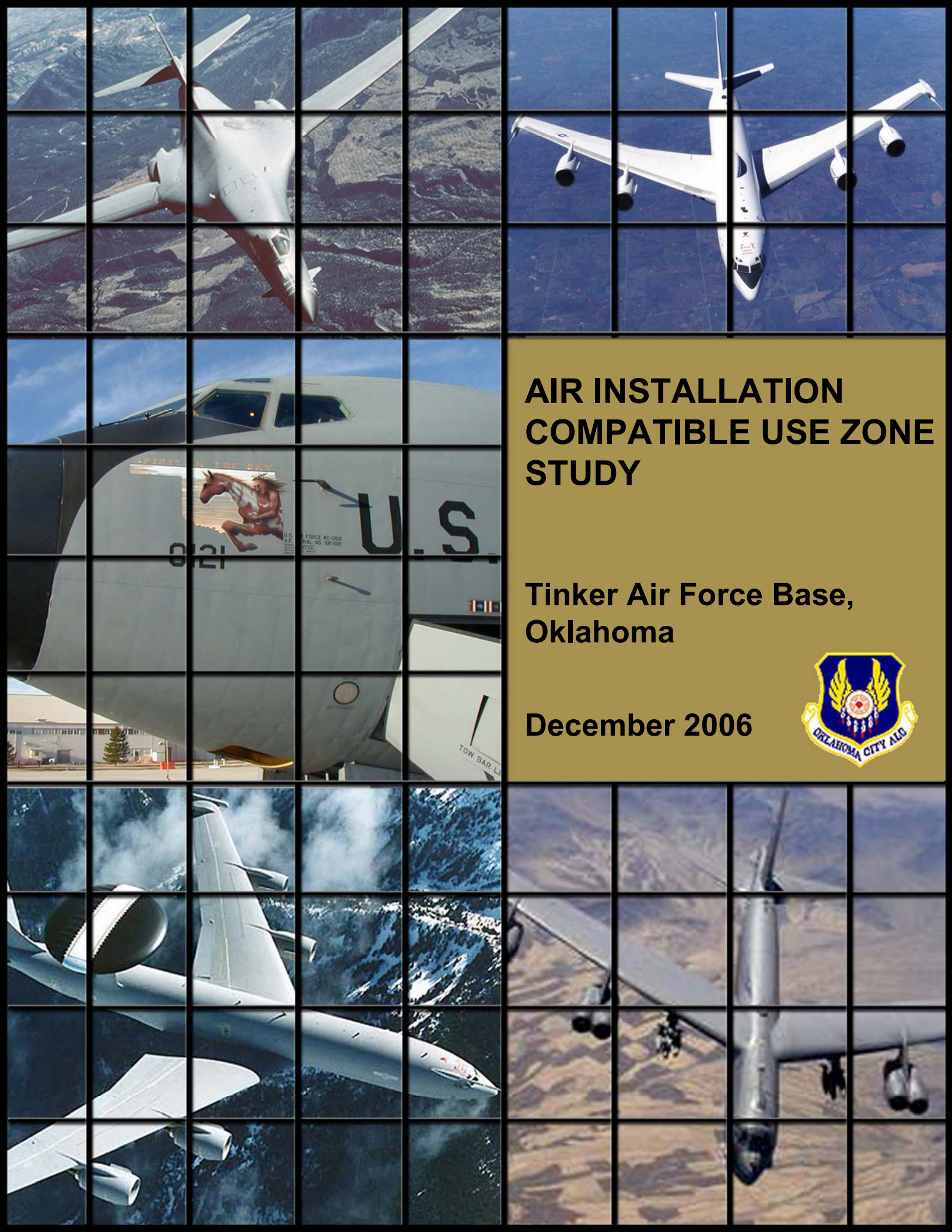

AIR INSTALLATION COMPATIBLE USE ZONE STUDY

Tinker Air Force Base, Oklahoma

December 2006

OKLAHOMA CITY ALC

AIR INSTALLATION
COMPATIBLE USE ZONE STUDY

TINKER AIR FORCE BASE,
OKLAHOMA

DECEMBER 2006

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ACRONYMS AND ABBREVIATIONS

ACOG	Association of Central Oklahoma Governments
AFB	Air Force Base
AFI	Air Force Instruction
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
APZ	Accident Potential Zone
CZ	Clear Zone
dB	decibel
dBA	A-weighted sound level measured in decibels
DNL	Day-Night Average A-Weighted Sound Level
DoD	Department of Defense
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
INM	Integrated Noise Model
LZ	landing zone
MSA	Metropolitan Statistical Area
MSL	mean sea level
NLR	Noise Level Reduction
OC-ALC	Oklahoma City Air Logistics Center
SLUCM	Standard Land Use Coding Manual
the Base	Tinker Air Force Base
UFC	Unified Facilities Criteria
US	United States
USEPA	United States Environmental Protection Agency
VFR	visual flight rules

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SECTION 1
PURPOSE AND NEED

1.1 INTRODUCTION

This study is an update of the 1998 Tinker Air Force Base (AFB), Oklahoma Air Installation Compatible Use Zone (AICUZ) Study. The update presents and documents changes to the AICUZ amendment for the period 1998-2006 and is based on the January 2006 aircraft operations condition. This AICUZ Study reaffirms Air Force policy of assisting local, regional, state, and federal officials in the areas surrounding Tinker AFB by promoting compatible development within the AICUZ area of influence; and protecting Air Force operational capability from the effects of land use that are incompatible with aircraft operations. Specifically, the report documents changes in aircraft operations since the last study and provides noise contours and compatible use guidelines for land areas surrounding the installation based on the January 2006 operations. This information is provided to assist local communities and to serve as a tool for future planning and zoning activities. Changes that occurred since the 1998 Tinker AFB AICUZ Study include:

- An increase in the number of operations by based aircraft;
- The addition of 4 based KC-135 aircraft;
- An increase in the number of transient aircraft operations at Tinker AFB;
- Addition, elimination, and modification of aircraft flight tracks to correspond to flying operations changes; and
- Technical improvements to the NOISEMAP computer modeling program.

1.2 PURPOSE AND NEED

The purpose of the long-standing AICUZ program is to promote compatible land development in areas subject to aircraft noise and accident potential. The Air Force provides the AICUZ Study to all local communities to assist them in preparing local land use plans. As the nearby cities of Oklahoma City, Midwest City, Del City, Choctaw, Nicoma Park, and Spencer and Oklahoma and Cleveland counties prepare and modify land use development plans, recommendations from this updated AICUZ Study should be included in the planning process to prevent incompatible land use that could compromise the ability of Tinker AFB to fulfill its mission. Accident potential and aircraft noise should be major considerations in the planning process.

Air Force AICUZ guidelines reflect land use recommendations for the Clear Zones (CZ), Accident Potential Zones (APZ) I and II, and four noise zones exposed to noise levels at or above 65 decibels (dB) Day-Night Average A-Weighted Sound Level (DNL). These guidelines were established on the basis of studies prepared and sponsored by several federal agencies, including the United States Department of Housing and Urban Development, United States Environmental Protection Agency (USEPA), United States Air Force, and state and local agencies. The guidelines recommend land uses that are compatible with airfield

operations while allowing maximum beneficial use of adjacent properties. The Air Force has no desire to recommend land use regulations that render property economically useless. It does, however, have an obligation to the inhabitants of the Tinker AFB area of influence and the citizens of the United States to point out ways to protect the public investment in the installation and the people living in areas adjacent to the installation. The AICUZ area of influence includes the area within the DNL 65 dB and greater noise exposure area and the area within the CZs and APZs.

1.3 PROCESS, PROCEDURE, AND NOISE METRICS

Preparation and presentation of this update to Tinker AFB's AICUZ Study is part of the continuing Air Force participation in the local planning process. Guidance for the Air Force AICUZ program is contained in Air Force Instruction (AFI) 32-7063, *Air Installation Compatible Use Zone Program*, which implements DoD Instruction 4165.57, *Air Installations Compatible Use Zones*.

As local communities prepare land use plans and zoning ordinances, the Air Force recognizes it has the responsibility to provide input on its activities relating to the community. This study is presented in the spirit of mutual cooperation and assistance by Tinker AFB to aid in the land use planning process around the Base.

The AICUZ program uses the latest technology to define noise levels in areas near Air Force installations with a flying mission. Aircraft operational data used in this study were collected at Tinker AFB in April 2005. The Air Force reviewed and validated the data through a communicative process that was finalized in January 2006. Aircraft flight data were obtained to derive average daily operations by runway and type of aircraft. Analysis of Tinker AFB's flying operations included the types of aircraft, flight patterns utilized, variations in altitude, power settings, number of operations, and hours of operations. These data were supplemented by flight track information (where we fly), flight profile information (how we fly), and ground runup information. After verification for accuracy, the data were input into the NOISEMAP Version 7.296 computer program to produce DNL noise contours. The noise contours for Tinker AFB were plotted on an area map and overlaid with the CZ and APZ areas for the airfield.

1.4 COMPUTERIZED NOISE EXPOSURE MODELS

The Air Force adopted the NOISEMAP computer program to describe noise impacts created by aircraft operations. NOISEMAP is one of two USEPA-approved computer programs; the other is the Integrated Noise Model (INM) used by the Federal Aviation Administration (FAA) for noise analysis at civil airports. The NOISEMAP and INM programs are similar; however, INM does not contain noise data for all military aircraft.

NOISEMAP is a suite of computer programs and components developed by the Air Force to predict noise exposure in the vicinity of an airfield due to aircraft flight, maintenance, and ground run-up operations. The components of NOISEMAP are:

- BASEOPS is the input module for NOISEMAP and is used to enter detailed aircraft flight track and profile and ground maintenance operational data.
- NOISEFILE is a comprehensive database of measured military and civil aircraft noise data. Aircraft operational information is matched with the noise measurements in the NOISEFILE after the detailed aircraft flight and ground maintenance operational data has been entered into BASEOPS.
- NMAP is the computational module in NOISEMAP. NMAP takes BASEOPS input and uses the NOISEFILE database to calculate the noise levels caused by aircraft events at specified grid points in the airbase vicinity. The output of NMAP is a series of georeferenced data points, specific grid point locations, and corresponding noise levels.
- NMPLOT is the program for viewing and editing the sets of georeferenced data points. NMPLOT plots the NMAP output in a noise contour grid that can be exported as files that can be used in mapping programs for analyzing the noise impacts.

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