	Y	Y	Max. FAR of 0.11 APZ I; 0.22 in APZ II
65	Professional services	N	N	Y	Max. FAR of 0.22
65.1	Hospitals, nursing homes	N	N	N	
65.1	Other medical facilities	N	N	N	

Table 6-2

Suggested Land Use Compatibility in Accident Potential Zones ¹

SLUCM	Land Use Name	Recommendation
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NO.		Clear Zone	APZ-I	APZ-II	Density
66	Contract construction services	N	Y	Y	Max. FAR of 0.11 APZ I; 0.22 in APZ II
67	Government Services	N	N	Y	Max FAR of 0.24
68	Educational services	N	N	N	
69	Miscellaneous	N	N	Y	Max. FAR of 0.22
70	Cultural, entertainment and recreational				
71	Cultural activities	N	N	N	
71.2	Nature exhibits	N	Y ⁸	Y ⁸	
72	Public assembly	N	N	N	
72.1	Auditoriums, concert halls	N	N	N	
72.11	Outdoor music shells, amphitheaters	N	N	N	
72.2	Outdoor sports arenas, spectator sports	N	N	N	
73	Amusements -fairgrounds, miniature golf, driving ranges; amusement parks, etc	N	N	Y	
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y ⁸	Y ⁸	Max. FAR of 0.11 APZ I; 0.22 in APZ II
75	Resorts and group camps	N	N	N	
76	Parks	N	Y ⁸	Y ⁸	Same as 74
79	Other cultural, entertainment and recreation	N	Y ⁸	Y ⁸	Same as 74
80	Resource production and extraction				
81	Agriculture (except live stock)	Y ⁴	Y ⁹	Y ⁹	
81.5, 81.7	Livestock farming and breeding	N	Y ^{9,10}	Y ^{9,10}	
82	Agriculture related activities	N	Y ⁹	Y ⁹	Max FAR of 0.28 APZ I; 0.56 APZ II no activity which produces smoke, glare, or involves explosives
83	Forestry Activities ¹¹	N	Y	Y	Same as Above
84	Fishing Activities ¹²	N ¹²	Y	Y	Same as Above
85	Mining Activities	N	Y	Y	Same as Above
89	Other resource production or extraction	N	Y	Y	Same as Above
90	Other				
91	Undeveloped Land	Y	Y	Y	
93	Water Areas	N ¹³	N ¹³	N ¹³	

Notes:

- ¹ A "Yes" or a "No" designation for compatible land use is to be used only for general comparison. Within each, uses exist where further evaluation may be needed in each category as to whether it is clearly compatible, normally compatible, or not compatible due to the variation of densities of people and structures. In order to assist installations and local governments, general suggestions as to floor/area ratios are provided as a guide to density in some categories. In general, land use restrictions which limit commercial, services, or industrial buildings or structure occupants to 25 per acre in APZ I, and 50 per acre in APZ II are the range of occupancy levels considered to be low density. Outside events should normally be limited to assemblies of not more than 25 people per acre in APZ I, and maximum assemblies of 50 people per acre in APZ II.
- ² The suggested maximum density for detached single-family housing is one to two Du/Ac. In a Planned Unit Development (PUD) of single family detached units where clustered housing development results in large open areas, this density could possibly be increased provided the amount of surface area covered by structures does not exceed 20% of the PUD total area. PUD encourages clustered development that leaves large open areas.
- ³ Other factors to be considered: Labor intensity, structural coverage, explosive characteristics, air-pollution, electronic interference with aircraft, height of structures, and potential glare to pilots.
- ⁴ No structures (except airfield lighting), buildings or aboveground utility/ communications lines should normally be located in Clear Zone areas on or off the installation. The Clear Zone is subject to severe restrictions. See NAVFAC P-80.3 or Tri Service Manual AFM 32-1123(I); TM 5-803-7, NAVFAC P-971 "Airfield and Heliport Planning and Design" dated 1 May 99 for specific design details.
- ⁵ No passenger terminals and no major above ground transmission lines in APZ I.
- ⁶ Low intensity office uses only. Accessory uses such as meeting places, auditoriums, etc. are not recommended. ⁷ No Chapels are allowed within APZ I or APZ II.
- ⁸ Facilities must be low intensity, and provide no tot lots, etc. Facilities such as clubhouses, meeting places, auditoriums,

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Table 6-2

Suggested Land Use Compatibility in Accident Potential Zones ¹

SLUCM NO.	Land Use Name	Recommendation			
		Clear Zone	APZ-I	APZ-II	Density

large classes, etc. are not recommended.

- ⁹ Includes livestock grazing, but excludes feedlots and intensive animal husbandry. Activities that attract concentrations of birds creating a hazard to aircraft operations should be excluded.
- ¹⁰ Includes feedlots and intensive animal husbandry.
- ¹¹ Lumber and timber products removed due to establishment, expansion, or maintenance of Clear Zones will be disposed of in accordance with appropriate DoD Natural Resources Instructions.
- ¹² Controlled hunting and fishing may be permitted for the purpose of wildlife management.
- ¹³ Naturally occurring water features (e.g., rivers, lakes, streams, wetlands) are compatible.

Key:

- Du/Ac = Dwelling units per acre. This metric is customarily used to measure residential densities. FAR = Floor area ratio. A floor area ratio is the ratio between the square feet of floor area of the building and the site area. It is customarily used to measure non-residential intensities.
- N = No. Land use and related structures are not normally compatible and should be prohibited.
- N* = No with exceptions. The land use and related structures are generally incompatible. However, see notes indicated by the superscript.
- SLUCM = Standard Land Use Coding Manual, U.S. Department of Transportation
- Y = Yes. Land use and related structures are normally compatible without restriction.
- Y* = Yes with restrictions. The land use and related structures are generally compatible. However, see notes indicated by the superscript.

6.4 Land Use Suitability in AICUZ

Compatible land use objectives are derived from the suggested land use suitability tables for noise and APZs (Tables 6-1 and 6-2, respectively). To find the recommended suitability of a particular land use for any AICUZ subzone, locate that use on both tables; both tables apply and

where conflicting guidance appears, the more restrictive criteria takes precedence.

6.5 Application of Guidelines

The Federal Land Use Planning Guidelines contained in this report are nationwide in scope. Since many air installations are in urban areas, these guidelines assume an urban environment with higher levels of ambient “background” noise than exists in much of the airfield impact area. These compatibility guidelines are, therefore, often modified at the local government level to address a specific local noise environment.

6.6 Changes in Land Use Compatibility Guidelines

In response to local government requests for detailed land use criteria, the Navy AICUZ guidance OPNAVINST 11010.36B includes a detailed version of the federal land use compatibility standards. “Compatible” and “Non- Compatible,” as well as “Conditionally Compatible” area uses are readily identified. These areas range from specifics on land use to the incorporation of

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architectural techniques and noise dampening products that are to be incorporated into the building upon construction. Also included in the new land use tables are floor area ratios (FARs), or the ratio between the footprint of the structure and the size of the site, and dwelling units per acre (Du/Ac) to aid in the measurement of residential densities.

6.7 Responsibility for Land Use Compatibility

Local government and the Navy have different responsibilities concerning airport land use compatibility. Local government is charged with protecting the health, safety, and welfare of residents. To meet this responsibility, Duval County (the City of Jacksonville) and other local governments have the authority to plan and control land use through zoning. The role of the Navy is to identify potentially affected areas and provide technical assistance, by supplying guidelines that local government can incorporate in its regulatory scheme.

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7 Impact Analysis

7.1 Introduction

This section identifies existing and proposed land use or development incompatibilities within the NAS Jacksonville AICUZ environment. Such analysis is a necessary step in the evolution of recommended strategies and implementation.

7.2 Existing On-station Land Use

The NAS Jacksonville Master Plan (SOUTHNAVFACENGCOM 1988) divides NAS Jacksonville into development zones, ranging from areas of low potential (wetlands) to specialized development potential (air operations, weapons storage, communications antennas, and recreation/open space) to general development potential (industrial, utilities and storage; community support; bachelor and family housing; medical; and recreation). The combination of these zones and the AICUZ footprint are depicted on Figure 7- 1.

The majority of on-station noise and potential accident impacts are contained within land use classifications “Operations” and “Operations Maintenance.” These zones are best suited for flight operations and accompanying support activities because of crash safety restrictions and noise characteristics.

Other land uses, such as “Supply,” “Training,” and “Ordnance,” are located south of the airfield, are encumbered on the northern edge by the 70-DNL contour, and contain existing large scale industrial development. Expansion in this area is limited to the industrial, storage, and utility uses currently in this zone. Further south, land uses such as “Community Facilities,” “Bachelor Housing” and “Administrative” use areas are marginally affected by the 65-DNL contour and are suited for a variety of uses, including station support, training, bachelor housing, and recreational activities. The renovation of the family housing area off Yorktown Avenue included new noise attenuation measures. This housing complex lies within the 65- to 70-DNL contour. Residential land uses are considered compatible land uses in this contour as long as a measure of noise attenuation is implemented.

7.3 Political Jurisdictions

John Towers Field and OLF Whitehouse are located in Jacksonville-Duval County, although the imaginary surfaces extend into neighboring Clay, Baker, and Nassau Counties. Within Duval

Figure 7-1

County, the preparation, update and enforcement of land use regulations are delegated to the Planning and Development Department and Zoning Department.

The City of Jacksonville Zoning Code contains an Airport District Zoning Ordinance that regulates land uses located within AICUZ areas. Table 656-3 of the Zoning Ordinance details allowable land uses, as defined by the zoning code, within airport environ areas in the City of Jacksonville; this table corresponds loosely to Tables 6-1 and 6-2. Allowable land uses in the City's table are more lenient than those suggested in OPNAVINST 11010.36B, particularly within the residential land use category. For example, the City allows conditional approval of single-family homes in APZ I and APZ II, as well as in Noise Zones 2 and 3. Mobile homes are conditionally approved in APZ I and APZ II. The City of Jacksonville also lacks the number of levels or sub categories in which the Navy further details compatible land use and desired densities. The ordinance is currently in the process of being updated (see Section 8.1.3).

7.4 Proposed Land Use within the AICUZ Footprint

The City of Jacksonville's Comprehensive Plan guides future development in Duval County. The plan is composed of a set of elements mandated by the State's 1985 Growth Management Act, which addresses areas critical to the future development of the county.

The Future Land Use Element and Future Land Use Map of the Jacksonville-Duval County Comprehensive Plan divide land uses into major categories: residential, commercial, industrial, recreation and open space, historic resources, conservation, agriculture, wetlands and water. These major categories are further divided into subcategories (e.g., the residential category is subdivided into rural, low-density, medium-density, and high-density residential categories). To further compatible use of developable lands in and around the vicinity of OLF Whitehouse, the City of Jacksonville has recently formed a steering committee that included a NAS Jacksonville representative to assist in future land use planning in areas both NW and SW of NAS Jacksonville.

7.4.1 John Towers Field

Off-base Land Use Compatibility

Figure 7-2 depicts land uses within the NAS Jacksonville composite AICUZ footprint. The area north of NAS Jacksonville consists of rural and low density residential uses; south of the air station are low- and medium-density residential areas and some commercial areas. Commercial uses are also delineated along the west side of U.S. 17 (Roosevelt Boulevard), as well as conservation, public facilities and low density residential. East of NAS Jacksonville, across the St. Johns River, the land use is predominately residential.

Figure 7-2

Areas of incompatible land use within noise contours and APZs were identified using Figure 7-2 and Tables 6-1 and 6-2, and are shown on Figures 7-3 and 7-4, respectively. A “finger” of the 75-DNL contour extends off base, over U.S. 17 and commercial land uses, into an area owned by NAS Jacksonville and utilized by the City of Jacksonville as a park (Westside Regional Park). The 65- and 70-DNL contours overlay residential, office and conservation land uses. Although these uses (with the exception of the park) are compatible with Table 6-1, methods to achieve indoor noise level reduction are recommended.

The Clear Zone, APZ I, and the majority of APZ II beyond the threshold of Runway 27 fall mainly over base property and the St. Johns River. A portion of APZ II overlays a low-density residential neighborhood on the east side of the river; this land use is recommended as compatible only if there is a maximum density of one to two dwelling units per acre and some level of noise reduction is achieved.

The Clear Zone beyond the threshold of Runway 09 extends off base, encumbering U.S. 17 and commercial land uses, which are conditionally compatible with Table 6-2. APZ I and APZ II extend over a conservation area (Westside Regional Park) and a low- to medium-density residential neighborhood to the northwest and southwest of the runway. These are identified as land uses which also are not compatible with Table 6-2.

The Clear Zone beyond the threshold of Runway 32 overlays base property and the St. Johns River. The Clear Zone beyond the end of Runway 14 also overlays base property and the St. Johns River.

7.4.2 OLF Whitehouse

Figure 7-5 depicts land uses within the OLF Whitehouse composite AICUZ footprint. Land uses to the north, south and west of the airfield are predominately agriculture and residential. The land use to the east of the fence line is designated light industrial, although that land is currently undeveloped. Farther east of the light industrial parcel is low-density residential.

Land use compatibilities for noise contours and APZs in the vicinity of OLF Whitehouse were identified using Figure 7-5 and Tables 6-1 and 6-2, and are shown on Figures 7-6 and 7-7, respectively. While the majority of the noise contours lie within base property; a portion of the 75- to 85-DNL contours extend beyond the boundary of OLF Whitehouse to the southeast and encumber agriculture, conservation light industrial, as well as some residential land uses. Residential land uses within these noise zones are incompatible uses. With increased development pressures near OLF Whitehouse, further encroachment on the airfield in the future is likely unless proactive steps by the community, as well as the Navy, are taken.

The Clear Zone, APZ I, and the majority of APZ II extending beyond the threshold of Runway 11 fall within agricultural land use or base property, which are compatible with AICUZ regulations shown in Table 6-2. However, beyond the end of Runway 29, that portion of the Clear Zone not located within base property lies within the light industrial land use, which is incompatible with the table. APZ I and APZ II also overlay incompatible land uses of light industrial and low density residential land uses.