BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION AFI 32-7063

18 DECEMBER 2015

Civil Engineering

AIR INSTALLATIONS COMPATIBLE USE ZONES PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

OPR: HQ USAF/A4CIP

Certified by: HQ USAF/A4C
(Brig Gen Timothy Green)

Supersedes: AFI32-7063, 13 September 2005

Pages: 70

This instruction implements: 1) the most recent version of the Department of Defense Instruction (DoDI) 4165.57, *Air Installations Compatible Use Zones* by identifying the requirements to implement, and maintain the Air Force Air Installations Compatible Use Zones (AICUZ) program, and 2) Air Force Policy Directive (AFPD) 90-20, *Encroachment Management,* by identifying requirements for compatible land use and development to preserve operational capability. It applies to all Air Force (AF) installations with active runways located in the United States and its territories, including government-owned contractor-operated facilities. Major Commands (MAJCOMs) with overseas installations shall apply the AICUZ program recommended land use criteria for on-base planning purposes only, subject to the requirements of any applicable host country or basing agreements. This AFI may be supplemented at any level, but all supplements are routed through the Office of Primary Responsibility for coordination prior to certification and approval.

This instruction interfaces with Department of Defense Directive (DoDD) 3200.15, "*Sustaining Access to the Live Training and Test Domain*." It also interfaces with AF Instruction (AFI) 32-7062, *Base Comprehensive Planning*; and AFI 90-2001, *Encroachment Management*, which provides comprehensive encroachment management guidance for the AF Encroachment Management (AFEM) Program. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of IAW the Air Force Records Disposition Schedule (RDS) in the Air Force Records Information Management System (AFRIMS). The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, Table 1.1 for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver

approval authority or alternately, to the Publication OPR for non-tiered compliance items. Refer recommended changes and questions about this publication to the OPR listed above using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate chain of command.

SUMMARY OF CHANGES

This document has been substantially revised and requires a complete review. Major changes include updated recommended land use tables; incorporation of Floor Area Ratios (FAR) for Accident Potential Zones (APZs); development of 5-10 year planning contours; creation of a Hazards to Aircraft Flight Zone (HAFZ), and guidance on evaluating the need to define a line-of-sight/look angle zone for evaluating compatibility related to radars, radar/radio relay sights, and telemetry equipment.

Chapter 1

INTRODUCTION

1.1. Background. The procedures in this instruction are essential to develop, implement and maintain a compatible land use program in compliance with all federal, state, and local requirements.

1.1.1. The Office of Management and Budget, Federal Management Circular (FMC) 75-2 *Compatible Land Uses at Federal Airfields* requires federal agencies operating airfields to work with local, regional, state and other federal officials on compatible land use planning. It requires other federal agencies to ensure their programs foster compatible use according to plans (such as AICUZ) developed by the federal agency operating the airfield.

1.1.2. DoDI 4165.57, May 2, 2011, with change 1, 12 March 2015, and requires the military departments to develop, implement, and maintain an AICUZ program for each installation, and requires military departments to develop and update, as necessary, AICUZ studies that contain an analysis of land use compatibility problems and potential solutions. The DODI:

1.1.2.1. Establishes Department of Defense (DoD) policy for achieving compatible use of lands in the vicinity of military airfields to protect public health, safety and welfare without degrading flight safety and mission requirements including:

1.1.2.1.1. Promoting long-term compatible land use in the vicinity of air installations through State and local government adoption of compatible land use regulations in local land use planning and control processes or, when necessary, acquisition of development rights or conservation easements using existing acquisition authorities or through partnering with communities or other eligible entities.

1.1.2.1.2. Limiting acquisition of real property interests to the minimum necessary and

1.1.2.1.3. Promoting education and engagement with communities affected by military operations.

1.1.2.2. Defines the procedures DoD Components shall take to address land use compatibility where:

1.1.2.2.1. Aircraft operations may affect public health, safety, and/or welfare

1.1.2.2.2. Certain uses or structures may obstruct the airspace, attract birds, create electromagnetic or thermal interference, or produce dust, smoke, steam, or light emissions that could impact a pilot's vision, or otherwise be hazardous to or incompatible with aircraft operations.

1.1.2.3. Defines areas of higher risk from aircraft accidents and high noise exposure and provides recommended land uses

1.2. Concept.

1.2.1. The concept of compatible use applies to both land and water bodies within the installation complex and is evaluated from two perspectives. The first is evaluating how AF activities could affect the use proposed for the land or water areas, and the second is whether

the use of land or water areas could either directly or indirectly affect Air Force activities. The program emphasizes the development of long-term solutions to achieve compatibility rather than achieving it on a case by case basis. This instruction and the associated handbook (AFH 32-7063, AICUZ Program Managers Guide) provide a foundation for engaging with the local land use planning processes and evaluating compatible land uses.

1.2.2. This instruction is not intended to duplicate federal, state, or local requirements, but is intended to provide MAJCOMs and installations guidance for achieving compatible development in accordance with AFPD 90-20.

1.2.3. MAJCOMs may provide additional implementing guidance in their supplemental publication(s) to this instruction.

1.2.4. The AICUZ program objectives are to:

1.2.4.1. Assist local, regional, state and federal officials in protecting the public health, safety, and welfare by promoting long-term land use compatible with military operations.

1.2.4.2. Protect AF operational capability from the effects of land and water use which are incompatible with AF operations.

1.2.5. Key elements of this program include proactive engagement and establishing strong long-lasting relationships with local communities and governments and other agencies to foster a better understanding of installation operations and procedures, and of local community needs and concerns.

1.3. Applicability of AICUZ program to Joint Use Airfields.

1.3.1. Civilian Flight Operations at Military Airfields. AICUZ program requirements apply to Air Force-owned runways, taxiways, and other necessary facilities where non-military aircraft operations are conducted. The AICUZ program manager will include both military and non-military operations in the AICUZ study **(T-1)**. At locations where the Air Force owns a runway(s) and a civil authority either owns, or has leased a runway(s) from the Air Force, the Air Force will prepare an AICUZ study that includes both civilian and military aircraft operations.

1.3.2. **Military Flight Operations at Civil Airfields.** At Air National Guard and Air Force Reserve installations located on civilian airfields that do not participate in the FAA's Part 150 program, the Base Civil Engineer will provide data on military aircraft operations to the airfield operator with a request that they prepare an AICUZ study or equivalent **(T-2)**. If the airfield operator does not agree, the installation turns over all AICUZ related materials to the airfield operator and refers all land use compatibility matters to the airfield operator.

1.3.2.1. At Air National Guard or Air Force Reserve installations located on civilian airfields that do participate in the FAA's Part 150 program, the Base Civil Engineer will provide the airport authority the necessary operational data to allow the airport to update their Noise Exposure Map as needed **(T-2)**.

1.3.2.2. When an active duty Air Force base conducts a significant number of flight operations at a civil airport, but does not base the aircraft at that location, such as a site serving as an auxiliary airfield, the host base of the flying units using the airport will prepare an AICUZ study and provide it to the airfield operator for release **(T-2)**. The AICUZ program manager at the installation that is using the civilian airfield should assist

the airport authority on all land use compatibility issues that may impact military operations at that airfield.

1.4. Relationship of the AICUZ program and the Air Force Encroachment Management (AFEM) Program. The AICUZ program is one of the foundation programs that the AFEM program builds upon. The AICUZ program focuses on compatible development issues near the airfield and provides land use recommendations for communities to incorporate into their planning regulations in order to prevent encroachment. Building on programs such as AICUZ and other existing AF programs, the AFEM program framework allows the integration of issues spanning thirteen encroachment and sustainment challenges (including compatible development) into an integrated action plan for the installation to implement. The AFEM program does not replace the AICUZ program.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Deputy Assistant Secretary for Installations, (SAF/IEI) will:

2.1.1. Provide policy oversight for the AICUZ program.

2.1.2. Advocate for resources within the AF corporate structure.

2.2. Deputy General Counsel of the Air Force for Installations, Energy, and Environment (SAF/GCN) will provide legal counsel and oversight for all aspects of the compatible use and real property acquisition and disposal policies and procedures in this instruction.

2.3. Air Force Director of Civil Engineers (HQ USAF/A4C) will:

2.3.1. Serve as the Office of Primary Responsibility (OPR) of the AICUZ program by publishing and interpreting guidance on the program.

2.3.2. Oversee AICUZ program implementation.

2.3.3. Monitor policies, plans, and programs of other federal agencies which may affect the use of land near military airfields.

2.3.4. Engage with other federal agencies, state, and national offices of non-governmental organizations, and other stakeholders as required to support the AICUZ program.

2.3.5. Maintain a library of current and historical AICUZ studies to be used in support of basing, planning, civic leader visits, trip books and litigation.

2.3.6. Advocate for resources required to support the AICUZ program.

2.3.7. Prepare responses to and coordinate on responses to Congressional inquiries on compatible use issues associated with the airfield environment, IAW AFI 90-401, *Relations with Congress*.

2.3.8. Support administrative hearings on compatibility issues by providing staff to testify on Air Force AICUZ policy and guidance.

2.4. Environmental Law and Litigation Division (AFLOA/JACE) will:

2.4.1. Provide legal advice and reach back support on all aspects of the AICUZ program to all levels of the Air Force **(T-1)**.

2.4.2. Provide legal advice in support of monitoring and reviewing current and proposed federal and state legislation and regulations associated with land use and land development **(T-1)**.

2.4.3. Provide legal advice on region-specific matters relating to land use compatibility issues or actions affecting multiple installations from different MAJCOMs through AFLOA/JACE Regional Counsels **(T-1)**.

2.4.4. Review proposed installation line of sight/radar look angle zones and the proposed compatible land use recommendations **(T-1)**.

2.4.5. Provide support related to AICUZ litigation matters, including administrative hearings and judicial proceedings **(T-1)**.

2.4.6. Obtain or provide approval for Air Force personnel to testify or make official statements in legislative or rule making forums addressing AICUZ matters in accordance with AFI 51-301 *Civil Litigation* **(T-1)**.

2.5. Director of Planning and Integration (CP) Directorate, Air Force Civil Engineer Center will:

2.5.1. Maintain the central archive for all noise modeling input and output data for AICUZ studies **(T-2)**.

2.5.2. Monitor the AICUZ program and provides technical assistance and reach-back support for AICUZ issues, trend analysis, civic leader visits, trip books, and Office of the Secretary of Defense (OSD) data calls for all echelons **(T-2)**.

2.5.3. Support MAJCOMs and installations with operational data collection and noise contour development for air installations, as requested **(T-1)**.

2.5.4. Provide quality control review of contractor developed noise contours and data collection, when requested **(T-1)**.

2.5.5. Review proposed installation unique compatibility zones for areas of critical concern and associated compatible land use recommendations prior to staffing to MAJCOM for approval **(T-1)**.

2.5.6. Develop and provide education and training for installation-level and MAJCOM leadership on noise, land use compatibility, community engagement on compatible use issues, encroachment partnering partner identification, and proposal preparation; support externally developed education and training as necessary **(T-1)**.

2.5.7. Provide GIS based analysis of the distribution and location of historic aircraft accidents using Air Force Safety Center (AFSEC) data and chi squared statistical analysis consistent with the original analysis of aircraft accidents **(T-1)**.

2.5.8. Periodically consult with federal regional agencies to ensure consistency of other agency plans, programs, and policies with approved AICUZ studies.

2.6. Director of Installations (CI) Directorate, Air Force Civil Engineer Center will:

2.6.1. Provide technical assistance and guidance to installations and MAJCOMs on preparing waivers of the OSD land acquisition moratorium when a major land acquisition is necessary to prevent incompatible development **(T-1)**.

2.6.2. Execute real estate actions when appropriate to prevent incompatible development including acquisition of restrictive use easements, fee simple titles, avigation easements and air rights **(T-1)**.

2.6.3. Process agreements and deeds of easements to be executed by SAF/IE in support of encroachment partnering strategies under 10 U.S.C. § 2684a, *Agreements to Limit Encroachments and Other Constraints on Military Training, Testing and Operations,* and 10 U.S.C 2869, *Exchange of Real Property at Military Installations* **(T-0)**.

2.7. Director of Environmental Directorate (AFCEC/CZ), Air Force Civil Engineer Center will:

2.7.1. Engage with state legislatures, state agencies, and regional offices of federal agencies and monitor the activities, plans, policies, programs, and projects that may affect land use in the vicinity of the mission critical areas of the installation complex, including the AICUZ footprint through the Air Force Regional Regulatory and Legislative Branch Offices (AFCEC/CZP) per DoDI 4715.02, *Regional Environmental Coordination* **(T-0)**.

2.7.1.1. Provide assessment to the appropriate MAJCOM and Installation Encroachment Management Teams (IEMT) and the HAF Encroachment Management Working Group (EMWG) as necessary **(T-2)**.

2.7.1.2. Inform these agencies of the AICUZ program, and coordinate with AFCEC/CZ to take formal positions in writing or through testimony in meetings or hearings as required by AFI 51-301, following coordination with the installation, MAJCOM EMT, AFCEC/CPPR, AFLOA/JACE and HQ USAF/A4CI **(T-1)**.

2.7.2. Advocate for state level land use planning regulations, to protect military installations from encroachment, i.e. military influence overlay districts **(T-0)**.

2.8. Air Force Flight Standards Agency (AFFSA). AFFSA will provide support for evaluating proposed development projects for impacts on an installation's Air Traffic Control Approach Landing Systems (ATCALS) or other flight standards as appropriate **(T-3)**.

2.9. Air Force Safety Center (AFSEC) will:

2.9.1. Provide Bird/Wildlife Aircraft Strike Hazards (BASH) team support to AF/A3O and AF/A4C in developing compatibility criteria and land use guidelines to support the BASH prevention program and AICUZ program **(T-2)**.

2.9.2. Periodically review BASH guidance and AICUZ compatible use guidelines for consistency in conjunction with the Air Force AICUZ program management team **(T-3)**.

2.9.3. Provide aviation accident location data for Class A incidents within 10 nautical miles of a military airfield to AFCEC/CPPR upon request to support airfield safety zone analysis **(T-3)**.

2.10. Air Force Spectrum Management Office (AFSMO). AFSMO will provide support to AF/A3O and AF/A4C in developing technical criteria for compatible land uses or densities to prevent radio frequency/electromagnetic interference (RF/EMI) and spectrum encroachment.

2.11. MAJCOM Director of Operations (A3) will:

2.11.1. Provide support for analyzing proposed development projects for impacts to TERPS and airfield management issues within the AICUZ.

2.11.2. Review and comment on safety zone variance packages as a member of the MAJCOM/DRU Encroachment Management Team (EMT).

2.12. MAJCOM and/or AFIMSC Detachment Civil Engineers will:

2.12.1. Approve proposed installation line of sight/radar look angle zones developed as part of the AICUZ study process after obtaining input from AFCEC/CPPR, AFLOA/JACE, and the MAJCOM EMT.

2.12.2. Approve and maintain copies of any waivers/exemptions to the public release of an AICUZ study or a mission element of a study.

2.12.3. Brief requests for safety zone variances to AICUZ compatible land uses for on-base development to MAJCOM EMT review and staff package for MAJCOM CV approval.

2.12.4. Approve each AICUZ study document for public release.

2.13. MAJCOM Spectrum Managers (A6). MAJCOM Spectrum Managers assist Installation Spectrum Managers define line of sight corridors, and land use compatibility criteria for Radio Frequency/Electromagnetic Interference (RF/EMI) as needed.

2.14. DRU Civil Engineers will:

2.14.1. Approve installation proposed line of sight/look angle zones developed as part of the AICUZ study process after obtaining input from AFCEC/CPPR, AFLOA/JACE, and the DRU EMT **(T-2)**.

2.14.2. Approve and maintain copies of any waivers/exemptions to the public release of an AICUZ study or a mission element of a study **(T-2)**.

2.14.3. Brief requests for safety zone variances to AICUZ compatible land uses for on-base development to DRU EMT review and staff package for DRU CV approval **(T-2)**.

2.14.4. Approve each AICUZ study document for public release **(T-1)**.

2.15. DRU Spectrum Managers (A6). DRU Spectrum Managers assist Installation Spectrum Managers define line of sight corridors, and land use compatibility criteria for Radio Frequency/Electromagnetic Interference (RF/EMI) as needed.

2.16. Installation Commanders. The Commander will ensure there is an active AICUZ program for the air installation in accordance with DODI 4165.57, *Air Installations Compatible Use Zones (AICUZ*) **(T-0).**

2.17. Executive Director of IEMT. The Executive Director will:

2.17.1. Support the AICUZ program manager with outreach and engagement as needed; ensuring the appropriate installation representatives attend and participate in appropriate planning and zoning commission, city council, county board, and other meetings and hearings whose near-term decisions could affect the ability of the installation complex to support mission requirements **(T-2)**.

2.17.2. Ensure the IEMT, established in accordance with AFI 90-2001, supports the AICUZ program by reviewing and coordinating on correspondence, position papers, educational materials, and briefings, regarding compatible uses and/or zoning in the vicinity of the air installation, as requested **(T-1)**.

2.18. The Base Civil Engineer. The Base Civil Engineer is responsible for the day to day implementation of the installation AICUZ program. The Base Civil Engineer will:

2.18.1. Appoint an AICUZ program manager who has the AICUZ program as a core responsibility **(T-1)**.

2.18.2. Ensure all AICUZ presentations and appearances by Air Force personnel are conducted according to HQ USAF/A4CI policy and guidance **(T-1)**. Advise the legal and

public affairs offices of all proposed AICUZ program related presentations and appearances; however, AFLOA/JACE approval for such presentations or appearances is not required under AFI 51-301.

2.18.3. AICUZ program implementation responsibilities will include:

2.18.3.1. Advising the Installation Commander and leadership on compatible land use concerns and issues within the AICUZ footprint.

2.18.3.2. Serving as the installation point of contact for supporting the AICUZ operational data collection team (as described in AFH 32-7084); including scheduling interviews, in-briefs and out-briefs, and review and coordinating Ops group review and validation of aircraft operational data **(T-2)**.

2.18.3.3. Reviewing updated noise contours and updates to the AICUZ study and forwarding to AFCEC/CPPR and MAJCOM for review and MAJCOM approval **(T-1)**.

2.18.3.4. Coordinating release of the AICUZ Study in a public meeting with local and area wide stakeholders.

2.18.3.5. Attending and participating as appropriate at commission, city council, county board, and other meetings and hearings on topics that could affect the AICUZ consistent with DODI 4165.57 **(T-0)**.

2.18.3.6. Reviewing and evaluating development plans, programs and projects; land use plans, zoning changes, and/or subdivision updates within the AICUZ footprint **(T-1)**.

2.18.3.7. Developing and maintaining information on development projects that have been proposed (by local communities or the base) within the AICUZ footprint that the installation has reviewed and provided responses back to local authorities **(T-2)**. Maintaining this information allows the installation to have a historical record from which to track changes in conditions, identify development trends, provide updates to Commanders and IEMTs, provide data for updating the AICUZ study's land use compatibility analysis and maintaining the Installation Complex Encroachment Management Action Plan (ICEMAP).

2.18.3.8. Preparing correspondence, position papers, educational materials, presentations, and briefings on compatible land use, zoning proposals, and other related topics consistent with, DODI 4165.57 **(T-0)**.

2.18.3.9. Obtaining copies and maintaining an understanding of the local land use regulations, local ordinances, subdivision regulations, building codes, planned unit development ordinances, Comprehensive Plans **(T-1)**.

2.18.3.10. Maintaining geospatial data on current and historical noise contours, and land use in AICUZ geospatial data layers following the latest AICUZ geospatial model as maintained by the Air Force GeoBase Program and the AFCEC/Regional Planning Development Branch (AFCEC/CPPR) **(T-2)**.

2.18.3.11. Conducting outreach and engagement activities to educate and inform local civic groups, local government, real estate and development associations, and other interested stakeholders on testing and training activities and the need for compatible land development consistent with DODI 4165.57 **(T-0)**.

2.18.3.12. Ensuring the review of potential AICUZ program related incompatibility issues by the IEMT as needed **(T-3)**.

2.18.3.13. Briefing the AICUZ program annually to the IEMT **(T-3)**.

2.18.3.14. Ensuring AICUZ program compatible use guidelines and design considerations are incorporated into the Installation Development Plan (IDP) **(T-1)**.

2.18.3.15. Ensuring variance packages for siting incompatible infrastructure siting/land uses are staffed for MAJCOM review and approval/disapproval **(T-1)**.

2.18.3.16. Keeping higher headquarters informed of all significant AICUZ challenges **(T-2)**. Although most AICUZ challenges can be addressed at the installation level, there may be situations in which AFCEC/CPPR, MAJCOMs or higher headquarters can provide guidance or assistance, or should simply be made aware of a potentially sensitive situation, such as negative mission impacts, negative media attention, or political interests. Energy projects analyzed for mission compatibility evaluation must be elevated to the HAF EMWG and the DOD Siting Clearinghouse when necessary in accordance with 32 CFR, Part 211, Mission Compatibility Evaluation Process **(T-0)**.

2.18.3.17. Monitoring development plans, programs and projects that may affect land use within the AICUZ footprint **(T-1)**.

2.18.3.18. Informing local and regional officials and the public of AICUZ considerations and taking formal positions (in writing and through testimony at meetings or hearings) as required **(T-1)**.

2.18.3.19. Participating in local government land use planning and control meetings (boards, commissions, and council) **(T-1)**.

2.18.3.20. Reviewing all operational data, as defined in Chapter 4, Air Force Handbook AFH 32-7084, *AICUZ Program Managers Guide, 1 March 1999*, for currency at least every 2 years or as part of an environmental analysis **(T-2)**.

2.18.3.21. Advising the installation legal office, in accordance with AFI 51-301, and higher headquarters if an AICUZ study or amendment is, or may become, the subject of a lawsuit **(T-1)**.

2.18.3.22. Sending AICUZ noise modeling files (both inputs and output files) to AFCEC/CPPR **(T-1)**.

2.18.3.23. Providing advance general notice to local jurisdictions of potential changes to the AICUZ study and the affected areas **(T-2)**.

2.18.3.24. Identifying and discussing potential land use conflicts with the local community; and providing inputs to local authorities, private developers, and the public in their land use deliberations and approval process **(T-1)**.

2.18.3.25. Monitoring real property interests acquired through restrictive use easements in coordination with installation real property officer (RPO) at the installation to ensure that any restrictive use easements remain enforceable over time **(T-2)**.

2.19. Wing Public Affairs Officer will:

2.19.1. Assist the AICUZ program manager's engagement efforts by developing messages for regional and local media outlets on the installation mission sustainment needs and compatibility issues.

2.19.2. Assist the AICUZ program manager with arrangements and public notices for AICUZ Study public release meetings or presentations to local civic groups.

2.20. Wing Flight Safety Officer will:

2.20.1. Evaluate all proposed changes to operational procedures developed in response to noise, BASH, obstacle or visual interference issues to ensure safety is not compromised **(T-2)**.

2.20.2. Evaluate local development proposals, when requested by the AICUZ program manager, to ensure that they do not create or contribute to conditions that could create a bird/wildlife aircraft strike hazard (BASH), cause interference with pilot's vision due to glint/glare or other light emissions, or increased dust, smoke or steam or create some other hazard to flight operations **(T-2)**.

2.21. Operations Group/Squadron Commander will:

2.21.1. Validate operational data used to develop the noise contours used in the AICUZ study in accordance with DODI 4165.57 **(T-0)**.

2.21.2. Coordinate proposed changes in aircraft operation, with the Base Civil Engineer's office for evaluation of potential changes to noise contour and environmental impacts.

2.21.3. Assist in the development of operational changes to minimize noise impacts to ensure that they do not negatively impact ability to execute mission or create negative training conditions.

2.22. Maintenance Group/Squadron Commander will:

2.22.1. Provide current maintenance data from engine test cell and flight line engine run-ups on AF Form 4003, Ground Runup Locations, and AF Form 4004, Engine Ground Runup Summary to the Base Civil Engineer or the AICUZ program manager upon request **(T-2)**.

2.22.2. Coordinate proposed changes in aircraft maintenance, including test stands and test cell operations with Base Civil Engineer's office for evaluation of potential impact to noise contours and environmental impacts **(T-1)**.

2.23. Weather Officer. The weather officer shall provide monthly temperature and humidity means data for the installation from the 14WS OCDSII report found at the following web site: **https://notus2.afccc.af.mil**. (Use DOD email certificate) **(T-2)**.

2.24. Airfield Operations Flight Commander will:

2.24.1. Provide updated information on any navigational aid changes, standard approaches, departures, and standard local patterns, to the AICUZ data collection team **(T-1)**.

2.24.2. Provide traffic count log, detailing type of aircraft and the numbers of arrivals, departures, and closed patterns to the AICUZ data collection team **(T-1)**.

2.25. Installation Staff Judge Advocate will:

2.25.1. Prepare and update, as necessary, descriptions of State land use statutes, local planning and zoning ordinances, legal court decisions relating to land use planning, zoning, property rights and land descriptions **(T-3)**.

2.25.2. Coordinate as necessary with AFLOA/JACE and MAJCOM/JA for advice and litigation support related to AICUZ matters, including public meetings and administrative hearings in accordance with AFI 51-301.

2.25.3. Support engagement with governing bodies to include coordinating with AFLOA/JACE Regional Counsel to obtain approval for Air Force personnel to testify or make official statements at such forums in accordance with AFI 51-301 **(T-1)**.

2.25.4. Review draft AICUZ studies **(T-2)**.

2.26. Installation Spectrum Manager will:

2.26.1. Evaluate proposed off and on-base development for compatibility (non-interference) with the air installation spectrum requirements **(T-2)**.

2.26.2. Assist the AICUZ program manager and community planner in defining land use compatibility parameters for EMI, Hazards of Electromagnetic Radiation to Personnel (HERP) and Hazards of Electromagnetic Radiation to Ordnance (HERO).

2.27. Installation Tenant Commanders. Tenant Commanders will provide information on aircraft operations as part of the operational data collection **(T-1)**.

Chapter 3

TECHNICAL CRITERIA FOR COMPATIBILITY ZONES

3.1. General. The majority of the compatibility zones are for air installations, however, Air Force supported Joint Bases with an Army component with ground training activities have additional compatibility zones centered on ground training noise. This chapter describes the technical criteria used to define both the physical extent of the zones as well as any associated land use compatibility guidelines. The compatibility zones at an air installation consist of:

3.1.1. Land areas within Clear Zone and Accident Potential Zones (APZs) of an AF base with active runways.

3.1.2. Land areas exposed to high levels of noise from aircraft operations, defined as being within the A-weighted Day-Night Average Sound Level (DNL) 65 dB (or Community Noise Equivalent Level (CNEL) 60 dB in California) and higher, noise zones. At Air Force led Joint Bases with an Army component there may be additional major noise sources such as small arms ranges and artillery/explosives training. The noise zones for small arms noise are defined as the area within 87 dB Peak and higher. The noise zones and for artillery/explosives training noise are the areas within the 62 dB CDNL (or C weighted CNEL in California) and higher.

3.1.3. Land areas surrounding the airfield on which certain uses may obstruct the airspace or pose hazards to flight safety.

3.1.4. Line of sight/radar look angles, if appropriate.

3.2. Fixed Wing Clear Zones and Accident Potential Zones. Clear Zones and APZs are areas off the end of DOD runways that were developed based on past Air Force aircraft accidents and reflect land areas at greater risk of an aircraft accident. The Clear Zone and the APZs represent areas where an accident is most likely to occur, if one would occur, however they are not predictors of accidents.

3.2.1. The Clear Zone begins at the end of the runway and is the area of highest accident potential; it has few uses that are compatible. APZ I lies beyond the Clear Zone is in area of lower but still considerable accident potential. APZ II is beyond APZ I and possesses less accident potential than APZ I but still high enough to warrant land use restriction recommendations.

3.2.2. DoD Instruction 4165.57 is the basis for runway Clear Zones and APZs for fixed-wing aircraft. Chapter 7 of Unified Facilities Criteria (UFC) 3-260-01, *Airfield and Heliport Planning and Design* defines the dimensions for Clear Zones and APZs for C-130 and C-17 landing zones. The type of aircraft that use them determines runway classifications. Class B runways are used by large aircraft such as refueling and airlift aircraft as well as high-speed tactical aircraft. Class A runways are designed to be used by smaller and lighter aircraft such as propeller driven aircraft, some of the smaller training jet aircraft, gliders, and some remotely piloted vehicles. Air Force airfield Clear Zones begin at the end of the runway for airfields operated by the Air Force and are rectangles that run along the extended centerline of the runway. Installations previously granted permission for reduced size Clear Zones for their Class B runways will now reflect the standard 3000 foot x 3000 foot Clear Zones in all

AICUZ studies. Figure 3.1 is a graphical depiction of the fixed wing aircraft Clear Zones and APZs, and the dimensions are in Table 3.1.

Figure 3.1. Clear Zones and Accident Potential Zones.

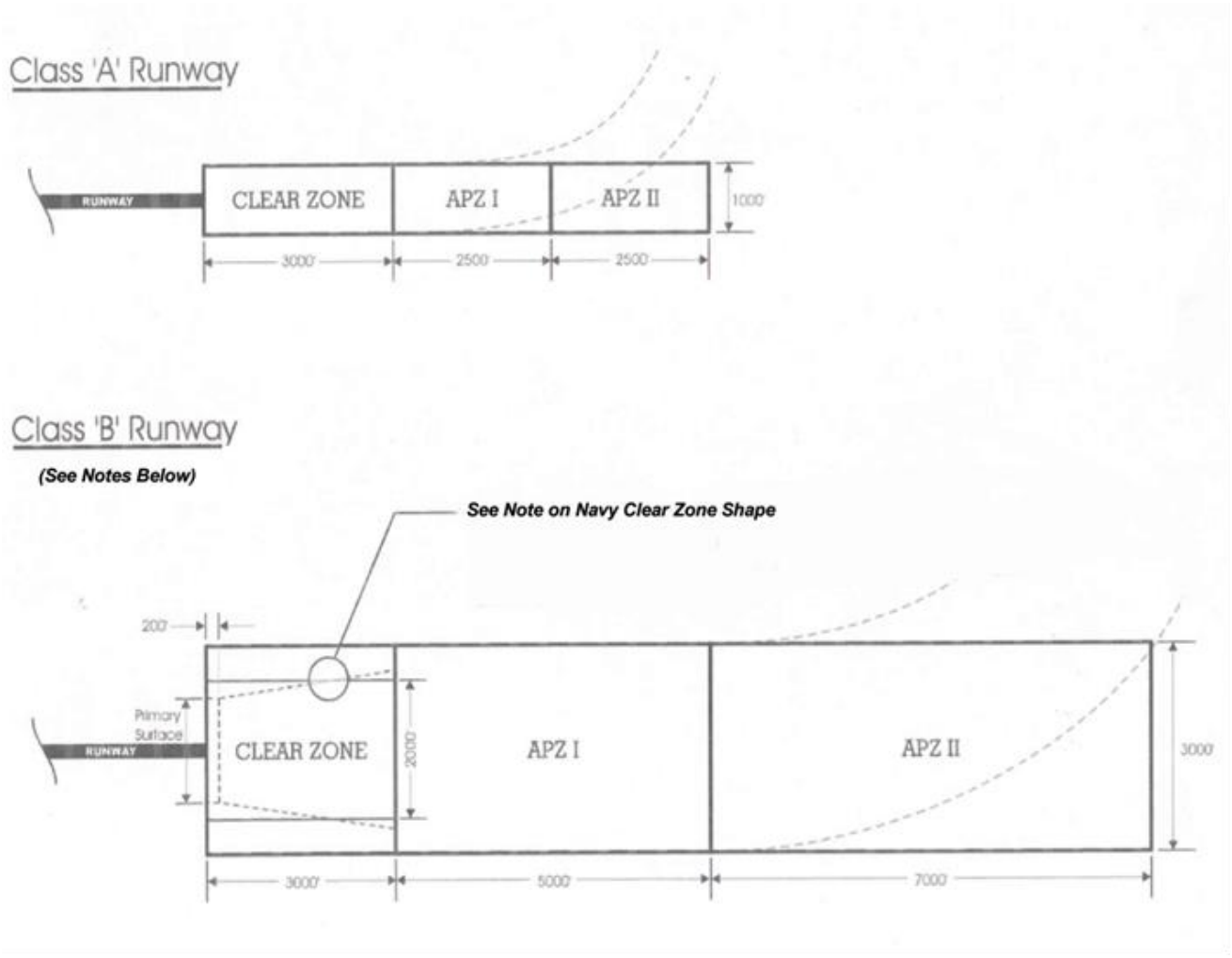

Table 3.1. Clear Zone and Accident Potential Zone Dimensions.

	Clear Zone		APZ 1		APZ 2	
	Length	**Width**	**Length**	**Width**	**Length**	**Width**
AF Class A	3,000 ft	1,000 ft	2,500 ft	1,000 ft	2,500 ft	1,000 ft
AF Class B	3,000 ft	3,000 ft	5,000 ft	3,000 ft	7,000 ft	3,000 ft
Navy Class A	3,000 ft	1,000 ft	5,000 ft	1,000 ft	7,000 ft	1,000 ft
Navy Class B	3,000 ft	2,000/2,784 ft*	5,000 ft	3,000 ft	7,000 ft	3,000 ft
Army Class B	3,000 ft	1,000 ft	5,000 ft	1,000 ft	7,000 ft	1,000 ft

* Navy trapezoid Clear Zone-width at beginning/width at end

3.2.3. The Clear Zones and APZs at Joint Bases with airfields operated by another Service will be determined by the Component operating the airfield(s) **(T-0)**. The operating

Component will identify dimensions for Clear Zones and APZs per existing Component guidance to be used to implement the AICUZ program in accordance with DOD 4165.57 **(T-0)**. More stringent or other specified Service criterion Clear Zones and APZs may be used if the supporting and supported Components agree.

3.2.4. MAJCOMs with permanent overseas installations will determine whether Air Force AICUZ Clear Zones and APZs or International Civil Aviation Organization/North American Treaty Organization (ICAO/NATO) Clear Zones will be used for on-base planning and development purposes. Both the MAJCOM and the base will retain documentation of the determination of which guidelines are being applied (T-2).

3.2.5. Air Force Clear Zones and APZ and the associated land use compatibility criteria do not apply to runways at Joint Use airfields where the Air Force does not own or control the runways. The Air Force should engage with the airport authority and encourage them to acquire ownership of the runway protection zones as discussed in the FAA Advisory Circular 150/5300-13A, *Airport Design,* Section 310.

3.3. Modifications to Fixed Wing APZs. Installations proposing modifications to their APZs should be aware that the Air Force's accident analysis has been conducted independent of flight tracks and does not support anything other than straight APZs bounding the runway centerline. However, modifications to Air Force APZs may be considered based on the conditions listed below.

3.3.1. All active runways will retain the traditional APZs aligned with the runway centerline. However, if more than 80% of the total runway departures or arrivals are on a single flight track that turns before the end of APZ II, the installation may propose adding a new set of APZS that follow the curved line of flight. Proposals for new APZs are sent to AFCEC/CPPR and AFLOA/JACE for review and approval.

3.3.2. Local accident history indicates consideration of a different area.

3.3.3. Proposals for including curved APZs should be forwarded, with appropriate justification, to AFCEC/CPPR and then to MAJCOM AICUZ program managers for MAJCOM EMT and AFLOA JA liaisons' review and discussion and final A4CI or equivalent approval.

3.4. Rotary Wing Aircraft Clear Zones and Accident Potential Zones. Clear Zones for rotary wing runways and helipads for visual and standard instrument flight rules (IFR) operations are 400 feet long with varying widths. The Clear Zone length for Army and Air Force IFR same direction ingress and egress is 825 ft. The single APZ length for a rotary wing runway and helipad is 800 feet long. More detailed discussion on rotary wing APZs and Clear Zones for rotary wing aircraft can be found in UFC 3-260-01 Chapter 4.

3.5. Noise. Although there are a number of noise sources on an air installation, the dominant source is typically aircraft operations. AICUZ studies for a typical air installation do not typically reflect noise from military or civilian vehicles, generators or Aerospace Ground Equipment (AGE). Joint Bases are likely to have military noise sources other than aircraft that need to be included in the Joint Base AICUZ study. The metrics and the depiction of noise level contours in an AICUZ study are as follows:

3.5.1. **Aircraft Noise.** Use the DNL noise descriptor to describe aviation noise environment in the AICUZ study, except in California, where the CNEL noise descriptor is used. However for purposes of on-base planning and land use compatibility, DNL is used in the Installation Development Plan. If State law requires some other descriptor, it may be used in addition to DNL/CNEL. DNL represents the sound level for a 24-hour period with a 10 dB weighting imposed on aircraft operations during the nighttime hours of 10 p.m. to 7 a.m. CNEL is the same as DNL except for an additional 5 dB weighting imposed on aircraft operations during the evening hours of 7 p.m. to 10 p.m. Use DNL at overseas bases for on-base planning and land use compatibility purposes. Noise contours for the off-base aviation noise environment at overseas bases are prepared only in consultation with HQ PACAF and HQ USAFE and are based on the host-nation noise descriptors. **Note:** Neither DNL nor CNEL represent the actual sound level experienced at any point in time.

3.5.1.1. A-weighted DNL/CNEL noise zones reflecting the current mission operations are developed by using an installation's aircraft operation and maintenance data and the latest DOD approved version of the NOISEMAP noise model (or in combination with the Advanced Acoustic noise model as appropriate). The DNL/CNEL noise zones are based on Average Annual Day (AAD) in accordance with DODI 4165.57, and copies of noise model input and output files are to be provided to AFCEC/CPPR.

3.5.1.2. DNL noise contours of 65, 70, 75, 80, and 85 dB are be plotted and used to analyze land use compatibility in the AICUZ study, and plot CNEL levels of 60, 65, 70, 75, 80, and 85 dB for California installations. Noise contours below DNL 65 dB are not required but may be provided if local conditions warrant discussion of lower noise levels, such as in rural and desert areas, or where significant noise complaints have been received from areas outside DNL 65 dB.

3.5.2. **Non-Aircraft Noise.** At Joint Bases where both aircraft operations and ground training activities (small arms, large caliber weapons or explosives) occur, do not combine the aircraft A-weighted DNL/CNEL, C-weighted large caliber DNL, and Peak Noise zones for small arms into a single set of noise zones for the AICUZ study.

3.5.2.1. Small Arms Ranges. The un-weighted peak sound pressure level noise descriptor is used to describe the noise environment for small arms (.50 caliber and below) ranges, and are generated by the Small Arms Range Noise Assessment Model (SARNM). Because the noise zones for small arms are based on the loudest weapon and not the number of annual operations conducted at the range, if there are multiple weapon types being fired at one or multiple locations, the peak contours reflect the loudest level that occurs at each receiver location. For small arms ranges, plot two noise zones, 87-104 dB Peak, and >104 dB Peak, for analyzing land use compatibility.

3.5.2.1.1. Since the sound of small arms is relatively localized when compared to other weapon systems, noise is typically only a concern up to 1000 meters behind the firing point. However since the direction of fire may not always be directly away from the boundary, noise modeling should be used when the range footprint is within 3000 meters of the boundary. **NOTE:** Ground ranges are defined using metric measures therefore US measurement system is not used for distances associated with ground training ranges.

3.5.2.1.2. Small arms range noise zones are to be included in an AICUZ study under the following circumstances:

3.5.2.1.2.1. At Joint Bases where their small arms training is a major noise source.

3.5.2.1.2.2. There is a history of community noise concerns related to the small arms range.

3.5.2.1.2.3. The noise zones from the small arms range extends off the installation.

3.5.2.1.3. Although small arms range noise can be included in an AICUZ study as a way to provide information to local communities about small arms range noise, installations that use their small arms ranges infrequently should consider whether asking local communities to incorporate land use controls for small arms noise is warranted. Other considerations may include if aircraft noise is the dominate noise source, or if the noise from small arms training tempo has the possibility of increasing in the future.

3.5.2.2. Artillery/Explosives. Use C-weighted Day-Night Average Noise Level (CDNL) noise descriptor to describe the noise environment for ground training ranges involving the live fire of large caliber (greater than 20 mm) munitions and detonation of explosives. Contours developed using the Blast Noise Model, (BNOISE), are averaged over 250 days for Joint Bases with ground training activities. CDNL noise contours of 57, 62 and 70, are plotted for purposes of land use compatibility.

3.5.3. **Planning contours.** Long-range planning by local land use authorities involves long-range strategies to influence present and future uses of land. Frequent AICUZ updates and changes to land use recommendations by the Air Force can undermine a community's willingness to adopt AICUZ land use recommendations into their comprehensive plan or enact land use controls over the AICUZ footprint. Therefore, in addition to current mission contours, updated AICUZ studies will include a description of the long-term (5-10 year) aircraft noise environment for projected aircraft operations that is consistent with the planning horizon used by State, tribal, regional and local planning bodies **(T-2)**.

3.5.3.1. Base these projections on the best available, realistic long-range projections of unclassified estimates of future mission requirements, including reasonable projections of future operations based on trends in operational tempo, retirement of legacy aircraft, new aircraft entering the inventory, etc.

3.5.3.2. These long-range projections are not commitments of future operations, nor should they be portrayed that way in the AICUZ study. Inclusion of planning contours in the AICUZ study does not eliminate the need to conduct appropriate environmental analysis if an assumption used in the development of the planning contours becomes a proposed Air Force action.

3.5.3.3. In situations where reasonable estimates of projected aircraft operations are not available, the local land use authorities are not open to long-range projections, or where little or no change to aircraft operations is expected in the next five to 10 years, the

current contours may be used to represent the long-range future instead of a separate planning contour.

3.6. Hazard to Aircraft Flight Zone (HAFZ). Certain land uses and activities can pose potential hazards to flight. The zone is defined as the area within the "Imaginary Surfaces" that are described in the UFC 3-260-01, and in Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*, Subpart C, *Obstruction Standards*. Land uses proposed in this area should be evaluated for compatibility. More information on this zone can be found in AFH 32-7084.

3.6.1. **Height.** Tall objects can pose significant hazards to flight operations or interfere with navigational equipment (including radar). City/County agencies involved with approvals of permits for construction should require developers to submit calculations which show that projects meet the height restriction criteria of FAA Part 77, for the specific airfield described in the AICUZ study.

3.6.2. **Visual Interference.** Activities that result in smoke, dust, or steam or may otherwise cause interference with flight activities are not compatible with air operations. Smoke generated by nearby businesses, industry, or field-burning operations can create severe visual interference during air operations. Dust and smoke can be created by fire (controlled burns, agricultural burning), ground disturbance (agricultural operations, grading), industrial activities, or similar processes.

3.6.3. **Light Emissions.** Sources of direct or indirect light emissions become a land use compatibility issue when the following conditions occur. Aircrews, maintainers, air traffic controllers or airfield operations personnel are unable to obtain necessary distance of view, or distinguish airfield surfaces, markings, or lighting; cannot see other air traffic or obstructions; or cannot properly train due to artificial light sources affecting nighttime training activities. Light sources can include spotlights, streetlights, laser light shows, fireworks, buildings with reflective glass surfaces, and some solar energy technologies.

3.6.3.1. Glint/Glare potential from Photovoltaic (PV) Panels**.** The potential for glint and glare from PV panels is extremely rare. However, depending on materials or the siting of the panels, there may be the potential for glint and glare impacts to Air Traffic Control (ATC) cabs and or pilots on approach to airfields. Use the Department of Energy's Sandia National Laboratory Solar Glare Hazard Analysis Tool (SGHAT), in accordance with DODI 4165.57, to determine whether PV arrays could create a glint/glare problem within HAFZ.

3.6.3.1.1. Standards for Objection.

3.6.3.1.1.1. Due to the fixed location of air traffic control facilities, prolonged exposure to glare has the potential to affect safety of operations; therefore zero glare from PV panels is the compatibility standard at the ATC cab.

3.6.3.1.1.2. The standard for glint/glare on approach or during other tactical maneuvers near the airfield is: no potential for glint/glare or low potential for after-image along the final approach path or future landing thresholds. SGHAT is configured to automatically evaluate straight in approaches using a three-degree glide path. At installations where military aircraft execute tactical approaches or overhead patterns, to include closed patterns, or have glide slopes other than three

degrees, supplement the standard SGHAT analysis to ensure there are no operational impacts from proposed PV arrays. Plot a series of observation points along the alternate final approach paths and conduct an SGAHT analysis for each point.

3.6.3.1.2. Mitigating circumstances may be present which would warrant a determination that notwithstanding the results of an SGHAT or other glint/glare analysis, the potential mission impact associated with a proposed solar PV array is within an acceptable range. Use Air Force Risk Management principles and procedures, defined in AFI 90-802, *Risk Management* and AF Pamphlet (AFPAM) 90-803, *Risk Management (RM) Guidelines and Tools* to further assess risks determined by the glint/glare evaluation. The risk assessment should consider the following:

3.6.3.1.2.1. Recorded Weather Conditions-Does the incidence of glint/glare occur during a calendar period where local climatic conditions result in regular occurrences of overcast conditions.

3.6.3.1.2.2. Frequency of operations on affected runways/flight tracks during glint periods.

3.6.3.1.2.3. Frequency and duration of "after image" risk periods.

3.6.3.1.2.4. Runway use practices. Is it a main runway critical to accomplish the mission or one that is used infrequently?

3.6.3.1.2.5. Planned or potential change in use due to airfield improvements or mission changes.

3.6.3.1.2.6. Other existing glint/glare sources (i.e. flat (lake) water bodies, structures). Are there existing conditions that have greater potential for glint/glare than the proposed PV panel array?

3.6.3.1.2.7. Other installation specific operational considerations.

3.6.4. **Bird/Wildlife Aircraft Strike Hazard (BASH).** Assess the development of potential bird attractants, such as storm water management ponds, landfills, and waste transfer stations, wildlife refuges and agricultural uses against BASH criteria.

3.6.5. **Radio Frequency/Electromagnetic Interference (RF/EMI).** Location of land uses that create radio frequency or electromagnetic interference can directly affect signal and electronic testing mission. In addition to mission disruptions, these uses can create HERP or HERO as ordnance is transported. Identify and map safe travel corridors for ordnance, both on and off base. These maps can be used during engagement with local and regional planning organizations to minimize incompatible development.

3.7. Areas of Critical Concern Beyond the AICUZ Footprint. The Air Force Encroachment Management program has identified areas where there may be additional land use compatibility concerns in areas beyond the traditional AICUZ footprint, based on encroachment challenges defined in AFI 90-2001.

3.7.1. Line of Sight/Look Angle Zones. Because signals being transmitted from radars, radar/radio relay sites, telemetry equipment, radio antennas, etc. can be diffracted, refracted,

reflected and attenuated, installations will develop line of sight zones to help ensure that the height and location of manmade structures or equipment within that corridor is compatible with mission activities/equipment that require uninterrupted line of sight or look angles**. (T-2)**.

3.7.1.1. These zones must consider the location, longitude, latitude and height above ground level, of both the signal source and receiver, the radar look angles, and in addition to a clear field of view for antennas, the Fresnel Zone of signal travel. Compatibility recommendations for these zones may more likely be built around height and location restrictions rather than specific land uses as used for other compatibility zones. More information on developing compatibility recommendations for these zones can be found in AFH 32-7084. The Communication squadron and MAJCOM spectrum managers should assist in defining these zones.

3.7.1.2. AFCEC/CPPR, AFLOA/JA and MAJCOM Encroachment Management Teams will review proposed line of sight/look angle zones and compatibility criteria **(T-1)**. MAJCOM EMTs will provide final approval of the proposed line of sight/look angle /zone for inclusion in the installation's AICUZ study as an additional compatibility zone.

3.7.1.3. MAJCOM EMTs will ensure the installation spectrum manager is included in the review of any proposed development that either would or could violate the recommended height restrictions in these zones. MAJCOM EMTs will ensure the review is incorporated into the AF Spectrum Interference Resolution (AFSIR) Program, which is governed by AFI 10-707 *Spectrum Interference Resolution Program*.

3.7.1.4. If the installation determines that there is little to no chance that development that would interfere with the line of sight or look angles necessary for the operation of this type of equipment would occur, document this in the AICUZ program implementation and maintenance plan, and no line of site zone needs to be developed.

3.8. Land Use Compatibility Guidelines. The Air Force recommended land use compatibility guidelines for Clear Zones, APZs and aircraft noise can be found in Attachments 2 (Table A2.1) and 3 (Table A3.1). Land use compatibility guidelines for noise zones from small arms, large caliber munitions and explosives training conducted at Joint Bases can be found in Tables A3.2 and A3.3.

3.8.1. The land use recommendations in these tables are based on the Federal Highway Administration's *Standard Land Use Coding Manual (SLUCM)*. The SLUCM standards, including their codes and sub-codes, provide planners with detailed information describing specific land use categories. Additions to some land use categories have been incorporated, subsequent to the issuance of the SLUCM, into the tables in Attachments 2 and 3 to reflect additional land uses and to clarify the categorization of certain land uses for the purposes of the AICUZ study. The Clear Zones and APZs and noise guidelines were developed specifically for airfield operations. **NOTE:** SLUCM standards only group similar types of land use and do not reflect noise sensitivity or population density that may influence a particular land use is compatible or incompatible.

3.8.2. To ensure accurate review of land use plans, zoning ordinances or development proposals, it is critical that the AICUZ program manager is aware which land use classification/coding system the community/county is using: SLUCM or the Land Based

Classification System (LBCS). If the community is using LBCS, the AICUZ program manager may need to cross-walk the communities land use classifications with the two digit SLCUM codes used in the AICUZ land use recommendation tables in order to make it easier for local planning authorities to identify possible incompatible land uses. Additionally, AICUZ program managers should be familiar with the more detailed three and four digit SLUCM break out to get a better understanding of the full range of land use activities that fall under the broader two digit categories used in the AICUZ tables. A copy of the SLCUM is posted on the AFCEC SharePoint site.

3.9. Clear Zone Land Use Compatibility. The Clear Zone is the area that has the greatest risk of accidents after the runway itself based on analysis of historic aircraft accident locations near military airfields. Because of this high risk, the Clear Zone warrants special attention. The potential for accidents is so high that that the land use restrictions necessary to ensure compatibility would prohibit reasonable economic use of the land. Therefore, it is DOD and AF policy to own the land within the Clear Zone, or control the land through restrictive use easements. Although primarily designed to protect people on the ground from accident potential, the area should remain as clear as possible to minimize objects that could increase damage should an aircraft accident occur.

3.10. Accident Potential Zone Land Use Compatibility. The percentage of accidents that have occurred within the two APZs is such that purchase of the property within the APZs by the Air Force is not necessary; however, some type of land use control is essential. The DoD and Air Force recommendation is limiting the number of people exposed through land use planning. The land use guidelines for APZs are founded on the concept of minimizing density of land use in the vicinity of the installations. In addition to limiting density, certain types of land use such as residential, educational facilities, and medical facilities are considered incompatible and are strongly discouraged in APZs. To assist local governments in implementing land use controls in APZs, recommended floor area ratios (FARs) are provided for select commercial uses. The following sections provide a general characterization of the recommended types of land use for each APZ.

3.10.1. The accident potential in APZ I is less than the Clear Zone, but still possesses a significant risk factor. This area has land use compatibility guidelines that are sufficiently flexible to allow reasonable economic use of the land, such as industrial/manufacturing, transportation, communication/utilities, wholesale trade, open space, recreation, and agriculture. However, uses that give rise to high concentrations of people in small areas are not appropriate.

3.10.2. The accident potential in APZ II is less than APZ I, but still possesses a significant potential for accidents. Within APZ II, acceptable uses include those compatible within APZ I, as well as low-density single family residential and those personal and business services and commercial/retail trade uses of low intensity or low scale of operation. High-density functions such as multi-story buildings, places of assembly (theaters, churches, schools, restaurants, etc.), and high-density office uses are not considered compatible.

3.11. Land Use Compatibility for Noise. Long-term land use compatibility with noise resulting from the operation of military aircraft should minimize the effects on people, animals (domestic and wild), and structures on or in proximity to the installation. Nearly all studies on residential aircraft noise compatibility recommend no residential uses in noise zones above DNL

75 dB DNL. Usually, no restrictions are recommended below noise zone DNL 65 dB DNL. The area between 65-75 dB DNL noise contours may not qualify for Federal mortgage insurance in residential categories according to the Department of Housing and Urban Development (HUD) Regulation 24 CFR 51, *Environmental Criteria and Standards*, Part B *Noise Abatement and Control*. In many cases, HUD approval requires noise attenuation measures, the Regional Administrator's concurrence, and an Environmental Impact Statement. The Department of Veterans Affairs (VA) also has airfield noise and accident restrictions that apply to its home loan guarantee program. Whenever possible, residential land use should be located below DNL 65 dB DNL.

3.11.1. Although Table A3.1 states that residential land uses can be made compatible by adding adequate noise attenuation to reduce the interior noise level to 45 dB DNL with the windows closed, the exterior noise levels cannot be reduced. DOD and Air Force guidelines recommend that local communities evaluate whether or not there is a demonstrated need for residential use that would not be met if residential development were prohibited in high noise zones before considering allowing residential development in high noise zones.

3.11.2. Most industrial/manufacturing uses are compatible in the airfield environs. Exceptions are uses such as research or scientific activities that require lower noise levels and/or may be affected by vibration. It is recommended that noise attenuation measures be added to those areas of buildings devoted to office use, receiving the public, or where the normal background noise level is low.

3.11.3. The transportation, communications and utilities categories have a high noise level compatibility because they generally are not people-intensive. When people use land for these purposes, the use is generally very short in duration. Additional evaluation is warranted when buildings are required for these uses, additional.

3.11.4. The commercial/retail trade, and personal and business services categories are compatible without restriction up to 70 dB DNL; however, they are generally incompatible above 80 dB DNL. Between 70-80 dB DNL, noise level reduction measures should be included in the design and construction of buildings.

3.11.5. The nature of most uses in the public and quasi-public services category requires a quieter environment, and attempts should be made to locate these uses below 65 dB DNL or else provide adequate noise level reduction.

3.11.6. Although recreational use has often been recommended as compatible with high noise levels, in areas above 75 dB DNL, noise becomes a factor that limits the ability to enjoy such uses. Where the requirement to hear is a function of the use (i.e., music shell, etc.), compatibility is limited. Buildings associated with golf courses and similar uses should be noise attenuated. People who are outdoors in areas above 80 dB DNL should consider wearing hearing protection when aircraft noise is present.

3.11.7. With the exception of forestry activities and livestock farming, most uses in the resources production, extraction, and open space category are compatible without restrictions.

3.12. Energy Related Land Uses. Because of the changing needs of military test and training, the broad array of energy related land uses, and the continual emergence of new energy technologies, there are no pre-defined or generic "energy development zones" for airfields nor is

there a definitive yes/no answer when it comes to energy compatibility. Typically, energy related land uses are not identified on land use plans or on zoning maps so AICUZ program managers and others involved in encroachment management to be actively watching for these kinds of development proposals.

3.12.1. Land uses related to energy development, including support infrastructure, fall under a range of SLUCM codes. The more traditional energy related land uses are identified under several SLUCM codes. Electrical transmission rights of way (and for AICUZ purposes transmission lines), electric generation plants and substations fall under two digit SLUCM code 48 and more specifically code 481. Gas pipeline rights of way, gas production plants, natural/manufactured gas storage and distribution fall under the three-digit SLUCM code 482 and petroleum pipeline right of ways and other types of pipeline rights of way are under SLCUM code 491. Coal mining, crude oil and natural gas drilling/mining fall under SLUCM code 85. The newer forms of renewable energy development is not included in the SLUCM but for purposes of AICUZ, large scale (i.e. commercial sized) energy development projects such as nuclear, solar, wind and geothermal, and biomass should be considered a form of electrical generation and classified under SLUCM code 48.

3.12.2. Typically utility related land uses may not be identified on a local land use map, AICUZ program managers may learn about local incentives to attract renewable energy development to the area or local or state permits for energy development. Like any other type of land development proposal, evaluate proposed energy projects for mission compatibility issues. There are no specific land use compatibility criteria for energy related land uses outside the APZs; however, energy projects proposed to be located within the HAFZ can be evaluated using the potential effects identified in Paragraph 3.6 as a starting point.

3.12.3. The AICUZ program managers and IEMTs must consider the following three factors when evaluating the compatibility or potential for mission impacts of proposed energy development or transmission line projects: the technology (solar, wind, geo-thermal, biomass); the location of the proposed development and the mission requirements **(T-1)**. Consider the following mission compatibility concerns for various types of energy projects when evaluating the compatibility of a proposed development:

3.12.3.1. The AICUZ program managers and IEMTs will evaluate wind turbine projects for possible radar interference to airfield and weather radars, long-range radars and aircraft-borne radar and for hazards to flight **(T-1)**.

3.12.3.2. Geothermal projects should be evaluated to determine whether the height of the steam towers would create hazards to flight, and if the steam could create visual interference. Depending on the type of geothermal technology and location of the plant, evaluate the potential for ice fog.

3.12.3.3. Solar energy technologies such as PV panel arrays or concentrating solar power, which use reflective materials like mirrors and lenses to concentrate sunlight to generate thermal energy, need to be evaluated for glint and glare issues for pilots and/or the air traffic control cab. Evaluate the potential for thermal updrafts from solar towers. **Note:** Such updrafts typically dissipate at distances beyond 50 feet, so standard separation distances between aircraft and objects on the ground may mitigate this concern.

3.12.3.4. The AICUZ program managers and IEMTs will evaluate biomass power generating plant designs and locations to determine if the emissions stacks create an obstruction. (T-1). Evaluate whether or not the emissions (dust/smoke/steam) will obscure pilot or ATC vision; and whether the design of the biomass feedstock storage area could attract birds, wildlife or their prey and therefore contribute to increased potential for BASH.

3.12.3.5. All electricity producing energy projects need to be linked to transmission lines. The project evaluation should also evaluate the compatibility of any new above ground transmission lines that would be required to connect the source to the electrical grid. Table A2.1 includes compatibility criteria for transmission lines in the APZs.

3.12.3.6. Installations can engage with energy developers if they find out about proposed energy development projects that may have the potential to impact their mission; however there are limits on what installation personnel can tell the developer. Should installation personnel find out about a proposed energy development prior to it coming through the OSD Clearinghouse process, it is highly recommended that the issue be elevated to the MAJCOM EMT lead for further guidance. The DoD Siting Clearinghouse of the Office of the Deputy Undersecretary of Defense, Installations and Environment, coordinates the DoD assessment of all renewable energy projects to prevent or mitigate adverse impacts on military operations, in accordance with 32 CFR, Part 211. Additional information on this process can also be found in Attachment 15 of AFI 13-201.

3.13. Applicability of AICUZ to Air Force Land and Facilities.

3.13.1. General Information. New Air Force facility sitings, construction and land use designations within the IDP must be consistent with the land use compatibility recommendations in Tables A2.1 and A3.1, and height restrictions for that installation (see Attachment 5, AICUZ Study, Appendix D, AFH 32-7084) and Tables A3.2 and A3.3 for Joint Bases **(T-1)**. Any land uses proposed for Air Force lands within the AICUZ footprint that are not consistent with the AICUZ land use recommendations will require documentation justifying the proposed incompatible development and appropriate approvals prior to planning and programming the project. The specific documentation and approvals are detailed in the following paragraphs.

3.13.2. **Land Use in the Clear Zone.** Existing Air Force facilities and land uses may continue; however the Base Civil Engineer will program replacement facilities as part of the normal planning and programming process and site such replacement facilities outside the Clear Zone **(T-2)**. People intensive facilities and facilities not related to flight operations should be relocated outside the Clear Zones where possible. Navigational aids and essential operational requirements are exceptions, which, because of their functions may need to be located in the Clear Zone for optimum performance.

3.13.2.1. The Air Force (or others under Air Force permit) will not plan, site, or construct a new use or facility within the boundaries of the Clear Zone except for the following allowed land uses consistent with DODI 4165.57 **(T-0)**:

3.13.2.1.1. Agriculture, with the exception of orchards (trees), grains, or other crops or vegetation that unnecessarily attract birds or wildlife.

3.13.2.1.2. Livestock grazing (excluding feed and dairy lots).

3.13.2.1.3. Permanent open space.

3.13.2.1.4. Existing water areas provided they do not create bird or wildlife strike hazards.

3.13.2.1.5. Rights-of-way for single track railroads, and fenced, two-lane roads without sidewalks or bicycle trails, provided that they do not violate obstacle clearance criteria or the graded portion of the Clear Zone.

3.13.2.1.6. Rights of way for communications and utilities provided all facilities and equipment are at grade level or underground.

3.13.2.1.7. Essential navigation aids and operational facilities, provided there are no feasible alternative locations (MAJCOM approval is required).

3.13.2.2. The following uses are specifically prohibited within the Clear Zone:

3.13.2.2.1. A use that releases any substance into the air that would impair visibility or otherwise interfere with operating aircraft, such as, but not limited to steam, dust, and smoke.

3.13.2.2.2. A use that produces electrical emissions which would interfere with aircraft and Air Force communications equipment, navigational aid systems, radar, weapons systems, or aircraft navigational equipment.

3.13.2.2.3. A use that produces light emissions, either direct or indirect (reflections, glare, etc.), which might interfere with a pilot's or air traffic control personnel's vision.

3.13.2.2.4. A use that would unnecessarily attract birds, waterfowl, or other animals, such as, but not limited to, operation of sanitary landfills, maintenance of feeding stations, or growing certain types of crops or vegetation.

3.13.2.2.5. Explosives facilities or activities as described in AFMAN 91-201, Explosive Safety Standards.

3.13.2.3. Consistent with applicable historic preservation requirements, the Base Civil Engineer must demolish or relocate buildings on newly acquired fee land within the Clear Zone and must ensure the rubble is removed **(T-1)**. Easement acquisitions must conform to the real estate acquired. Through programing avenues, the Base Civil Engineer is responsible for any further relocation of above ground utilities, fencing, and any grading or seeding. In addition, the Base Civil Engineer determines what is done with roads and sidewalks that terminate in the acquired area.

3.13.2.4. Installations are required to have a MAJCOM approved Safety Zone Variance prior to planning and programming any construction of new facilities or installation of equipment, including above ground infrastructure such as lights, pumps, etc, (other than as noted above) in the Clear Zone **(T-2)**. The AICUZ program manager or base planner coordinates the installation's Safety Zone Variance package (Attach 4) through the IEMT prior to submitting the package to the MAJCOM EMT for final MAJCOM CV approval.

3.13.2.4.1. Project managers will file a copy of the variance package and approval in the project file, and the AICUZ program manager will include the variance package in the development project information called for in paragraph 2.18.3.7 **(T-3)**.

3.13.2.4.2. Copies of variance package paperwork should accompany any paperwork for projects that require higher headquarters approval.

3.13.2.5. Project managers ensure that alterations, minor additions, or improvements to facilities currently in the Clear Zone have a completed safety zone variance package that explains why the functions in those facilities have to remain in the Clear Zone instead of being relocated outside the Clear Zone in accordance with paragraph 3.13.2. The MAJCOM EMT must approve the variance, with explicit concurrence from the MAJCOM/A3, and Safety offices.

3.13.3. **Development in the APZs.** Prior to planning and programming any facility/land use on Air Force land in an APZ that is not consistent with AICUZ guidelines, the Base Civil Engineer obtains an IEMT approved Safety Zone Variance. The AICUZ program manager will keep a copy on file of the completed variance package as part of the development project information called for in paragraph 2.18.3.7 **(T-3)**.

3.13.4. **Development in the Noise Zones.** Proposals that locate land uses/facilities in the noise zones that are not consistent with the guidelines require a written justification as to why they have to be located in the noise zones and what mitigations have been considered to minimize the incompatibility. The AICUZ program manager will ensure this documentation is included in the development project information and the project file, and included in any package that must be sent forward to the MAJCOM EMT for approval **(T-2)**.

3.13.5. **On-Base Renewable Energy Projects.** The Base Civil Engineer ensures all on-base proposed renewable energy projects and associated support infrastructure (transmission lines, etc.) are consistent with the compatible land use recommendations in Table A2.1 for Clear Zone and APZs and evaluated for compatibility with the mission if they are proposed to be located in areas of the HAFZ. SGHAT is used to evaluate the compatibility of small or large commercial size PV arrays during the siting process in accordance with DODI 4165.57. More information on glint/glare is in in section 3.6.3.

Chapter 4

AICUZ STUDY AND PROGRAM IMPLEMENTATION

4.1. General. While the most obvious component of the program is the AICUZ study, a successful program requires continuous awareness of local planning and development activities and active external engagement with local communities. Six phases of the AICUZ program reoccur on a continuous basis. The first five focus on the study itself and cover data collection, validation, preparation of maps, study preparation and the public release of the study. The sixth phase centers on the installation's implementation and maintenance responsibilities and activities. This section summarizes the first five phases, additional detail on all six phases is in AFH 32-7084.

4.2. The AICUZ Study. The AICUZ study is the backbone of the program and provides the necessary information communities need to pursue compatible development. The study describes air operations and depicts the compatibility zones for accident potential, noise and other installation specific areas of critical concern along with land use compatibility recommendations for the zones. The compatibility recommendations are based on the relationships between the existing and future military mission, existing land use and zoning and planned or anticipated development, as well as the strategies the Air Force has taken to manage and implement the AICUZ program. Phases I-V are described in more detail in Attachment 5. The outline and template for the AICUZ study is in AFH 32-7084.

4.3. Joint Base AICUZ Studies. Where the Component installations were contiguous and both airfields have fixed and/or rotary wing aircraft operations, the supporting Component will be the lead to develop a single AICUZ study that covers all airfields. For Joint Bases that have geographically separate airfields, (and each Component conducts fixed and or rotary wing aircraft operations on their respective airfields) the supporting Component is the lead to develop a separate AICUZ study for each airfield in accordance with DODI 4165.57 **(T-0)**. If the Joint Base has a geographically separate site where the supported component conducts ground training but no airfield operations, create a separate Installation Compatible Use Zones (ICUZ) Study for that site of the Joint Base in accordance with AICUZ DODI 4165.57.

4.4. Exemptions from preparing and releasing an AICUZ Study.

4.4.1. An installation may be exempt from publishing an AICUZ study if the following conditions exist:

4.4.1.1. If an installation's AICUZ footprint does not extend beyond the installation boundary. Review current mission and planning noise contours, as well as APZs, HAFZ and any identified areas of critical concern to determine the full geographical extent of the AICUZ footprint.

4.4.1.2. There are less than 10 jet or 25 propeller-driven aircraft operations on an average annual day.

4.4.1.3. There are less than 250 helicopter operations on an average annual day.

4.4.1.4. The installation is located on a Joint Use Airfield as described in paragraphs 1.3.2 and 1.3.3.

4.4.2. Installations exempt from publishing an AICUZ study are not exempt from the biennial review of airfield operations (or ground training operations for Joint Bases) to determine if changes in their operations have caused noise contours to extend off the installation.

4.4.3. Installations will forward requests for exemptions to AFCEC/CPPR AICUZ staff. **(T-1)**. AFCEC/CPPR will then conduct a review of the installation's AICUZ and forward their assessment and conclusions to the respective MAJCOMs for EMT review and approval/disapproval of a requested exemption **(T-2)**. MAJCOMS will inform AFCEC/CPPR and A4CI regarding the rational for any approved exemptions.

4.5. Updating the AICUZ Study. As noted in Section 3.5.6, frequent updating of AICUZ studies can result in local communities not adopting AICUZ land use recommendations. Ideally, the planning contours should result in less frequent updating; however, at some point an update will likely be required due to mission changes and subsequent changes in noise contours or the addition of areas of critical concern. Details on when and how to update an AICUZ study are in Attachment 5.

4.6. AICUZ Program Implementation and Maintenance. This is one of the most critical phases of the program. During this phase, the installation must play an active role in local and area-wide planning and participates in the review of local and state plans and programs in accordance with DODI 4165.57 **(T-0)**. The success of the AICUZ program depends on local government acceptance as well as actions by private individuals and other agency officials. Local officials need to understand the AICUZ program to effectively implement the AICUZ recommendations. The Air Force's role then becomes one of insuring that private and/or public organizations and interested citizens have the necessary information on which to base a decision, not engaging in a high-pressure "selling" exercise in the community or pressuring local authorities to enact zoning or adopt the AICUZ recommendation. The Air Force encourages increased public understanding through a continuous flow of public information from the installation and by the installation's participation in interagency and intergovernmental coordination and planning processes at the local, area-wide, and federal regional levels. Phase six AICUZ implementation and maintenance responsibilities are delineated in Paragraphs 2.18.3.1 through 2.18.3.25. Additional detail on these responsibilities can be found in in AFH 32-7084.

4.6.1. **Joint Land Use Study Program.** Often local communities need assistance to determine what steps they need to take to incorporate the AICUZ land use recommendations into their land use and comprehensive plans, and zoning. Congress has authorized DOD to provide planning assistance to local communities to address encroachment issues. The Office of Economic Adjustment's (OEA) Compatible Use Program provides direct federal assistance to help states and communities work with the Military Services to prevent and mitigate impacts where encroachment of the civilian community impairs the use of military installations. Technical and financial assistance is available through a Joint Land Use Study (JLUS) to partner with the local military to plan and carry out strategies promoting compatible civilian use adjacent to an installation complex, including related ranges, special use airspace and associated military training routes and military operations areas. Through the community-driven JLUS planning process, adjacent communities and often the state, in partnership with the installation, identify and evaluate a wide range of both existing and potential future encroachment challenges that may impair the continued operational utility of

the military installation complex. The affected communities then develop a strategic action plan to identify specific actions, responsible parties, and a proposed timeline to address the encroachment challenges. The JLUS is a partnership between OEA and the local communities. The installation's role in the JLUS process is advisory, providing technical information on noise, safety and installation's flight and/or ground training activities in the case of Joint Bases.

4.6.2. **Joint Land Use Study Nominations.** JLUS Nominations are submitted by the MAJCOMS in response to an annual A4CI call letter. MAJCOMS should consider nominating an installation or range if civilian development has impaired or is likely to impair the continued operational utility of the installation complex. To assist OEA to understand the encroachment challenges, all nominations need to include the following information:

4.6.2.1. A description of the nature and extent of the incompatible civilian development, or the potential for such incompatible civilian development.

4.6.2.2. A statement affirming the installation leadership's commitment to support a JLUS.

4.6.2.3. A statement regarding the status of the AICUZ study and any encroachment study (external or internal ICEMAP), or Comprehensive Range Plan. Installations should indicate whether the AICUZ noise contours represent the current mission or if they are planning contours. If an installation's AICUZ study is being updated, include information on when it is expected to be completed and released.

4.6.2.4. Points of contact at the Major Command and nominated installation or range.

4.6.2.5. A statement of the reasonable expectation that the affected local government would likely participate in a JLUS.

4.6.3. **Coordinated Air Force Planning.** Any installation or range planning activity that may affect or be affected by or may involve off-base activities (e.g. AICUZ, Installation Development Plan or other activities, such as actions taken under the authority granted in Title 10 USC, Section 2684a, the ICEMAP, etc.) and any ongoing or pending JLUS efforts should be done in coordination with each other. Establishing effective communication and coordination of interrelated efforts is instrumental in developing integrated strategies to achieve mutual goals and objectives to sustain an installation complex's future ability to support mission changes.

Chapter 5

ACQUISITION OF REAL PROPERTY INTERESTS

5.1. General. Although noise generated by military aircraft is an integral element of land use compatibility efforts, the acquisition of property interests on the basis of noise by the Air Force may not be in the best interests of the United States because noise contours change based on the type of aircraft and number and type of operations. Therefore, the following priorities apply to any program to acquire real estate interests to ensure land use compatibility:

5.2. Priorities.

5.2.1. Clear Zone. The first priority area is the acquisition of the Clear Zone in fee or appropriate restrictive easements of land whenever practicable.

5.2.2. The next highest priority is the APZs followed by the HAFZ, Line of Sight/Look Angle Zones followed by the high noise zones. Acquisition of interests should only be considered when all possibilities of achieving compatible zoning, or similar protection, have been exhausted (or the area is not subject to zoning) and the operational integrity of the air installation or mission is manifestly threatened. If acquisition is considered necessary, complete records documenting all discussions, negotiations, testimony with or before all local officials, boards, or commissions, should be maintained. This ensures that documentation is available to indicate that all reasonable and prudent efforts were made to preclude incompatible land use through cooperation with local government officials and that all recourse to such action has been exhausted.

5.2.3. **Guidelines.**

5.2.3.1. This Instruction cannot be used as sole justification for either the acquisition or the retention of owned interests beyond the minimum required to protect the Government.

5.2.3.2. If fee title is currently held or subsequently acquired in an area where compatible uses could be developed, and there is no requirement for fee interest except to prevent incompatible use, disposal actions should be considered in the following situations: the parcel can be easily severed, the disposal generates no additional cost or disposal proceeds or maintenance cost avoidance are more advantageous to the Air Force.

5.2.3.3. Retain only those rights and interests necessary to establish and maintain compatible uses. Where proceeds from disposal and costs of retaining title would be inconsequential, consideration may be given to retaining title.

5.3. Authorities and Methods.

5.3.1. The necessary rights to real property within the defined compatible use zone or mission critical area may be obtained by purchase, exchange, or donation, in accordance with all applicable laws and regulations. In addition to traditional land acquisition methods for acquiring real property interests, such as negotiated purchase through military construction authorization or minor land acquisition authority, there are other options available.

5.3.2. **10 USC, Section 2684a.** This statute authorizes the Air Force to enter into agreements with eligible entities such as States, political subdivisions of the state, or other

qualified private entities with conservation or land restoration goals to address the use or development of real property in the vicinity of, or ecologically related to, a military installation or military airspace.

5.3.2.1. The purpose of such an agreement is to limit incompatible development or preserve habitat in a manner that may eliminate or relieve current environmental restrictions that might restrict or interfere directly or indirectly with military training, testing or operations on an installation. The agreement shall provide for the acquisition of real property interests in the property as may be appropriate. The cost of the acquisition of real property interests is to be shared by both the Air Force and the eligible entity. Opportunities exist when there are shared interests that can be achieved through a transaction. To use this authority, there must be a "partner," (i.e. authorized eligible entity) and a landowner who is a willing seller.

5.3.2.2. To assist the Services with projects under this authority, OSD established the Readiness and Environmental Protection Integration (REPI) Buffer Program as a source of funding. Air Force guidance for the REPI Buffer Program states that the projects should enhance Air Force operational requirements for current and future mission needs. In regards to the AICUZ program, REPI Buffer Program funds cannot be used to acquire interests in the Clear Zone. Any REPI projects should be part of a larger comprehensive compatible land use strategy.

5.3.3. 10 USC Section 2663(c) and (e)(2) allows the Air Force to acquire minor interests in land needed for national defense by gift, purchase, or exchange. Whether the land acquisition is considered a minor interest acquisition is determined by the upper dollar cost thresholds described in Section 2663(c). 10 USC Section 2664 defines limitations on real property acquisition.

5.3.4. 10 USC Section 2869 allows the Air Force to enter into an agreement to convey closure, realignment, or excess Air Force real property to any person who agrees, in exchange for the real property, to transfer to the United States all ownership rights of the person to a parcel of real property, or who agrees to carry out a land acquisition, including the fee acquisition or acquisition of a lesser interest in real property under an agreement entered into under 10 USC Section 2684a to limit encroachments and other constraints on military training, testing, and operations.

5.3.5. Federal, State, and/or local agencies and private conservation organizations may work together to acquire or provide funding for land and water conservation projects that also can contribute to protecting the installation mission from incompatible development.

5.3.6. Local communities or counties have purchased land or easements to support AF missions. Communities might choose to acquire land to achieve long-term planning goals and may be willing to work with the installation to identify parcels that meet both their and the installation's needs for open space.

5.3.7. Exchanging land between the Air Force and a state or Federal agency, a landowner, local government, or other legal entities is another strategy to prevent incompatible development that may be executed using appropriate authorities.

5.4. Real Estate Interests in the Clear Zones.

5.4.1. The Base Civil Engineer should initiate the process of acquiring a real property interest in fee or through appropriate restrictive easements over all land within the Clear Zones whenever practicable. In the event adjacent land is owned by another federal agency, obtain formal agreements to restrict land use. HQ USAF/A4C, in coordination with SAF/IEI will determine exceptions to Clear Zone boundary (as set forth in Section 3.2) and the real property interest to be acquired on a case-by-case basis. The only real property interests to be acquired are those necessary to prevent incompatible land use, or to prohibit uses generating increased incompatibility (e.g. increased density, increased structure height, etc.) in the Clear Zone (except at certain Joint Use airfields that are exempt from the Clear Zone acquisition program, as discussed in section 1.3).

5.4.2. The Installation is responsible for identifying private lands within the Clear Zone, determining the real property interest to be acquired, and funding the acquisitions through programming avenues. The Base Civil Engineer initiates the process of acquiring real property interests IAW AFI 32-9001, *Acquisition of Real Property*). The MAJCOM should inform HQ USAF/A4CI, AFCEC/CI, and AFCEC/CPPR concerning proposed acquisition actions under this chapter.

5.4.2.1. Real estate interests to be considered for acquisition include:

5.4.2.1.1. The right to make low and frequent flights over said land and to generate noises associated with:

5.4.2.1.1.1. Aircraft in flight, whether or not directly over said land.

5.4.2.1.1.2. Aircraft and aircraft engines operating on the ground.

5.4.2.1.1.3. Aircraft engine test stand/cell, and hush-house operations.

5.4.2.1.2. The right to regulate or prohibit the release into the air of any substance that would impair the visibility or otherwise interfere with the operations of aircraft, such as, but not limited to steam, dust and smoke.

5.4.2.1.3. The right to limit or prohibit light emissions, either direct or indirect (reflective), visible or invisible, including lasers, that might interfere with pilot vision, performance of instruments equipment, weapon systems or airfield operations.

5.4.2.1.4. The right to prohibit electromagnetic emissions that would interfere with aircraft and aircraft sensors, aircraft communications systems, weapons systems, or aircraft navigational equipment.

5.4.2.1.5. The right to prohibit any use of the land that would unnecessarily attract birds or other animals, such as, but not limited to, operation or sanitary landfills, maintenance of feeding stations or the growing of certain types of vegetation attractive to birds or other animals.

5.4.2.1.6. The right to prohibit and remove any buildings or other non-frangible structures.

5.4.2.1.7. The right to top, cut to ground level, and to remove trees, shrubs, brush or other forms of obstruction that the installation commander determines might interfere with the operation of aircraft, including emergency landings.

5.4.2.1.8. The right of ingress and egress upon, over and across said land for the purpose of exercising the rights set forth herein.

5.4.2.1.9. The right to post signs on said land indicating the nature and extent of the Government's control over said land.

5.4.2.1.10. The right to prohibit land uses other than the following:

5.4.2.1.10.1. Agriculture (except such uses that would attract birds).

5.4.2.1.10.2. Livestock grazing (except managed intensive grazing, concentrated animal feeding operations, feedlots, dairy herds, and intensive animal husbandry).

5.4.2.1.10.3. Permanent open space (open space recreational use, is authorized only if it conforms to the compatibility guidelines in Attachment 2).

5.4.2.1.10.4. Existing water areas.

5.4.2.1.10.5. Rights-of-ways for fenced two-lane highways without sidewalks or bicycle trails provided that they do not violate obstacle clearance criteria or cross the graded portion of the clear zone.

5.4.2.1.10.6. Rights-of-way for single-track railroads without terminals, or platforms so long as rail traffic does not extend into the flight path.

5.4.2.1.10.7. Communications and utilities right-of-way, provided all facilities are at or below grade.

5.4.2.1.11. The right to prohibit entry of persons onto the land except in connection with activities otherwise authorized.

5.4.2.1.12. The right to disapprove land uses not in accordance with Table 2.1, Attachment 2.

5.4.2.1.13. The right to control the height of structures to ensure that they do not become a flight hazard.

5.4.2.1.14. The right to install airfield lighting and navigational aids.

5.5. Documentation of Real Property Interests Acquired in Support of the AICUZ Program. In addition to recording the easements in the real property inventory, maintain readable copies (paper copies or digital copies) of the restrictive use easements, aviation easements or other less than fee simple interests at the installation to ensure they are available for review by installation personnel working encroachment issues. The location of the land areas for which the Air Force has acquired an interest are included on a data layer in accordance with the latest appropriate Real Property geospatial data layers (parcels, installation area, etc.) as maintained by Air Force GeoBase Program and AFCEC/CPPR.

5.6. Monitoring Terms of Easements. The installation AICUZ program manager and installation RPO monitor the real property interests acquired through restrictive use easements to ensure that any restrictive use easements remain enforceable over time.

Chapter 6

GEOSPATIAL DATA

6.1. General. The AICUZ program is heavily reliant on geospatial data when it comes to analyzing the compatibility of land uses and mission activities. Most of the AICUZ area of influence lies outside the installation and requires the acquisition and use of geospatial data that comes from external sources, as well as Air Force generated geospatial data layers. Ensure all geospatial data used in support of the AICUZ program adheres to the latest AICUZ geospatial model as maintained by Air Force GeoBase Program and AFCEC/CPPR.

6.2. AICUZ geospatial data layers created by the Air Force or its contractors may consist of:

6.2.1. Historic DNL/CNEL noise contours-plotted in 5 dB increments starting with 65 dB DNL and going to 80 dB. May start at 60 dB in some locations.

6.2.2. Current DNL/CNEL noise contours-plotted in 5 dB increments starting with 65+ and going to 80. May start at 60 dB in some locations.

6.2.3. Planning DNL/CNEL contours (if used)- plotted in 5 dB increments starting with 65+ and going to 80. May start at 60 dB in some locations.

6.2.4. Current Peak Noise Contours for Small Arms Ranges: two contours, 87-104 dB Peak, and >104 dB Peak.

6.2.5. Historic Peak Noise Contours for Small Arms Ranges: two contours, 87-104 dB Peak, and >104 dB Peak.

6.2.6. Current CDNL noise contours plotted in the following increments 57-62 dB CDNL, 62-70 dB CDNL, and 70+ dB CDNL.

6.2.7. Historic CDNL noise contours plotted in the following increments 57-62 dB CDNL, 62-70 dB CDNL, and 70+ dB CDNL.

6.2.8. Safety zones, to include Clear Zones, APZs 1 and II.

6.2.9. Hazards to Aircraft Flight Zone (defined by the airfield imaginary surfaces).

6.2.10. Any approved Line of Sight/Look Angle Zone.

6.2.11. Non-Conforming Uses with Airfield Criteria-location of obstructions within the HAFZ.

6.2.12. Primary flight tracks to include departure, arrival and closed pattern.

6.2.13. Real Property Interests- restrictive use easements/aviation easements.

6.2.14. Development proposals reviewed by the base.

6.2.15. Existing incompatible land uses within the Clear Zones and APZ I and II.

6.3. AICUZ geospatial data layers that are externally generated include:

6.3.1. Current Zoning Map-used for land use compatibility analysis in the AICUZ study.

6.3.2. Current Land Use Map- used for land use compatibility analysis in the AICUZ study.

6.3.3. Future Zoning Map- used for land use compatibility analysis in the AICUZ study.

6.3.4. Future Land Use Map- used for land use compatibility analysis in the AICUZ study.

6.3.5. Local planning area maps-used to facilitate conversations with local planning department.

JOHN B. COOPER, Lieutenant General, USAF
DCS/Logistics, Engineering & Force Protection

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

DoD Instruction 4165.57, *Air Installation Compatible Use Zone Program*, 2 May 2011

AFPD 90-20, *Encroachment Management*, 12 April 2012

DoD Directive 3200.15, *Sustaining Access to the Live Training and Test Domain*, 18 December 2013

AFI 32-7062, *Base Comprehensive Planning*, 27 June 2013

AFI 90-2001, *Encroachment Management*, 3 September 2014

AFMAN 33-363, *Management of Records*, 1 March 2008

AFI 33-360, *Publications and Forms Management*, 25 September 2013

Federal Management Circular 75-2, *Compatible Land Uses at Federal Airfields*, 30 September 1975

Title 14 Code of Federal Regulations, Part 150, *Airport Noise Compatibility Planning*, 24 September 2004

DoDI 4715.02, *Regional Environmental Coordination*, 28 September 2009

AFI 90-401, *Relations with Congress,* 14 June 2012

Title 10 United States Code, § 2684a, *Agreements to Limit Encroachments and Other Constraints on Military Training, Testing and Operations*

Title 10 United States Code, §2869, *Exchange of Real Property at Military Installations*

AFI 51-301, *Civil Litigation*, 1 July 2002

32 CFR, Part 211, *Mission Compatibility Evaluation Process*

AFI 13-201, *Airspace Management*, 21 August 2012

AFH 32-7084, *AICUZ Program Managers Guide*, 1 March 1999

Unified Facilities Code 3-260-01, *Airfield Planning and Heliport Planning and Design*, November 2008

Federal Aviation Administration Advisory Circular 150/5300, *Airport Design*, 29 September 1989

Federal Aviation Administration Regulation Part 77, *Objects Affecting Navigable Airspace,* Subpart C, *Obstruction Standards*, 21 July 2010

AFI 90-802, *Risk Management*, 11 February 2013

AFPAM 90-803, *Risk Management (RM) Guidelines and Tools*, 11 February 2013

AFI 10-707, *Spectrum Interference Resolution Program*, 20 June 2005

Department of Transportation, *Standard Land Use Coding Manual*, 1977

AFMAN 91-201, *Explosive Safety Standards*, 12 January 2011

24 CFR Part 51, *Environmental Criteria,* Subpart B, *Noise Abatement and Control*

AFI 32-9001, *Acquisition of Real Property*, 27 July 1994

Prescribed Forms

AF Form 847, *Recommendation for Change of Publication*

AF Form 3997, *General Airfield Data*

AF From 3998, *Specific Noise Sensitive Locations*

AF Form 3999, *Based Aircraft Operations*

AF Form 4000, *Transient Aircraft Operations*

AF Form 4001, *Flight Track and Profile*

AF Form 4002, *Flight Track Inventory for Runway____*

AF Form 4003, *Ground Runup Locations*

AF Form 4004, *Engine Ground Runup Summaries*

Abbreviations and Acronyms

AAD—Average Annual Day

AAM—Advanced Acoustic Model

AFCEC—Air Force Civil Engineer Center

AFCEC/CP—Air Force Civil Engineer Center, Planning and Integration Directorate

AFCEC/CPPR—Air Force Civil Engineer Center, Regional Planning Development Branch

AFCEC/CI—Air Force Civil Engineer Center, Installations Directorate

AFCEC/CZ—Air Force Civil Engineer Center, Environmental Directorate

AFCEC/CZP—Air Force Civil Engineer Center, Regulatory and Legislative Branch

AFCEC GIO—Air Force Geospatial Integration Officer

AFEM—Air Force Encroachment Management

AFFSA—Air Force Flight Standards Agency

AFI—Air Force Instruction

AFH—Air Force Handbook

AFLOA—Air Force Legal Operations Agency

AFLOA/JACE—Air Force Legal Operations Agency Environmental Law and Litigation Division

AFPAM—Air Force Pamphlet

AFPD—Air Force Policy Directive

AFSEC—Air Force Safety Center

AFSIR—Air Force Spectrum Interference Resolution

AFSMO—Air Force Spectrum Management Office

AGE—Aerospace Ground Equipment

AICUZ—Air Installations Compatible Use Zones

APZ—Accident Potential Zone

ATCALS—Air Traffic Control and Landing Systems

ATC—Air Traffic Control

BASH—Bird/Wildlife Air Strike Hazard

BNOISE2—Blast Noise Model, Version 2

CNEL—Community Noise Equivalent Level

dB—Decibel

DNL—Day-Night Average Noise Level

DoD—Department of Defense

DoDD—Department of Defense Directive

DoDI—Department of Defense Instruction

EMC—Electromagnetic Compatibility

EMI—Electromagnetic Interference

EMT—Encroachment Management Team

EMWG—Encroachment Management Working Group

FAA—Federal Aviation Administration

FAR—Federal Aviation Regulation

GIS—Geographic Information System

HERO—Hazards of Electromagnetic Radiation to Ordnance

HERP—Hazards of Electromagnetic Radiation to Personnel

HAF—Headquarters United States Air Force

HAFZ—Hazards to Aircraft Flight Zone

HUD—Housing and Urban Development

IAW—In Accordance With

ICAO—International Civil Aviation Organization

ICEMAP—Installation Complex Encroachment Management Action Plan

IDP—Installation Development Plan

IEMT—Installation Encroachment Management Team

IFR—Instrument Flight Rules

JLUS—Joint Land Use Study

LBCS—Land Based Classification System

MAJCOM—Major Command

MILCON—Military Construction

MOU—Memoranda of Understanding

NATO—North American Treaty Organization

NM—Nautical Mile

OEA—Office of Economic Adjustment

O&M—Operations and Maintenance

OSD—Office of the Secretary of Defense

POC—Point of Contact

PV—Photovoltaic

REPI—Readiness and Environmental Protection Integration

SARNM—Small Arms Range Noise Assessment Model

SLUCM—Standard Land Use Coding Manual

TERPS—Terminal Instrument Procedures

UFC—Unified Facilities Criteria

USC—United States Code

VA—Veterans Affairs

Terms

Average Annual Day− Average annual day is used to define the average number of daily airfield operations that would occur during a 24—hour period based on 365 flying days per year. Calculate Average Annual Day operations by dividing the total annual airfield operations by 365.

Attenuation−—A decrease in a property, as energy, per unit area of a wave or a beam of particles, occurring as the distance from the source increases as a result of absorption, scattering, spreading in three dimensions.

Avigation Easement−A perpetual and assignable, non—exclusive easement and right-of-way, appurtenant to a specified installation or training area, for the free and unobstructed use and passage of all types of aircraft together with the right to create or cause in the airspace such noise, vibrations, odors, vapors, exhaust, smoke, dust, light, fuel particles or other effects that may be inherent in the lawful operation of aircraft in the process of landing at or taking off from or operating at, on, over, or in the vicinity of the installation or training area, notwithstanding the

extent of interference that such activities may have upon the use or value of the underlying landowner's remaining estate.

C—weighted Day-Night Average Sound Level (CDNL or symbol LCdn)−C-weighting is applied to the DNL metric for low-frequency impulsive sounds, such as sonic booms, heavy weapons, and other explosions because they are perceived by humans not only by the ear, but also by the whole body as pressure or vibration. When experienced indoors, impulsive sounds can create secondary noise from rattling and vibrations of the building. See DNL for additional discussion.

Community Noise Equivalent Level (CNEL [symbol L—den])−CNEL is similar to DNL but adds an evening penalty of 5 dB to all operations occurring between the hours of 7:00 p.m. and 10:00 p.m., in addition to the night penalty of 10 dB from 10:00 p.m. until 7:00 a.m. CNEL is used for land use planning and environmental analysis for all installations in the State of California. (See also DNL.) **NOTE**: The symbol L_{den} should not be confused with the noise descriptor used in Japan, Day, Night, Evening Level, abbreviated Lden. Although CNEL and Lden are similar, in that each has an evening penalty, CNEL defines evening as a three hour period and Japan defines evening as a four hour period.

Diffraction−—The phenomenon exhibited by wave fronts that, passing the edge of an opaque body are modulated, thereby causing a redistribution of energy within the front.

Day Night Average Sound Level (DNL [symbol: L_{dn}]−The equivalent sound level from all noise events occurring during a 24—hour period with an additional 10 dB penalty imposed on operations occurring during the nighttime hours (10 p.m. to 7 a.m.), and then averaged together with moments of quiet. DNL is the primary noise metric used for describing long-term noise impacts for sub-sonic aircraft operations and is the primary metric used to describe the noise environment in the airfield vicinity.

Fresnel Zone−The area around the visual line of—sight that radio waves spread out into after they leave the antenna. This area must be clear or else signal strength will weaken.

Hazards to Aircraft Flight Zone−This zone is defined as the area on the ground within the "Imaginary Surfaces" that are described in the UFC 3—260-01, and in Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*, Subpart C: *Obstruction Standards*. This is the area that will be evaluated for the compatibility related to height, visual interference, glint/glare, bird/wildlife aircraft strike hazard, and radio frequency/electromagnetic interference.

Installation Complex−—The land, facilities, airspace and ranges providing direct mission support to and/or are managed by the installation. This includes a combination of land and facilities comprised of a main installation and its noncontiguous properties (auxiliary air fields, annexes, and missile fields) that provide direct support to or are supported by that installation. Installation complexes may comprise two or more properties, e.g., a major installation, a minor installation, or a support site, each with its associated annex(es) or support property(ies).

Installation Complex Encroachment Management Action Plan (ICEMAP)−—The ICEMAP document documents the results of a comprehensive encroachment study addressing current and future encroachment and sustainment challenges facing the installation complex and surrounding communities.

Installation Encroachment Management Team (IEMT)−A cross—functional team established in accordance with section 3.3.2.3 of AFI 90-2001, designed to address encroachment issues within the installation complex.

Land Based Classification System−—The Land Based Classification Standards (LBCS) model extends the notion of classifying land uses by refining traditional categories into multiple dimensions, such as activities, functions, building types, site development character, and ownership constraints. Each dimension has its own set of categories and subcategories.

Noise contour line−—Lines on a map connecting points of equal noise levels.

Noise Zone− A range of noise levels generally bounded by two noise contours, e.g. 66—70 dB DNL.

Operational Data−—Operational data covers multiple types of data associated with aircraft operations.

Peak Sound Pressure—(PK [Symbol Lpk])−Measured in decibels (dB) is the highest instantaneous sound pressure that occurs during a given time period. Lpk is used to describe a single noise event such as a sonic boom or blast and relate it to human and animal response. Peak sound levels are not weighted.

Reflection−—The act of casting back (light, heat, sound, etc) from a surface.

Refraction−—The change of direction of a ray of light, sound, heat, or the like, in passing obliquely from one medium into another in which the speed of propagation differs.

Attachment 2

LAND USE COMPATIBILITY RECOMMENDATIONS FOR APZS

A2.1. Suggested land use compatibility guidelines in the Clear Zone and APZs are shown in Table A2 1. Additions to some land use categories have been incorporated into Table A2.1 subsequent to issuance of the SLUCM to reflect additional land uses and to clarify the categorization of certain uses. The compatible land use recommendations for the Clear Zone and APZ are provided for local governments as well as AF personnel for on-base planning.

Table A2.1. Land Use Compatibility in APZs.

LAND USE		SUGGESTED LAND USE COMPATIBILITY[1]			
SLUCM NO.	LAND USE NAME	CLEAR ZONE	APZ-I	APZ-II	DENSITY
10	Residential				
11	Household Units				
11.11	Single units: detached	N	N	Y[2]	Maximum density of 2 Du/Ac
11.12	Single units: semi-detached	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 IN APZ II
22	Textile mill products; manufacturing	N	N	Y	Maximum FAR 0.56 IN APZ II
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 & 0.56 in APZ II
25	Furniture and fixtures; manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
26	Paper and allied products; manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
27	Printing, publishing, and allied industries	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
28	Chemicals and allied products; manufacturing	N	N	N	
29	Petroleum refining and related industries	N	N	N	
30	Manufacturing[3] (continued)				

LAND USE		SUGGESTED LAND USE COMPATIBILITY[1]			
SLUCM NO.	LAND USE NAME	CLEAR ZONE	APZ-I	APZ-II	DENSITY
31	Rubber and miscellaneous plastic products; manufacturing	N	N	N	
32	Stone, clay, and glass products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
33	Primary metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
34	Fabricated metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks	N	N	N	
39	Miscellaneous manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
40	Transportation, communication, and utilities[3, 4]				
41	Railroad, rapid rail transit, and street railway transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
42	Motor vehicle transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
43	Aircraft transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
44	Marine craft transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
45	Highway and street right-of-way	Y[5]	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
46	Automobile parking	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
47	Communication	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48	Utilities[7]	N	Y[6]	Y[6]	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48.5	Solid waste disposal (landfills, incinerators, etc.)	N	N	N	
49	Other transportation, communication, and utilities	N	Y[6]	Y	See Note 6 below
50	Trade				
51	Wholesale trade	N	Y	Y	Maximum FAR of 0.28 in APZ I & .56 in APZ II
52	Retail trade – building materials, hardware and farm equipment	N	Y	Y	See Note 8 below
53	Retail trade – including, discount clubs, home	N	N	Y	Maximum FAR of 0.16 in APZ II

LAND USE		SUGGESTED LAND USE COMPATIBILITY[1]			
SLUCM NO.	LAND USE NAME	CLEAR ZONE	APZ-I	APZ-II	DENSITY
	improvement stores, electronics superstores, etc.				
53.	Shopping centers-Neighborhood, Community, Regional, Super-regional[9]	N	N	N	
54	Retail trade – food	N	N	Y	Maximum FAR of 0.24 in APZ II
55	Retail trade – automotive, marine craft, aircraft, and accessories	N	Y	Y	Maximum FAR of 0.14 in APZ I & 0.28 in APZ II
56	Retail trade – apparel and accessories	N	N	Y	Maximum FAR of 0.28 in APZ II
57	Retail trade – furniture, home, furnishings and equipment	N	N	Y	Maximum FAR of 0.28 in APZ II
58	Retail trade – eating and drinking establishments	N	N	N	
59	Other retail trade	N	N	Y	Maximum FAR of 0.16 in APZ II
60	Services[10]				
61	Finance, insurance and real estate services	N	N	Y	Maximum FAR of 0.22 in APZ II
62	Personal services	N	N	Y	Office uses only. Maximum FAR of 0.22 in APZ II.
62.4	Cemeteries	N	Y[11]	Y[11]	
63	Business services (credit reporting; mail, stenographic, reproduction; advertising)	N	N	Y	Maximum FAR of 0.22 in APZ II
63.7	Warehousing and storage services[12]	N	Y	Y	Maximum FAR of 1.0 in APZ I; 2.0 in APZ II
64	Repair Services	N	Y	Y	Maximum FAR of 0.11 APZ I; 0.22 in APZ II
65	Professional services	N	N	Y	Maximum FAR of 0.22 in APZ II
65.1	Hospitals, nursing homes	N	N	N	
65.1	Other medical facilities	N	N	N	
66	Contract construction services	N	Y	Y	Maximum FAR of 0.11 APZ I; 0.22 in APZ II
67	Government Services	N	N	Y	Maximum FAR of 0.24 in APZ II
68	Educational services	N	N	N	
68.1	Child care services, child development centers, and nurseries	N	N	N	
69	Miscellaneous Services	N	N	Y	Maximum FAR of 0.22 in APZ II
69.1	Religious activities (including places of worship)	N	N	N	
70	Cultural, entertainment and recreational				
71	Cultural activities	N	N	N	

LAND USE		SUGGESTED LAND USE COMPATIBILITY[1]			
SLUCM NO.	LAND USE NAME	CLEAR ZONE	APZ-I	APZ-II	DENSITY
71.2	Nature exhibits	N	Y[13]	Y[13]	
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[20]	
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y[13]	Y[13]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II
75	Resorts and group camps	N	N	N	
76	Parks	N	Y[13]	Y[13]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II
79	Other cultural, entertainment and recreation	N	Y[11]	Y[11]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II
80	Resource production and extraction				
81	Agriculture (except live- stock)	Y[4]	Y[14]	Y[14]	
81.5-81.7,	Agriculture-Livestock farming, including grazing and feedlots	N	Y[14]	Y[14]	
82	Agriculture related activities	N	Y[15]	Y[15]	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
83	Forestry activities[16]	N	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
84	Fishing activities[17]	N[17]	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
85	Mining activities[18]	N	Y[18]	Y[18]	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
89	Other resource production or extraction	N	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives

LAND USE		SUGGESTED LAND USE COMPATIBILITY[1]			
SLUCM NO.	LAND USE NAME	CLEAR ZONE	APZ-I	APZ-II	DENSITY
90	Other				
91	Undeveloped land	Y	Y	Y	
93	Water areas[19]	N[19]	N[19]	N[19]	

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 air installations and local governments, general suggestions as to FARs are provided as a guide to density in some categories. In general, land use restrictions that limit occupants, including employees, of commercial, service, or industrial buildings or structures to 25 an acre in APZ I and 50 an acre in APZ II are considered to be low density. Outside events should normally be limited to assemblies of not more than 25 people an acre in APZ I, and maximum assemblies of 50 people an acre in APZ II. Recommended FARs are calculated using standard parking generation rates for various land uses, vehicle occupancy rates, and desired density in APZ I and II. For APZ I, the formula is FAR = 25 people an acre/ (Average Vehicle Occupancy x Average Parking Rate x (43560/1000)). The formula for APZ II is FAR = 50/ (Average Vehicle Occupancy x Average Parking Rate x (43560/1000)).

2. The suggested maximum density for detached single-family housing is 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 slightly provided the amount of surface area covered by structures does not exceed 20 percent 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 and navigational aids necessary for the safe operation of the airfield when there are no other siting options), buildings, or above-ground utility and communications lines should normally be located in Clear Zone areas on or off the air installation. The Clear Zone is subject to the most severe restrictions.

5. Roads within the graded portion of the Clear Zone are prohibited. All roads within the Clear Zone are discouraged, but if required, they should not be wider than two lanes and the rights-of-way should be fenced (frangible) and not include sidewalks or bicycle trails. Nothing associated with these roads should violate obstacle clearance criteria.

6. No above ground passenger terminals and no above ground power transmission or distribution lines. Prohibited power lines include high-voltage transmission lines and distribution lines that provide power to cities, towns, or regional power for unincorporated areas.

7. Development of renewable energy resources, including solar and geothermal facilities and wind turbines, may impact military operations through hazards to flight or electromagnetic interference. Each new development should to be analyzed for compatibility issues on a case-by-case basis that considers both the proposal and potentially affected mission.

8. Within SLUCM Code 52, maximum FARs for lumberyards (SLUCM Code 521) are 0.20 in APZ-I and 0.40 in APZ-11; the maximum FARs for hardware, paint, and farm equipment stores, (SLUCM Code 525), are 0.12 in APZ I and 0.24 in APZ II.

9. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, or managed as a unit. Shopping center types include strip, neighborhood, community, regional, and super-regional facilities anchored by small businesses, a supermarket or drug store, discount retailer, department store, or several department stores, respectively.

10. Ancillary uses such as meeting places, auditoriums, etc. are not recommended.

11. No chapels or houses of worship are allowed within APZ I or APZ II.

12. Big box home improvement stores are not included as part of this category.

13. Facilities must be low intensity, and provide no playgrounds, etc. Facilities such as club houses, meeting places, auditoriums, large classes, etc., are not recommended.

14. Activities that attract concentrations of birds creating a hazard to aircraft operations should be excluded.

15. Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.

16. Lumber and timber products removed due to establishment, expansion, or maintenance of Clear Zone lands owned in fee will be disposed of in accordance with applicable DoD guidance.

17. Controlled hunting and fishing may be permitted for the purpose of wildlife management.

18. Surface mining operations that could create retention ponds that may attract waterfowl and present bird/wildlife aircraft strike hazards (BASH), or operations that produce dust or light emissions that could affect pilot vision are not compatible.

19. Naturally occurring water features (e.g., rivers, lakes, streams, wetlands) are pre-existing, nonconforming land uses. Naturally occurring water features that attract waterfowl present a potential BASH. Actions to expand naturally occurring water features or construction of new water features should not be encouraged. If construction of new features is necessary for storm water retention, such features should be designed so that they do not attract waterfowl.

20. Amusement centers, family entertainment centers or amusement parks designed or operated at a scale that could attract or result in concentrations of people, including employees and visitors, greater than 50 people per acre at any given time are incompatible in APZ II.

Attachment 3

RECOMMENDED LAND USE COMPATIBILITY FOR NOISE ZONES

A3.1. Suggested land use compatibility guidelines for noise zones are shown in Table A3 1. Additions to some land use categories have been incorporated into Table A3.1 subsequent to issuance of the SLUCM to reflect additional land uses and to clarify the categorization of certain uses. Tables A3.2 and A3.3 provide land use compatibility recommendations as it relates to ground training noise sources such as small arms and blast noise from large caliber munitions and explosives. The land use compatibility recommendations are provided for local governments as well as AF for on-base planning.

Table A3.1. Land Use Compatibility in Aircraft Noise Zones.

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
SLUCM NO.	LAND USE NAME	DNL or CNEL 65-69	DNL or CNEL 70-74	DNL or CNEL 75-79	DNL or CNEL 80-84	DNL or CNEL 85+
10	Residential					
11	Household units	N[1]	N[1]	N	N	N
11.11	Single units: detached	N[1]	N[1]	N	N	N
11.12	Single units: semidetached	N[1]	N[1]	N	N	N
11.13	Single units: attached row	N[1]	N[1]	N	N	N
11.21	Two units: side-by-side	N[1]	N[1]	N	N	N
11.22	Two units: one above the other	N[1]	N[1]	N	N	N
11.31	Apartments: walk-up	N[1]	N[1]	N	N	N
11.32	Apartment: elevator	N[1]	N[1]	N	N	N
12	Group quarters	N[1]	N[1]	N	N	N
13	Residential hotels	N[1]	N[1]	N	N	N
14	Mobile home parks or courts	N	N	N	N	N
15	Transient lodgings	N[1]	N[1]	N[1]	N	N
16	Other residential	N[1]	N[1]	N	N	N
20	Manufacturing					
21	Food and kindred products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
22	Textile mill products; manufacturing	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[2]	Y[3]	Y[4]	N
24	Lumber and wood products (except furniture); manufacturing	Y	Y[2]	Y[3]	Y[4]	N
25	Furniture and fixtures; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
26	Paper and allied products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
27	Printing, publishing, and allied industries	Y	Y[2]	Y[3]	Y[4]	N
28	Chemicals and allied	Y	Y[2]	Y[3]	Y[4]	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
SLUCM NO.	LAND USE NAME	DNL or CNEL 65-69	DNL or CNEL 70-74	DNL or CNEL 75-79	DNL or CNEL 80-84	DNL or CNEL 85+
	products; manufacturing					
29	Petroleum refining and related industries	Y	Y[2]	Y[3]	Y[4]	N
30	Manufacturing (continued)					
31	Rubber and misc. plastic products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
32	Stone, clay and glass products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
33	Primary metal products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
34	Fabricated metal products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
35	Professional scientific, and controlling instruments; photographic and optical goods; watches and clocks	Y	25	30	N	N
39	Miscellaneous manufacturing	Y	Y[2]	Y[3]	Y[4]	N
40	Transportation, communication and utilities					
41	Railroad, rapid rail transit, and street railway transportation	Y	Y[2]	Y[3]	Y[4]	N
42	Motor vehicle transportation	Y	Y[2]	Y [3]	Y[4]	N
43	Aircraft transportation	Y	Y[2]	Y[3]	Y[4]	N
44	Marine craft transportation	Y	Y[2]	Y[3]	Y[4]	N
45	Highway and street right-of-way	Y	Y	Y	Y	N
46	Automobile parking	Y	Y	Y	Y	N
47	Communication	Y	25[5]	30[5]	N	N
48	Utilities	Y	Y[2]	Y[3]	Y[4]	N
49	Other transportation, communication and utilities	Y	25[5]	30[5]	N	N
50	Trade					
51	Wholesale trade	Y	Y[2]	Y[3]	Y[4]	N
52	Retail trade – building materials, hardware and farm equipment	Y	25	30	Y[4]	N
53	Retail trade – including shopping centers, discount clubs, home improvement stores, electronics superstores, etc.	Y	25	30	N	N
54	Retail trade – food	Y	25	30	N	N
55	Retail trade – automotive, marine craft, aircraft and accessories	Y	25	30	N	N
56	Retail trade – apparel and accessories	Y	25	30	N	N
57	Retail trade – furniture, home,	Y	25	30	N	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
SLUCM NO.	LAND USE NAME	DNL or CNEL 65-69	DNL or CNEL 70-74	DNL or CNEL 75-79	DNL or CNEL 80-84	DNL or CNEL 85+
	furnishings and equipment					
58	Retail trade – eating and drinking establishments	Y	25	30	N	N
59	Other retail trade	Y	25	30	N	N
60	Services					
61	Finance, insurance and real estate services	Y	25	30	N	N
62	Personal services	Y	25	30	N	N
62.4	Cemeteries	Y	Y[2]	Y[3]	Y[4,11]	Y[6,11]
63	Business services	Y	25	30	N	N
63.7	Warehousing and storage	Y	Y[2]	Y[3]	Y[4]	N
64	Repair services	Y	Y[2]	Y[3]	Y[4]	N
65	Professional services	Y	25	30	N	N
65.1	Hospitals, other medical facilities	25	30	N	N	N
65.16	Nursing homes	N[1]	N[1]	N	N	N
66	Contract construction services	Y	25	30	N	N
67	Government services	Y[1]	25	30	N	N
68	Educational services	25	30	N	N	N
68.1	Child care services, child development centers, and nurseries	25	30	N	N	N
69	Miscellaneous Services	Y	25	30	N	N
69.1	Religious activities (including places of worship)	Y	25	30	N	N
70	Cultural, entertainment and recreational					
71	Cultural activities	25	30	N	N	N
71.2	Nature exhibits	Y[1]	N	N	N	N
72	Public assembly	Y	N	N	N	N
72.1	Auditoriums, concert halls	25	30	N	N	N
72.11	Outdoor music shells, amphitheaters	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	Y[7]	Y[7]	N	N	N
73	Amusements	Y	Y	N	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	Y	25	30	N	N
75	Resorts and group camps	Y	25	N	N	N
76	Parks	Y	25	N	N	N
79	Other cultural, entertainment and recreation	Y	25	N	N	N
80	Resource production and extraction					
81	Agriculture (except live-stock)	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
SLUCM NO.	LAND USE NAME	DNL or CNEL 65-69	DNL or CNEL 70-74	DNL or CNEL 75-79	DNL or CNEL 80-84	DNL or CNEL 85+
81.5-81.7	Agriculture-Livestock farming including grazing and feedlots	Y[8]	Y[9]	N	N	N
82	Agriculture related activities	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]
83	Forestry activities	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]
84	Fishing activities	Y	Y	Y	Y	Y
85	Mining activities	Y	Y	Y	Y	Y
89	Other resource production or extraction	Y	Y	Y	Y	Y

KEY:

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

Y (Yes)– Land use and related structures compatible without restrictions.

N (No) – Land use and related structures are not compatible and should be prohibited.

Y^x – Yes with restrictions. The land use and related structures generally are compatible. However, see note(s) indicated by the superscript.

N^x – No with exceptions. The land use and related structures are generally incompatible. However, see note(s) indicated by the superscript.

25, 30, or 35 – The numbers refer to noise level reduction (NLR) levels. NLR (outdoor to indoor) is achieved through the incorporation of noise attenuation into the design and construction of a structure. Land use and related structures are 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.

DNL – Day-Night Average Sound Level.

CNEL – Community Noise Equivalent Level (normally within a very small decibel difference of DNL)

Ldn – Mathematical symbol for DNL.

NOTES:

1. General

a. Although local conditions regarding the need for housing may require residential use in these zones, residential use is discouraged in DNL 65-69 and strongly discouraged in DNL 70-74. 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. Existing residential development is considered as pre-existing, non-conforming land uses.

b. Where the community determines that these uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 decibels (dB) in DNL 65-69 and 30 dB in DNL 70-74 should be incorporated into building codes and be considered in individual approvals; for transient housing, an NLR of at least 35 dB should be incorporated in DNL 75-79.

c. Normal permanent construction can be expected to provide an 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 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, site planning, design, and use of berms and barriers can help mitigate outdoor noise exposure 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. Buildings are not permitted.

6. Buildings are not permitted.

7. Land use is compatible provided special sound reinforcement systems are installed.

8. Residential buildings require an NLR of 25

9. Residential buildings require an NLR of 30.

10. Residential buildings are not permitted.

11. Land use that involves outdoor activities is not recommended, but if the community allows such activities, hearing protection devices should be worn when noise sources are present. Long-term exposure (multiple hours per day over many years) to high noise levels can cause hearing loss in some unprotected individuals.

Table A3.2. Land Use Compatibility for Small Arms Noise.

LAND USE		SUGGESTED LAND USE COMPATIBILITY	
SLUCM NO.	LAND USE NAME	Noise Zone II 87-104 dBP	Noise Zone III >104 dBP
10	Residential		
11	Household units	N[1]	N
11.11	Single units: detached	N[1]	N
11.12	Single units: semidetached	N[1]	N
11.13	Single units: attached row	N[1]	N
11.21	Two units: side-by-side	N[1]	N
11.22	Two units: one above the other	N[1]	N
11.31	Apartments: walk-up	N[1]	N
11.32	Apartment: elevator	N[1]	N
12	Group quarters	N[1]	N
13	Residential hotels	N[1]	N
14	Mobile home parks or courts	N[1]	N
15	Transient lodgings	25	N
16	Other residential	N[1]	N
20	Manufacturing		
21	Food and kindred products; manufacturing	Y[2]	Y[3]
22	Textile mill products; manufacturing	Y[2]	Y[3]
23	Apparel and other finished products; products made from fabrics, leather, and similar materials; manufacturing	Y[2]	Y[3]
24	Lumber and wood products (except furniture); manufacturing	Y[2]	Y[3]
25	Furniture and fixtures; manufacturing	Y[2]	Y[3]
26	Paper and allied products; manufacturing	Y[2]	Y[3]
27	Printing, publishing, and allied industries	Y[2]	Y[3]
28	Chemicals and allied products; manufacturing	Y[2]	Y[3]
29	Petroleum refining and related industries	Y[2]	Y[3]
30	Manufacturing (continued)		
31	Rubber and misc. plastic products; manufacturing	Y[2]	Y[3]
32	Stone, clay and glass products; manufacturing	Y[2]	Y[3]
33	Primary metal products; manufacturing	Y[2]	Y[3]
34	Fabricated metal products; manufacturing	Y[2]	Y[3]
35	Professional scientific, and controlling instruments; photographic and optical goods; watches and clocks	25	35

LAND USE		SUGGESTED LAND USE COMPATIBILITY	
SLUCM NO.	LAND USE NAME	Noise Zone II 87-104 dBP	Noise Zone III >104 dBP
39	Miscellaneous manufacturing	Y[2]	Y[3]
40	Transportation, communication and utilities		
41	Railroad, rapid rail transit, and street railway transportation	Y[2]	Y[3]
42	Motor vehicle transportation	Y[2]	Y[3]
43	Aircraft transportation	Y[2]	Y[3]
44	Marine craft transportation	Y[2]	Y[3]
45	Highway and street right-of-way	Y[2]	Y[3]
46	Automobile parking	Y[2]	Y[3]
47	Communication	25	35
48	Utilities	Y[2]	Y
49	Other transportation, communication and utilities	25	35
50	Trade		
51	Wholesale trade	Y[2]	Y[3]
52	Retail trade – building materials, hardware and farm equipment	25	35
53	Retail trade – including shopping centers, discount clubs, home improvement stores, electronics superstores, etc.	25	35
54	Retail trade – food	25	35
55	Retail trade – automotive, marine craft, aircraft and accessories	25	35
56	Retail trade – apparel and accessories	25	35
57	Retail trade – furniture, home, furnishings and equipment	25	35
58	Retail trade – eating and drinking establishments	25	35
59	Other retail trade	25	35
60	Services		
61	Finance, insurance and real estate services	25	35
62	Personal services	25	35
62.4	Cemeteries	Y[2]	Y[3]
63	Business services	25	35
63.7	Warehousing and storage	Y[2]	Y[3]
64	Repair services	Y[2]	Y[3]
65	Professional services	25	N
65.1	Hospitals, other medical facilities	N	N
65.16	Nursing homes	N	N
66	Contract construction services	25	35
67	Government services	25	35
68	Educational services	35	N
68.1	Child care services, child development centers, and nurseries	35	N
69	Miscellaneous Services	35	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY	
SLUCM NO.	LAND USE NAME	Noise Zone II 87-104 dBP	Noise Zone III >104 dBP
69.1	Religious activities (including places of worship)	35	N
70	Cultural, entertainment and recreational		
71	Cultural activities	35	N
71.2	Nature exhibits	N	N
72	Public assembly	N	N
72.1	Auditoriums, concert halls	35	N
72.11	Outdoor music shells, amphitheaters	N	N
72.2	Outdoor sports arenas, spectator sports	N	N
73	Amusements	Y	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N	N
75	Resorts and group camps	N	N
76	Parks	N	N
79	Other cultural, entertainment and recreation	N	N
80	Resource production and extraction		
81	Agriculture (except live- stock)	Y^4	Y^5
81.5	Livestock farming	Y^4	N
81.7	Animal breeding	Y^4	N
82	Agriculture related activities	Y^4	Y^5
83	Forestry activities	Y^4	Y^5
84	Fishing activities	Y	Y
85	Mining activities	Y	Y
89	Other resource production or extraction	Y	Y

Key:

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

dBP- unweighted Peak decibel level

Y (Yes)– Land use and related structures compatible without restrictions.

N (No) – Land use and related structures are not compatible and should be prohibited.

Y^x – Yes with restrictions. The land use and related structures generally are compatible. However, see note(s) indicated by the superscript.

N^x – No, with exceptions. The land use and related structures are generally incompatible. However, see note(s) indicated by the superscript.

25, 30, or 35 – The numbers refer to noise level reduction (NLR) levels. NLR (outdoor to indoor) is achieved through the incorporation of noise attenuation into the design and construction of a structure.

Land use and related

NOTES:

Note 1:

a. Although local requirements for on- or off-base housing may require noise-sensitive land uses within Noise Zone II, such land use is generally not recommended. 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. Existing residential development is considered as pre-existing, non-conforming land uses.

b. Where the community determines that these uses must be allowed, measures to achieve outdoor to indoor NLR of at least 30 decibels (dB) in Noise Zone II should be incorporated into building codes and be considered in individual approvals.

c. Normal permanent construction can be expected to provide an NLR of 20 dB, thus the reduction requirements are often stated as 10 dB over standard construction and normally assume mechanical ventilation, upgraded sound transmission class ratings in windows and doors, and closed windows year round.

d. NLR criteria will not eliminate outdoor noise problems. However, building location, site planning, design, and use of berms and barriers can help mitigate outdoor noise exposure 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. Residential buildings require an NLR of 30.

5. Residential buildings are not permitted.

Table A3.3. Land Use Compatibility for Artillery/Explosives.

LAND USE		SUGGESTED LAND USE COMPATIBILITY		
SLUCM NO.	LAND USE NAME	LUPZ CDNL or CNEL 57-62	Noise Zone II CDNL or CNEL 62-70	Noise Zone III CDNL or CNEL 70+
10	Residential			
11	Household units	Y[1]	N[2,3]	N[3]
11.11	Single units: detached	Y[1]	N[2,3]	N[3]
11.12	Single units: semidetached	Y[1]	N[2,3]	N[3]
11.13	Single units: attached row	Y[1]	N[2,3]	N[3]
11.21	Two units: side-by-side	Y[1]	N[2,3]	N[3]
11.22	Two units: one above the other	Y[1]	N[2,3]	N[3]
11.31	Apartments: walk-up	Y[1]	N[2,3]	N[3]
11.32	Apartment: elevator	Y[1]	N[2,3]	N[3]
12	Group quarters	Y[1]	N[2,3]	N[3]
13	Residential hotels	Y[1]	N[2,3]	N[3]
14	Mobile home parks or courts	Y[1]	N[2,3]	N[3]
15	Transient lodgings	Y	Y	N
16	Other residential	Y[1]	N[2,3]	N[3]
20	Manufacturing			
21	Food and kindred products; manufacturing	Y	Y[4]	Y[4]
22	Textile mill products; manufacturing	Y	Y[4]	Y[4]
23	Apparel and other finished products; products made from fabrics, leather, and similar materials; manufacturing	Y	Y[4]	Y[4]
24	Lumber and wood products (except furniture); manufacturing	Y	Y[4]	Y[4]
25	Furniture and fixtures; manufacturing	Y	Y[4]	Y[4]
26	Paper and allied products; manufacturing	Y	Y[4]	Y[4]
27	Printing, publishing, and allied industries	Y	Y[4]	Y[4]
28	Chemicals and allied products; manufacturing	Y	Y[4]	Y[4]
29	Petroleum refining and related industries	Y	Y[4]	Y[4]
30	Manufacturing (continued)			
31	Rubber and misc. plastic products; manufacturing	Y	Y[4]	Y[4]
32	Stone, clay and glass products; manufacturing	Y	Y[4]	Y[4]

LAND USE		SUGGESTED LAND USE COMPATIBILITY		
33	Primary metal products; manufacturing	Y	Y[4]	Y[4]
34	Fabricated metal products; manufacturing	Y	Y[4]	Y[4]
35	Professional scientific, and controlling instruments; photographic and optical goods; watches and clocks	Y	N	N
39	Miscellaneous manufacturing	Y	Y[4]	Y[4]
40	Transportation, communication and utilities			
41	Railroad, rapid rail transit, and street railway transportation	Y	Y	Y
42	Motor vehicle transportation	Y	Y	Y
43	Aircraft transportation	Y	Y	Y
44	Marine craft transportation	Y	Y	Y
45	Highway and street right-of-way	Y	Y	Y
46	Automobile parking	Y	Y	Y
47	Communication	Y	N	N
48	Utilities	Y	Y	Y
49	Other transportation, communication and utilities	Y	Y	N
50	Trade			
51	Wholesale trade	Y	Y	N
52	Retail trade – building materials, hardware and farm equipment	Y	Y	N
53	Retail trade – including shopping centers, discount clubs, home improvement stores, electronics superstores, etc.	Y	Y	N
54	Retail trade – food	Y	Y	N
55	Retail trade – automotive, marine craft, aircraft and accessories	Y	Y	N
56	Retail trade – apparel and accessories	Y	Y	N
57	Retail trade – furniture, home, furnishings and equipment	Y	Y	N
58	Retail trade – eating and drinking establishments	Y	Y	N
59	Other retail trade	Y	Y	N
60	Services			
61	Finance, insurance and real estate services	Y	Y	N
62	Personal services	Y	Y	N
62.4	Cemeteries	Y	Y	Y
63	Business services	Y	Y	N
63.7	Warehousing and storage	Y	Y4	Y4
64	Repair services	Y	Y	N
65	Professional services	Y	Y	N
65.1	Hospitals, other medical facilities	Y1	N	N
65.16	Nursing homes	Y1	N	N
66	Contract construction services	Y	Y	N
67	Government services	Y	Y	N

LAND USE		SUGGESTED LAND USE COMPATIBILITY		
68	Educational services	Y1	N	N
68.1	Child care services, child development centers, and nurseries	Y1	N	N
69	Miscellaneous Services			
69.1	Religious activities (including places of worship)	Y1	N	N
70	Cultural, entertainment and recreational			
71	Cultural activities	Y1	N	N
71.2	Nature exhibits	Y1	N	N
72	Public assembly	Y1	N	N
72.1	Auditoriums, concert halls	Y1	N	N
72.11	Outdoor music shells, amphitheaters	Y1	N	N
72.2	Outdoor sports arenas, spectator sports	Y	N	N
73	Amusements	Y	Y	N
74	Recreational activities (including golf courses, riding stables, water recreation)	Y	N	N
75	Resorts and group camps	Y	N	N
76	Parks	Y	N	N
79	Other cultural, entertainment and recreation	Y	N	N
80	Resource production and extraction			
81	Agriculture (except live- stock)	Y	Y	Y
81.5	Livestock farming	Y	N	N
81.7	Animal breeding	Y	N	N
82	Agriculture related activities	Y	Y	Y
83	Forestry activities	Y	Y	Y
84	Fishing activities	Y	Y	Y
85	Mining activities	Y	Y	Y
89	Other resource production or extraction	Y	Y	Y

NOTES:

Note 1: LUPZ- Land Use Planning Zone is a subdivision of Land Use Zone I and functions as a buffer for Noise Zone II. Communities and individuals often have different views regarding acceptable or desirable levels of noise. To address this, some local governments have implemented land use planning measures beyond Noise Zone II limits. In addition to mitigating current noise impacts, implementing such controls within the LUPZ can create a buffer to prevent the possibility of future noise conflicts.

Note 2: Although local requirements for on- or off-base housing may require noise-sensitive land uses within Noise Zone II, such land use is generally not compatible within Noise Zone II. Measures to achieve overall noise level reduction inside structures do not solve noise difficulties outside the structure. Barriers are not effective reducing the noise from artillery and armor, the detonation of either large caliber military munitions or a large quantity of explosives. Additionally, noise level reduction inside structures does not mitigate the vibration generated by the low-frequency energy of large caliber weapons firing and detonations.

Note 3: Within Zones, existing "noise sensitive land uses are considered as pre-existing incompatible land uses. In most cases these uses are not a risk to either mission sustainment or a community's quality of life. Most long-term members near Army installations or activities acknowledge hearing military operations and activities but they are usually not alarmed or bothered by the noise.

Note 4: Although noise levels may be compatible, caution should be exercised in siting any activity which may be sensitive to vibration.

Attachment 4

CLEAR ZONE AND ACCIDENT POTENTIAL ZONE VARIANCE PACKAGE

A4.1. Variance from Compatibility Criteria. Installations that propose to deviate from compatible land use criteria for on base structures/facilities are required to request a variance for deviation from criteria prior to construction, justifying the requirement and reason for deviation **(T-1)**.

A4.1.1. A request for a variance to site a facility or non-airfield related equipment within the CZs and APZs is submitted by the base to the MAJCOM for approval. Submit requests for variances prior to initiating any programming documents.

A4.1.2. Prior to submittal to the MAJCOM, the request for the variance has been presented to the IEMT for their review, comment, and coordination. The IEMT Chair and the Wing Commander coordinates with the airfield/airspace management and flight safety offices and develops an installation position. Documentation of the IEMT review and necessary coordination is be included as part of the package.

A4.1.3. The IEMT submits the package to the MAJCOM EMT for their review, comment, and coordination. The MAJCOM EMT forwards the package to the MAJCOM CV for final decision on the variance.

A4.1.4. Existing incompatible AF facilities and land uses may continue in the CZs without a request for variance, but their presence is documented and mapped within the appropriate Real Property Geospatial data layer as maintained by the AFCEC Geospatial Integration Office (AFCEC/GIO) and AFCEC/CPPR. The Base Civil Engineer's office programs replacement facilities as part of the normal planning and programming process, including documenting all plans for replacement of nonconforming facilities. Site all replacement facilities outside the CZs. People-intensive facilities and facilities for other than flight-operations are to be sited outside the CZ when possible. Navigational aids and essential operational requirements are exceptions, which, because of their functions, are located for optimum performance.

A4.2. Package Content. The package includes, as a minimum, the following information:

A4.2.1. Narrative data.

A4.2.1.1. Installation name.

A4.2.1.2. Project Title and Land Use.

A4.2.1.3. Facility user/operator.

A4.2.1.4. Average number of people expected to occupy the facility.

A4.2.1.5. Noise contour and aircraft Sound Exposure Levels at the site.

A4.2.1.6. Provide a description of proposed project, and compelling reasons why the project is proposed to be sited in the CZs or APZ. Identify the siting requirements and factors applied in the site selection process and how these were used in making the decision. Provide any proposed design considerations being proposed to minimize the footprint of the facility/equipment. Provide analysis of all candidate sites outside the safety zones and explain why they are not suitable.

A4.2.2. **Site Plan.** Show the proposed location of the project on the site plan along with and its perpendicular distance from the extended runway centerline along with alternative sites outside the CZs and APZs which were considered but determined unacceptable.

A4.2.3. Risk Assessment for Siting in the Clear Zone.

A4.2.3.1. The operational risk assessments prepared as part of the variance request package should look at risk from two aspects: safety risk from the flight operations (accident/noise) to the facility/equipment and any people occupying or using or servicing the facility/equipment and the safety risk to the aircraft and aircrew from the proposed facility/equipment.

A4.2.3.2. The risk assessment team should include staff from Base Civil Engineering, Safety-(both ground and flight safety), Bio-Environmental office, Operations Squadron (airfield/airspace managers).

A4.3. Evaluation of Variance Package. Consider and evaluate the following additional factors before approving a variance to site a facility or equipment in the CZs or APZs:

A4.3.1. Safety. The obvious concern within the safety zones is an aircraft accident. Therefore siting people-intensive facilities or uses within the safety zones that are not essential to flight operations and not consistent with land use recommendations is contradictory to DOD and Air Force policies which recommend against uses which locate personnel within this potentially hazardous area. There is also concern for air crew safety since buildings, structures, and irregular land forms can adversely affect aircraft recovery in the event of take-offs and landing problems. Dropped objects and navigational aid interference are also safety concerns which should be considered. Flying safety and airfield and airspace management offices should provide one of the risk assessments as well as provide input regarding safety issue during the variance review process.

A4.3.2. The following uses are specifically prohibited within the CZs and are not waiverable:

A4.3.2.1. Uses that release into the air any substance which would impair visibility or otherwise interfere with the operation of aircraft, e.g. steam, dust, and smoke.

A4.3.2.2. Uses that produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision.

A4.3.2.3. Uses that would attract birds or waterfowl, such as the operation of sanitary landfills, maintenance of feeding stations, or growing of certain vegetation.

A4.3.2.4. Uses that produce electromagnetic emissions which would interfere with aircraft computer/communication systems or navigational equipment.

A4.3.2.5. Explosives facilities or activities as described in AFMAN 91-201, *Explosive Safety Standards.*

A4.3.3. **Noise.** The CZs and some portions of the APZs are typically a high noise area with noise levels often exceeding 80 DNL. The single event noise level, which takes into account not only the actual measured noise level, but the length of the exposure, can be 8-10 dB higher than the DNL level. Because of the potential damage to hearing many land uses are incompatible with these extremely high noise levels. The installation AICUZ study noise

contour map along with the land use compatibility table (found inAFI 32-7063) for noise provides a list of suitable land uses for the noise levels in the installation's CZs and APZs. AFOSH Standard 48-20 contains guidance on human exposure limits to noise and should be referred to in the variance request. The bio-environmental engineer should provide input concerning the health effects of placing people in the CZ or APZs as related to noise levels as part in thevariance review package.

A4.3.4. **Public Perception.** Constructing facilities in the CZ which are contradictory to AICUZ land use guidelines sends a message to the public saying "Do as we say, not as we do" even though there might be a legitimate reason for placing a facility in the Clear Zone. AICUZ guidance states that the overall risk is so high that the necessary land use restrictions would prohibit reasonable economic use of the land. If an installation proposes to site residential, commercial, industrial, or recreational-type facilities on AF property in the Clear Zone, however, it is easy to understand how the public could receive a mixed message on compliance with AICUZ land use policies. Constructing such facilities in the Clear Zone weakens the AF position opposing private development in APZs I or II that potentially could degrade flying missions and jeopardizes our credibility with Federal agencies such as HUD and VA, who support AICUZ through related program actions.

Attachment 5

PREPARING AND UPDATNG AN AICUZ STUDY

A5.1. General. The following sections discuss each of the Phases of the AICUZ program. The first five phases focus on the study; the sixth phase focuses on the day implementation and maintenance responsibilities of the installation after the public release of the AICUZ study. A more detailed discussion on each phase can be found in AFH 32-7084.

A5.1.1. **Phase I: Data Collection.** There are two types of data collected in this phase:

A5.1.1.1. Operational data from aircraft flying and maintenance activities, as well as ground testing and training activities for Joint bases that conduct ground training activities (small arms, artillery, etc.).

A5.1.1.2. Data on local land use (existing and future), zoning, economic development goals, population changes, planned developments, etc. This phase also includes analysis of the land use data collected.

A5.1.2. **Phase II−Operational Data Review and Validation.** This phase e provides quality assurance and quality control for operational data collected in phase I. Because this data is the basis of the noise contours, accuracy is critically important. The best way to ensure accuracy is to have the operational data reviewed by the same people who were interviewed during the phase I data collection. AFCEC/CPP AICUZ staff is also available to review operational data collected by contractors to determine whether all the necessary data has been collected. AFCEC review of the data is not a substitute for the review and validation by installation personnel.

A5.1.3. **Phase III−Development of Noise Contour Map.** The noise contours are developed either by AFCEC/CPPR AICUZ staff or a contractor. The IEMT and MAJCOM staff do the technical review of the noise contours. AFCEC/CPPR AICUZ staff is also available to review contractor prepared noise contours after being provided all of the data collected by the contractor. After making all the corrections, the contractor or AFCEC prepares the final noise contour, and then it the contours are evaluated to determine whether the amount of change in the contours drives the need to update the AICUZ study.

A5.1.4. **Phase IV−Preparing an AICUZ Study.** This phase includes the preparing an AICUZ study updates or amendment. These updates or amendments can be prepared by contractors or with in-house staff. The community brochure and implementation and maintenance plan are also developed in Phase IV.

A5.1.5. **Phase V−Public Release of AICUZ Study or Amendment.** Once the AICUZ study or amendment is drafted, copies are to be provided to AFCEC/CPPR and the MAJCOM EMT for review and comment to ensure legal adequacy and consistency with Air Force and MAJCOM policies. Once the MAJCOM approves the release of the AICUZ study or amendment, five copies are sent up to A4CI for distribution to the Congressional delegation. Copies are to be received at least 10 days prior to the public release.

A5.1.5.1. The release of the study to the general public and local and area-wide government officials is generally done by the Installation Commander at a public meeting, unless the MAJCOM has waived the requirement. AFCEC/CPPR coordinates

the study with federal regional offices after public release. After the public release, the installation ensures coordination of the study with state single points of contact.

A5.1.5.2. An amendment to an AICUZ study may be employed in place of a full AICUZ study if changes are few and minor in nature, if little explanation is needed, or no known controversy exists.

A5.1.5.2.1. An amendment consists of a transmittal letter dated and signed by the Installation Commander, and the corrected pages for insertion into the latest AICUZ study. Release an amendment as follows:

A5.1.5.2.2. Public notification of the release is accomplished through newspapers and other media two weeks in advance of the mail out of the release.

A5.1.5.2.3. Copies of the amendment are mailed simultaneously to all recipients of the last public release of the AICUZ study.

A5.1.5.2.4. Copies are sent simultaneously to local libraries, agencies, local governments, organizations, and individuals known to have an interest.

A5.2. Updating AICUZ Studies.

A5.2.1. **General.** A full update of the AICUZ study is prepared if changes in current aircraft operations or a new mission results in an increase or decrease in the noise contours of two dB or greater in a residential area when compared to the noise contours in the previously published AICUZ study. The two dB change in noise zones does not apply to ground-based training activities. AFCEC/CPPR in consultation with the U.S. Army Public Health Center (MCHP-IP-EON) determines the need to update the noise zones for these activities.

A5.2.2. **Biennial Review of Operational Data.** Biennial validation of operational data is necessary to determine the need for an AICUZ update unless an environmental analysis on operational activities has occurred during the two-year period. If the biennial review identifies changes to operations may be enough to cause changes to the noise contours, follow Phases III-V.

A5.2.2.1. If small arms range noise zones are included in the AICUZ study, determine if there have been any changes in the weapons used at the range, or the types of ammunition used. If there are new arms or changes in ammunition used at the range, the installation provides the information on any changes to AFCEC/CPPR who in consultation consult with the U.S. Army Public Health Center determines if the noise zones need updating.

A5.2.2.2. The type of changes to large ordnance/explosive range operations which could drive an update include: new mission, new training techniques, changes in firing points, changes in types of munitions or explosives, closing existing and/or opening new ground training ranges. Because establishing a new range or firing points requires environmental analysis, the results from the environmental analysis since the last biennial review can be used to determine the need for an update of the noise zones. Provide any changes in operational data to AFCEC/CPPR, who in consultation with U.S. Army Public Health Command, Army Institute of Public Health, MCHP-IP-EON, determines if an update to the noise zones is needed.

A5.2.3. **Updates as a result of Environmental Analysis.** The noise contours developed for an environmental analysis can be used in an AICUZ study update when the changes in the noise levels are the result of simple modifications of existing aircraft operations. Such changes include slight increases or decreases in numbers of aircraft and associated aircraft operations, or modifications to flight tracks or the way the aircraft are flown (e.g. changes in flight profiles or use of after-burners). The AICUZ study update should be accomplished within 180 days of implementation of the proposed action.

A5.2.3.1. If the proposed action analyzed is the beddown of aircraft new to the Air Force inventory, a formal update of the AICUZ study should not occur until the aircraft have arrived at the beddown location and the operational procedures, flight profiles and flight patterns are finalized and stable enough to allow for the review of flight operations.

A5.2.3.2. When the aircraft operations for new aircraft beddown are well defined, provide the noise contours and the compatibility analysis from the environmental analysis document and any other relative data to the local planning agencies to serve as in interim update to the AICUZ study within 120 days of the beddown decision. Disclose the timeframe for a full update of the AICUZ study, in the transmittal letter. Initiate the full update of the AICUZ after the aircraft have arrived, operational procedures are established and flight patterns are stable enough to allow for the production of more accurate noise contours.

A5.2.3.3. In those situations where the operational requirements of the aircraft are not well defined or is still undergoing development, transmittal letters should disclose the timeframe for a full update and discourage local communities from adopting land use changes and regulations based solely on the noise contours generated in the environmental analysis.

A5.2.4. **Updates due to changes other than Aircraft Operations.** Although AICUZ program managers may be monitoring specific land use changes and changes in plans on a real time basis, it often means it is easy to overlook the larger overall trends. To assist both the installation and the local communities in understanding the larger picture, it may benefit all the stakeholders if the land use analysis portion of the AICUZ study is updated periodically to reflect the current land use environment. Such updates can be the basis for renewed engagement with local communities/counties regarding compatibility issues or can assist members of the IEMT or others to understand how incremental changes may result in large-scale shifts in development patterns. Another catalyst for updating AICUZ study would be to include newly identified areas of critical concern and associated compatibility criteria for those areas.

A5.3. Exemptions to AICUZ Study Updates.

A5.3.1. If the biennial review of the operational data and subsequent contour map indicates that the AICUZ study should be updated, there are certain circumstances where the preparation and release of an fully updated study may not be required or appropriate.

A5.3.1.1. An AICUZ study update is not required if the local community has adopted the AICUZ study and the applicable zoning ordinances in effect meet the recommended compatible land uses for the reduced or expanded AICUZ footprint. The lead planning

agency should have a written request on file with the Base Civil Engineer's office for maintaining the existing AICUZ study.

A5.3.1.2. The local government acceptance of the AICUZ study recommendations must be clearly documented, with an Airport comprehensive land use plan, general land use plan, zoning ordinance and map or airport overlay zone, or a defined Military Influence Area.

A5.3.1.3. The IEMT reviews requests for exemptions for updating the AICUZ study and forwards the request to the MAJCOM EMT who either approves or disapproves the exemption to the AICUZ study update. The MAJCOM informs AFCEC/CPPR of the decision and supplies the related documentation.

A5.3.2. In cases where exemptions to the release of an AICUZ study are granted, the current noise zone map is provided to the local governments to be attached to the existing AICUZ study.

A5.3.3. Installations with an exemption for updating the AICUZ study forward the most current AICUZ map to the lead planning agency and specific federal agencies (FAA, HUD, VA, and Farmers Home Administration).

A5.3.4. An exemption from updating the AICUZ study should not be interpreted to mean that the installation no longer has to participate in local planning efforts or are exempt from other AICUZ program requirements. The biennially evaluation of aircraft operations and monitoring of other changes to mission operations that could create non-noise related compatibility issues needs to continue. Monitoring local community land use planning activities and to identify proposed changes that would essentially reverse the previous adoption of AICUZ recommendations in local zoning and land use controls remains vitally important.