

3.17 PUBLIC HEALTH AND SAFETY

Section 3.17 describes the existing public health and safety issues on Tinian and Pagan. Public health and safety refers to the health and well-being of the general public living on or visiting the region of influence. The region of influence includes the airspace, land areas, and marine waters (sea space) of Tinian and Pagan. The evaluation of health and safety in this EIS/OEIS addresses issues related to the capacity of emergency response organizations (i.e., police, fire, medical) to respond to emergency as needed in the region of influence is provided in Section 3.15, *Socioeconomics and Environmental Justice*.

3.17.1 Definition

Health and safety issues addressed in this EIS/OEIS include: risks of public exposure to military operations, and local/regional emergency response matters. Risks related to military operations may be related to flight safety, ground training munitions-related hazards, energy hazards, and marine safety. Flight safety issues may include potential accidents resulting from mid-air collisions, collisions with manmade structures or terrain, weather-related accidents, mechanical failure, pilot error, or wildlife-aircraft collisions. Ground safety issues may be related to vehicle and maneuvers, munitions use, range maintenance activities, traffic safety, and other military activities. Energy hazards may include human exposure to electromagnetic frequencies and lasers as well as hazards that electromagnetic radiation may present to storage and use of munitions. Marine safety issues may include potential accidents resulting from vessel collisions with other vessels or wildlife, vessels running aground, munitions danger zones over the water, and other military activities.

3.17.2 Regulatory Framework

The information presented in this section focuses on the health and safety of the general public. The health and safety of military personnel is not addressed in this EIS/OEIS. Military personnel would follow health and safety requirements as outlined by Department of Defense regulations in order to minimize the risk to their health and safety.

The Marine Corps Safety Program (DoN 2011a) governs Marine Corps policies, responsibilities, and procedures to protect and preserve Marine Corps personnel and property against accidental injury or loss of life. Other U.S. military services (i.e., the Navy, Army, and Air Force) have similar safety programs that apply to their operations and would be followed when undertaking their operations. Federal and CNMI laws, rules, and regulations that are applicable to protecting public health and safety are detailed in Appendix E, *Applicable Federal and Local Regulations*. Marine Corps policies include:

- The Marine Corps practices Operational Risk Management as specified in Office of the Chief of Naval Operations Instruction 3500.39C (DoN 2010a)
- Marine Corps Order 3500.27B (DoN 2011b)

Safety risks to construction personnel are addressed under 29 CFR 1910 et seq., *Occupational Health and Safety Standards*. Due to adherence to these regulations, health and safety of construction personnel is not addressed further in this EIS/OEIS.

3.17.3 Methodology

Existing procedures for ensuring public health and safety associated with military training activities were derived from U.S. military standard operating procedures related to the use of specific training areas, ranges, and facilities within the region (Guam and the CNMI). These standard operating procedures are applicable to military units of all Services (personal communication with Mark Cruz, Joint Region Marianas). Historical ordnance assessments conducted provide a general assessment for the probability of encountering unexploded ordnance and historically discarded munitions on Tinian and Pagan (DoN 2010b, 2013a).

3.17.4 Tinian

As summarized in Chapter 1, *Introduction*, Section 1.4, since 1983, the U.S. government has leased approximately two-thirds of the island (i.e., the Military Lease Area) ([Figure 3.17-1](#)). There are no homes within the Military Lease Area. The Military Lease Area is unfenced except for a formerly used unexploded ordnance area known as the Tinian Mortar Range (described in [Section 3.17.4.2.3, Unexploded Ordnance and Historically Discarded Military Munitions](#)), fences associated with cattle ranging operations, and perimeter fencing around the International Broadcasting Bureau.

3.17.4.1 Aircraft Operations

Civilian and military airspace and air transportation facilities are described in Section 3.6, *Airspace*, and 3.13, *Transportation*, respectively.

3.17.4.1.1 Civilian Activities

There are no control towers for aircraft on Tinian. Coordination of flight and ground taxi is accomplished through the Saipan control tower and via a common traffic advisory frequency. Aircrews use the common frequency to deconflict their arrivals and departures, providing location and intent to other aircraft in the vicinity. This procedure is applicable to both civilian and military air traffic. Airport lighting and aircraft rescue and firefighting capabilities are available at Tinian International Airport during field operating hours. Aircraft refueling services are not normally available at Tinian International Airport (Federal Aviation Administration 2014).



Figure 3.17-1
Tinian Military Lease Area

Tinian International Airport has two Runway Protection Zones, one at either end of the runway, which are to be kept clear of all above-ground objects and all facilities supporting incompatible activities. Runway Protection Zones are established to enhance the protection of people and property on the ground under the flight approach zones. This is best achieved through airport owner control over Runway Protection Zones. Control is preferably exercised through the acquisition of sufficient property interest in the Runway Protection Zones and includes clearing Runway Protection Zones areas (and maintaining them clear) of incompatible objects and activities. The Tinian Runway Protection Zones are trapezoidal in shape and centered about the extended runway centerline, at both ends. At 2,700 feet (820 meters) from the runway edge, the Runway Protection Zones width is 1,750 feet (530 meters), and then narrows toward the runway edge (Federal Aviation Administration 1999, 2012).

3.17.4.1.2 Military Activities

Military aircrews currently use both the Tinian International Airport and Tinian's North Field for training. Recent exercises have centered on fixed-wing aircraft arrested landings and refueling at the Tinian International Airport and expeditionary landing and take-off operations by cargo aircraft at North Field. Other military activities include humanitarian assistance/disaster relief practice, off-loading of cargo, and helicopter night vision landings using North Field as a landing zone. Aircraft-delivery of munitions does not occur.

At its aviation facilities, the Department of Defense normally establishes Accident Potential Zones, which depict areas with a significant or measurable potential (not the probability) for accidents. Tinian International Airport does not have any associated Accident Potential Zone.

Military air operations within the local Tinian airspace are conducted under Federal Aviation Administration visual flight rules, which specify certain flight altitudes based on direction of flight. Military and civilian activities are deconflicted based primarily on a see-and-avoid concept, and the use of a common frequency for local situational awareness. Air traffic control personnel at the Saipan tower provide additional information as requested. The U.S. military standard operating procedures specify aircraft training flight restrictions over certain areas within the Military Lease Area associated with bird habitat. There is currently no Special Use Airspace for Tinian.

3.17.4.1.3 Aircraft-related Accidents

The Federal Aviation Administration has recorded three safety-related incidents at Tinian International Airport over the past 10 years (Federal Aviation Administration n.d.-a). All involved small, single engine air taxi/commuter aircraft and were related to taxi or take-off from the airport. In July 2004, an aircraft experienced a landing gear bolt failure on landing, with minor aircraft damage. The flight incident report indicates no personal injury. In May 2012, an aircraft lost power on initial take-off and sustained minor damage. The flight incident report indicates no personal injury. Personal accounts from passengers on this flight indicate they sustained various injuries (De Guzman 2012). In October 2013, an aircraft sustained substantial damage when it struck a raised concrete berm after failing to maintain its position on the taxiway. The flight incident report indicates no personal injury.

Recent aircraft incidents occurring on Tinian (but not at Tinian International Airport) include a fatal crash near Mount Lasso on the northern portion of Tinian, at night. In October 2013, an air taxi aircraft that had departed from Tinian International Airport en route to Saipan International Airport crashed, there

were three survivors and four fatalities (Guerrero 2013). In November 2012, an air taxi aircraft departing Saipan International Airport bound for Tinian International Airport was substantially damaged when it crashed at the Saipan Airport. There was one fatality, five individuals seriously injured, and one sustaining minor injury (National Transportation Safety Board 2012; Flight Safety Foundation 2012).

There have been two reported bird strike incidents, occurring during take-off and climb-out from Tinian International Airport. Both were air taxi aircraft and neither sustained serious damage (Federal Aviation Administration n.d.-b). A Wildlife Hazard Assessment was completed for Tinian International Airport (U.S. Department of Agriculture 2008) that recommended a Wildlife Hazard Management Plan be developed. A Bird Aircraft Strike Hazard Plan, implemented on Department of Defense installations used to help prevent or reduce bird strikes by aircraft) does not exist for Tinian International Airport.

3.17.4.2 Ground Operations

3.17.4.2.1 Civilian Activities

As described in Section 3.15, *Socioeconomics and Environmental Justice*, the Tinian Department of Public Safety indicated that, as of February 2014, they were staffed by 17 police officers (a ratio of 6 officers for every 1,000 residents) and 11 firefighters (a ratio of 3.8 firefighters per 1,000 residents) (CNMI Department of Public Safety 2013a). The condition of the Department of Public Safety's building was noted as fair and able to accommodate current personnel and operations (DoN 2014). In 2013, 86 criminal offenses were recorded in San Jose; there were 30 thefts or burglaries, 15 incidences of disturbing the peace, and 15 assaults (CNMI Department of Public Safety 2013b). Descriptions of the police divisions, fire divisions, and health services are presented in Section 3.15, *Socioeconomics and Environmental Justice*.

As described in Section 3.13, *Transportation*, ground transportation facilities on Tinian include the existing road network (primarily developed in 1944 to accommodate the U.S. military), with limited designated bicycle paths, and isolated sidewalks along roads within San Jose. Many of the existing roads throughout Tinian are in poor condition.

The Commonwealth Department of Public Safety, Highways Safety Office develops, coordinates, and promotes safety programs and provides policy and public awareness on highway safety. Highway safety, in general terms, includes the following initiatives: reduction of traffic crashes, impaired driving traffic-related injuries and fatalities, and property damages as a result of a traffic collision; and improving pedestrian and motorcycle safety, community outreach, occupant protection, child restraint, and emergency medical services. Under CNMI Public Law 3-61, §1 (§ 101), the Department of Public Safety, Police Traffic Services is the enforcement authority of all laws relating to traffic matters on the islands of Saipan, Tinian, and Rota.

The Department of Public Services division on Tinian is required to submit a monthly traffic report. The report includes motor vehicle crashes, seat-belt usage, impaired driving, speeding, pedestrian, and traffic fatalities/injuries, and other data related to traffic safety. One of the five fatal collisions reported within the CNMI in 2010 occurred on Tinian. No other fatal collisions occurred on Tinian during the 5-year period from 2008 through 2012. Of the 7,332 collisions that occurred during the 5-year period, 94% resulted in property damage, 5% resulted in injury, and 1% resulted in fatality. Alcohol was a factor in 63% of the 27 fatal collisions. None of the collisions reported during the 5-year period resulted in a

bicyclist or motorcyclist death. The 5 year (2008-2012) collision summary for the CNMI is summarized in [Table 3.17-1](#).

Table 3.17-1. CNMI Five Year (2008-2012) Collision Summary

<i>Data Element</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>5-Year Average</i>
Total Collisions	1,630	1,868	1,212	906	1,717	1,466
Property Damage	1,569	1,694	1,207	853	1,599	1,384
Injury Collisions	52	167	0	51	114	77
Fatal Collisions	9	7	5	2	4	5
Pedestrian Fatalities	3	2	2	0	0	1
Bicycle Fatalities	0	0	0	0	0	0
Motorcycle Fatalities	0	0	0	0	0	0

Legend: Total Collisions includes Property Damage Only, Injury Collisions, and Fatal Collisions. Pedestrian, bicycle, and motorcycle fatalities are non-occupant fatalities. All other fatalities are occupant fatalities.

Source: CNMI Department of Public Safety, Highways Safety Program 2013.

The Military Lease Area is open to the public at the discretion of the military, generally during times when U.S. military training is not occurring. Activities occurring in the Military Lease Area include daily use of the International Broadcasting Bureau, cattle grazing lots, all-terrain vehicle off-roading, and visitation to other locations (e.g., historic sites, beaches) by visitors and residents.

Potential public exposure to electromagnetic radiation hazards (as defined by American National Standards Institute) associated with the radio transmission activities of the International Broadcast Bureau is a public health and safety concern. The area of potential exposure is largely contained within the International Broadcasting Bureau’s fenced boundaries. The risk of exposure is minimized through public exclusion from the fenced boundaries.

3.17.4.2.2 Military Activities

Military operations and training have occurred in the Military Lease Area, (i.e., northern two-thirds of the island) since the 1940s. Public safety is a concern within the Military Lease Area because the public visits numerous historic and scenic sites within the Military Lease Area. This includes North Field National Historic Landmark, beaches, scenic viewpoints, and other points of interest. The public also uses the Military Lease Area for hunting, fishing, and plant gathering when the military is not conducting training. Additional details on civilian use of the Military Lease Area are provided in Section 3.7, *Land Use*, Section 3.8, *Recreation*, and Section 3.15, *Socioeconomics and Environmental Justice*.

The military notifies the CNMI Government and the Tinian Mayor’s office 45 days in advance of scheduled training in the Military Lease Area. To ensure public safety, the area is cleared of unauthorized civilian personnel and cordoned off prior to the start of potentially hazardous training operations. Traffic control points are located on 8th Avenue and Broadway Avenue to prevent unauthorized access (DoN 2013b).

Training maneuvers and limited live-fire training activities follow range, aviation, and munitions safety standard operating procedures. During hazardous training activities such as maneuvers and small arms fire involving live and inert munitions, a qualified range safety officer is always on duty. Range safety officers ensure that these hazardous areas are clear of personnel during training activities. After a live-

fire event, the participating unit ensures that all weapons are safe and that the training area is clear of live rounds.

3.17.4.2.3 Unexploded Ordnance and Historically Discarded Military Munitions

Due to the historic use of Tinian during World War II, unexploded and historically discarded military munitions are known to exist within the Military Lease Area and may exist in the Tinian Harbor and other civilian locations. There are confirmed reports of the use of artillery, mortars, and tanks, in addition to naval gunfire and aircraft bombs, along with common infantry weapons in the historical record of the battle fought on the island by advancing U.S. military forces against defending Japanese forces in World War II (i.e., the Battle of Tinian). In response, the U.S. military, the U.S. Environmental Protection Agency, and the CNMI have established ordnance and munitions mitigation and cleanup activities under a variety of programs. These programs are summarized in Appendix R, *Hazardous Materials and Waste Technical Memo*. In addition, the community is routinely advised not to handle or step on any suspicious items, and to report such findings immediately. Unexploded ordnance and historically discarded military munitions have been discovered periodically since the end of World War II. There have been no reported incidents of serious injury or death related to unexploded ordnance and historically discarded military munitions on Tinian in the past 50 years. Clearances for unexploded military munitions have been conducted. Unexploded ordnance and historically discarded military munitions are identified to determine disposal requirements. Normally, an unexploded ordnance and historically discarded military munitions item may be removed offsite for disposal. If unstable, it may need to be blown in place. This determination is made by qualified military explosive ordnance disposal technicians.

Although portions of the island have been developed, unexploded military munitions may still be present. A historical ordnance assessment (DoN 2010b) was completed in 2010 and categorized areas of Tinian based on the probability (low, medium, and high) of such ordnance and munitions being present. The assessment was limited to current U.S. military properties where military construction may occur, which included the Military Lease Area (see Figure 3.16-1, Section 3.16, *Hazardous Materials and Waste*).

Medium and high probabilities of unexploded ordnance and the presence of historically discarded military munitions are the general risk assessment categories assigned to the Military Lease Area on Tinian (DoN 2010b). Light ordnance (e.g., hand grenades, projected grenades, and light mortars) likely comprise a large majority of unexploded ordnance that could be found within 4 feet (1.2 meters) of the ground surface. Heavier munitions (e.g., artillery projectiles, naval projectiles, and aerial bombs) can likely be found at greater depths since their force of impact tends to bury them deeper below the ground surface if they fail to detonate. In addition, there is a possibility of encountering historically discarded military munitions from either individual losses of ammunition or abandoned munitions. The northern portion of the Military Lease Area is considered a high-probability area due to the intensive pre-invasion bombardment and the intensive combat associated with the amphibious training that occurred during World War II. The southern portion of the area is assessed as medium probability because movement through this area was relatively rapid after the capture of Mount Lasso (DoN 2010b). Section 3.16, *Hazardous Materials and Waste* (Table 3.16.1) provides a description and location of known sites containing either unexploded ordnance and/or historically discarded military munitions.

A portion of the Battle of Tinian site was used as a military training range (Tinian Mortar Range) from 1945 to 1994. The former training range is located along the road north of Unai Chiget and south of Blow Hole, which is fenced off and marked as containing unexploded ordnance.

The Historical Ordnance Assessment (DoN 2010b) did not take into account that the majority of the Military Lease Area was bulldozed during World War II to develop airfields and supporting infrastructure. Despite prior development activities on the island, there is no record of unexploded ordnance surface or subsurface clearance having been performed. Unexploded ordnance and historically discarded munitions could be present in undeveloped areas and at depths below previous earth disturbing activities.

3.17.4.3 Marine Operations

3.17.4.3.1 Civilian Activities

The Port of Tinian is used by the public, commercial and supply barges, as well as U.S. Coast Guard vessels. The current port docking facilities consist of a main wharf that is approximately 2,000 feet (610 meters) long with a usable length of 1,600 feet (488 meters). The harbor has no fixed shore-side cranes or lighting. West of the main wharf are two finger piers, both are in complete disrepair and unusable.

As described in Section 3.8, *Recreation* and Section 3.15 *Socioeconomics and Environmental Justice*, waters to the northwest of Tinian are used for fishing by the Saipan commercial fishing fleet. The water is notably calmer on the western side of Tinian, which makes it more attractive for fishing than the eastern side. Additionally, shorelines are used for recreational fishing, primarily located south of Dump Coke South and north of the Two Coral (Turtle Cove) diving sites on the west side of Tinian.

3.17.4.3.2 Military Activities

North of the main wharf and adjacent to the current public dock and ramps is an old concrete boat ramp that has been used by military Amphibious Assault Vehicles. This ramp has an adjacent grassy staging area suitable for storing vehicles brought ashore, or for staging, cleaning, and reloading (U.S. Commander Pacific Fleet 1999). There are no recurrent military operations within waters surrounding Tinian. There is currently no marine danger zones associated with Tinian.

3.17.4.3.3 Marine Vessel Accidents

The Lloyd's Maritime Information Service Casualty Register collects data on and reports vessel casualties. Vessel casualties consist of accidental groundings and shipwrecks. In 1997 the South Pacific Regional Environment Programme published a research paper which included a list of all casualties in the South Pacific between 1976 and 1996. During this 20-year period there were seven documented wrecks or groundings in the vicinity of the Northern Marianas. Four of the seven documented events involved heavy weather of typhoons. Only one vessel casualty was recorded in the waters surrounding Tinian. In August 1986, a refrigerated cargo ship carrying frozen fish stranded while entering the Tinian Harbor. The hold and engine room of the ship flooded (Preston et al. 1997). Based on a review of National Transportation Safety Board, Marine Accident Reports issued since 1996, there have been no accidents reported in the waters surrounding Tinian, during the past 18 years (National Transportation Safety Board 2014).

3.17.5 Pagan

3.17.5.1 Aircraft Operations

The population of Pagan was evacuated to Saipan in May 1981 due to the eruption of Mount Pagan and has not been formally re-inhabited since. The active volcano located on Northern Pagan is monitored by the U.S. Geological Survey via satellite. Procedures and support during natural disasters and area advisories to inform travelers of safety risks is provided by the CNMI Homeland Security and Emergency Management Office. Temporary visitors to Pagan on approved visits generally travel by private or chartered boats or aircraft (i.e., helicopters) and are required to have the ability to contact the CNMI Homeland Security and Emergency Management Office.

3.17.5.1.1 Civilian Activities

As described in Section 3.6, *Airspace* and Section 3.13, *Transportation*, Pagan airfield is an unattended/uncontrolled World War II-era, grass field, truncated at one end by a 30-foot-thick lava flow. It has no airport control tower, communications or other airport facilities. There are no scheduled flights. These conditions limit the type of aircraft that can land there, generally small aircraft and helicopters. It is used as an evacuation airfield for medical emergencies in the Northern Islands, coordinated via satellite phone. There are no recorded wildlife strike events at or near the Pagan airfield and no published Runway Protection Zones.

3.17.5.1.2 Military Activities

Limited military training has occurred in recent years on Pagan as part of the Forager Fury and Forager Fury II training exercises. The training consisted of 1-day combat search and rescue training missions in the northern section of Pagan. A rotary-wing aircraft (MV-22 Osprey) was utilized to extract personnel from a simulated downed aircraft. No live-fire training has occurred as part of these activities. There is currently no Special Use Airspace for Pagan.

3.17.5.2 Ground Operations

3.17.5.2.1 Civilian Activities

There is no resident population on Pagan but people visit Pagan for recreation and resource gathering. Visitors have been observed using temporary encampments to over-night on the island. Abandoned livestock have become feral and roam the entire island. The Department of Public Safety maintains no personnel or facilities on Pagan. There is no information available to suggest that accidents and safety are a current issue.

3.17.5.2.2 Military Activities

No military ranges exist on Pagan, with military operations confined to recent, 1-day, non-live-fire, aviation events described in [Section 3.17.5.1.2, Military Activities](#).

3.17.5.2.3 Unexploded Ordnance and Historically Discarded Military Munitions

As describe in Section 3.16, *Hazardous Materials and Wastes*, Pagan was a Japanese Imperial Army stronghold that was continuously bombed from June 1944 through September 1945. There is the

possibility that unexploded ordnance and/or historically discarded military munitions could be encountered throughout the island. The historic ordnance study conducted in support of this EIS/OEIS (DoN 2013a) summarized the probability of the presence of unexploded ordnance (i.e., unexploded munitions and explosive hazards) on Pagan. In this study, the island is described in terms of moderate-to-high-potential and low-potential hazard areas. Areas with moderate-to-high-potential were identified by historical records indicating locations of military importance based on the level of historic military use of the area. Low-potential areas include areas where there is no evidence or documentation of military use and areas that lacked structures during World War II (i.e., the entire southern portion of Pagan) (see Figure 3.16-2, Section 3.16, *Hazardous Materials and Waste*).

3.17.5.3 Marine Operations

3.17.5.3.1 Civilian Activities

There is no operable pier or port facilities on Pagan and there are no regularly scheduled marine operations. Ships that have travelled to Pagan have anchored off the northwestern shore, and personnel have used small boats to come ashore. However, as described in Section 3.8, *Recreation*, there are currently two tour options being offered for Pagan: Pagan ecotour adventure and the Silver Explorer cruise ship. In September 2014, the Silver Explorer cruise ship anchored and shuttled people between the ship and Pagan for a day trip nature excursion before sailing on to Saipan and Tinian.

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3.17.5.3.3 Marine Vessel Accidents

As reported by the South Pacific Regional Environment Programme from data compiled by the Lloyd's Maritime Information Services Casualty Register, during the 20-year period from 1976 to 1996 there were no reported vessel casualties in the waters surrounding Pagan (Preston et al. 1997). Based on a review of National Transportation Safety Board, Marine Accident Reports issued since 1996, there have been no accidents reported in the waters surrounding Pagan, during the past 18 years (National Transportation Safety Board 2014).