

APPENDIX I

AIRSPACE TECHNICAL MEMO

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1.0 INTRODUCTION

This Airspace Technical Memo addresses both civilian and military airspace and supports discussions in Sections 3.6 and 4.6, *Airspace, Affected Environment* and *Environmental Consequences*, respectively, of the Commonwealth of the Northern Mariana Islands Joint Military Training (CJMT) Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS). In this technical memo, a more detailed discussion of the regulatory framework, the definition of airspace as a resource, the approach used to evaluate potential impacts, and the potential impacts are all presented. Secondary impacts resulting from the use of Special Use Airspace (SUA), such as noise and safety are addressed in their respective sections of the EIS/OEIS.

The International Civil Aviation Organization (ICAO) codifies the principles and techniques of international air navigation and fosters the planning and development of international air transportation to ensure safe and orderly growth. The airspace associated with this proposed action is within the Oakland Oceanic Flight Information Region (FIR) and the Federal Aviation Administration (FAA) is responsible for airspace coordination with the ICAO.

The FAA is assigned responsibilities pursuant to 49 United States Code (U.S. Code) 40101 *et seq.*, for civil aviation and for regulation of air commerce in the interests of aviation safety and efficiency. The FAA is a Cooperating Agency on the Department of Defense (DoD) EIS, in accordance with 40 Code of Federal Regulations (CFR) Part 1501.6(a)(1), since it has special expertise and jurisdiction by law to approve proposed development at civilian airports and SUA required for military operations and training. Additionally, in accordance with the *Memorandum of Understanding between the Federal Aviation Administration and the Department of Defense Concerning Environmental Review of Special Use Airspace Actions* (FAA and the Department of Defense 2005), the FAA's status as a cooperating agency for this EIS/OEIS will ensure there is no unnecessary duplication of effort.

As a Cooperating Agency on this EIS/OEIS, FAA will use the EIS/OEIS documentation to comply with its own requirements under the National Environmental Policy Act (NEPA) for federal action. The FAA will also use the EIS/OEIS to support additional decisions and federal action including unconditional approval of the portion of the Airport Layout Plan (ALP) depicting the proposed action and approval of SUA (see Appendix O, *Transportation Study*) (DoN 2014). The EIS/OEIS will include information that addresses resource impacts per FAA Order 1050.1E – *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B – *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* (FAA 2006a, 2006b). [Table 1](#) contains procedures required by the FAA to process SUA action. [Table 2](#) provides the resource impact categories required for analysis by the FAA. The section where each resource area is addressed in this EIS/OEIS is also identified. Chapter 3 of the EIS/OEIS defines the existing conditions and Chapter 4 defines the potential impacts associated with each alternative.

Table 1. FAA Procedures for Processing Special Use Airspace Action Aeronautical and Environmental Summary

<i>Aeronautical</i>	<i>Environmental</i>
<p>1. Proponent must present to the Facility a Pre-draft concept (i.e., new/revisions to SUA needed or required).</p>	<p>1. Proponent must discuss with the Service Area, at the earliest time, the potential for environmental impacts associated with the proposal.</p> <p>2. If there is the potential for environmental impacts, Proponent must make a request to the FAA for a Cooperating Agency (CA) status when Proponent decides to initiate the environmental process. Proponent must forward the request to the Director of the Mission Support, Airspace Services. The Director will transmit the request to the Airspace Management Group who prepares and forwards the response to Proponent. The Airspace Management Group will send a courtesy copy of the response to the responsible Service Area. The Service Area environmental specialist works as the FAA point of contact throughout the process in development of any required environmental documentation.</p> <p>3. Proponent submits a Preliminary Draft EA or EIS to the Service Area environmental specialist.</p> <p>The Service Area environmental specialist must provide comments, in consultation with the airspace specialist and the Airspace Management Group, back to Proponent.</p>
<p>2. Proponent forwards the aeronautical proposal to the FAA Service Area for review and processing by the airspace specialist.</p>	<p>4. Proponent prepares a Draft EA or EIS with a 45-day public comment period.</p> <p>As the FAA CA point of contact, the Service Area environmental specialist reviews the associated draft environmental documentation to ensure that the Proponent addressed adequately all environmental concerns submitted on the Preliminary Draft. If required, the Service Area environmental specialist forwards the draft environmental documentation to the Airspace Management Group for review and comment by the headquarters environmental specialist and the Office of Chief Counsel.</p>

Table 1. FAA Procedures for Processing Special Use Airspace Action Aeronautical and Environmental Summary

<i>Aeronautical</i>	<i>Environmental</i>
<p>3. The Service Area airspace specialist, in accordance with this order, determines the type of airspace action(s) necessary, either Non-Rulemaking or Rulemaking. FAA Service Area and Proponent determine if informal Airspace Meetings are required.</p>	
For Non-Rulemaking:	
<p>4. The Service Area airspace specialist sends out a circularization with a 45-day public comment period. The service Area airspace specialist reviews and prepares, in consultation with the Proponent, responses to the aeronautical comments from the study and circularization in accordance with Chapter 21 of this order.</p>	<p>5. The Proponent reviews comments received on their Draft EA/FONSI or EIS and prepares their responses to the comments, in consultation with the FAA and other cooperating agencies, if necessary, and in accordance with Chapter 32 of this order.</p> <p>6. Proponent prepares and submits their Final EA/FONSI or EIS/ROD to the Service Area environmental specialist.</p> <p>7. The Service Area environmental specialist prepares a Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD.</p> <p>8. The Service Area environmental specialist submits the Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD and the Proponent's Final EA/FONSI or EIS/ROD to the Service Area airspace specialist for inclusion with the airspace proposal package.</p>
<p>5. The Service Area airspace specialist then sends the completed package containing the aeronautical proposal, response to comments, Proponent's Final EA/FONSI, and the Draft FAA FONSI/ROD to the Headquarters Airspace Regulations and ATC Procedures Group with their recommendation.</p>	
For Rulemaking:	
<p>6. The Service Area airspace specialist sends the proposal to the Airspace Regulations and ATC Procedures Group who prepares a Notice of Proposed Rulemaking (NPRM). The Headquarters Airspace Regulations and ATC Procedures Group submit the NPRM for publication in the Federal Register with a 45-day comment period in accordance with Chapter 2 of this order.</p>	

Table 1. FAA Procedures for Processing Special Use Airspace Action Aeronautical and Environmental Summary

<i>Aeronautical</i>	<i>Environmental</i>
7. The Headquarters airspace specialist sends comments received on the NPRM to the Service Area airspace specialist for resolution.	
8. The Service Area airspace specialist then sends the completed package containing the response to comments, final service area recommendation, the proposal, Proponent's Final EA/FONSI or EIS/ROD, and the Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD to the Headquarters Airspace Regulations and ATC Procedures Group for preparation of the Final Rule.	
9. The Headquarters airspace specialist forwards the draft final rule package or draft non-rulemaking case summary (NRCS) with all supporting documentation to the Headquarters Airspace Management Group for review (after all aeronautical comments have been resolved).	9. The Headquarters environmental specialist reviews the package for environmental technical accuracy; then submits the environmental documentation to the Office of the Chief Counsel, Airports and Environmental Law Division, for legal sufficiency review (having collaborated throughout the process).
	10. The Chief Counsel's environmental attorney's comments are incorporated into the final FAA environmental decision and signed by Headquarters Airspace Management Group Manager. The package is then returned to the Headquarters Airspace Regulations and ATC Procedures Group.
10. For Non-rulemaking: The non-rulemaking action is published in the National Flight Data Digest (NFDD). 11. For Rulemaking: The Final Rule is published in the Federal Register. The Final Rule will contain a reference to the decision rendered and location of documentation for the associated environmental process.	

Legend: ATC = Air Traffic Control; CA = Cooperating Agency; EA = Environmental Assessment; FONSI = Finding of No Significant Impact; NPRM = Notice of Proposed Rulemaking; ROD = Record of Decision.

Source: FAA 2014a, Appendix 4.

Table 2. Federal Aviation Administration Resource Impact Categories

<i>Impact Category</i>	<i>Draft EIS/OEIS Section</i>
Air Quality	3.4/4.4
Coastal Resources	3.11/4.11
Compatible Land Use	3.7/4.7
Construction Impacts	Each Section
Department of Transportation Act: Sec. 4(f)	4.19
Farmlands	3.2/4.2
Fish, Wildlife, and Plants (Terrestrial)	3.9/4.9
Fish, Wildlife, and Plants (Marine)	3.10/4.10
Floodplains	3.3/4.3
Hazardous Materials, Pollution Prevention, and Solid Waste	3.16/4.16
Historical, Architectural, Archeological, and Cultural Resources	3.11/4.11
Light Emissions and Visual Impacts	3.12/4.12
Natural Resources and Energy Supply	3.2/4.2
Noise	3.5/4.5
Secondary (Induced) Impacts	Each Section
Socioeconomic Impacts and Environmental Justice	3.15/4.15
Children’s Environmental Health and Safety Risks	3.17/4.17
Water Quality	3.3/4.3
Wetlands	3.3/4.3
Wild and Scenic Rivers	NA

Source: FAA 2006a.

The Commonwealth Port Authority owns and manages the civilian airports in the Commonwealth of the Northern Mariana Islands (CNMI) and the Department of Defense has worked with the Commonwealth Port Authority regarding the proposed airport development (see Appendix O, *Transportation*). The Commonwealth Port Authority shows the proposed Department of Defense airport changes on their official ALP. The changes must undergo FAA review, since the FAA has statutory authority for review and approval of proposed civilian airport development. As a cooperating agency, FAA may use the EIS/OEIS documentation to comply with its own requirements under NEPA. Once the FAA determines that the EIS/OEIS adequately addresses the proposed action and alternatives, it may adopt the EIS/OEIS for its own NEPA compliance purposes. This EIS/OEIS has been prepared to include information that addresses FAA NEPA requirements per FAA Order 1050.1F, *Environmental Impacts: Policies and Procedure*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* (FAA 2006b, 2013a). The FAA may also decide to supplement the EIS/OEIS with additional information that may be needed to address FAA requirements regarding the safe and efficient use of airspace.

For this EIS/OEIS document, the following FAA actions are anticipated:

1. Unconditional approval of the ALP to depict the proposed construction and operation of the proposed airport development pursuant to 49 U.S. Code § 40103(b) and 47107(a)(16).
2. Determination of the effects of the proposed airport project upon the safe and efficient use of navigable airspace pursuant to 14 CFR Part 77, *Objects Affecting Navigable Airspace*. The FAA

must determine if the proposed development is consistent with the existing airspace utilization procedures.

3. Determination under 49 U.S. Code § 44502(b) that the airport development is reasonably necessary for use in air commerce or in the interests of national defense.
4. Approval of construction of the new taxiways, aircraft parking aprons, and other associated development that meet FAA Design Standards.
5. Development of air traffic control and airspace management procedures designed to ensure the safe and efficient use of navigable airspace.
6. Approval of an airport certification manual, to maintain aviation and airfield safety during construction pursuant to 14 CFR Part 139 (49 U.S. Code § 44706).
7. Approval of the proposed establishment of SUA at Tinian and Pagan in accordance with Federal Aviation Administration Joint Order 7400.2.
8. Approval of a reduction in the exclusionary airspace surrounding Tinian International Airport.

The FAA also conducts an airspace analysis process known as “Obstruction Evaluation/Airport Airspace Analysis” for proposed development on and within the vicinity of an airport. The Obstruction Evaluation/Airport Airspace Analysis process is the primary method by which the FAA determines whether or not an object, most often a proposed man-made structure such as the proposed new roadway, would constitute an “obstruction” and/or a “hazard” to aircraft operating in the local airspace of an airport. Sponsors of proposed construction or alteration in the vicinity of airports are required to provide notification to the FAA by filing an FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, and respond to FAA’s inquiries that may be posed throughout the aeronautical study process. A Form 7460-1 must be initially filed for the ultimate proposed action build-out design as part of the ALP review process and then a Form 7460-1 must be filed prior to initiating any construction activities on or near the airport for the proposed action.

Construction of the proposed development involves coordination of construction schedules and construction methods with airport operations and airfield safety. There is a notice of construction requirement with the airport and FAA during the project construction involving cranes and heavy equipment.

Construction time windows would need to be discussed with the FAA and the airport during the ongoing construction. Examples of scheduling to minimize airport impacts include night and early morning hours when effects to existing airport arrivals and departures would be minimal. Other time windows when airport operations are already adjusted due to other airport-related capital improvement projects would also be considered for construction scheduling. In general, close coordination with the FAA and the airport would need to be made to maintain normal aircraft arrival and departure operations during the construction period.

1.1 AIRSPACE REGULATORY FRAMEWORK

Congress has charged the FAA with the responsibility for developing plans and policies for the use of all navigable airspace and assigning (by regulation or order) the use of the airspace necessary to ensure aircraft safety and the efficient use of all airspace (49 U.S. Code § 40103[b]). SUA identified by the FAA for military and other governmental activities is charted and published by the National Aeronautical Charting Office in accordance with FAA Joint Order 7400.2K, *Procedures for Handling Airspace Matters* and other applicable regulations (FAA 2014a). Descriptions of approved SUA, except temporary areas and Controlled Firing Areas, are compiled and published once a year in FAA Joint Order 7400.8W, *Special Use Airspace* (FAA 2014b).

Airspace management considers how airspace is designated, used, and administered to best accommodate the individual and common needs of military, commercial, and general aviation. The FAA defines airspace management as the direction, control, and handling of flight operations in the “navigable airspace” that overlies the geopolitical borders of the U.S. and its territories. “Navigable airspace” is airspace above the minimum altitudes of flight prescribed by regulations under U.S. Code Title 49, Subtitle VII, Part A. It includes airspace needed to ensure safety during the takeoff and landing of aircraft (49 U.S. Code § 40102) as well as airspace needed for military training and other special uses. By policy, the term “airspace above minimum altitudes of flight” is interpreted to mean “airspace at or above minimum flight altitudes.” Specific rules and regulations concerning airspace designation and management are listed in FAA Joint Order 7400.2K (FAA 2014a).

The Department of Defense requests airspace from the FAA and schedules and uses airspace in accordance with processes and procedures detailed in DoD Directive 5030.19, *DoD Responsibilities on Federal Aviation and National Airspace System Matters*, and FAA regulations. The controlling agency for the Tinian airspace included in this proposed action is FAA Guam Combined Center Radar Approach Control (CERAP). The airspace in the immediate vicinity of Pagan lies within the Oakland Oceanic FIR and the controlling Agency is Seattle Air Route Traffic Control Center (ARTCC). The Using Agency would be the Commander, Joint Region Marianas.

Governing procedures for the use of training areas, ranges, and airspace operated and controlled by Joint Regions Marianas, including instructions and procedures for the use of Saipan and Tinian, are included in Commander, U.S. Naval Forces, Marianas Instruction 3500.4 (DoN 2013a, 2013b). This guidance identifies specific land use constraints to enable protection of environmental resources during military training activities in the Mariana Islands Range Complex (DoN 2010a, 2013b).

1.2 RESOURCE DEFINITION

Airspace is a three-dimensional resource defined by latitude, longitude, and altitude that is managed and controlled by the FAA in the United States and its territories. [Figure 1](#) represents each class of airspace relative to each other and available to all users of the airspace (civilian and military).

Changes to both regulatory (rulemaking) and non-regulatory (non-rulemaking) airspace, are required with this proposed action.

Regulatory airspace includes six airspace classifications, namely A, B, C, D, E, [no F], and G, as well as two types of SUA: prohibited areas, and restricted areas. Changes to regulatory SUA are considered rule-making actions that are implemented by a formal amendment to 14 CFR Part 73. All alternatives for this proposed action include regulatory airspace (Tinian R-7203 and Pagan R-7204). With few exceptions, regulatory SUA is located within Class A, G, and E airspace.

Controlled airspace is a generic term used to describe Class A, Class B, Class C, Class D, and Class E airspace. In controlled airspace, all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements found in 14 CFR Part 91, *General Operating and Flight Rules*. Each class has specific navigational requirements that must be met for a pilot to enter safely ([Table 3](#)). Class G is basically airspace that is not A, B, C, D, or E. It is described as uncontrolled airspace because there are no entry requirements.

Non-regulatory airspace includes five types of SUA: Military Operations Areas (MOA), Warning Areas, Alert Areas, Controlled Firing Areas, and National Security Areas. Changes to non-regulatory airspace do not require a formal amendment to 14 CFR Part 73, *Special Use Airspace*.

SUA consists of airspace with defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature, or wherein limitations may be imposed upon aircraft operations that are not a part of those activities, or both. The vertical limits of SUA are measured by designated altitude floors and ceilings expressed as flight levels or as feet above mean sea level (MSL). Unless otherwise specified, the word “to” (an altitude or flight level) means “to and including” (that flight level). The horizontal limits of SUA are measured by boundaries described by geographic coordinates or other appropriate references that clearly define their perimeter. The period of time during which a designation of SUA is in effect is stated in the designation (FAA 2014b).

Other special activity airspace areas included in this EIS/OEIS include existing military training routes and Air Traffic Control Assigned Airspace (ATCAA).

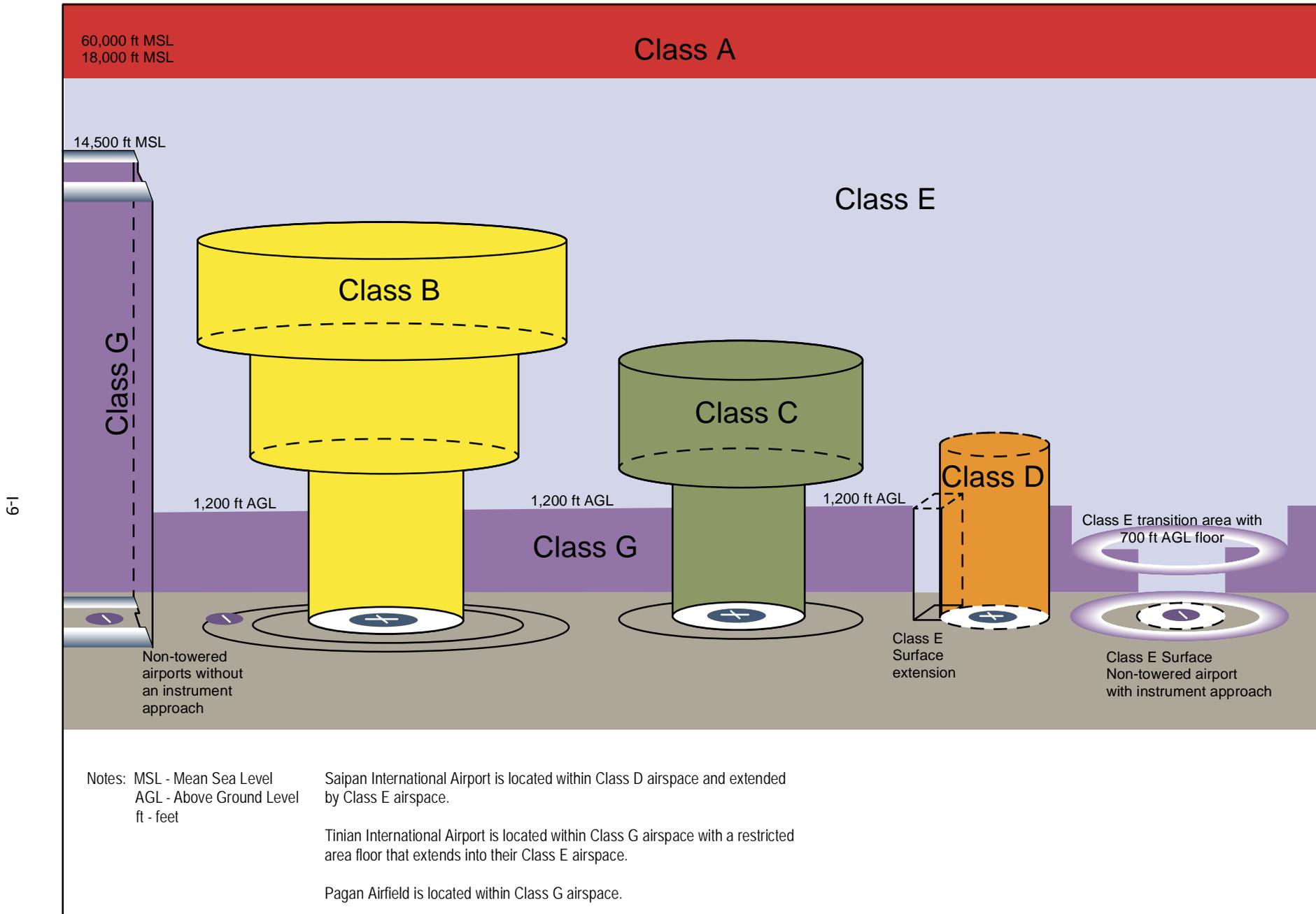


Figure 1
Cross Section of Airspace Classes and Relationships

Table 3. Airspace Classification Requirements

Airspace	Class A	Class B	Class C	Class D	Class E	Class G
Entry Requirements	ATC Clearance	ATC Clearance	ATC clearance for IFR. All require radio contact	ATC clearance for IFR all require radio contact	ATC clearance for IFR all require radio contact	None
Minimum Pilot Qualifications	Instrument Rating	Private or Student certificate. Local restrictions apply	Student Certificate	Student Certificate	Student certificate	Student Certificate
Two-Way Radio Communication	Required	Required	Required	Required	Required under IFR flight plan*	Not required*
VFR Visibility Minimum	NA	3 SM (4.82 km)	3 SM(4.82 km)	3 SM(4.82 km)	Below 10,000 MSL (3048 meters): 3 statute miles (4.82 km). At or above 10,000' MSL (3048 meters): 5 statute miles	Below 1,200 feet AGL (365 meters) (regardless of MSL): Day: 1 SM (1.6 km); Night: 3 SM (4.18 km) Above 1,200 feet AGL (365 meters) and below 10,000 feet (3,048 meters): Day: 1 SM (1.6 km); Night: 3 SM (4.18 km) Above 10,000 MSL: 5 SM (8 km)
VFR Aircraft Separation	NA	All	IFR Aircraft	Runway Operations	None	None
Traffic Advisories	Yes	Yes	Yes	Workload Permitting	Workload Permitting	Workload Permitting
Airport Application	NA	Radar, Instrument Approaches, Weather, Control Tower, High Density	Radar, Instrument Approaches, Weather, Control Tower	Instrument Approaches, Weather, Control Tower	Instrument Approaches, Weather	Control Tower

Table 3. Airspace Classification Requirements

<i>Airspace</i>	<i>Class A</i>	<i>Class B</i>	<i>Class C</i>	<i>Class D</i>	<i>Class E</i>	<i>Class G</i>
Speed Restrictions	N/A	250 KIAS below 10,000 MSL (3048 meters)	250 KIAS below 10,000 MSL (3,048 meters) and 200 KIAS below 2,500' (762 meters) with in 4 nm (7.4 km) of the primary airport	250 KIAS below 10,000 MSL (3,048 meters) and 200 KIAS below 2,500' (762 meters) within 4 nm (7.4 km) of the primary airport	NA	NA
Differs from ICAO	No	ICAO does not have speed restriction	ICAO does not have speed restriction, ICAO requires ATC Clearance	ICAO requires ATC Clearance	No	ICAO requires 3 statute mile visibility

Legend: AGL = above ground level; ATC = Air Traffic Control; km = kilometers; KIAS = Knots Indicated Airspeed; ICAO = International Civil Aviation Organization; IFR = Instrument Flight Rule; NA = Not Applicable; VFR = Visual Flight Rules
nm = Nautical Mile; SM = Statute Mile.

Notes: *Unless a temporary tower is present.

Source: FAA 2013b.

Types of airspace included as part of this EIS/OEIS and the FAA definition of each are below (FAA 2014a).

- *Class A Airspace.* Generally the airspace from 18,000 feet MSL, up to and including, Flight Level (FL) 600 (60,000 feet [81,288 meters] MSL), including the airspace overlying the waters within 12 nautical miles (22 kilometers) of the coast of the 48 contiguous states and Alaska. Unless otherwise authorized, all persons must operate their aircraft under Instrument Flight Rules (IFR).
- *Class D Airspace.* Generally, the airspace from the surface to 2,500 feet (762 meters) above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class C area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish two-way radio communications with the Air Traffic Control facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to visual flight rules (VFR) aircraft.
- *Class E Airspace.* Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. The types of Class E airspace associated with the proposed action follow:
 - *Airspace Used for Transition.* These are Class E airspace areas beginning at either 700 or 1,200 feet above ground level (AGL) used to transition to/from the terminal or en route environment.
 - *Offshore/Control Airspace Areas.* Airspace areas beyond 12 NM (22 kilometers) from the coast of the United States, wherein air traffic control services are provided.
- *Class G Airspace.* Airspace that has not been designated as Class A, Class B, Class C, Class D, or Class E airspace.
- *Military Operations Area* is airspace designated outside of Class A airspace (i.e., below 18,000 feet [5,486 meters] MSL), to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.
- *Restricted Area.* Airspace established under 14 CFR part 73 provisions, within which the flight of aircraft, while not wholly prohibited, is subject to restriction.
- *Warning Area.* Airspace of defined dimensions (extending from 3 nautical miles [6 kilometers] outward from the coast of the United States) designated to contain activities that may be hazardous to nonparticipating aircraft.
- *Military Training Route* is a corridor of airspace with defined vertical and lateral dimensions established for conducting military flight training at airspeeds exceeding 250 nautical miles per hour (463 kilometers per hour) and generally below 10,000 feet (3,048 meters) MSL. Military training routes are designated as either instrument route (IR) or a visual route (VR).
- *Air Traffic Control Assigned Airspace.* Airspace assigned by Air Traffic Control to segregate air traffic between the specified activities being conducted within the assigned airspace and other IFR air traffic.

- *Commercial Aviation Routes* are federal airways assigned to commercial aircraft use.
- *Organized Track System Routes*. A series of air traffic service routes which may be fixed and charted, or are flexible and are described by Notices to Airmen (NOTAMs).

1.3 DESCRIPTION OF PROPOSED SPECIAL USE AIRSPACE AND TRAINING ACTIVITIES

1.3.1 Tinian

As can be seen in [Figure 2](#), three types of airspace are proposed to support military training on Tinian. There is one restricted area, R-7203, that would be made up of eight segments (A/B/C/X/Y/Z/E/W), one MOA (Tinian MOA) and one ATCAA (Tinian ATCAA). The configurations of the restricted areas are based on the location of the proposed Range and Training Area (RTA) and the distance needed to ensure the safety of non-participating aircraft. The RTAs were relocated to ensure that single engine aircraft would be able to safely fly around the impact areas. [Table 4](#) describes the airspace proposed for Tinian.

Table 4. Proposed Airspace Coordinates-Tinian

<i>Airspace</i>	<i>Coordinates</i>	<i>Altitude¹</i>	<i>Times of Use</i>
<i>Tinian MOA</i>	Beginning at a point 12 nm from and parallel to the Tinian shoreline to the point of beginning.	3,000 feet (914 meters) MSL up to, but not including, FL180 (18,000 feet MSL [5,486 meters])	Activated by NOTAM
<i>Tinian ATCAA</i>	Beginning at lat. 15°05'33"N., long. 145°51'47"E.; curved (12nm) to lat. 14°58'43"N., long. 145°52'41"E.; curved (12nm) to lat. 14°51'13"N., long. 145°26'19"E.; curved (12nm) to lat. 15°11'36"N., long. 145°26'51"E.; to lat. 15°14'29"N., long. 145°29'47"E.; to the point of beginning.	FL180 (18,000 feet MSL [5,486 meters]) up to FL300 (30,000 feet [9,144 meters] MSL)	Activated by NOTAM
<i>R-7203A</i>	Beginning at lat. 15°4'17" N., long. 145°34'19" E.; to lat. 15°6'4" N., long. 145°37'37" E.; to lat. 15°5'59" N., long. 145°38'32" E.; to lat. 15°3'42" N., long. 145°36'52" E.; to lat. 15°3'4" N., long. 145°36'51" E.; to lat. 15°0'55" N., long. 145°33'10" E.; to the point of beginning.	Surface up to FL180 (18,000 feet MSL [5,486 meters])	0700-2200 (7:00 a.m. to 10:00 p.m.); except for periods with Saipan International Airport (large passenger jet or Jetliner) activity; other times by NOTAM
<i>R-7203B</i>	Beginning at lat. 15°5'59" N., long. 145°38'32" E.; to lat. 15°5'57" N., long. 145°38'50" E.; to lat. 15°5'8" N., long. 145°39'26" E.; to lat. 15°4'37" N., long. 145°39'30" E.; to lat. 15°3'4" N., long. 145°36'51" E.; to lat. 15°3'42" N., long. 145°36'52" E.; to the point of beginning.	Surface up to FL180 (18,000 feet MSL [5,486 meters])	0700-2200 (7:00 a.m. to 10:00 p.m.); except for periods with Saipan International Airport (large passenger jet or Jetliner) activity; other times by NOTAM

Table 4. Proposed Airspace Coordinates-Tinian

Airspace	Coordinates	Altitude¹	Times of Use
R-7203C	Beginning at lat. 15°5'57" N., long. 145°38'50" E.; to lat. 15°5'53" N., long. 145°39'29" E.; to lat. 15°4'51" N., long. 145°39'54" E.; to lat. 15°4'37" N., long. 145°39'30" E.; to lat. 15°5'8" N., long. 145°39'26" E.; to the point of beginning.	Surface up to FL180 (18,000 feet MSL [5,486 meters])	0700-2200 (7:00 a.m. to 10:00 p.m.); except for periods with Saipan International Airport (large passenger jet or Jetliner) activity; other times by NOTAM
R-7203X	Beginning at lat. 15°0'55" N., long. 145°33'10" E.; to lat. 15°3'4" N., long. 145°36'51" E.; to lat. 15°2'8" N., long. 145°36'50" E.; to lat. 15°0'17" N., long. 145°37'56" E.; to lat. 14°59'35" N., long. 145°33'32" E.; to the point of beginning.	Surface up to FL180 (18,000 feet MSL [5,486 meters])	0700-2200 (7:00 a.m. to 10:00 p.m.); other times by NOTAM
R-7203Y	Beginning at lat. 15°3'4" N., long. 145°36'51" E.; to lat. 15°4'37" N., long. 145°39'30" E.; to lat. 15°0'37" N., long. 145°40'3" E.; to lat. 15°0'17" N., long. 145°37'56" E.; to lat. 15°2'8" N., long. 145°36'50" E.; to the point of beginning.	Surface up to FL180 (18,000 feet MSL [5,486 meters])	0700-2200 (7:00 a.m. to 10:00 p.m.); other times by NOTAM
R-7203Z	Beginning at lat. 15°4'37" N., long. 145°39'30" E.; to lat. 15°4'51" N., long. 145°39'54" E.; to lat. 15°3'28" N., long. 145°40'48" E.; to lat. 15°0'40" N., long. 145°40'19" E.; to lat. 15°0'37" N., long. 145°40'3" E.; to the point of beginning.	Surface up to FL180 (18,000 feet MSL [5,486 meters])	0700-2200 (7:00 a.m. to 10:00 p.m.); other times by NOTAM
R-7203E²	Beginning at lat. 15°3'28" N., long. 145°40'48" E.; to lat. 15°1'28" N., long. 145°47'46" E.; to lat. 14°57'18" N., long. 145°45'14" E.; to lat. 15°0'40" N., long. 145°40'19" E.; to the point of beginning.	Surface up to FL180 (18,000 feet MSL [5,486 meters])	Activated by NOTAM
R-7203W	Beginning at lat. 15°7'38" N. long. 145°29'31" E.; to lat. 15°12'42" N., long. 145°37'19" E.; to lat. 15°5'53" N., long. 145°39'29" E.; to lat. 15°6'4" N., long. 145°37'37" E.; to lat. 15°4'17" N., long. 145°34'19" E.; to lat. 15°0'55" N., long. 145°33'10" E.; to lat. 14°59'35" N., long. 145°33'32" E.; to lat. 14°58'59" N., long. 145°29'28" E.; to the point of beginning.	Surface up to FL180 (18,000 feet MSL [5,486 meters])	Activated by NOTAM

Notes: ¹Maximum altitude would vary from 4,000 feet MSL to 17,000 feet MSL depending upon which systems/activities have been scheduled.

²Air-to-ground ordnance delivery only.

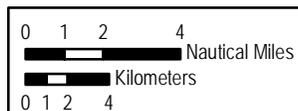
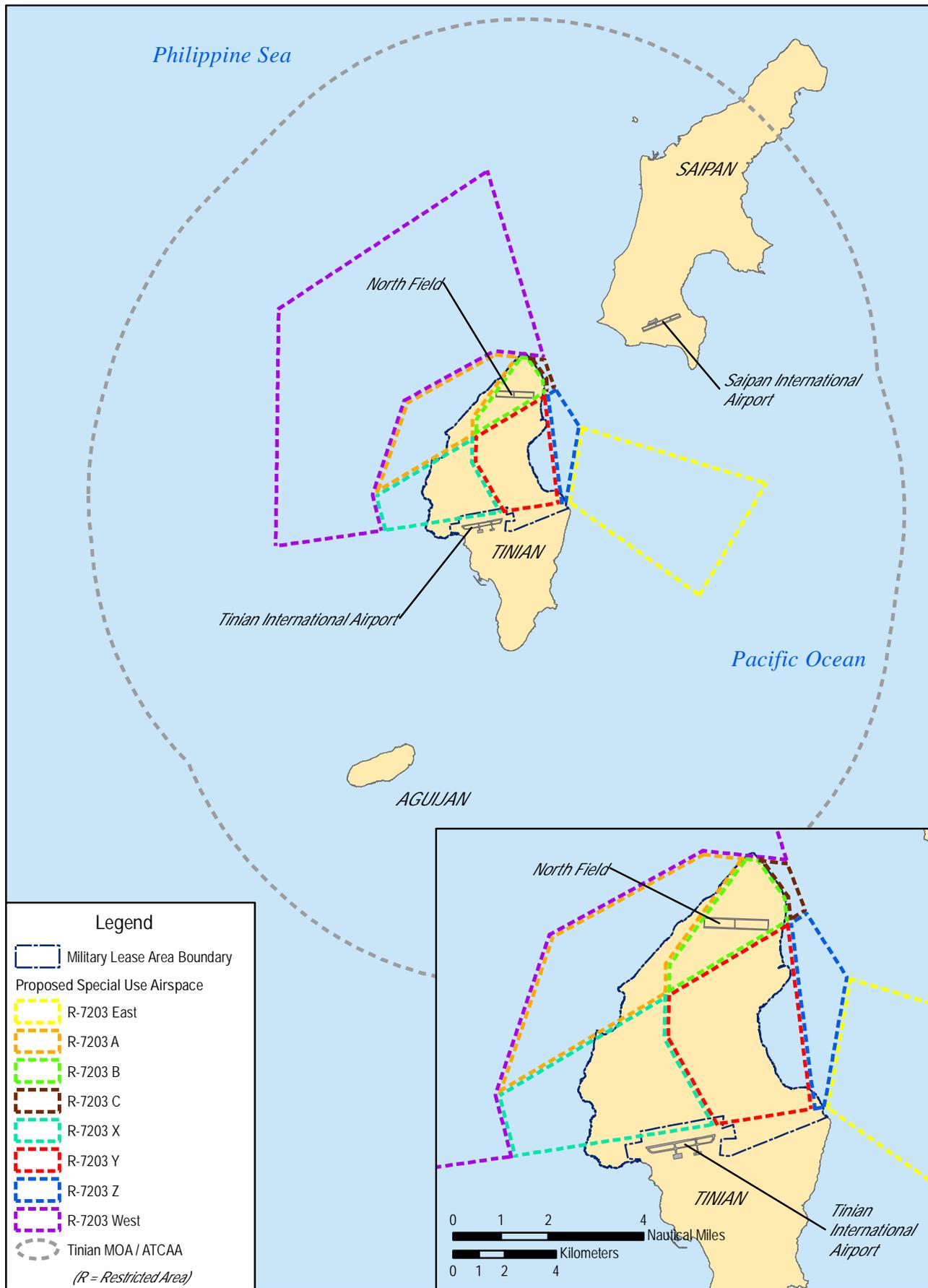


Figure 2
Tinian All Action Alternatives
Special Use Airspace: Two-Dimensional Perspective



R-7203A/B/C/X/Y/Z/E and W would be scheduled together and NOTAMs issued in support of fixed-wing aircraft training events only. R-7203W would also be scheduled as needed for the live convoy course.

R-7203A/B/C/X/Y/Z and W would be activated either individually or together to the appropriate vertical hazard elevation when live-fire training on Tinian includes larger caliber weapons such as .50 caliber, 7.62-millimeter (mm) rifles; 60-mm, 81-mm, or 120-mm mortars; artillery; demolitions; unmanned aerial systems; or close air support training events. Altitudes scheduled would be from the surface to a maximum altitude that would vary from 4,000 feet (914 meters) up to 18,000 feet MSL (5,486 meters) depending upon which activities are scheduled. Examples of how this airspace would be scheduled and/or restricted follow.

During fixed-wing aircraft training events such as Close Air Support, R-7203A/B/C/X/Y/Z/E/W could be activated together up to 18,000 feet (5,486 meters) MSL. Activation of the Tinian MOA and Tinian ATCAA could be used to extend the horizontal and vertical airspace available for training when aircraft need more space in which to operate.

[Table 5](#) presents the proposed annual operating days and hours per day of use for each block of SUA. Additional details for proposed munitions use can be found in the EIS/OEIS, Chapter 2, Table 2.4-5, *Proposed Tinian RTA Representative Annual Munitions Expenditures: All Tinian Action Alternatives*. Additional details on aircraft operations can be found in the EIS/OEIS, Chapter 2, Table 2.4-4, *All Tinian Action Alternatives Proposed Typical Annual Landing Zone Operations*, and Chapter 2, Table 2.4-6, *All Tinian Action Alternatives Proposed Annual Operations in Special Use Airspace*.

Table 5. Proposed Special Use Airspace Use¹

<i>Airspace</i>	<i>Annual Number of Days</i>	<i>Hours Per Day (Aircraft Sorties)¹</i>	<i>Hours Per Day (Munitions Use)²</i>
R-7203A/B/C/X/Y/Z	140	1-2	12
R-7203E	135	1-2	NA
R-7203W	140	1-2	12
Tinian MOA	135	1-2	NA
Tinian ATCAA	135	1-2	NA

Notes: ¹Hours per day are not cumulative as Airspace Units may be activated independent of each other or simultaneously.

²Altitude varies based on munitions in use.

As required by the FAA, SUA would be charted on airspace maps and the schedule of use published at least 24-hours in advance of airspace activation through NOTAMs. Tinian Range Control would be responsible for scheduling airspace with training and operational units and would follow existing notification procedures to the FAA or local aviation authorities. NOTAMs are available on the internet at <https://www.notams.jcs.mil>.

1.3.2 Pagan

As can be seen in [Figure 3](#), there are two types of SUA proposed for Pagan, one warning area and one restricted area with four segments; each airspace unit has a low and high component.

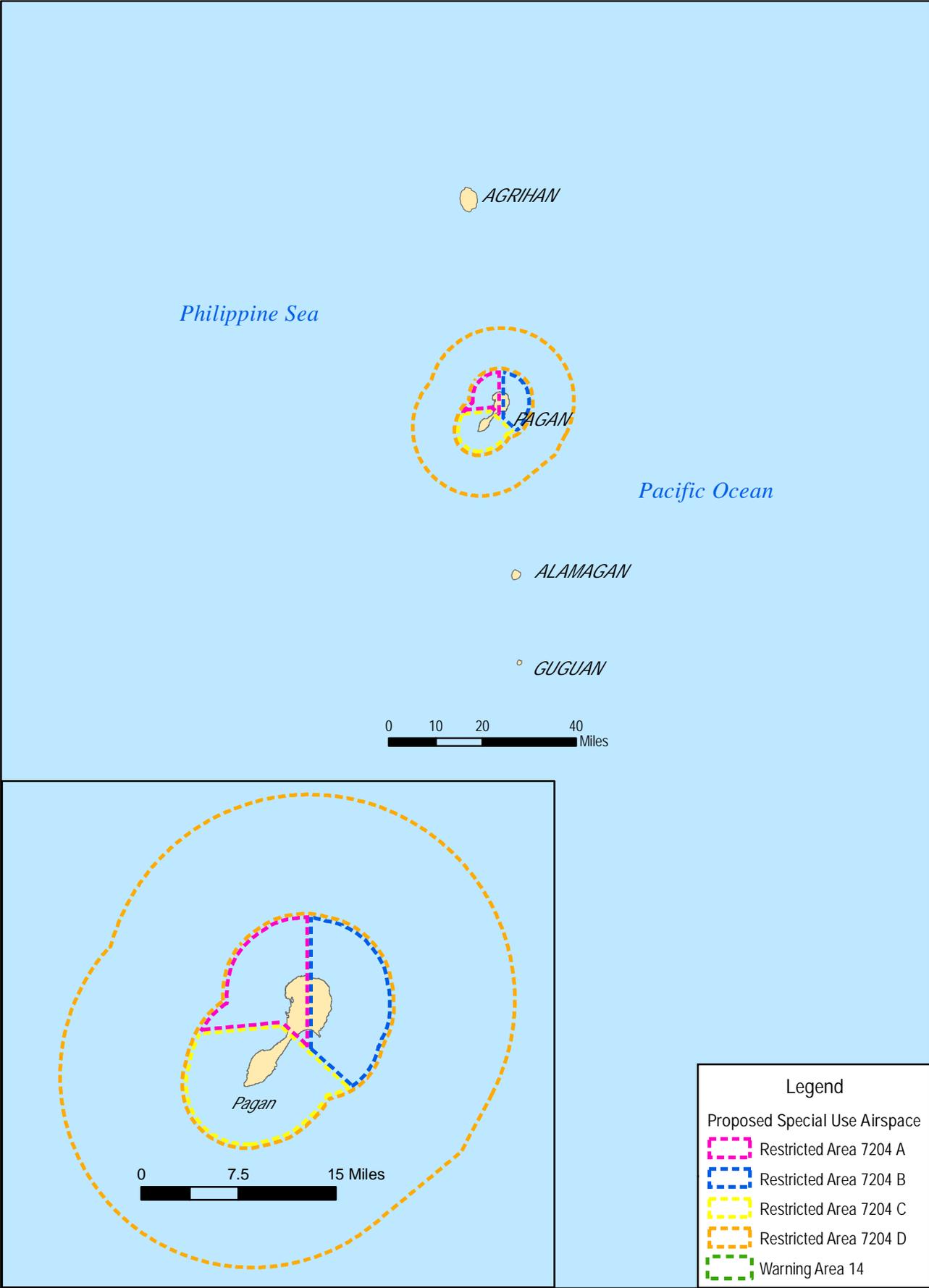


Figure 3
 Pagan All Action Alternatives
 Special Use Airspace: Two-Dimensional Perspective



Warning Area (W) -14 is a quadrilateral centered on the island of Pagan with a dimension roughly 60 nautical miles by 80 nautical miles (111 by 148 kilometers) and an area of approximately 4,800 square nautical miles (8,890 square kilometers). W-14 would be activated as needed to separate non-participating military and civil/commercial aircraft from hazardous air-to-air, air-to-ground, and ship-to-shore operations.

W-14 would be charted on airspace maps as W-14 Low (Surface to FL300 [30,000 feet] [9,144 meters]) and W-14 High (FL300 to FL600 [60,000 feet] [18,288 meters]) and scheduled for use by the Commander, Joint Region Marianas with NOTAMs issued monthly and at least 24 hours prior to activation. High and low segments would allow for the recall of the high segment to accommodate commercial aircraft transiting the area.

R-7204A/B/C/D is an area that encompasses the island of Pagan and the airspace within 12 nautical miles from the shoreline. It would be charted as described in [Table 6](#). When high and low areas are activated together, airspace would be from the surface to FL600 (approximately 60,000 feet [18,288 meters] MSL). R-7204 would be activated as needed when live-fire training on Pagan includes large-caliber weapons such as 7.62-mm rifles, mortars, artillery, demolitions; Unmanned Aerial Systems; lasers; and close air support training events. Altitudes scheduled would be from the surface to an altitude that would vary from 4,000 feet AGL (1,219 meters) to 60,000 feet (18,288 meters) MSL depending upon which systems/activities have been scheduled. High and low segments allow better management of the airspace, with the high segment only activated as needed. When the R-7204A/B/C/D low is active (surface to FL300 [approximately 30,000 feet] [9,144 meters]), it is expected that commercial aircraft would be at altitudes above 30,000 feet (9,144 meters) and could transit the area without interference.

Table 6. Proposed Airspace Coordinates - Pagan

<i>Airspace</i>	<i>Coordinates</i>	<i>Altitude</i>	<i>Times of Use</i>
R-7204A	Beginning at lat. 18°14'12"N., long. 145°46'57"E.; to lat 18°5'12"N., long 145°47'1"E.; to lat 18°6'53"N., long 145°45'3"E.; to lat 18°6'19"N., long 145°39'13"E.; following a line north 4 NM from and parallel to the Pagan shoreline to the point of beginning.	Low: Surface up to FL300 (30,000 feet [9,144 meters] MSL) High: FL300 up to FL600 (60,000 feet [18,288 meters] MSL)	Activated by NOTAM
R-7204B	Beginning at lat. 18°14'12"N., long. 145°46'57"E.; to lat 18°5'12"N., long 145°47'1"E.; to lat 18°2'37"N., long 145°50'4"E.; following a line north 4 NM from and parallel to the Pagan shoreline to the point of beginning.	Low: Surface up to FL300 (30,000 feet [9,144 meters] MSL) High: FL300 up to FL600 (60,000 feet [18,288 meters] MSL)	Activated by NOTAM
R-7204C	Beginning at lat. 18°6'53"N., long. 145°39'13"E.; to lat 18°6'53"N., long 145°45'3"E.; to lat 18°2'37"N., long 145°50'4"E.;	Low: Surface up to FL300 (30,000 feet [9,144 meters] MSL) High: FL300 up to FL600 (60,000 feet	Activated by NOTAM

Table 6. Proposed Airspace Coordinates - Pagan

Airspace	Coordinates	Altitude	Times of Use
	following a line north 4 NM from and parallel to the Pagan shoreline to the point of beginning.	[18,288 meters] MSL)	
R-7204D	Beginning at lat. 18°12'12"N., long. 145°52'56"E.; curved (12nm) to lat. 17°58'17"N., long. 145°57'51"E.; to the point of beginning.	Low: Surface up to FL300 (30,000 feet [9,144 meters] MSL) High: FL300 up to FL600 (60,000 feet [18,288 meters] MSL)	Activated by NOTAM
W-14	Beginning at lat. 19°19'07"N., long. 144°16'53"E.; to lat. 19°18'57"N., long. 13 147°00'07"E.; to lat. 17°00'07"N., long. 147°00'07"E.; to lat. 17°00'02"N., long. 145°05'10"E.; to the point of beginning.	Low: Surface up to FL300 (30,000 feet [9,144 meters] MSL) High: FL300 up to FL600 (60,000 feet [18,288 meters] MSL)	Activated by NOTAM

[Table 7](#) presents the proposed annual operating days and hours per day of use for each block of SUA. Additional details for proposed munitions use can be found in the EIS/OEIS, Chapter 2, Table 2.5-4, *All Pagan Alternatives Proposed Representative Annual Munitions Expenditures*. Additional details on aircraft operations can be found in the EIS/OEIS, Chapter 2, Tables 2.5-5, *All Pagan Action Alternatives Aircraft Operations Proposed in Special Use Airspace*, and 2.5-3, *All Pagan Action Alternatives Proposed Typical Annual Landing Zone Operations*.

As required by the FAA, SUA would be charted on airspace maps and the schedule of use published at least 24 hours in advance of airspace activation through NOTAMs. Range Control would be responsible for scheduling airspace with training and operational units and would follow existing notification procedures to the FAA or local aviation authorities.

Table 7. Proposed Special Use Airspace Use¹

Airspace	Annual Number of Days	Hours Per Day (Aircraft Sorties)²	Hours Per Day (Munitions Use)³
R-7204A Low	112	3	24
R-7204A High	112	3	0
R-7204B Low	112	3	24
R-7204B High	112	3	0
R-7204C Low	112	3	24
R-7204C High	112	3	0
R-7204D Low	112	3	24
R-7204D High	112	3	0
W-14 Low	112	3	3
W-14 High	112	3	0

Notes: ¹Hours per day are not cumulative as airspace units may be activated independent of each other or simultaneously.

²Based on an average annual day; usage would vary based on asset availability.

³Ceiling altitude varies based on munitions in use.

1.4 EXISTING AIRSPACE ENVIRONMENT

The region of influence for the proposed action is the CNMI airspace where the U.S. military proposes to operate aircraft and conduct live-fire training. It is inclusive of the airspace used to support airport arrivals and departures of the airports located beneath the proposed airspace as well as the en route airways used by civilian aircraft to transit the area ([Figures 4, 5, 6 and 7](#)). Information specific to each airport can be found in the EIS/OEIS, Section 3.13, *Transportation*. Specifically, the airspace region of influence includes:

- The regional airspace used to support arrivals and departures for Tinian and Saipan International Airports.
- Airspace within a 12-nautical mile (22-kilometer) boundary of Tinian's shore (see the EIS/OEIS, Chapter 2, *Proposed Action and Alternatives*) from the surface up to FL300 (18,000 feet [5,486 meters] MSL).
- Existing SUA and ATCAA located within the region of the proposed action.
- Airspace within a 60-nautical mile (111-kilometer) by 80-nautical mile (148-kilometer) area surrounding Pagan (see the EIS/OEIS, Chapter 2, *Proposed Action and Alternatives*) from the surface to FL600 (60,000 feet [18,288 meters] MSL).

1.4.1 Tinian

There are three airfields and three private use heliports that rely on airspace within the proposed Tinian airspace for approaches and departures. Tinian International Airport and Saipan International Airport are FAA airports used by civilian and military aircraft; North Field is located within the Military Lease Area and used exclusively by the U.S. military. Three private-use heliports located near the Dynasty Hotel and Casino are used occasionally by chartered and private helicopters for transit between Saipan and Tinian. The *Feasibility Assessment for the Establishment of Special Use Airspace for Marine Corps Training Activities on the Islands of Guam, Tinian, and Pagan*, Appendix B contains detailed graphics of the approach and departure procedures for Saipan International Airport (DoN 2011) ([Enclosure 1](#)). Other military airspace within 40 nautical miles (74 kilometers) of Tinian includes ATCAAs 3A, 3B, and 3C, and R-7201. ATCAA 6, with a floor of FL390 (39,000 feet [11,887 meters] MSL) to FL410 (41,000 feet [12,497 meters] MSL) lies directly above the proposed Tinian MOA and ATCAA.

Airport Operations are collected by Air Traffic Control personnel and reported to the FAA on an annual basis. [Table 8](#) provides the most current information available for operations at Tinian and Saipan International airports. The local heliports are used only 1 or 2 times per week. Based on the low number of operations and because flights require access to the same airspace as flights en route to and from Tinian International Airport, the impacts to flights en route to the heliports would be as discussed for Tinian and they are dismissed from detailed analysis.

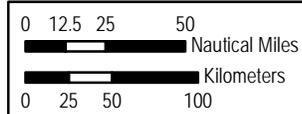
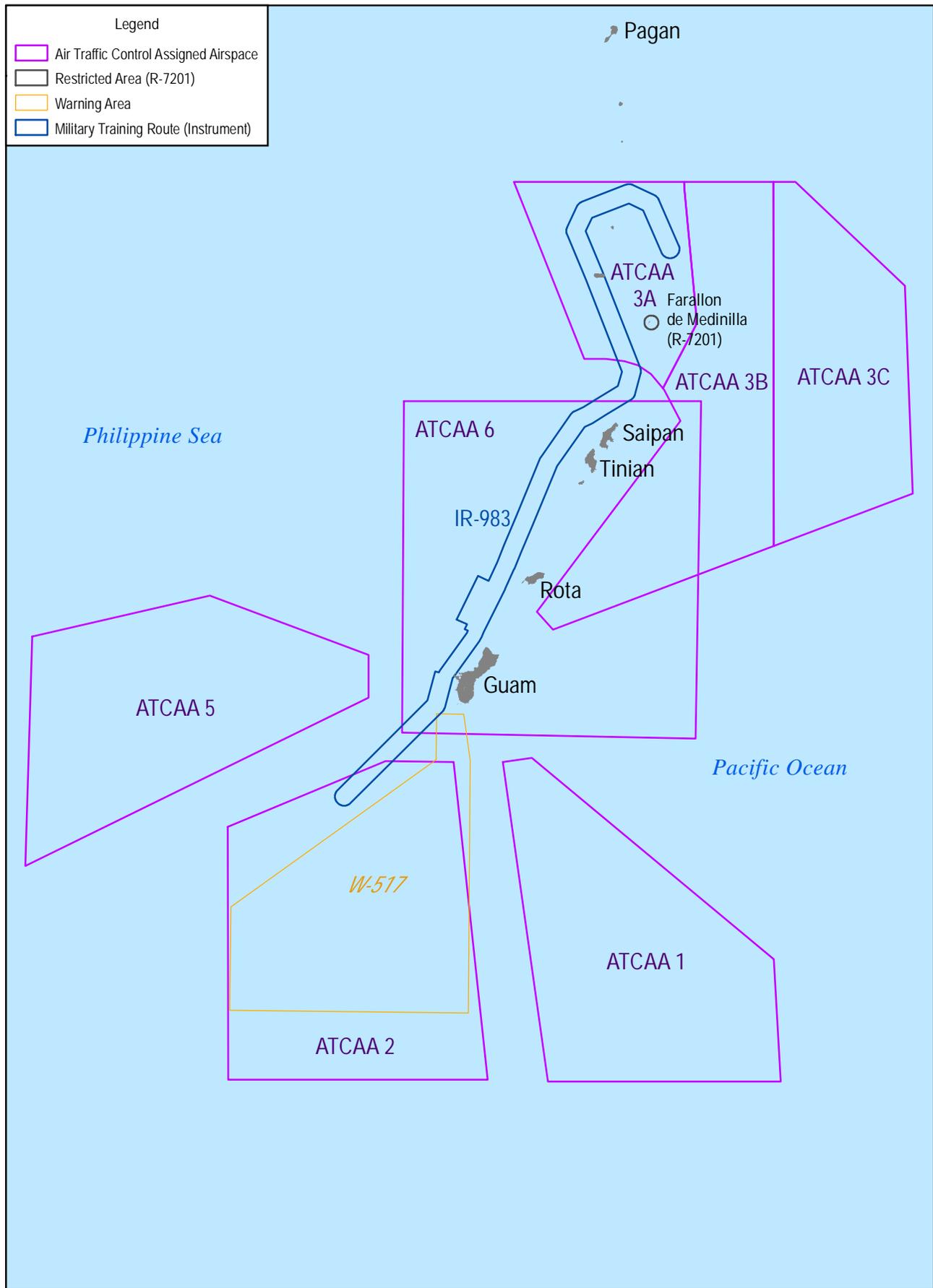


Figure 4
 Airspace Region of Influence



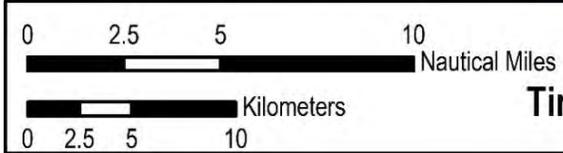
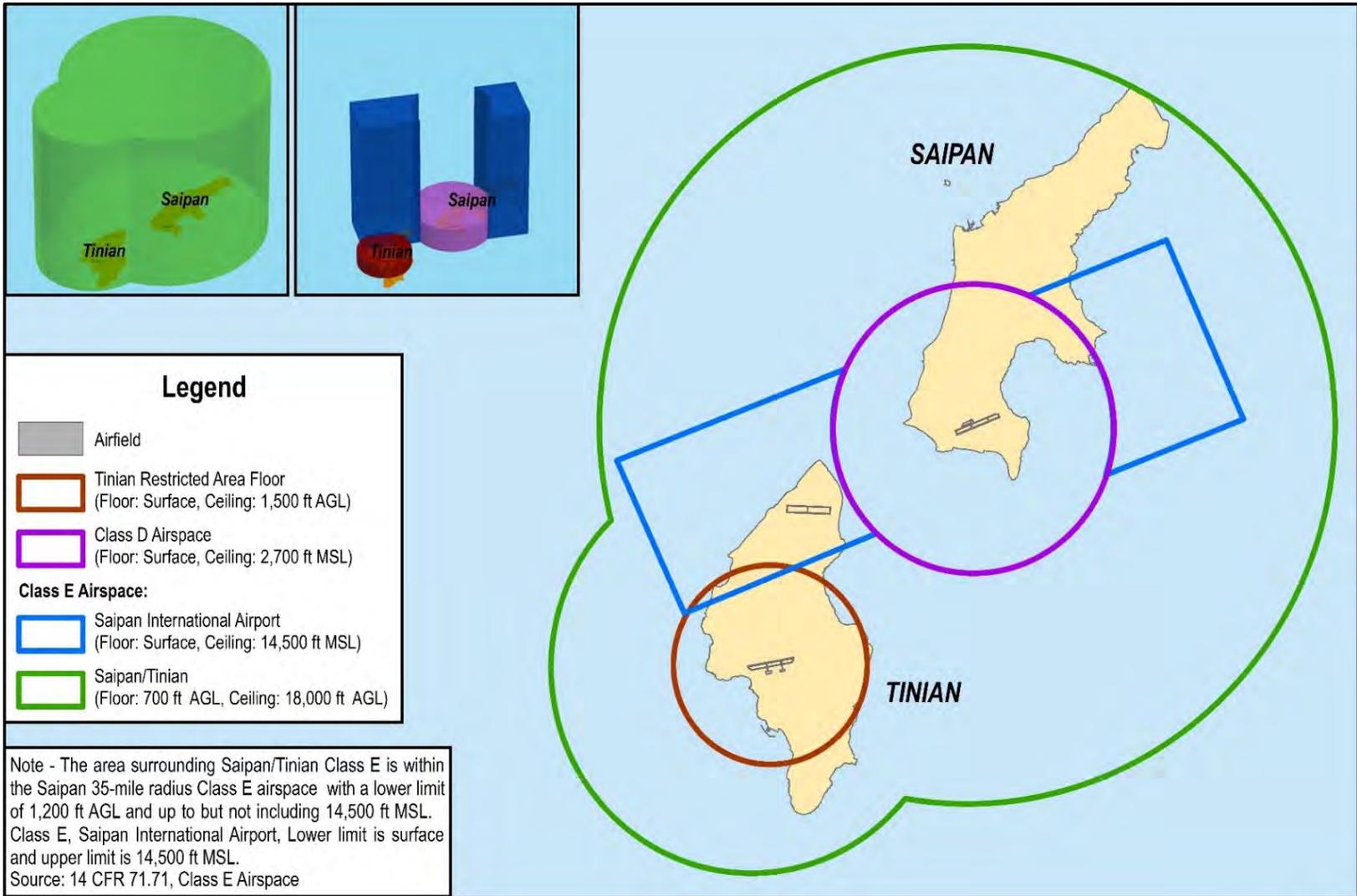


Figure 5
Tinian and Saipan Regional Airspace

Table 8. CNMI Annual Airport Operations

<i>Characteristics</i>	<i>Annual Operations</i>	
	<i>Tinian</i>	<i>Saipan</i>
Air Carrier	0	4,656
Air taxi	48,640	48,800
Military	476	166
General aviation (local and itinerant)	0	10,406
Total	49,116	64,028

Source: FAA 2014c (Tinian); Skyvector 2013 (Saipan).

Tinian International Airport has one runway that supports takeoffs and landings in two directions: to the east/northeast on a compass heading of 080 degrees and to the west/southwest on a compass heading of 260 degrees (or 08/26). A 3-nautical mile (6-kilometer) area from the surface to 1,500 feet (357 meters) AGL surrounding the airport denotes the airport safety zone. Currently, Tinian airport averages 67 flights per day consisting of charter flights connecting Tinian with Saipan and military flights to and from Guam. Approximately 85% of arrivals and departures occur on Runway 08, and 15% on Runway 26 (Natasha Morgan, Tinian International Airport, personal communication, January 15, 2014). Tinian is a non-towered FAA airport located in Class G airspace with a Class E transition area (i.e., a floor of 700 feet [213 meters] AGL).

The airport is equipped with a navigational light system that includes runway end identifier lights and precision approach path indicator lights on both runway ends. There are no additional navigational aids. Aircraft arrivals and departures occur on a first come, first serve basis with pilots notifying each other of their intentions via the common traffic advisory frequency or as directed by Air Traffic Control. Air Traffic Control at Guam International Airport provides air traffic control services for flights in and out of Tinian airport on an as-needed basis. Communication services are provided by Air Traffic Control at Saipan International Airport. There are three published approaches to Tinian International Airport (Skyvector 2013). Charter flights fly VFR using the most direct route between runways.

- Tinian Area Navigation/GPS to Runway 26 intersects R-7203E and the Tinian MOA. It lines up with the runway at approximately 10 nautical miles (18 kilometers) and at an altitude at or above 2,600 feet (792 meters) MSL. Approaches to Tinian descend to the runway on a 3.04-degree glideslope. Missed approaches are directed to implement a climbing right turn to 2,800 feet (853 meters) MSL direct to the Saipan International Airports Non-Directional Beacon (NDB) and hold. All aircraft using this initial approach could be directly affected during the 135 days per year that R-7203E and the Tinian MOA are activated for use. When the Tinian MOA is activated independently of R-7203E, pilots would be expected to follow see-and-avoid procedures. Aircraft requiring use of the missed approach could be impacted when R-7203X and R-7203Y are active.
- Tinian Area Navigation/GPS to Runway 08 interacts with R-7203X. It lines up with the Tinian's Runway 08 at approximately 9 nautical miles (17 kilometers) and at an altitude at or above 2,600 feet (792 meters) MSL. Approaches to Tinian descend to the runway on a 3.04-degree glideslope. Missed approaches are directed to implement a climb to 2,800 feet (853 meters) MSL turning north at a point (DUCFI) 10 nautical miles (18 kilometers) from the departure end of the runway to the Saipan International Airport NDB and hold. All aircraft using this initial approach could be indirectly affected during the 135 days per year that Tinian MOA is scheduled

for use. Aircraft using this approach could continue to land using VFR or GPS. The missed approach could be directly affected during the 140 days per year that R-7203X and R-7203Y are activated.

- Tinian NDB-A interacts with R-7203 and the Tinian MOA. The NDB originates at 2,800 feet (853 meters) MSL at Saipan International Airport's holding pattern approximately 10 nautical miles (18 kilometers) from Tinian International Airport. Approaches to Tinian begin descent to the runway approximately 8 nautical miles (15 kilometers) from the approach end of either runway. Missed approaches are directed to implement a climb to 1,400 feet (427 meters), then a climbing right turn to 2,800 feet (853 meters) MSL direct to the Saipan International Airport's NDB and hold. All aircraft using this approach, or implementing the missed approach could be directly affected during the 140 days per year that R-7203X and R-7203Y are scheduled for use.

Tinian Commuter Flight Routes ([Figure 6](#)) intersect R-7203B/C/X/Y/Z. It is the primary flight path for aircraft transiting between Saipan and Tinian. Flights to and from Saipan and Tinian take place within the Saipan/Tinian Class E airspace and generally remain under 3,000 feet (914 meters) MSL. Flight operations to Tinian consist of private aircraft and unscheduled charter flights available through Star Marianas and private transportation between Saipan and the heliports located at Tinian Dynasty Hotel and Casino.

1.4.2 North Field

The U.S. military currently conducts airlift of personnel and cargo drops into the Exclusive Military Use Area. An important feature of the Exclusive Military Use Area is North Field, a large abandoned World War II-era airfield that is still used as a contingency landing field and supports fixed-wing and helicopter training activities. There are no published approaches into North Field. No SUA is required to support these activities unless they involve Unmanned Aerial Systems or live-fire training. Currently, there are approximately 80 C-130 and 118 helicopter annual operations on North Field and aircraft operating in the airspace are required to maintain contact with Saipan Air Traffic Control.

1.4.3 Saipan International Airport

Saipan International Airport has one runway, 07/25, with departures to the north (Runway 07) 85% of the time and to the south (Runway 25) 15% of the time. Saipan International Airport lies within the Guam Center's Radar Control Area, who is responsible for controlling commercial aircraft outside of Saipan Airport's Class D and E airspace. Air Traffic Control at Saipan Airport is responsible for the separation and movement of aircraft within their Class D and E airspace. Saipan Airport supports two navigational aids, an NDB, and an instrument landing system. Based on data reported to the FAA, in 2012 there were an average of approximately 85 daily departures and 85 daily arrivals when based on an average annual year (see [Table 6](#)).

- Saipan Class D airspace would not interact with the proposed Tinian MOA or R-7203. The Class D airspace consists of the airspace within a 4.3-nautical mile (7.9-kilometer) radius of Saipan International Airport from the surface to 2,700 feet (83 meters) AGL.

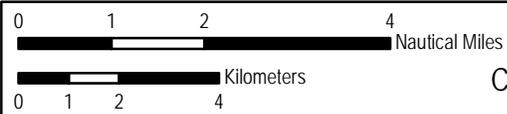


Figure 6
 Commuter Flight Routes



- Saipan Class E airspace would intersect with the proposed R-7203A/B/C and R-7203W and the Tinian MOA. Class E airspace extends the Saipan Class D airspace as depicted in [Figure 5](#). The Class E airspace extends the Saipan Class D airspace by approximately 8 nautical miles (15 kilometers) to the southwest and approximately 5 nautical miles (9 kilometers) to the northeast. The airspace begins at 700 feet (213 meters) MSL up to 4,500 feet (1,372 meters) MSL.
- Saipan Instrument Landing System or Localizer/Distance Measuring Equipment (DME) Runway 7 intersects 7203A/B/C. Aircraft using this approach line up with the runway at approximately 10 nautical miles (18 kilometers) and at an altitude at or above 2,100 feet (640 meters) MSL and begin their descent to the runway approximately 5.5 nautical miles (10.2 kilometers) from the approach end of the runway using a 3 degree glide slope. Missed approaches are directed to climb to 1,600 feet (488 meters), and then make a climbing right turn to 2,800 feet (853 meters) MSL direct to the Saipan International Airport's NDB and hold.
- Saipan NDB/DME Runway 7 intersects the Tinian MOA and R-7203A/B/C. Aircraft using this approach line up with the runway at approximately 10 nautical miles (18 kilometers) and at an altitude at or above 2,000 feet (610 meters) MSL and begin their descent to the runway. Missed approaches are directed to climb to 1,600 feet (488 meters) MSL, and then make a climbing right turn to 2,600 feet (610 meters) MSL direct to a holding point at 5 nautical miles (9 kilometers) from Runway 078.
- Saipan NDB/DME Runway 25 intersects with Tinian MOA. Aircraft using this approach line up with the runway at approximately 10 nautical miles (18 kilometers) and at an altitude at or above 2,600 feet (792 meters) MSL and begin their descent to the runway. Missed approaches are directed to climb to 1,900 feet (579 meters) MSL, and then make a climbing left turn to 2,800 feet (853 meters) MSL direct to the Saipan International Airport's NDB and hold.

1.4.4 Commercial Aviation Routes

As shown in [Figure 7](#), Regional Airports and Commercial Aviation Routes, there are several published commercial aviation routes that lie within close proximity of Tinian. Additional routes that traverse the Pacific are not charted but are based on the FAA's Pacific Organized Track System in order to provide fuel-efficient routes for long distance transpacific flights. These routes are currently adjusted every 12 hours in response to upper level wind conditions and adjustments necessary to route around active airspace. The proposed Tinian SUA would not be expected to impact these routes.

The FAA completed an air traffic analysis over a 7-day period from September 16 to 22, 2012 for IFR traffic within the Guam CERAP airspace in that included operations within the vicinity of ATCAA 3A/B and C. The study identified a total of 62 commercial tracks that occurred on or parallel to Jet Route G-205 along the far western edge or northwest corner of ATCAA 3A and a total of 28 tracks that occurred within ATCAA 3B/C, eight of which occur between the time period of 10:00 p.m. and 2:00 a.m. local time (DoN 2013b). The commercial tracks parallel to Jet Route G-205 would not be expected to be affected by activation of the Tinian MOA, ATCAA or R-7203 as it lies approximately 35 miles to the west of the SUA.

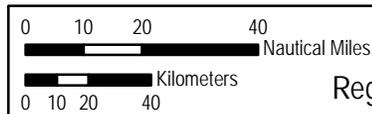
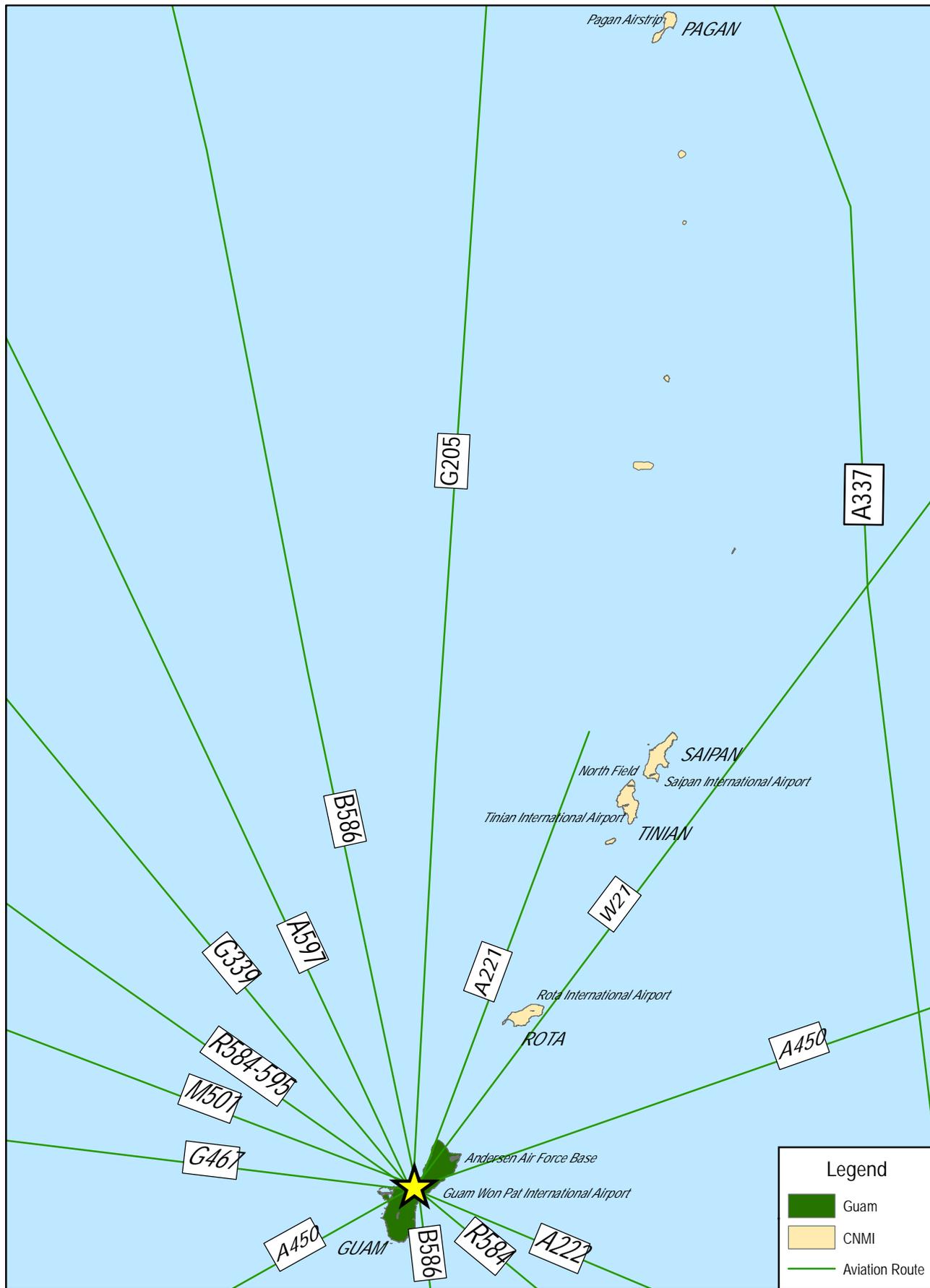
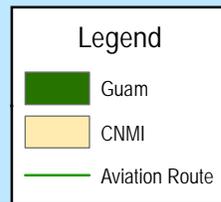


Figure 7
 Regional Airports and Commercial Aviation Routes



If the operations within ATCAA 3 A/B/C were associated with W-21, they could be affected when the Tinian MOA/ATCAA are active. W-21 is the airway used to transition between Guam and points north/northeast. Airway W-21 lies approximately 10 nautical miles (19 kilometers) to the east of Tinian and transects the proposed Tinian MOA/ATCAA.

Airway 221 is used to route traffic between Guam and the CNMI ([Figure 7](#)). Operations on A-221 are guided by the Guam CERAP. Those aircraft en route to and from Saipan are turned over to Saipan Air Traffic Control within 15 nautical miles (28 kilometers) of the airport. Aircraft operations on this route would be affected as a result of impacts to landings and takeoffs at Saipan International Airport.

1.5 EXISTING SPECIAL USE AIRSPACE AND OTHER MILITARY TRAINING AIRSPACE

[Figure 4](#) identifies the existing SUA and ATCAAs in the region. Only that airspace north of Guam (R-7201 and ATCAA 3A/B/C) has the potential for cumulative effects with the proposed action. ATCAAs 1/2/5 and W-517 to the south of Guam do not intersect with commercial airways (G205, A337 and W21 or Pacific Organized Track System routes) that require access to the proposed airspace. Joint Region Marianas is the DoN command that provides scheduling and control of activities within the restricted area units and submits requests and coordinates with the FAA for use of the ATCAA. The military training route (IR-983) is managed by Mariana Islands Range Control.

1.5.1 Military Training Routes

As shown in [Figure 8](#), IR-983 is aligned west of Guam and the CNMI and begins at a point northwest of Saipan to an end point southwest of Guam. With two exceptions, the route is 8-nautical miles (15 kilometers) wide and is charted from the surface to below 10,000 feet (3,048 meters) MSL. The closest point, the eastern edge of IR-983, is located approximately 8 nautical miles (15 kilometers) to the west of Tinian and the centerline is approximately 13 nautical miles (24 kilometers). The route is charted for continuous use and managed by Joint Region Marianas. Range Control. IR-983 is located approximately 8 nautical miles (15 kilometers) from Tinian. IR-983 is seldom used and was only scheduled for use 4 to 6 times in the past 3 to 4 years (Lt Col W. Burkland, Navy, personal communication, June 2014).

1.5.2 Air Traffic Control Assigned Airspace

As identified in [Figure 8](#), there are four ATCAAs within the Region of Influence that have been pre-configured and pre-assigned in agreements with the Guam CERAP and Joint Regions Marianas. Each ATCAA can be scheduled between the hours of 2100Z–0300Z (7:00 a.m.-1:00 p.m. ChST) and 0800Z–1400Z (6:00 p.m.-12 p.m. ChST) only, with the requested time block not to exceed 2 hours. In all cases, when in use at least one aircraft (to be identified in the request) must continuously monitor the appropriate Guam CERAP frequency for immediate recall of the airspace/altitude as needed to support air traffic control (DoN 2013b). Guam CERAP is designated as the controlling agency and Joint Region Marianas is the designated Department of Defense scheduling and de-confliction agency for activities within the ATCAAs. The FAA issues a NOTAM least 72 hours prior to military activity. [Table 9](#) provides details of each ATCAA in the region of influence and [Table 10](#) presents the use of each ATCAA in 2011.

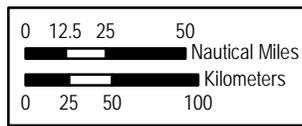
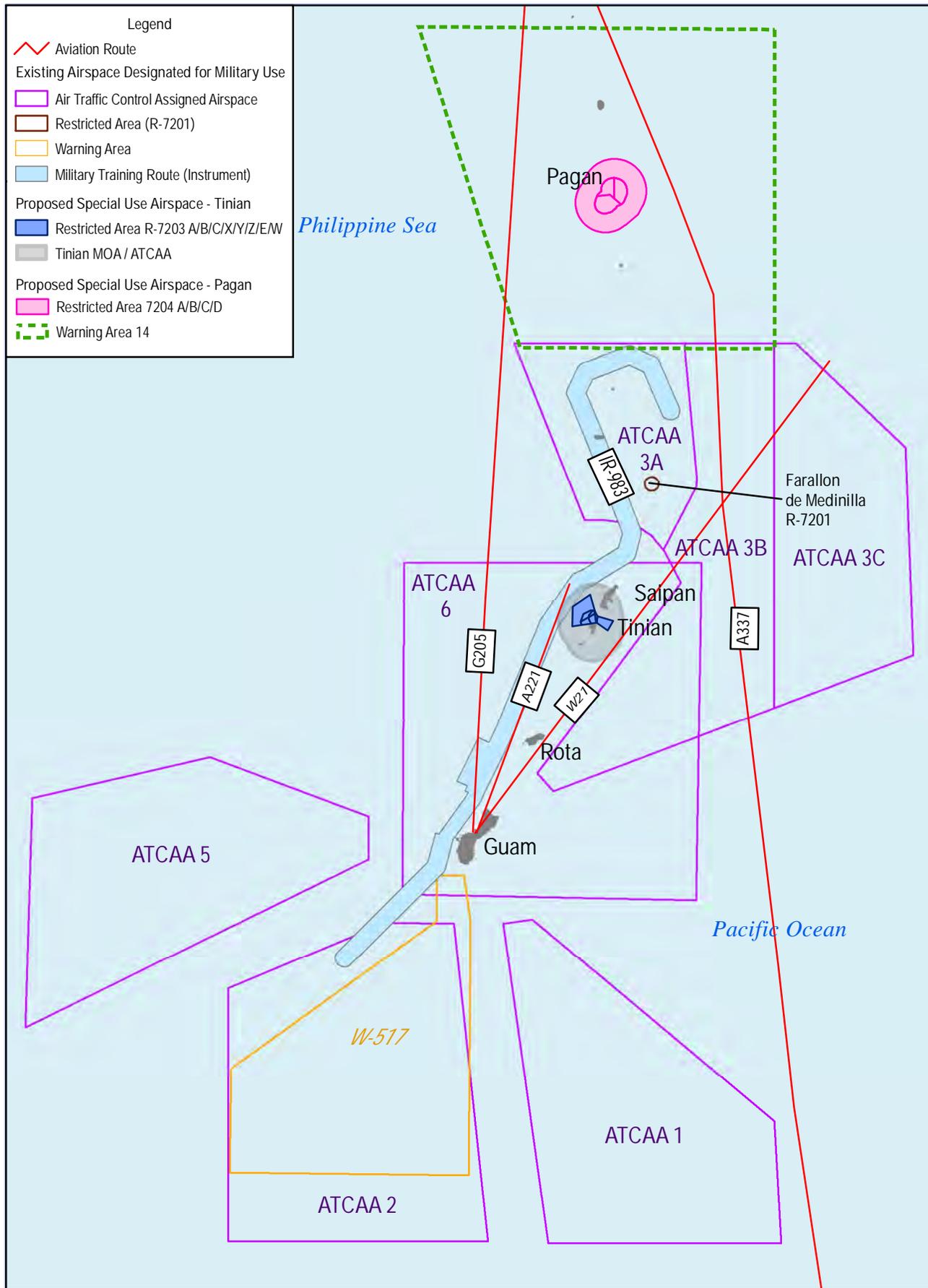


Figure 8
 Existing CNMI Special Use and Other
 Airspace for Designated Military Use

Table 9. Air Traffic Control Assigned Airspace within the Vicinity of Tinian

<i>Airspace</i>	<i>Area (nm²/km²)</i>	<i>Lower Limit (Floor)</i>	<i>Upper Limit (Ceiling)</i>
ATCAA 3A	4,802/16,802	Surface	FL300
ATCAA 3B	7,450/25,553	Surface	FL300
ATCAA 3C	8,905/31,159	Surface	FL300
ATCAA 6	18,551/63,628	FL390	FL410

Legend: FL = Flight Level (altitude in 100's of feet). FL300 = 30,000 feet (9,144 meters) MSL; FL410 = 41,000 feet (12,497) meters) MSL.

Source: DoN 2011.

ATCAAs 3A/B and C cover a 21,157 square nautical mile (72,566-square kilometer) area to the north and east of Tinian. ATCAA 3B lies within 25 nautical miles (46 kilometers) of Tinian and partially beneath ATCAA 6. ATCAA 3 has a floor at the surface and a ceiling of 30,000 feet (9,144 meters) MSL leaving a 9,000 foot (2,743 meter) gap between ATCAA 3B and ATCAA 6.

ATCAA 6 covers an 18,551-square nautical mile (63,628-square kilometer) area and lies 9,000 feet (2,743 meters) above the proposed Tinian ATCAA. ATCAA 6 has a floor of FL390 (39,000 feet [11,887 meters] MSL) and a ceiling of FL410 (41,000 feet [12,497 meters] MSL).

As shown in [Table 10](#), in 2011, ATCAAs 3A, 3B and 3C were scheduled and used approximately 4 times more than ATCAA 6. It should be noted that ATCAA 3A, 3B and 3C are activated either simultaneously or independent of each other so the annual hours used cannot be added together to show total hours of use for ATCAA 3. ATCAA 3 is used to extend the airspace available for training in R-7201.

Table 10. Current Use of Air Traffic Control Assigned Airspace

<i>Airspace</i>	<i>Annual # of Days</i>	<i>Annual Hours Used</i>
ATCAA 3A	160	1,440
ATCAA 3B	157	1,417
ATCAA 3C	111	1,109
ATCAA 6	61	381

Source: DoN 2011, Table 3-2.

1.5.3 Restricted Areas

R-7201 is a restricted area with a 3-nautical mile (6-kilometer) radius surrounding Farallon de Medinilla, although the published NOTAM usually advises that a 10-nautical mile (19-kilometer) radius is to be observed. The altitude limits of R-7201 span from the surface to infinity. The airspace supports live-fire and inert training activities such as sea-to-surface and air-to-ground gunnery, bombing, and missile exercises, along with Fire Support and Precision Weapons delivery on the range. R-7201 lies directly beneath ATCAA 3A and would not be expected to interact with use of Tinian airspace.

1.5.4 Airspace Obstructions

The International Broadcasting Bureau ([Photo 1](#)) is located on the western side of the Military Lease Area. The International Broadcasting Bureau contains an antenna array that includes five high/low band pairs of antennas, one mid-band antenna, and two low band antennas for a total of 13 curtain antennae. Each antenna comprises two vertical steel towers between 150 and 400 feet (46 to 122 meters) tall with a curtain of horizontal and vertical cables hung between the towers of the same height (DoN 2010b). These are obstacles that all aircraft need to avoid to prevent collision. Additionally, aircraft equipped with flight control or mission-critical electronic systems are vulnerable to the electromagnetic emissions from the relay station and are advised to avoid potential interference with aircraft control.



Photo 1. International Broadcasting Bureau

1.6 PAGAN

1.6.1 Pagan Airfield

There is one unimproved runway 11/29 on Pagan. In May 1981, Mount Pagan erupted and lava flowed across the airstrip causing the FAA to close the runway indefinitely. While Pagan airfield remains as an FAA-listed airfield, it is unattended and there is no control tower, navigational aids, or published approaches to either runway (Skyvector 2013). There are no scheduled flights to or from Pagan. The airstrip is used on an as needed basis by helicopters or small propeller aircraft to transport cargo and passengers to and from Saipan and for medical evacuation.

1.6.2 Commercial Aviation Routes

There are two commercial airways within 60 nautical miles (111 kilometers) of Pagan (see [Figure 8](#)). A-337 lies about 23 nautical miles (43 kilometers) to the east and G-205 is located approximately 40 nautical miles (74 kilometers) to the west. Operations on these airways in the vicinity of Pagan are within the Oakland FIR and guided by the Seattle ARTCC.

1.6.3 Existing Special Use Airspace

The closest SUA is ATCAA 3A/B. It lies approximately 60 nautical miles (111 kilometers) south of Pagan. Operations can be found in [Table 10](#). The northern border of ATCAA 3A/B forms the southern border of proposed W-21.

1.6.4 Airspace Obstructions

There are no obstructions to navigable airspace on Pagan although temporary flight restrictions could be issued by the FAA during volcanic activity.

1.7 AFFECTED AIRSPACE

The following section describes the potential effects to airspace needed to support commercial and civilian aircraft operations. The Marine Corps Guam Range Management Division would have the responsibility for safety functions during all training events within the RTAs on Tinian and Pagan. These functions are described in detail in the *Concept of Operations* (DoN 2013a) and would include airspace management, access, aircraft movement, and SUA de-confliction surveillance. The FAA is in the process of completing a formal aeronautical study for this proposed action that will be used to identify impacts to the national airspace system as a whole. The aeronautical study will include an in-depth analysis of aircraft operations using radar track data and flight plan information recorded by the Performance Data Analysis and Recording System (PDARS) and other data sources deemed necessary to ensure a comprehensive study. For this EIS/OEIS, impacts are identified for the local region of influence and based on the best information available. The U.S. military would continue to work with the FAA as a cooperating agency in resolving mutual concerns over these proposed airspace designations and configurations and in developing procedures in accordance with FAA Order 8260.19E, Change 1, *Flight Procedures and Airspace*, regarding the handling of civilian air traffic in the SUA. Prior to any airspace operations, the FAA, in their aeronautical study, will examine the potential impacts and identify resolutions to mitigate these impacts.

1.7.1 Tinian

R-7203 would be activated for all hazardous military activity. When activated for military use, non-participating aircraft would be prohibited from flying through the airspace without prior permission from the controlling agency. Per FAA Joint Order 7400.2K, *Procedures for Handling Airspace Matters*, paragraph 23-1-4B, "provisions must be made for aerial access to private and public use land beneath the restricted area and to accommodate instrument arrivals and departures at affected airports with minimum delay." Communication procedures would be established between U.S. military personnel responsible for controlling range operations (Tinian Range Control) and the Saipan International Airport Air Traffic Control to ensure access to Tinian International Airport for life-flight and to ensure that other emergency-related activities are given priority access to the airspace. Active management by Tinian Range Control, Saipan Air Traffic Control, and/or the Guam CERAP would allow civilian aircraft to be routed so they remain outside of the Restricted Areas.

The Tinian MOA would be activated when non-hazardous military aircraft activities, such as close air support, occur that warrant notification to non-participating aircraft. The MOA is airspace in which all aircraft pilots who are flying VFR are allowed access; however, all pilots (military and non-military) must follow see-and-avoid procedures to ensure safe separation of aircraft. Those aircraft flying under IFR may be routed through the airspace but only when separation of non-participating aircraft can be provided by controlling agencies (e.g., Saipan or Guam Air Traffic Control) and those using it (such as Tinian Range Control) (per Joint Order 7400.2K, paragraph 25-1-6, FAA 2014a). For commercial airlines and when environmental conditions prevent VFR from being followed, civilian aircraft seeking to fly through the active MOA using IFR would need to request Air Traffic Control clearance to transit through, delay entrance to, or divert around the MOA.

1.7.1.1 Tinian International Airport

Tinian International Airport is located approximately 0.5 statute miles (0.8 kilometer) south of the proposed R-7203X and R-7203Y and beneath the proposed Tinian MOA. When active, R-7203X and R-7203Y would penetrate the northern portion of Tinian International Airport’s Restricted Area Floor (a 3-nautical mile [5.6-kilometer] radius of Tinian International Airport from the surface to 1,500 feet [457 meters] AGL). In accordance with FAA Joint Order 7400.2k, paragraph 23-1-4, the restricted area floor may be established to the surface only when the using agency owns, leases, or by agreement, controls the underlying surface. For this EIS/OEIS it is assumed that Change 2 to FAA Joint Order 7400.2K, publicized and opened for public comment in November 2014, will be approved as requested by the DoN, in part, to support this proposed action. The order states that a reduction to the 3-nautical mile (5.6-kilometer) exclusionary airspace surrounding Tinian International Airport, may be approved by the FAA on a case-by-case basis after a risk based analysis is accomplished in accordance with the safety risk management process, and development of a risk resolution implementation plan (FAA 2015). As depicted in [Table 11](#), annual military operations at Tinian International Airport would be expected to increase by 8,768 operations. Although the tempo would fluctuate during the training period, if operations were equally distributed throughout the 20 weeks of training (non-consecutive), there would be an average of approximately 62 operations per day (31 approaches and 31 departures). The majority of the operations (5,000) would be related to fighter aircraft with 3,000 practicing field carrier landings. The Draft EIS/OEIS Table 4.5-11, *All Tinian Alternatives Proposed Annual Airfield Operations* (see Section 4.5, *Noise*), provides detailed information on existing and proposed military operations. Based on the 2014 to 2040 year-over-year growth rate estimated by the FAA Terminal Area Forecast, daily use of the airspace needed by general aviation aircraft (134 operations per day) for arrivals and departures to Tinian International Airport would not be expected to change (FAA 2013d).

Table 11. Change in Tinian International Airport Annual Airport Operations¹

<i>Aircraft Type</i>	<i>Existing Airport Operations²</i>	<i>Proposed Airport Operations</i>	<i>Change in Airport Operations</i>
Military	476	9,244	+8,768
Single Engine/Air Carrier and General Aviation	48,640	48,640	0
Total	49,116	57,884	+8,768

Notes: ¹Operations include departures, arrivals and closed patterns. An aircraft flying one field carrier landings pattern counts as two airport operations (one arrival and one departure).

²Source: FAA 2014c

The majority (approximately 99%) of current flights using Tinian International Airport are chartered or private flights from Saipan International Airport using the Tinian Commuter Flight Route (Table 8) and visual approaches to the airport. Under the proposed action, they would continue to be the majority (approximately 81%) with military aircraft operations from Guam accounting for approximately 19%. The annual operations potentially affected are based an average annual day calculation (i.e., annual operations divided by 365 days) and 140 days of usage of the airspace. Aircraft arrivals and departures at Tinian International Airport would continue to occur on a first-come, first-serve basis with pilots notifying each other of their intentions via the common traffic advisory frequency or as directed by Air Traffic Control. As can be seen in Figure 2, the proposed Tinian MOA encompasses Tinian International Airport’s approach and departure corridors and the southern portions of R-7203X and R-7203Y penetrate both the primary and secondary approach areas into the airport. Table 12 summarizes the potential impacts to the aircraft using the airspace associated with airport operations. It should be noted that only those flights occurring on the days and times that the airspace is active would be affected by the proposed action.

Table 12. Operations¹ Affected by Proposed Special Use Airspace – Tinian International Airport

<i>Airspace/Published Routes</i>	<i>Annual Operations</i>	<i>Annual Operations Potentially Impacted</i>	<i>Impacted by Special Use Airspace</i>
Air Carrier	58	22	R-7203E/Tinian MOA
Military	476	182	R-7203A/X/Tinian MOA
Tinian Commuter Flights and General Aviation	48,582	18,634	R-7203A/B/C/X/Y/Z/E/W
TOTAL	49,116	18,838	

Notes: ¹Includes arrival and departure operations, one for an approach and one for a departure.

²Air traffic between Saipan International Airport, Tinian International Airport, and Rota International Airport.

³Annual operations potentially affected are based an average annual day calculation (i.e., annual operations divided by 365 days) and then multiplied by 140 days airspace is proposed for use).

Source: FAA 2013.

The increase in military air traffic would not restrict access to Tinian International Airport but a portion of the civilian flights identified in Table 12 could experience minimal delays in departures and arrivals during the time when military aircraft are practicing approaches to the runway. As required by the process to establish SUA, the FAA will complete an aeronautical study that will further quantify impacts to airport operations and air traffic control procedures. The U.S. military is continuing coordination with the FAA to mitigate potential impacts to the airport. Part of that process could include modifications to the existing published approaches needed to ensure safe and timely access to Tinian International Airport.

As indicated in Table 11, there were 48,640 non-military operations at Tinian International Airport in 2012. These operations would continue to require access to the airspace to transit between Saipan International Airport and Tinian International Airport. As non-participating aircraft, they would not be permitted to use the existing commuter flight path while the restricted areas are active. Private aircraft would need to be routed outside of the restricted areas or obtain permission from the controlling agency to transit the area. This could be expected up to 20 weeks per year based on the training being conducted. Chartered and private flights between islands would continue to be flown under VFR using the most direct route possible.

As can be seen in Figure 10, when active, Restricted Area 7203 would directly impact the existing Tinian commuter aircraft flight path. As non-participating aircraft, civilian aircraft would not be permitted to

use the existing flight path while the restricted areas are active without permission of the controlling agency. Although chartered and private flights between islands would continue to be flown under visual flight rules using the most direct route possible, they would need to fly outside of the restricted area or obtain permission from the controlling agency to transit the area. The two major airspace units that would have the most impact to this type of transit are Restricted Area 7203W (west of Tinian) and Restricted Area 7203E (east of Tinian). If only one of these is activated together with the airspace units overlying Tinian (Restricted Area 7203A/B/C/X/Y/Z), civilian aircraft can continue flights on the other side of the island. Rerouting around the west end of the island would increase distance and add time to the flights, while rerouting around the east of the island would not (see more detailed discussion below). When all airspace units are activated, civilian aircraft could not transit on either side. However, activation of all airspace units at the same time would typically occur only one or two times per week during the 20 weeks of training, and the duration would be two hours or less. With advance notice and coordination, chartered and private flights would be able to plan for these events. Furthermore, the Department of Defense would coordinate with commercial air taxi and charter services to minimize to the extent possible disruptions to their service. A more detailed discussion is presented below.

Based on the notional flight paths presented in [Figure 10](#), it is possible for civilian aircraft to be routed around the airspace when Restricted Areas 7203E and 7203W are not activated together while staying within the minimum safety glide slope. For example, using a 10:1 glide ratio (i.e., for every 10 feet [3 meters] travelled horizontally, 1 foot [0.3 meter] of altitude is lost), the glide distance of a single engine aircraft such as the Piper Cherokee traveling 3,000 feet (914 meters) above ground level at 100 miles per hour (185 kilometers) would be approximately 5 nautical miles (9 kilometers). Under the proposed configuration, aircraft could fly around the active restricted airspace and remain within 2 nautical miles (3.7 kilometers) of shore except for periods when Restricted Areas 7203E and W are activated together. Traveling around Restricted Areas-7203E or 7203W would require aircraft to be more than 10 nautical miles (18 kilometers) from shore. Based on the above safety glide slope example, when the entire restricted area (i.e., Restricted Areas 7203A/B/C/X/Y/Z/E/W) is activated, single engine aircraft used to transit to and from Saipan and Tinian International Airports would not be able to meet the minimum safety glide slope requirements and flight delays would be expected. This could occur for brief periods during the 1-2 hours a day for 135 days per year that Restricted Area 7203E is activated for use.

When Restricted Areas 7203E and 7203W are not in use, civilian aircraft could still transit between Saipan and Tinian even if Restricted Areas 7203A/B/C/X/Y/Z are in use. Aircraft could either fly around the east side or the west side. As can be seen in [Table 13](#), there would be no change in the distance when aircraft can be routed to the east around the restricted areas. Aircraft would experience the greatest change in distance (10 to 12 nautical miles [18 to 22 kilometers, respectively]) when they need to be routed to the west of the restricted areas. This could be required for some portion of the 1-2 hours per day up to 135 days per year when Restricted Area 7203E is active.

When Restricted Area 7203A/B/C/X/Y/Z and E are activated independently of Restricted Area 7203W and aircraft are routed to the west of the airspace, additional time and fuel would be needed. However, less than significant impacts would be expected as this would only occur up to two hours per day for 135 days per year. No impacts would be expected with activation of R7203A/B/C/X/Y/Z/W independent of Restricted Area 7203E as aircraft could fly to the east of Tinian without adding time or distance between locations.

Table 13. Distances between Saipan and Tinian

Runway in Use	Distance (Nautical Miles)*				
	Existing Flight Path	East Around Restricted Area	Change	West Around Restricted Area	Change
Saipan 25	11	11	0	23	+12
Saipan 07	17	17	0	20	+3
Tinian 26	17	17	0	22	+5
Tinian 08	11	11	0	21	+10

Note: *Distances based on notional flight patterns presented in Figure 4.6-2 of the EIS/OEIS.

Aircraft needing to be routed to the west around the active airspace would experience indirect effects such as additional travel distances, time en route, and fuel consumption. With advance notice and coordination, chartered and private flights would be able to plan for these events. Furthermore, the Department of Defense would coordinate with commercial air taxi and charter services to minimize to the extent possible disruptions to their service.

Activating all Restricted Area-7203 segments together would rarely occur. However, when it does occur, single engine commuter aircraft would not be able to transit the area as they would not meet the minimum safety glide slope requirements. Without mitigation, commuter aircraft needing access to the airspace during the time (up to two hours per day for 135 days per year) would be directly and significantly impacted.

Activation of the Tinian MOA independent of the restricted area would not be expected to impact commuter flight routes as air traffic would be expected to remain below 3,000 feet (914 meters) MSL. Pilots flying above 3,000 feet (914 meters) MSL (military and non-military) would need to follow see-and-avoid procedures to ensure safe separation of aircraft. Pilots desiring not to transit through the active MOA could choose to remain below 3,000 feet (914 meters) MSL.

1.7.1.2 Saipan International Airport Airspace

Saipan International Airport is located outside of R-7203 and beneath the Tinian MOA. The proposed action directly affects Saipan International Airport’s approach and departure corridors as well as their Class E airspace (see [Table 14](#)). As indicated in [Table 14](#), there are 24, 558 annual (67 per average annual day) airfield operations at Saipan International Airport that could be directly affected by the proposed action. Eighteen of the operations are the result of scheduled daily international arrivals and departures. Major airlines (i.e., large passenger jets and jetliners) scheduled arrivals typically occur between the hours of 1:00 a.m. and 9:00 a.m. local time with the majority arriving before 5:00 a.m. Departures occur between the hours of 2:00 a.m. and 6:00 p.m. with approximately half occurring before 6:00 a.m. (FlightStats 2014). The remaining operations are the result of air taxi, general aviation (primarily those transitioning between Saipan and Tinian) and military operations. The 2014 to 2040 year-over-year growth rate estimated by the FAA’s Terminal Area Forecast civilian aircraft operations are projected to increase by approximately 1% each year until 2040 when they project 110,348 annual operations (302 operations per day) for arrivals and departures (FAA 2014a). It should be noted that only those flights occurring on the days and times that the airspace is active would be affected by the proposed action. The operations potentially affected are based an average annual day calculation (i.e., annual operations divided by 365 days) and 140 days of usage of the airspace for R-7203A/B/C/X/Y/Z/W and 135 days of usage of R-7203E and the Tinian MOA.

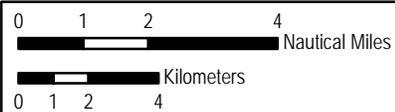
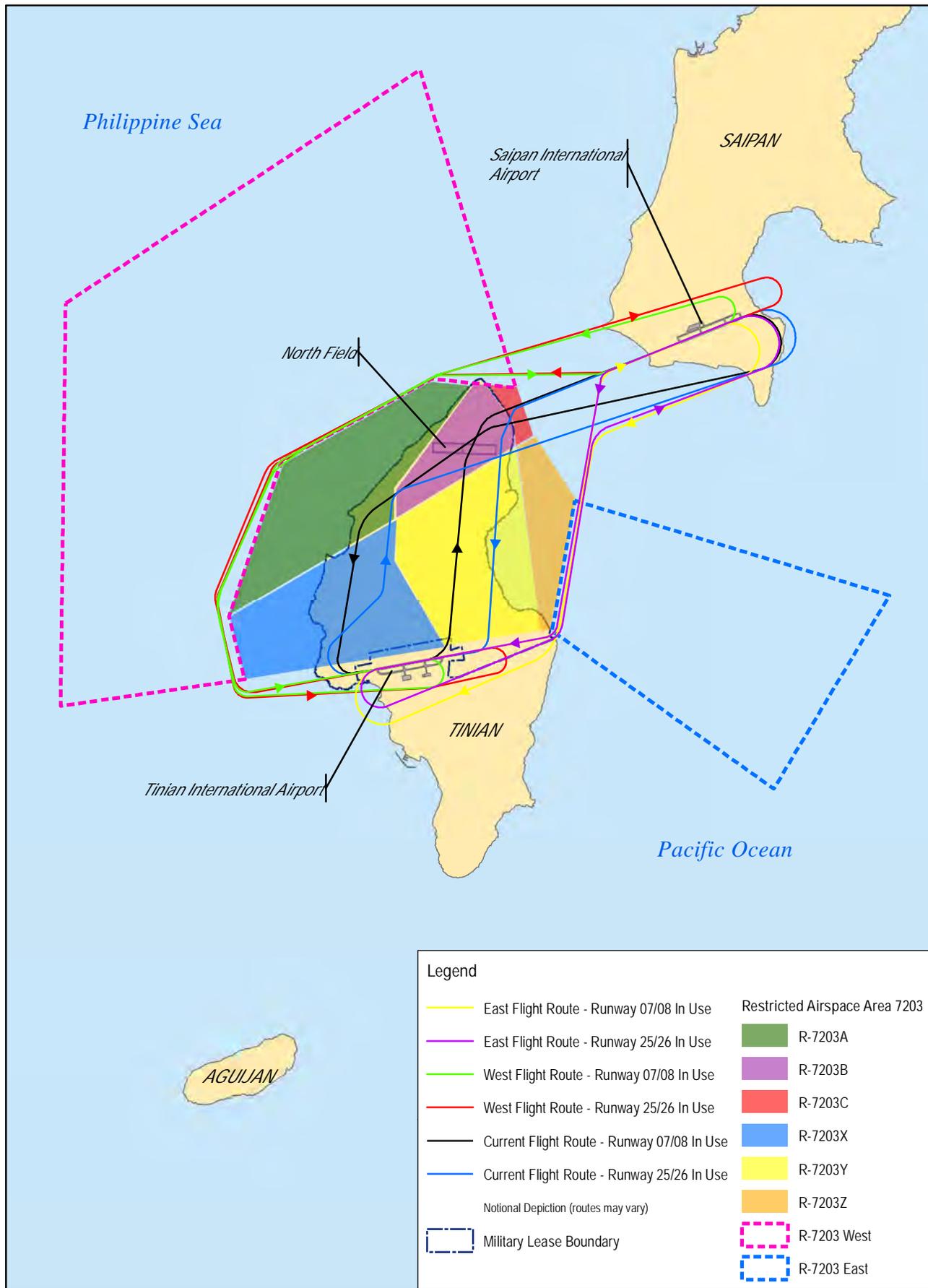


Figure 10
 Commuter Flight Routes
 All Action Alternatives



Table 14. Operations Affected by Proposed Special Use Airspace – Saipan International Airport

<i>Airspace/Published Routes</i>	<i>Annual Operations¹</i>	<i>Annual Operations Potentially Impacted</i>	<i>Impacted by Special Use Airspace</i>
Saipan Class D Airspace	64,028	24,558	None
Saipan Class E Airspace	41,880	16,064	R-7203A/B/C/W/Tinian MOA
Saipan Published Approaches-Runway 07	35,598	13,654	R-7203A/B/C/W/Tinian MOA
Saipan Published Approaches-Runway 25	6,282	2,323 ²	R-7203E/Tinian MOA

Sources: Skyvector 2013 and Natasha Morgan, Tinian International Airport, personal communication, January 15, 2014.

1. Aircraft operations are not additive. The operations in Saipan Class D Airspace represent the total operations for the airport; all other operations are subsets.
2. Tinian E and the Tinian MOA are projected for use 135 days for up to 2 hours per day.

Saipan Class D Airspace is outside of the proposed R-7203 and beneath proposed Tinian MOA. Aircraft operating in the proposed Tinian MOA would be at altitudes above 3,000 feet (914 meters) MSL and would not be expected to interact with Saipan’s Class D airspace.

Saipan International Airport’s Class E extension airspace would intersect with the proposed R-7203A/B/C/West and the Tinian MOA. R-7203A/B/C would not be activated during periods with Saipan International Airport international flight (large passenger jet or jetliner) activity. Saipan International Airport’s Air Traffic Control tower would continue to be responsible for the separation and efficient movement of aircraft within this airspace and procedures for access to the airspace would be explained in a Letter of Procedure.

Missed approaches are directed to a hold location within Saipan’s Class D airspace.

As required by the process to establish SUA associated with training at Tinian, the FAA is in the process of completing an aeronautical study that will quantify impacts to air traffic. The U.S. military is coordinating with the FAA and Commonwealth Ports Authority to mitigate potential impacts to airspace management and airport operations to ensure safe and timely access to Saipan International Airport. It is anticipated that an agreement with the FAA would be in place that sets forth appropriate measures to assure the safe passage of all commercial and private aircraft. It is anticipated that the agreement would provide for commercial large passenger jets and jetliners approaching Saipan to be given priority access to the airspace needed to land. Though air and ground activities would have the potential to have an effect on current airspace procedures during the 140 days per year that the R-7203A/B/C/W and the 135 days that the Tinian MOA are scheduled and activated for use, it is anticipated that the agreement would assure proper range scheduling procedures are in place to minimize impacts. Mitigations developed during the coordination process would ensure safe and timely access to Saipan International Airport.

1.7.1.3 Commercial Aviation Routes

One commercial jet route occurs in the region and could be impacted by the Tinian proposed action. Airway W-21 lies approximately 10 nautical miles (19 kilometers) to the west of Tinian and within the proposed Tinian MOA. Commercial aircraft en route to and from Guam International Airport on W-21 would be expected to be in Class A airspace at altitudes greater than 18,000 feet (5,486 meters) and no impacts to air traffic would be expected from activation of the Tinian MOA or R-7203. When the Tinian

ATCAA has been scheduled for use, the FAA would be responsible for re-routing aircraft around or over the ATCAA.

1.7.1.4 Military Training Route, IR-983

The closest point, the eastern edge, and the centerline of IR-983 are located approximately 8 nautical miles (15 kilometers) and approximately 13 nautical miles (24 kilometers), respectively, to the west of Tinian. Use of IR-983 would not be affected by R-7203 but the western edge lies within the proposed Tinian MOA (see [Figure 4](#)). Pilots scheduling use of IR-983 would be required to check NOTAMs to avoid conflicts with the Tinian MOA. If the Tinian MOA is active at the same time, pilots could elect to fly around the MOA or at altitudes below 3,000 feet (457 meters).

1.7.2 Pagan

The airspace within 60 nautical miles (111 kilometers) of Pagan to the north, east, west and a portion of the south is part of the Oakland Oceanic FIR and is controlled by the Seattle ARTCC. At approximately 25 nautical miles (40 kilometers) south of Pagan, the airspace is within the 245-nautical miles (454-kilometers) range of the Guam CERAP and is under the control of Guam CERAP. Under the proposed action, airspace would be scheduled for use by the Marine Corps. For safety purposes, airspace restrictions would be active when air-to-ground weapons are employed and when live-fire is being conducted on the RTAs. The Department of Defense would be responsible for airspace scheduling and following existing notification procedures to the FAA or local aviation authorities.

R-7204 and W-14 would be activated for all hazardous military activity. The warning area would be activated through NOTAMs when needed for ship-to-shore and air-to-ground operations. Proposed *R-7204A/B/C/D* would be activated as needed when training with live munitions during ground based training, air-to-ground training, and ship-to-shore training. When *R-7204* is activated for military use, non-participating aircraft would be prohibited from flying through the airspace. Communication procedures would be established between Department of Defense personnel responsible for controlling range operations (Range Control) and the Guam International Airport Air Traffic Control to ensure life-flight and that other emergency-related activities are given priority access to the airspace. Active management by Range Control, and/or FAA ATC, would route civilian aircraft so they remain outside of the airspace.

1.7.2.1 Pagan Airfield

The Pagan airfield is used infrequently because the island has no established population and is remotely located. When *W-14* and/or *R-7204B/C/D* are active, access restrictions would represent an impact on air traffic desiring to use Pagan Airfield during the 120 days that Pagan is used for military training. Because Pagan is uninhabited, use of the airfield is rare. The most current record of operations was found in the 2008 Pagan Airstrip Master Plan. It reported 10-24 annual operations from 2004 to 2007. However, improvements to the airfield would be beneficial to air traffic desiring to access Pagan during the 245 days that Pagan is not being used for military training. (See also Appendix O, Transportation).

1.7.2.2 Commercial Aviation Routes

There are two existing airways that cross within the proposed W-14, A-337, and G-205. Air Route A-337 is within 23 nautical miles (43 kilometers) of Pagan and G-205 lies within 40 nautical miles (74 kilometers) of the island. Guam CERAP exercises air traffic control authority for this airspace up to the boundary of the outer Air Defense Identification Zone (i.e., limit of voice and radar) and aircraft are handed over to the Seattle ARTCC. Each scheduled aircraft has the potential of being directly affected when W-14 High and W-14 Low are scheduled together for military use as commercial airlines would require rerouting or the FAA would need to recall W-14 High permitting commercial aircraft to fly over W-14 Low. When W-14 Low is activated independent of W-14 High no impacts would be expected. Neither airway would be impacted if R-7204 were activated independent of the warning area as aircraft could easily be routed around the airspace.

Airway A-337 is scheduled and used by commercial aircraft en route from Honolulu, Hawaii, and Guam to Japan. It is also one of the preferred routes used by aircraft en route to and from the Fukuoka Oceanic Control Area/FIR that terminate within Guam CERAP delegated airspace (Department of Defense 2014).

Airway G-205 is scheduled and used by commercial aircraft en route from Guam to Japan and other points north. It is also a preferred route used by aircraft en route to and from the Fukuoka Oceanic Control Area. If aircraft needed to be routed around the warning area, indirect impacts to commercial flights could occur as a result of extended air times and increases in fuel costs. The FAA exercises air traffic control authority for this airspace.

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Enclosure 1

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Federal Airways & Airspace[®]

Special Aeronautical Study
"GSN ILS/LOC Runway 07"
for

HDR/engineering-environmental Management, Inc.
March 25, 2010
Original

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EXECUTIVE SUMMARY

Date: 3/25/2010

Subject: Create KML files that depict Francisco C. Ada/Saipan International Airport (GSN) ILS/LOC Runway 07.

Reference Documents:

1. Instrument Approach Procedure ILS/LOC RWY 07
2. JO 8260.54A
3. JO 8260.3B
4. FAA Airport/Runway Database (March 2010)

Discussion: The SAIP LMM (Saipan(LMM/NDB)) is located approximately 0.5 Nautical Miles Southwest of GSN Runway 07 at the coordinates listed below:

North Latitude: 15° 06' 41.2"

East Longitude: 145° 42' 37.2"

The Localizer provides an on-course signal on a heading of 066°. The Initial Approach Fix (IAF) is located at waypoint "WILLE." The coordinates for the IAF are:

North Latitude: 14° 58' 27.000"

East Longitude: 145° 21' 54.310"



Figure 1. GSN ILS Runway 07 Procedure Turn at "KORDY"

The Procedure Turn for this approach was constructed in accordance with guidance provided in FAA JO 8260.3B. The published procedure calls for a Holding Pattern at "SAIP" NDB at 2100' MSL. From there, aircraft proceed out-bound on a heading of 246° to the Precision Final Approach Fix (PFAF). The PFAF is identified as "KORDY." From "KORDY," a Procedure Turn is executed and

aircraft are to remain within 10 NM of "KORDY." Upon completion of the Procedure Turn, aircraft are within the Intermediate Segment area at 2100' MSL. Application of the Required Obstacle Clearance (ROC) for this Procedure Turn yields a maximum allowable

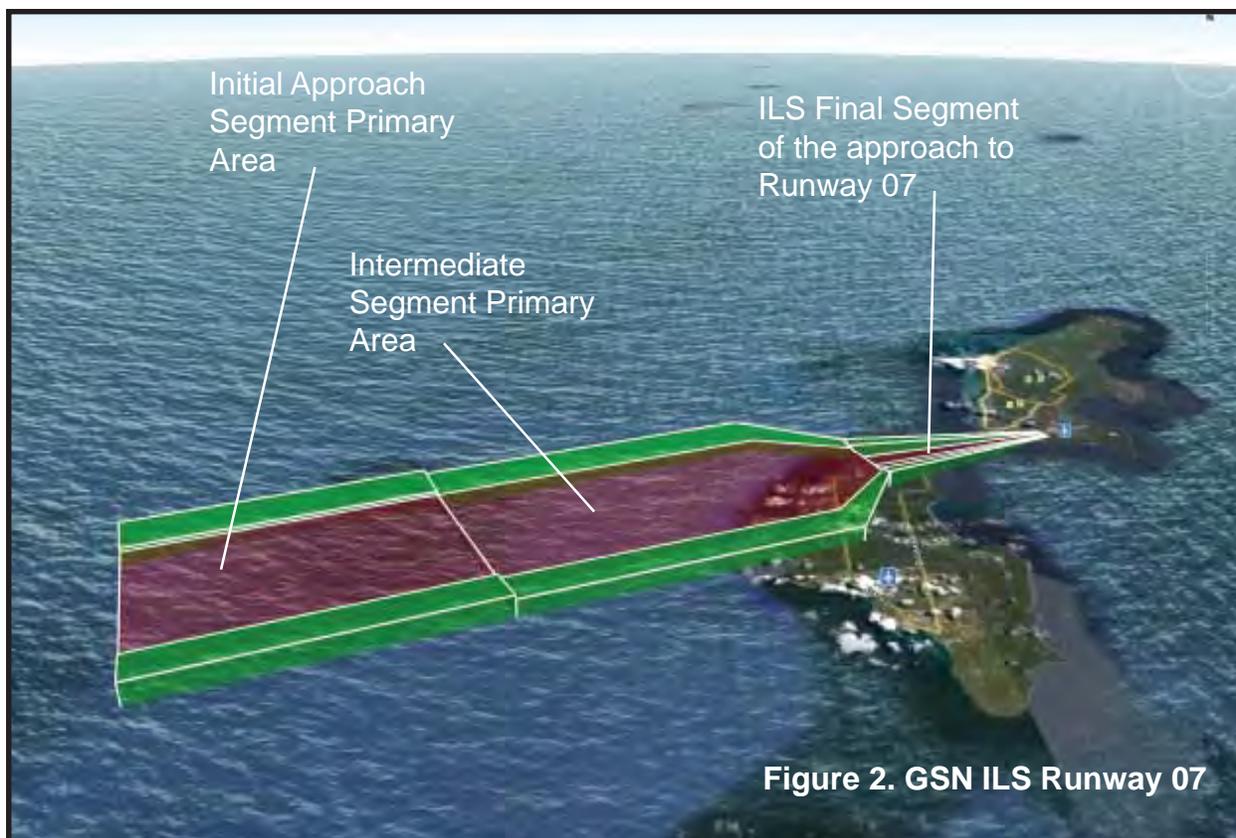


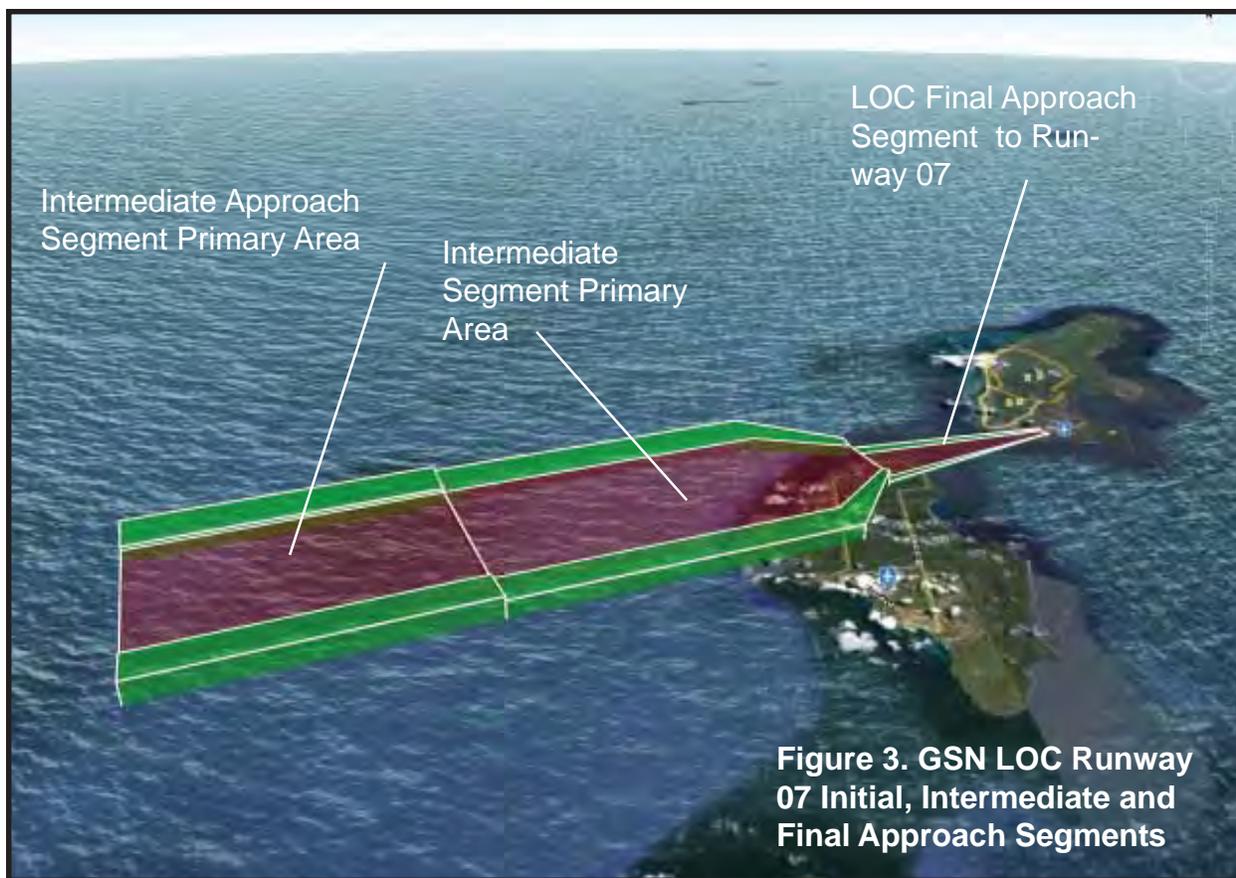
Figure 2. GSN ILS Runway 07

height of 1600' MSL. This elevation value establishes the floor of the Primary Area of the Procedure Turn and is expressed as 487.68 meters in the KML file developed for this procedure. The corresponding Procedure Turn file name is "GSN ILS-LOC_R07_PT_AT_KORDY.kml." The key element of the Procedure Turn is its length of 10 Nautical Miles.

After completion of the Procedure Turn, aircraft pass over the PFAF "KORDY," which is located 5.5 NM from the end of GSN Runway 07 at 2100' AMSL. At this point, aircraft on the ILS follow the Glide Slope and descend to 415' MSL. Aircraft should achieve 200' above the threshold approximately 0.5 NM from the end of Runway 07. If the lights or runway are not visible, a Missed Approach is executed approximately 0.5 NM from the landing threshold.

Alternately, aircraft approaching from the west at 2600' MSL proceed to the Initial Approach Fix (IAF) at "WILLE." Aircraft then proceed at 2600' MSL to the Intermediate Fix "PONOI." Once arriving at "PONOI," aircraft are authorized to descend to 2100' MSL.

The Primary Area of the Procedure Turn at "KORDY" has a 1600' AMSL Obstacle Clearance level. The Secondary Area of the Procedure Turn starts at the edge of the Primary Area and rises to 2100' AMSL over the Secondary Area. The Secondary Area is 2 NM wide.



The image of the Instrument Landing System (ILS) Procedure from the Initial Approach Fix to GSN Runway 07 is shown in Figure 2. The image of the Localizer (LOC) Non-Precision Approach Procedure from the Initial Approach Fix to GSN Runway 07 is shown in Figure 3.

The Initial and Intermediate Segments of the ILS and Localizer Approach Procedures are the same. They have the same commencement altitude of 2600' MSL for the Initial Segment. They have the same commencement altitude of 2100' MSL for the Intermediate Segment. The Localizer Primary Area width at the PFAF is equal to the combined width of the ILS "W" and "X" Obstacle Clearance Surfaces. The segment between "WILLE" and "PONOI" define the Initial Segment for these approach procedures. The Required Obstacle Clearance (ROC) for the Initial Segment is 1000' in the Primary Area. The elevation of the inside edge of the Secondary Area is 500' higher than the Primary Area and the ROC tapers to "0" at the outside edge of this surface. Therefore, the Secondary Area of the Initial Approach Segment starts at 2100' AMSL and increases to 2600' AMSL

The Intermediate Segment requires aircraft to be at 2100' MSL and has a Required Obstacle Clearance (ROC) of 500'. The Primary Obstacle Clearance Surface is 1600' AMSL. The Secondary Area begins where the Primary Surface ends at the same height of 1600' AMSL. The ROC tapers to "0" feet at the outside edge of this surface (2100' AMSL).

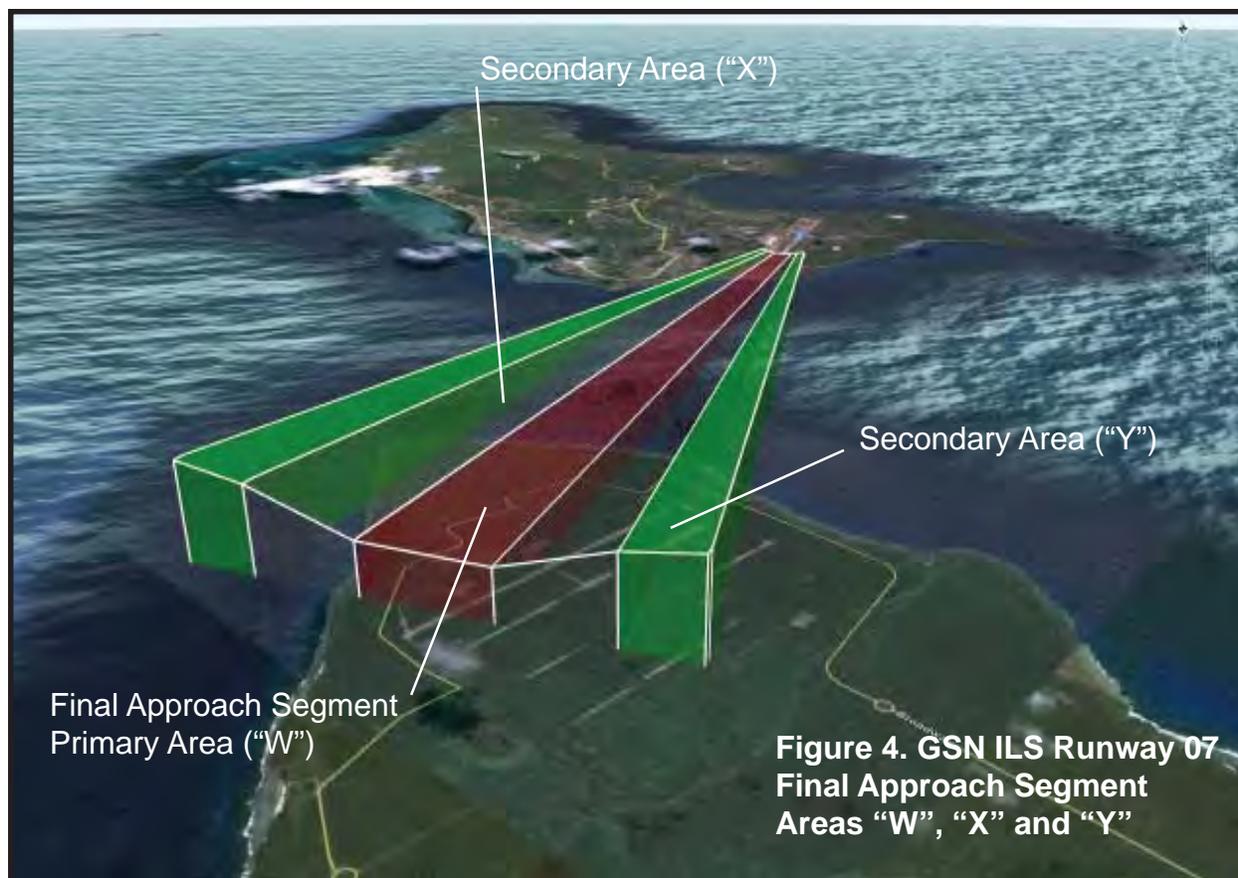
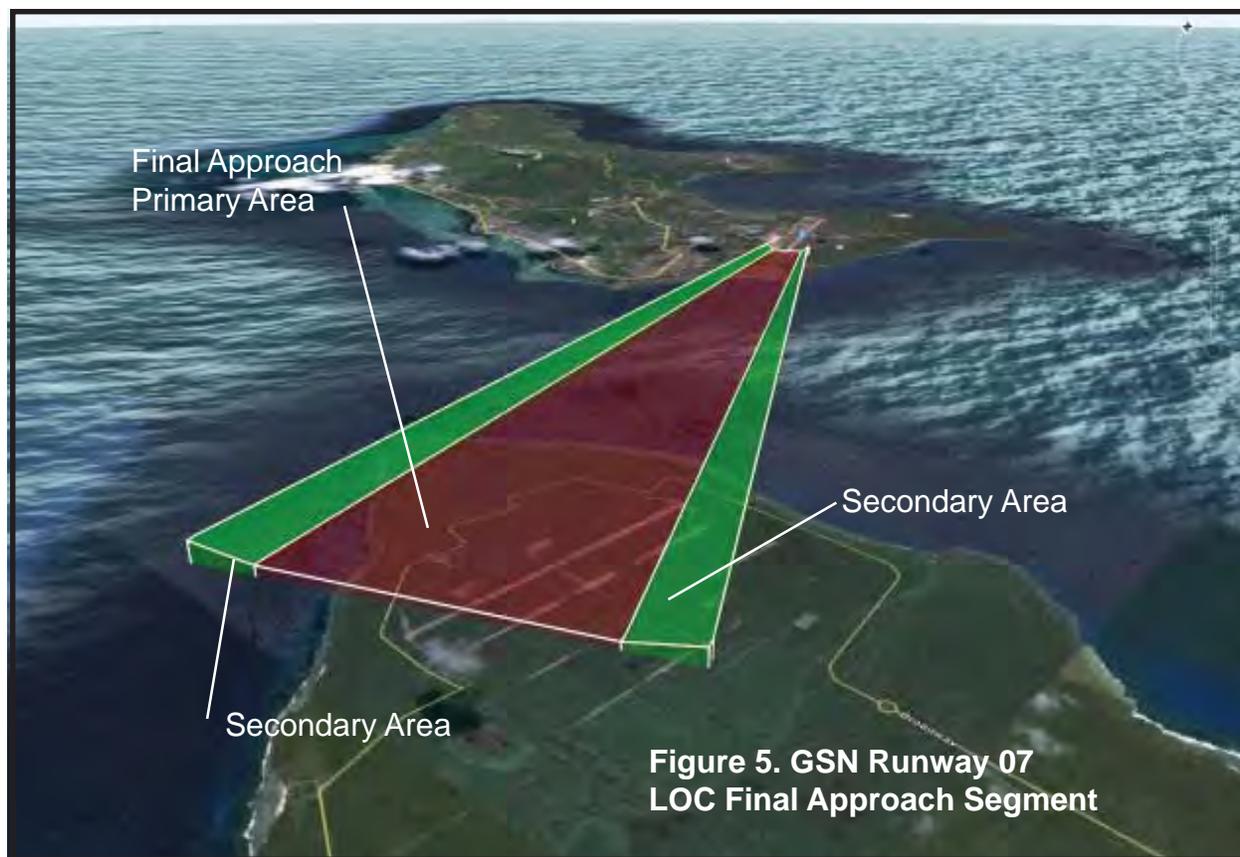


Figure 4. GSN ILS Runway 07 Final Approach Segment Areas "W", "X" and "Y"

The Final Approach Segment for the ILS (Figure 4 above) is very different from the Final Segment of the LOC (Figure 5 on the next page). The ILS is a Precision Landing System (PLS) and is composed of three separate sloping surfaces. These are referred to as "W", "X" and "Y". The "W" surface is the middle surface and is the Primary Area of the procedure. The "X" surface borders the "W" surface and rises at a slope of 4:1 in a direction perpendicular to the Final Approach course. The "Y" surface is the outside surface of the Final Approach Segment and begins at the height of the "X" surface and rises at a slope of 7:1. At the runway, the width of the "W" surface is 800 feet, the width of the "X" surface is 300 feet and the width of the "Y" surface is 300 feet. The total width of the origin (200 feet off the end of Runway 07) is 1000 feet either side of the Runway Centerline. The corresponding KML file name of the ILS Instrument Approach Procedure is "GSN_07_ILS_D23-B.kml." The Obstacle Clearance Surfaces of the Final Segment begin at the PFAF "KORDY" and end 200' before Runway 07.



**Figure 5. GSN Runway 07
LOC Final Approach Segment**

As shown in Figure 5, the Primary Area of the Localizer Approach combines the “W” and “X” surfaces of the ILS Final Segment Area. The allowable height within the Obstacle Clearance Surface (OCS) of the Localizer Primary Area 230’ AMSL. The Secondary Areas located on either side of the Primary Area begin at the Primary Area boundary at 230’ AMSL and rise to 480’ AMSL and the outside boundary edge. The corresponding KML file name of the Localizer Instrument Approach Procedure is “GSN_07_LOC_D23-B.kml.” The Obstacle Clearance Surfaces begin at the Initial Approach Fix “WILLE” and end 40 meters past the Runway 07 threshold.

The method used for construction of the ILS and Localizer Approach Surfaces and the ILS Missed Approach Surface was obtained from guidance contained in FAA JO 8260.54A.



The requirements document for this special aeronautical study required construction of the ILS Missed Approach Procedure for GSN Runway 07. The construction of the Missed Approach Surface is two-dimensional. This surface is shown in Figure 6. Construction of the Missed Approach Surface is in accordance with guidance contained in FAA JO 8260.54A.

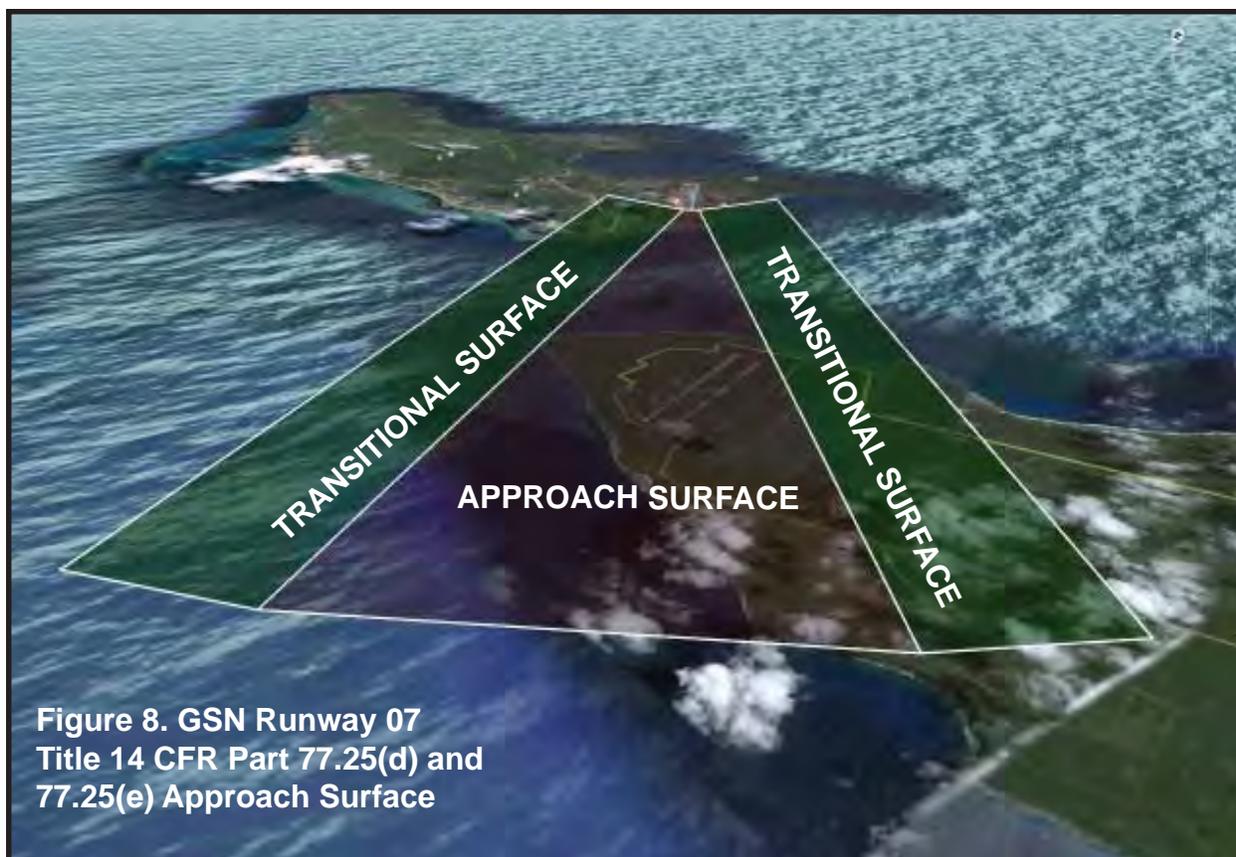
The parameters used:

1. Category "D" aircraft
2. Velocity Indicated Air Speed (Vkias) = 265 knots/hr
3. Velocity Indicated Air Speed (with tailwind) (Vktas) = 272.6 knots/hr
4. Aircraft Turn Radius = 3.819 NM
5. Wind Spiral Radius = 1.358 NM
6. Reaction and Rollout Distance = 2761.193 feet



Construction of a Procedure Turn beginning at WILLE was undertaken as part of this special aeronautical study. The standard length of a Procedure Turn is 10 Nautical Miles. This turn was constructed so as to begin at "WILLE" in the same direction as is specified in the actual procedure. The corresponding KML file name for a Procedure Turn at "WILLE" with a height of 2600' MSL is "GSN ILS-LOC_R07_PT_AT_WILLE-2600.kml." The Obstacle Clearance height of the Primary Area is 1600' AMSL, while the Secondary Area has an initial height of 2100' AMSL and tapers to 2600' AMSL at the outer edge.

The corresponding KML file for a procedure turn at "WILLE" with a height of 2100' MSL is "GSN ILS-LOC_R07_PT_AT_WILLE-2100.kml." The Obstacle Clearance height of the Primary Area is 1100' AMSL, while the Secondary Area has an initial Obstacle Clearance height of 1600' AMSL that tapers to 2100' AMSL at the outside edge.



The Saipan International Airport (GSN) Runway 07 Approach and Transitional Surfaces were constructed in accordance with the specifications outlined in Title 14 CFR Part 77.25(d) and 77.25(e). These surfaces begin 200' off the end of Runway 07 at the elevation of the runway. The elevation of Runway 07 is 210' AMSL, according to data supplied by the Federal Aviation Administration. Runway 07 is classified as a precision runway of type 'PIR'. The slope of the Approach Surface is 50:1, extending from its starting point 200' off the runway end along the Runway Centerline Extended until it reaches an elevation of 1210' AMSL. The Approach Surface length is 50,000'. This surface is surrounded on the left and right sides by the Transitional Surface (FAR 77.25(e)). Figure 8 above is an image of this surface. The corresponding KML file name of the Runway 07 Approach Surface is "GSN_77-25-d-e_PIR_R07.kml."

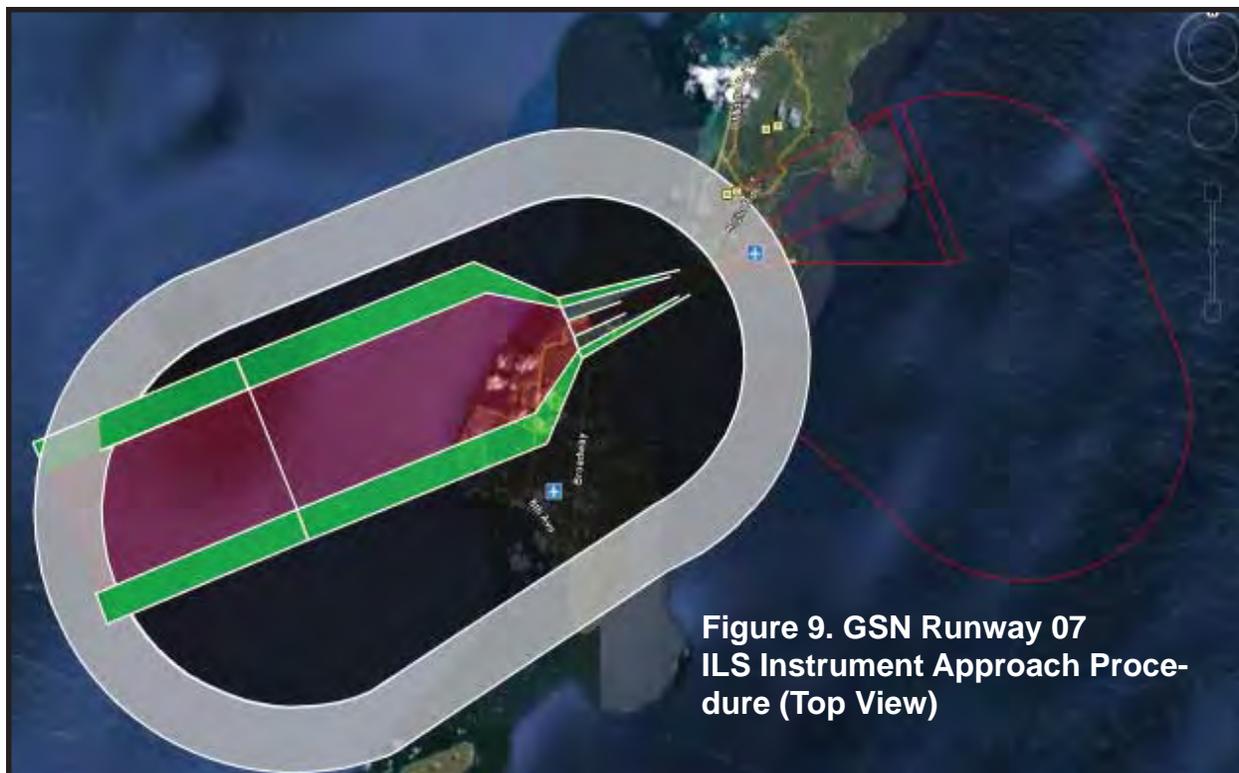


Figure 9. GSN Runway 07 ILS Instrument Approach Procedure (Top View)

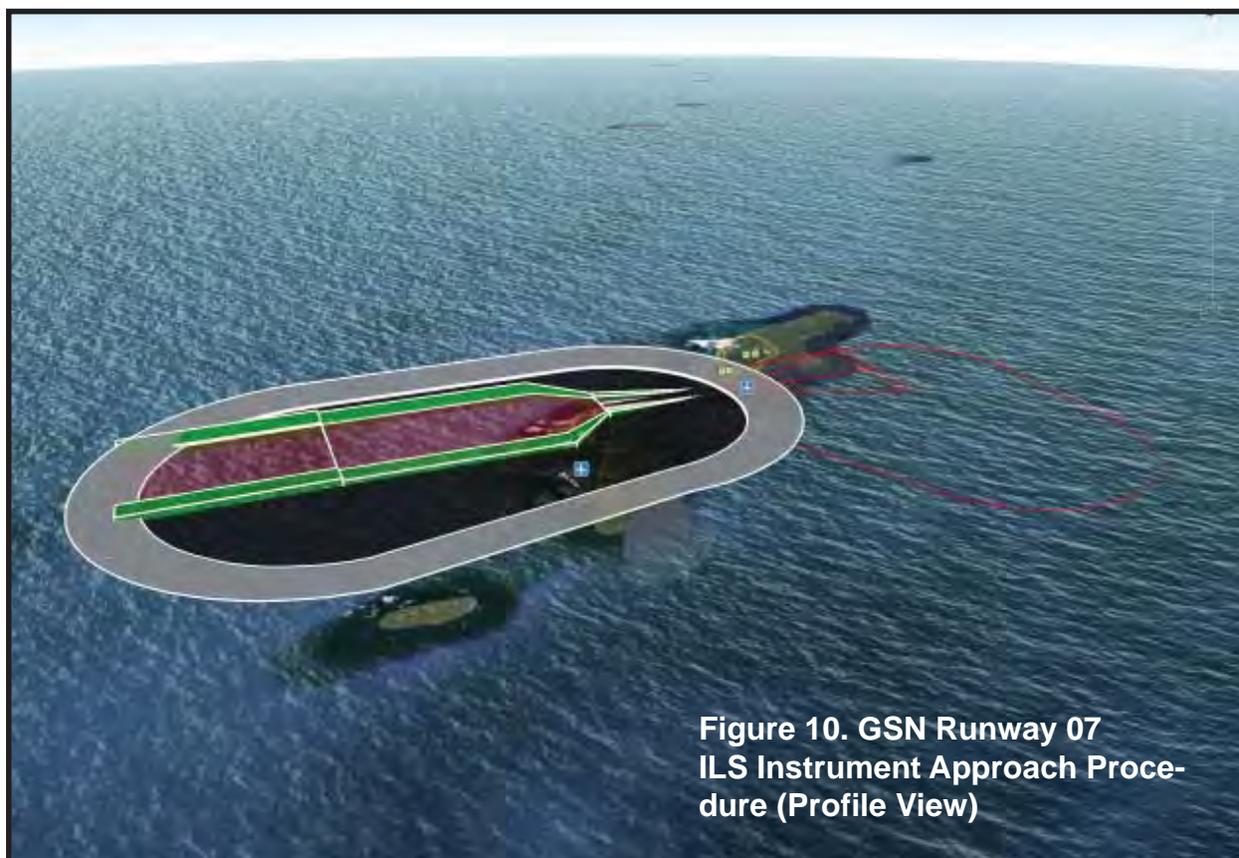


Figure 10. GSN Runway 07 ILS Instrument Approach Procedure (Profile View)

List of Attached Files:

Primary and Secondary Surface Airspace (KORDY) (2100' MSL)

1. GSN_ILS-LOC_R07_PT_AT_KORDY.kml

The Initial, Intermediate and Final Approach Segment From the IF - KORDY

2. GSN_07_ILS_D23-B.KML

3. GSN_07_LOC_D23-B.KML

Primary and Secondary Surface Airspace (WILLE) (2600' MSL)

4. GSN_ILS-LOC_R07_PT_AT_WILLIE-2600.kml

Primary and Secondary Surface Airspace (WILLE) (2100' MSL)

5. GSN_ILS-LOC_R07_PT_AT_WILLIE-2100.kml

The Intermediate and Final Approach Segment From the IF -WILLE (2100' MSL)

6. GSN_07_ILS_D23-B-WILLE.KML

Missed Approach ILS or LOC/DME RWY 7, Saipan International Airport

7. GSN_ILS_RWY07_MAP.kml

GSN Title 14 CFR Part 77.25(d) & 77.25(e) Approach/Transitional Surface

6. GSN_77-25-d-e_PIR_R07.kml

A handwritten signature in black ink, appearing to read "Clyde Pittman", is written over a series of overlapping, hand-drawn circles or loops.

Clyde Pittman
Aerospace Engineer
Federal Airways & Airspace®

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