

VERSION 1

**COMMONWEALTH OF THE NORTHERN MARIANA
ISLANDS JOINT MILITARY TRAINING
UNCONSTRAINED TRAINING CONCEPT FOR TINIAN
AND PAGAN**



Department of the Navy
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
JBPHH HI 96860-3134

April 2014

This page is intentionally left blank.

VERSION 1

**COMMONWEALTH OF THE NORTHERN MARIANA
ISLANDS JOINT MILITARY TRAINING
UNCONSTRAINED TRAINING CONCEPT FOR TINIAN
AND PAGAN**

Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
JBPHH HI 96860-3134

Prepared by:

AECOM Technical Services, Inc.
1001 Bishop Street, Suite 1600
Honolulu, HI 96813-3698

Under the TEC-AECOM Pacific Joint Venture

April 2014

This page is intentionally left blank.

**Commonwealth of the Northern Mariana Islands Joint Military Training Unconstrained Training
Concept
Table of Contents**

	<u>Page</u>
LIST OF ACRONYMS AND ABBREVIATIONS	V
CHAPTER 1. BACKGROUND AND TRAINING REQUIREMENTS	1-1
1.1 INTRODUCTION.....	1-1
1.2 JOINT TRAINING	1-2
1.3 PURPOSE.....	1-2
1.4 PLANNING STUDIES	1-2
1.5 LAND REQUIREMENTS	1-5
1.6 ASSUMPTIONS.....	1-6
CHAPTER 2. UNIT LEVEL RANGE AND TRAINING AREAS ON TINIAN	2-1
2.1 UNIT LEVEL TRAINING EVOLUTION SCENARIO	2-1
2.2 TINIAN - UNIT LEVEL	2-5
2.3 UNIT LEVEL LIVE-FIRE RANGES AND TRAINING AREAS	2-11
2.4 UNIT LEVEL NON-LIVE-FIRE TRAINING AREAS	2-23
2.5 LOGISTICAL SUPPORT OF UNIT LEVEL TRAINING	2-26
2.6 SUPPORTING ACTIVITIES.....	2-36
CHAPTER 3. COMBINED LEVEL RANGE AND TRAINING AREAS ON PAGAN.....	3-1
3.1 COMBINED LEVEL TRAINING EVOLUTION SCENARIO	3-1
3.2 PAGAN - COMBINED LEVEL	3-3
3.3 COMBINED LEVEL LIVE-FIRE RANGES AND TRAINING AREAS	3-8
3.4 COMBINED LEVEL NON-LIVE-FIRE TRAINING AREAS	3-10
3.5 LOGISTICAL SUPPORT OF COMBINED LEVEL TRAINING.....	3-15
3.6 SUPPORTING ACTIVITIES.....	3-15
CHAPTER 4. SEA SPACE AND AIRSPACE TO SUPPORT TRAINING	4-1
4.1 SEA SPACE AND AIRSPACE IN SUPPORT OF TRAINING.....	4-1
4.2 SEA SPACE.....	4-1
4.3 AIRSPACE	4-2
4.4 ESTIMATED SEA SPACE AND AIRSPACE USAGE	4-3
CHAPTER 5. RANGE AND TRAINING AREA MANAGEMENT CONCEPT.....	5-1
5.1 TINIAN RANGE CONTROL.....	5-2
5.2 PAGAN RANGE CONTROL.....	5-3
CHAPTER 6. REFERENCES	6-1

List of Figures

<u>Figure</u>	<u>Page</u>
Figure 1-1. Commonwealth of the Northern Mariana Islands and Guam.....	1-3
Figure 1-2. Tinian Military Lease Area	1-7
Figure 2-1. Tinian Unconstrained Use Laydown.....	2-8
Figure 2-2. Tinian Unconstrained Use Laydown – Composite Surface Danger Zone	2-9
Figure 2-3. Tinian Unconstrained Use Laydown – Vegetation Maintenance Areas.....	2-10
Figure 2-4. Tinian Unconstrained Use Laydown – Live-Fire Convoy Course.....	2-21
Figure 2-5. Tinian Unconstrained Use Laydown – Tracked Vehicle Driver’s Course.....	2-24
Figure 2-6. Tinian Unconstrained Use Laydown – Base Camp.....	2-27
Figure 2-7. Tinian Unconstrained Use Laydown – Tinian Port.....	2-31
Figure 2-8. Tinian Unconstrained Use Laydown – Tinian International Airport Improvements	2-32
Figure 2-9. Tinian Unconstrained Use Laydown – Tinian Road Improvements, Fence Lines, and Access Gates.....	2-34
Figure 3-1. Pagan Unconstrained Use Laydown.....	3-5
Figure 3-2. Pagan Unconstrained Use Laydown – Composite Surface Danger Zone	3-6
Figure 3-3. Pagan Unconstrained Use Laydown – Vegetation Maintenance Areas	3-7
Figure 3-4. Pagan Unconstrained Use Laydown – Pagan Airfield Elements, Pier, and Breakwater	3-12
Figure 3-5. Pagan Unconstrained Use Laydown – Road Network	3-14
Figure 4-1. Tinian Unconstrained Use Laydown – Special Use Airspace.....	4-5
Figure 4-2. Pagan Unconstrained Use Laydown – Special Use Airspace	4-6

List of Tables

<u>Table</u>	<u>Page</u>
Table 1-1. Pacific Command Service Components’ Unfilled Training Requirements in the Commonwealth of the Northern Mariana Islands	1-4
Table 2-1. Estimated Amphibious Operations/Beach Use - Tinian.....	2-3
Table 3-1. Estimated Amphibious Operations/Beach Use - Pagan.....	3-2
Table 4-1. Estimated Average Daily Special Use Airspace Usage – Tinian and Pagan.....	4-3
Table 4-2. Estimated Annual Aircraft Sorties Special Use Airspace - Tinian.....	4-4
Table 4-3. Annual Aircraft Sorties - Pagan.....	4-4

List of Appendices

Appendix A Physical Descriptions and Intended Use of the Ranges and Training Areas

Appendix B Tinian Unit Level Training Cycle

Appendix C Pagan Combined Level Training Cycle

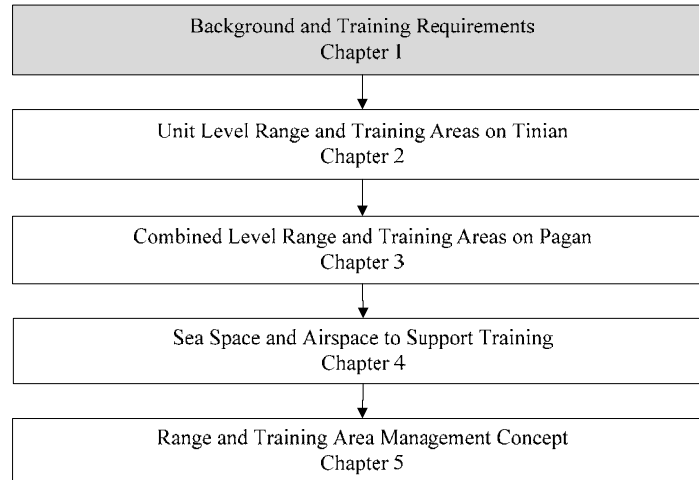
This page is intentionally left blank.

LIST OF ACRONYMS AND ABBREVIATIONS

AAV	amphibious assault vehicle	mm	millimeter
AAW	Anti-Air Warfare	MARFORPAC	Marine Forces Pacific
AGL	above ground level	MET	Mission Essential Task
AOR	Area of Responsibility	MOA	Military Operations Area
AT	Anti-Tank	MPRC	Multi-Purpose Range Complex
BAX	Battle Area Complex	MPTR	Multi-Purpose Training Range
BLT	Battalion Landing Team	MSL	mean sea level
CCDR	Combatant Commander	MW	megawatt
CJMT	Commonwealth of the Northern Mariana Islands Joint Military Training	NM	nautical mile
CAS	Close Air Support	OP	Observation Post
CNMI	Commonwealth of the Northern Mariana Islands	PACOM	U.S. Pacific Command
DZ	Drop Zone	R	Restricted area
ESS	Electronic Security System	RTA	Range and Training Area
FAA	Federal Aviation Administration	SDZ	surface danger zone
FARP	Forward Arming and Refueling Point	SMAW	Shoulder-launched Multipurpose Assault Weapon
FL	Flight Level	SOC	Special Operations Capable
Ha	Hectare	SUA	Special Use Airspace
HE	High Explosive	TD	training day
HHIA	High Hazard Impact Area	TERF	Terrain Flight
IPBC	Infantry Platoon Battle Course	T&R	Training & Readiness
I-TESS	Instrumented Tactical Engagement Simulation System	UAC	Urban Assault Course
km	kilometer	UAS	Unmanned Aircraft System
JHSV	joint high speed vessel	UMCS	Utility Monitoring and Control System
LAR	light armored reconnaissance	U.S.	United States
LAV	Light Armored Vehicle	UTC	Unconstrained Training Concept for Tinian and Pagan
LAW	Light Anti-Armor Weapon	UXO	unexploded ordnance
LCAC	Landing Craft Air Cushioned	W	warning area
LCM	Landing Craft Mechanized	WDZ	Weapon Danger Zone
LCU	Landing Craft Utility		
LFCC	Live-Fire Convoy Course		
LZ	Landing Zone		
MEU	Marine Expeditionary Unit		
mi	mile		
MLA	Military Lease Area		
MSA	Munitions Storage Area		
m	meter		

This page is intentionally left blank.

CHAPTER 1. BACKGROUND AND TRAINING REQUIREMENTS



1.1 INTRODUCTION

The Commonwealth of the Northern Marianas (CNMI) Unconstrained Training Concept for Tinian and Pagan (UTC) supports ongoing Department of Defense planning studies for the CNMI Joint Military Training (CJMT) Environmental Impact Statement/Overseas Environmental Impact Statement. The UTC presents an unconstrained view of how proposed ranges and training areas could be optimally arranged and used to best meet the unfilled training requirements identified by the United States (U.S.) Pacific Command (PACOM) Service Components.

The UTC is the third in a series of planning documents designed to help inform the scope of the proposed action and the scope of the National Environmental Policy Act analysis with respect to viable location(s) for the development of new Range and Training Areas (RTAs) in the CNMI. Previous studies included the:

- *Training Needs Assessment* (Department of the Navy, 2012) which documented the training shortcomings of ranges, training areas, and facilities in all of the regions, or “hubs” within the entire PACOM Area of Responsibility (AOR). The assessment concluded that the greatest shortcomings (training needs) were within the Mariana Islands (Figure 1-1). In addition, the Mariana Islands were considered the area with the greatest potential for increasing training capacity overall.
- *Requirements and Siting Study* (Department of the Navy, 2013) took the results of the Training Needs Assessment Study and focused on developing and applying operation siting criteria to determine potential locations within the Mariana Islands where all of the unfilled unit and combined level training requirements could be met. Of the 14 CNMI islands, only a combination of Tinian and Pagan would meet unit level and combined level operations siting criteria and could satisfy virtually all unfilled training requirements.

This UTC sets out a maximum usage concept that presents an unconstrained construct for Tinian and Pagan which could be utilized to further define the proposed action and will assist with developing alternatives that still accomplish the proposed action albeit within a constrained environment. The laydown presented maximizes land area and live-fire training opportunities without consideration to existing logistical, operational and environmental constraints.

The UTC describes the anticipated maximum use of the proposed facilities and infrastructure necessary to support the envisioned training and presents potential training evolutions (cycles) that could be conducted on Tinian and Pagan based on an optimal unconstrained future force flow. The Environmental Impact Statement will then present the proposed action and analyze alternatives of this unconstrained training concept.

1.2 JOINT TRAINING

This UTC provides one solution for Combatant Commanders (CCDRs) to meet their responsibility for joint training of assigned forces as outlined in Joint Training Policy and Guidance for the Armed Forces of the U. S. (Chairman of the Joint Chiefs of Staff 2012). For those forces that are assigned and allocated to the CCDRs, the Joint Training System is key to their preparation and readiness within a common Mission Essential Tasks (METs)-based training and readiness system. All personnel and components shall train on their METs according to established conditions and standards to provide capabilities that support the CCDRs and the concepts of operations across all phases of joint campaigns and throughout the spectrum of Service, joint, interagency, intergovernmental, and multinational operations.

1.3 PURPOSE

The purpose of the *Unconstrained Training Concept for Tinian and Pagan* is to provide PACOM and the Service Components with a conceptual planning document that provides an optimal physical laydown of proposed new RTAs in the Marianas. These RTAs will support and enable training to meet Service METs and the CCDR's need for trained and ready forces. It will also assist the National Environmental Policy Act process in developing alternatives to ensure that operational objectives are met while minimizing environmental impacts.

1.4 PLANNING STUDIES

In August 2010, the Commander PACOM appointed the Commanding General Marine Forces Pacific (MARFORPAC) as the Executive Agent to assess joint training deficiencies and opportunities in the PACOM AOR.

Training Needs Assessment

A Training Needs Assessment was prepared to document training shortcomings of ranges, training areas, and facilities in all of the regions, or "hubs." In order to determine the unfilled training requirements for the PACOM Service Components, MARFORPAC met with each of the Service Components from November to December 2011. Each Service Component discussed current conditions of ranges, training areas, and facilities used by U.S. forces within the PACOM AOR based on established range design criteria and outlined their current unfilled training requirements (See Table 1-1).

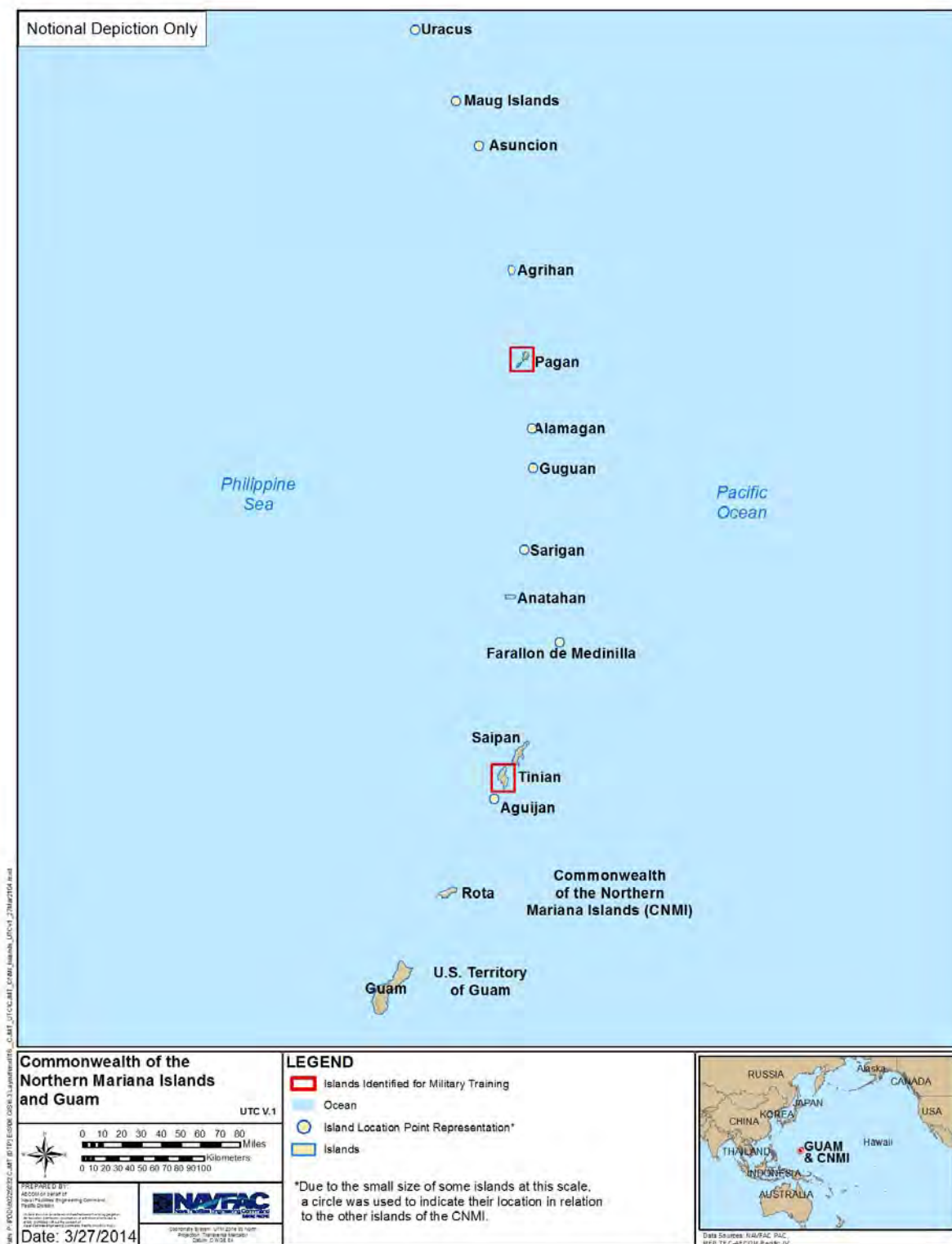


Figure 1-1. Commonwealth of the Northern Mariana Islands and Guam

The assessment concluded that the greatest shortcomings (training needs) were within the Mariana Islands. In addition, the Mariana Islands were considered the area with the greatest potential for increasing training capacity overall.

Based on this assessment, in May 2012, the Executive Agent in coordination with PACOM decided to initially focus on potential future range and training area development in the Mariana Islands, specifically the CNMI. With this focus on the CNMI, the project evolved from the Pacific-wide Defense Training in the Pacific to the "CJMT" effort.

Table 1-1. Pacific Command Service Components' Unfilled Training Requirements in the Commonwealth of the Northern Mariana Islands

No.	Name	Training Level ¹
1	Impact Area Dudded	U,C
2	Combat Pistol Range (Automated)	U
3	Multipurpose Automated Unknown Distance Range	U
4	Live Hand Grenade Range – (as part of a multipurpose range)	U
5	Field Artillery Indirect Fire Range	U,C
6	Mortar Range (60 mm, 81 mm)	U
7	Field Fire Range (Automated)	U
8	Anti-Armor Tracking Range (Automated)	U
9	Field Artillery Direct Fire Range	C
10	Tank/Fighting Stationary Target Range	U
11	Light Anti-Armor Weapon Range Live	U
12	Grenade Launcher Range	U
13	Battle Sight Zero Range (built to 100-yd Non Standard Small Arms Range)	U,C
14	Infantry Platoon Battle Course (Automated)	U
15	Multi-Purpose Training Range/ Multi-Purpose Training Range (Automated)	U
16	Tank/Fighting Vehicle Multi-Purpose Range Complex/Multi-Purpose Range Complex	U
17	Combined Arms Training Range to support Close Air Support and Naval Gun Fire Support training	C
18	Company Combined Arms Live-Fire and Maneuver Range	U
19	Combined Arms Live-Fire Amphibious Beaches with Maneuver Area	C
20	Urban Assault Course/Military Operations on Urban Terrain Urban Assault Course	U
21	Convoy Live-Fire Range	U
22	Tracked Vehicle Driver's Course	U
23	Tactical Amphibious Landing Beaches	U,C
24	Maneuver Area, Heavy Forces	C
25	Maneuver Area, Light Forces	U,C
26	Maneuver Area, Amphibious Forces	U,C
27	Offensive Air Support Range (Aerial Gunnery and/or Aerial Bombing Range)	U,C
28	Close Air Support Range (Air-to-Ground Range)	U,C
29	Electronic Warfare Training Range (Integrated Air Defense System/Counter Integrated Air Defense System)	U,C
30	Landing Zones	U,C
31	Drop Zones	U,C
32	Unmanned Aircraft Systems Operating Areas	U,C
33	Anti-Air Warfare Range	U,C
34	Terrain Flight Maneuver Area/Route (Rotary Wing/Tilt Rotor)	U,C
35	Forward Arming and Refueling point (FARP)	U,C
36	Base Camp and associated facilities and infrastructure	U,C
37	Range Control	U,C
38	Data Transfer Infrastructure	U,C

No.	Name	Training Level ¹
39	Ammunition Storage	U,C
40	Staging Areas (administrative and tactical)	U,C
41	Adequate waterfront piers, harbor, and infrastructure (existing or new construction)	U,C
42	Adequate roads, utilities, and infrastructure for training areas, ranges, and facilities (existing or new construction)	U,C

Note: 1. Level of training: U = Unit level; C = Combined level.

Legend: mm = millimeter; yd = yard.

CJMT Requirements and Siting Study

A *Requirements and Siting Study* (Siting Study) was conducted in the CNMI to identify potential locations within the CNMI for meeting PACOM Service Components' known and anticipated military training deficiencies (i.e., unfilled training requirements). The Siting Study developed and applied operational screening criteria to determine potential locations within the CNMI where the unfilled unit level and combined level training requirements could be met. Unit level and combined level training are described as follows:

- Unit level training supports “readiness” to meet a unit’s mission-essential tasks. These units could include an aviation squadron; an infantry company; tank, amphibious vehicle, light armored vehicle (LAV), engineer, and maintenance platoons; an artillery battery; and communications, transportation support, landing support, maintenance, health services, and military police detachments. Examples of unit level training include an infantry company’s execution of an attack on an enemy held position, or a helicopter squadron’s execution of a logistical resupply mission.
- Combined level training joins the efforts of various units into the synchronized accomplishment of a broad task which is greater in complexity than that of the unit level training. An example of combined training would be an Army infantry unit executing ground maneuvers to seize an objective area in concert with Air Force or Naval aviation providing air support in the form of synchronized attacks on hostile targets.

Of the 14 CNMI islands, only a combination of Tinian and Pagan meet unit level and combined level screening criteria and could satisfy virtually all unfilled training requirements. Tinian best met the established siting criteria for unit level training and Pagan best met the criteria for the combined level training. Therefore, the two islands of Tinian and Pagan are carried forward for further planning activities.

1.5 LAND REQUIREMENTS

Service Component training references (e.g., manuals, guidance documents) provide space characteristics and/or parameters for some, but not all, ranges, and training areas, and support facilities. The *Requirements and Siting Study* (2013) indicated that the total acreage for unfilled training requirements for those that have standard dimensions would be approximately 8,725 miles² (22,600 kilometers², 5,584,600 acres), if each range and training area was accounted for separately at their ideal size.

Siting ranges and training areas individually and separately is neither feasible nor practical because of the extensive size requirements. Where feasible, multi-purposing a range (i.e. using a single range to accomplish several training objectives), with overlapping surface danger zones (SDZs) as much as

possible, are strategies proposed to reduce overall land requirements. For example, maneuver areas and aviation ranges could be combined or grouped based on the availability of land, sea, and airspace; or, some RTAs that primarily support aviation training could be sited over sea spaces, although this would require a portion over land for training in target acquisition and weapons delivery.

Some existing ranges and training areas have incompatible prior usage and would not be considered for multi-purpose use. For example, the Farallon de Medinilla naval gunfire and air to ground range, approximately 60 nautical miles (NM) (110 kilometers [km]) from Tinian is not compatible for training that would involve ground troops due to inaccessibility and unexploded ordnance (UXO). The overlapping of ranges results in improved land area utilization, maximizing training throughput, and minimizes future impacts on environmental resources. The ability of a land area to support unfilled training requirements is based on operational criteria, physical characteristics, safety, and other constraints needed to provide for training that meets mission needs, and not based strictly on size.

1.6 ASSUMPTIONS

For planning purposes only, Marine Corps units, weapon systems, and training events are used throughout the following chapters as representative of the type and duration of proposed joint training that the ranges and training areas would support for all military services.

Certain logistical and operational assumptions were made in the development of this document; which includes:

- Joint High Speed Vessel (JHSV) – A JHSV or similar commercial vehicle will be available to move troops, equipment and ammunition to and from Tinian and Pagan.
- Special Use Airspace (SUA) – Rulemaking will be initiated by the Federal Aviation Administration (FAA) to institute the necessary SUA to enable the envisioned live-fire training.
- Fuel Availability on Tinian and Pagan – The necessary quantities of aviation and ground fuel will be available on island to support the laydown and envisioned training.
- Ammunition Movement – Ammunition lift will be available and movement from the harbor to the planned Munitions Storage Area (MSA) can be deconflicted with existing land use.
- In-Water Upgrades for Tinian – All necessary improvements to the Tinian Harbor (breakwater, pier and dredging) necessary to support the laydown will be made by the Commonwealth Ports Authority, U.S. Army Corps of Engineers, or other unidentified entities.
- Unconstrained Fiscal Environment – Necessary funding will be available to support the construction of RTAs and land acquisition.
- Land Acquisition – Land, not already under lease to the Department of Defense, will be acquired, as appropriate, to support the laydown.

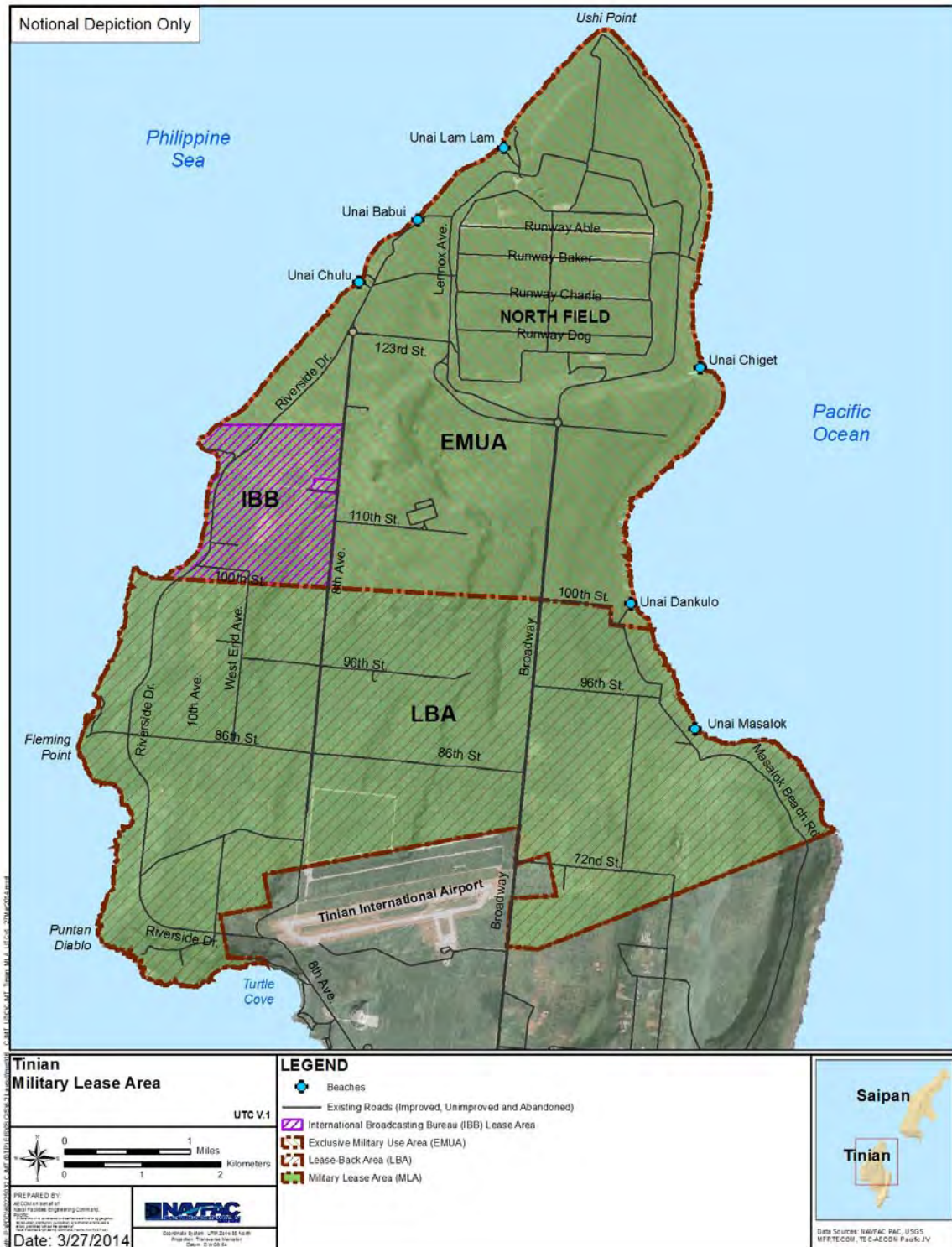
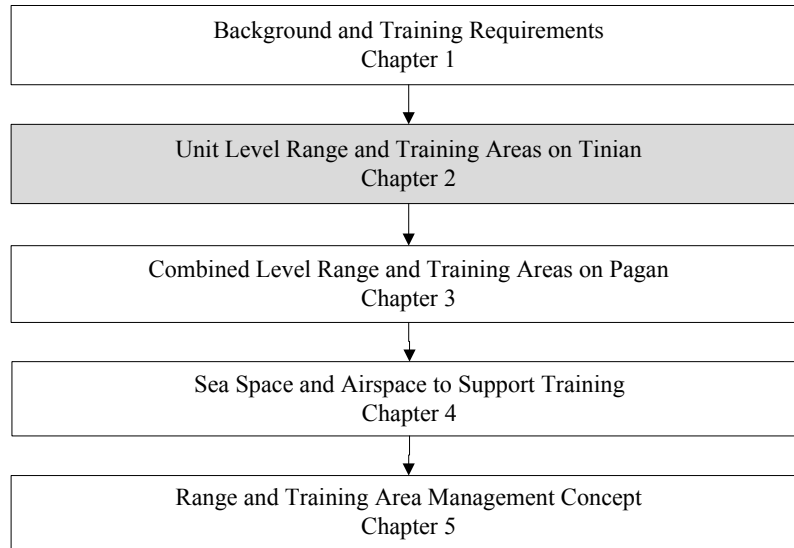


Figure 1-2. Tinian Military Lease Area

This page is intentionally left blank.

CHAPTER 2. UNIT LEVEL RANGE AND TRAINING AREAS ON TINIAN



2.1 UNIT LEVEL TRAINING EVOLUTION SCENARIO

With respect to meeting the unfilled training requirements presented in Chapter 1 (Table 1-1), the goal for the Tinian ranges and training areas is two-fold: to provide the capability and capacity for unit level training using the weapons organic to an infantry battalion, the principal component of a battalion landing team (BLT); and to provide suitable aviation ranges and training areas that are linked to supporting ground training. Envisioned training on Tinian would include amphibious and land-based company-level, live-fire training for U.S., bi-lateral (i.e., Japan Self- Defense Forces), and multi-national (i.e., Australia, Japan, and Republic of Korea) forces. The Tinian ranges and training areas would also support a degree of Marine Expeditionary Unit (MEU) training and training for other U.S. military units throughout the PACOM AOR, such as Naval Special Warfare, Army Special Forces, Air Force Security Forces, and National Guard and Reserve units. Along with these tactical ranges and training areas, a billeting complex for transient trainees, a munitions storage area, and improvements to the airfield, and harbor improvements to infrastructure are envisioned to support the anticipated training.

The training on Tinian is anticipated to occur 45 weeks per year. Camp accommodations would support 1,500 trainees in permanent facilities and an additional 1,500 trainees in surge facilities, such as tents.

As noted previously, Marine Corps units, such as an amphibious-capable infantry company, are depicted as a representative training audience for Tinian and Pagan ranges and training areas. Training periods for these types of units range from one training period for an infantry company on Tinian to two training periods on Pagan, with one period as a company, and one period as a part of a whole BLT for an amphibious assault. Special Operations units, foreign allies, and infantry battalions of the Army National Guard and Army Reserve would use the Tinian ranges and training areas in a manner similar to the BLT infantry company presented in the following sections. During

periods when infantry units would not be training on Tinian, the ranges and training areas would be used by other types of units, such as military police units, and non-infantry Army National Guard and Army Reserve units.

Typical Operating Scenario - BLT. The Unit Level Tinian Training Cycle, in Appendix B, provides a representative template of anticipated range and training area use on Tinian for an infantry company, such as a Marine, Army National Guard, or Army Reserve infantry company, where applicable to a unit's training requirements. Units would plan to accomplish training events, based on their current training readiness status and anticipated mission requirements. Currently, an established and mandated training structure does not exist that accounts for all the potential variables involved in long range scheduling, since units would arrive at Tinian with different levels of training needs. The approximately two week representative template depicts the ranges and training areas that a unit would use during each training day (TD). Three infantry companies would consecutively train for two-week periods at a time, totaling six weeks of core training for constituent BLT units. In addition, depicted are the BLT attachments that would provide training support to the infantry company. When multiple units are depicted as using the same ranges and training areas, these units would cycle through the training at off-set times. Detailed scheduling would be planned and controlled by Tinian range control personnel. The following is a sample day-by-day synopsis of the Tinian Unit Level Training Cycle for an infantry company:

- Personnel of Alpha and Weapons Companies, along with associated attachments such as the artillery battery, arrive at Tinian via sea (primarily the JHSV) or air transportation (C-130 or C-17) and are bused to the base camp where they receive range safety, environmental, and familiarization briefs and prepare for the next day of training. Their equipment arrives via the Tinian port and is staged at the base camp.
- TD 1. Infantry platoons cycle through the battle sight zero ranges, bore sighting their weapons, while weapons platoon personnel use the multi-purpose range complex (MPRC) machine gun and shoulder-launched multipurpose assault weapon (SMAW), the high hazard impact area (HHIA) for rocket, and 60 millimeter (mm) mortar range for live-fire training. Sections from the Weapons Company use the MPRC, and the HHIA for 81 mm mortar live-fire training, as well as the Multipurpose Automated Unknown Distance Range. The artillery battery positions their 155 mm howitzers at firing point Group C, and engages targets within the HHIA. The light armored reconnaissance (LAR) and amphibious assault vehicle (AAV) platoons transit in their vehicles from the base camp to the MPRC, set up firing positions, and engage targets with their organic weapon systems. The engineering platoon moves from the base camp to the HHIA where they would rehearse breaching obstacles (enemy defensive obstacles such as concertina wire, doors, and walls) with demolition charges (such as Composition 4, known as C4) and Bangalore torpedoes (an extended-tube device filled with explosives that is placed within an obstacle). All this type of training would occur at the HHIA.
- TD 2. Units described above, rotate to a different ranges and training areas than TD 1, moving from the Multipurpose Automated Unknown Distance Range to the MPRC, for example. Units with indirect firing systems (artillery, mortars) shift to a different firing point, engaging targets in the HHIA from differing azimuths.

- TD 3. Similar rotation as described in TD 2 above. The AAV platoon conducts amphibious beach landings, without embarked personnel. The platoon would depart the base camp, transit to either a designated beach in the Military Lease Area (MLA) or the Tinian harbor, enter the ocean, and conduct various platoon drills while afloat. The platoon would conduct numerous landings at beaches based on sea state, perform land maneuvers via prepared tracked vehicle transit lanes, potentially re-entering the ocean at the same or a different MLA beach. A typical AAV unit level training scenario on Tinian consists of four AAVs that would "splash" into and out of the ocean using one of the named beaches, spending approximately 2 hours in the ocean, rehearsing immediate action drills, then landing on a named beach. The AAVs would conduct a maintenance check ashore, and then "re-splash" returning to the ocean for another 2-hour training period. All AAVs would then meet as a complete platoon (16 AAVs) at a named beach, and conduct coordinated immediate action drills as a platoon. AAVs also conduct night training, using a similar pattern of actions. During times of no live-fire training on Tinian, AAVs may have an opportunity to conduct additional amphibious landings training, alternating between those actions described above, or the following type of training event.

AAV units have a sustainment training requirement to disembark off amphibious support ships every 6 months. If amphibious support ships are not available, AAV units would train using a "notional" amphibious support ship, that being a point off shore from the intended landing beach where an actual amphibious ship would position itself for AAV launch. The training standard is for an amphibious support ship to be located 1 NM to 3 NM (1,900 meters [m] to 5,550 m) offshore from the intended landing beach. To affect training, AAVs would enter the ocean from a named beach as a platoon and travel the distance to the "notional" ship, and upon reaching that point, turn around and set up a "boat lane", which goes from the notional ship to the objective (beach they are assaulting). A boat lane is 1700 feet (ft) (500 m) wide. The AAVs would travel in an on-line formation while in the water. Due to potential space constraints of the proposed beaches on Tinian, they would transition to a landing formation based on the allowable nearshore and beach terrain and conduct a beach raid/assault, move inland, and then conduct a beach withdrawal. During the withdrawal, they travel the boat lane back to the ship. AAV units would also conduct this type of training day and night.

Table 2-1 depicts the estimated amphibious operations/beach use for the Tinian RTAs. The AAV-7 is the typical type of vehicle that would be used for amphibious landing training. Embarked personnel are those individuals who are transported within the AAV, not including the AAV crew. These embarked personnel could be an infantry squad.

Table 2-1. Estimated Amphibious Operations/Beach Use - Tinian

<i>Type of AAV-7 Landings</i>	<i>Planned Training Frequency</i>	<i>Number of Training Vehicles</i>
Without embarked personnel	70 days/year	(4) AAV-7
With embarked personnel	20 days/year	(16) AAV-7
	Annual Total 90 days/year	

- TD 4. All infantry, AAV, and LAR platoons move from the base camp to the Urban Assault Course (UAC), the final objective areas of the Infantry Platoon Battle Complex (IPBC) and the Battle Area Complex (BAX), conducting coordinated assaults in this training environment. Remaining units cycle through the other ranges and training areas previously

used by the infantry platoons. The 81 mm mortar section executes a Fire Support Team Exercise using the targets within the HHIA. Aviation units (fixed wing and rotary wing) may provide close air support (CAS), attacking the same targets, for ground controller sustainment training.

- TD 5-6. The infantry, AAV, and LAR platoons and the sections of the Weapons Company conduct live-fire convoy course (LFCC) training. Departing the base camp in their organic transportation, these units would proceed through the convoy course, engaging targets that are controlled by range personnel. The convoy course has various engagement zones wherein differing target presentations are activated. The convoy course travels near the HHIA, where requirements to integrate various other units and their capabilities and weapon systems would be presented. Training situations would arise where aviation and artillery units would be required and called upon for convoy support. The training focus is on the conveying unit. TD 5 convoy course training would be conducted during daylight. TD 6 would be dedicated to nighttime convoy course training. Other units, such as the artillery battery, fixed wing attack aircraft (such as an FA-18), and attack helicopters (such as an AH-1) would support the unit conducting the actual convoy course.
- TD 7-8. The focus of training is platoon-level, live-fire mission coordination. The infantry platoons would separately cycle through an attack scenario on the IPBC, engaging appropriate targets and internally coordinating movement and fire. Day scenarios elevate in complexity, leading to a night event. Squads within the platoon would traverse the IPBC range, from east to west, moving from objective to objective, in a coordinated manner.
- TD 9-12. The focus of training period is company-level, live-fire mission coordination. The infantry and weapons companies, along with supporting arms units such as the LAR and AAV platoons would depart the base camp and proceed to the BAX. At the BAX, each platoon would move through the scenario course, engaging appropriate targets and coordinating movement and fire with adjacent units, as well as integrating supporting arms at the company-level. Similar to convoy course training, various scenarios would present the requirement to integrate supporting arms such as artillery or air delivered ordnance, wherein units would direct the engagement of targets within the HHIA. Units would cycle through day and night scenarios of varying levels of engagement complexity and requisite coordination demands.
- TD 13. Planned range and training area make-up day (for inclement weather or other potential training delays).
- TD 14. The infantry platoons would embark in AAVs at the base camp, travelling to either the Tinian port, or the various MLA beaches for amphibious landings. The transit areas and locations for this event are the same as previously named beaches for the AAV's non-embarked training. The focus of this training is the safe loading and unloading of infantry on and off the AAV, in order to conduct follow-on ground training maneuvers. These actions may occur throughout the entire MLA, using the tracked vehicle transit lanes.
- Following TD 14, the units would conduct clean up and pack out, departing via the same transportation modes as they arrived.

- Various RTAs not specifically delineated above or in Appendix B would be used to support training, but on a potentially less predictable cycle. The following provides supporting use information:
 - The MLA and surrounding sea space may be considered both light and amphibious maneuver areas, and as such support a large portion of unit level training as a matter of other range and training area use. As an example, AAV landings on a specific beach and movement ashore to a follow-on range and training area would constitute inherent use of the MLA as an amphibious maneuver area.
 - LZs and drop zones (DZs) would be used to support various heli-borne and tilt-rotor-borne training events, such as a platoon's insertion near an objective area on one of the maneuver ranges.
 - Unmanned aircraft systems (UAS) operations as well as anti-air warfare (AAW) training would use special use airspace in the conduct of unit level training missions. Terrain flight (TERF) by helicopters could occur while in transit to support other missions.
 - Forward arming and refueling on Tinian would occur in support of specific attack helicopter use of the Tinian impact area for coordinated air and ground synchronization training.

Non-Infantry Units. During periods when the BLT is not training on Tinian, other units, such as Permanent Change of Station units on Guam (i.e., Military Police) and non-infantry units of the local Army National Guard and Army Reserve units may use the ranges and training areas for their sustainment training. These units train with their organic weapons and equipment. As with other units, training readiness would dictate the types of ranges and training areas these types of units would seek to use, linked to their current readiness status and anticipated mission requirements. These units would also train at night with a similar day/night split as the BLT.

2.2 TINIAN - UNIT LEVEL

To accomplish the training described above, a unit level laydown has been developed for Tinian to demonstrate its' capability to meet the unfilled training requirements (designated "U"). The minimum requirements for the laydown are:

- Site all of the unit level range and training area requirements, and maximize use of the MLA to establish ranges and training areas.
- Establish a base camp, located north of the Tinian International Airport, to support the recurrent billeting and other logistical needs of the training audience on Tinian.
- Repair and improve Tinian's transportation infrastructure, as necessary to support the military's anticipated logistical demands, including improvements to airport, roads, and port. Tinian International Airport would act as a hub for aerial debarkation and embarkation for training and support personnel.
- Anticipate amphibious landing training using AAVs and Landing Craft, Air Cushioned (LCACs) at select MLA beaches, which would also support other types of amphibious operations such as combat swimmer and small boat training.

- Use a portion of the MLA as an impact area for artillery, mortars, direct fire weapons, and aviation delivered ordnance.
- Require restricted sea space and SUA in order for military units to perform the desired training and provide for the safe separation of civilian seaborne and air traffic.
- Relocate the International Broadcasting Bureau site, an area with radio transmission antennas and inhabited buildings, to another location outside the MLA to free 800+ acres for training.

This laydown, depicted in Figure 2-1, fulfills the unit level training requirements previously described. Additional characteristics of this laydown include:

- The largest range and training area, the Company Live-fire and Maneuver Range, also known as a BAX, is distributed over two separate locations.
 - The Live-Fire and Movement area is located on the National Historic Landmark, from Able runway south. Movement on the area would progress from objective to objective, north to south. General weapon system firing direction on this BAX area is oriented toward the southwest. The southern-most edge of the BAX terminates at the planned HHIA.
 - The Live-Fire and Maneuver Range is located west of center within the MLA. Movement on the range would progress from objective to objective, south to north. General weapon system firing direction on this range is oriented toward the northwest. This larger area provides a venue for more infantry company-level training objectives to be met than with only the northern BAX Live-Fire and Movement area. The establishment of both movement and maneuver areas provides a more systematic and less constrained training environment for an infantry unit, prior to moving on to combined-level training.
- The LFCC has eight engagement zones.
- The IPBC is situated in the southern section of the MLA and is oriented to the west.
- Small arms ranges are located just east of the IPBC.

Figure 2-2 is a composite SDZ depiction for the ranges and weapon systems for the Tinian unconstrained laydown. An SDZ depicts the ground and airspace for the vertical and lateral containment of projectiles, fragments, debris, and components resulting from the firing, launching, or detonating weapon systems to include explosives and demolitions. A weapon danger zone (WDZ) is a similar profile; however this type of zone is calculated for aviation-delivered ordnance. The WDZs for intended aviation-delivered ordnance are wholly contained within the composite SDZ depictions.

Figure 2-3 depicts potential vegetation clearing and maintenance requirements that support the training uses for the unconstrained laydown. Vegetation within the designated areas would be regularly maintained as defined below:

- 100% Vegetation Maintenance Level – All vegetation within the area is maintained at approximately six inches above the ground, facilitating a clear line-of-sight from personnel firing weapons to their intended targets. This is generally associated with such ranges as the Automated Combat Pistol, portions of the duded impact area (HHIA), tactical objectives

areas within the fire and maneuver/movement ranges and training areas, and landing zones (LZs).

- 75% Vegetation Maintenance Level – Vegetation within three quarters of the area is maintained at 1 ft above ground level (AGL) and the remaining area (other 25%) remains un-cleared. This is generally associated with supporting facilities, such as the MSA and base camp. The MSA requires vegetation within 50 ft (15 m) of storage facilities to be maintained at a height of no more than 1.5 ft (0.5 m) to create a fire break.
- 50% Vegetation Maintenance Level – Vegetation within half of the total area is maintained at 2-3 ft AGL and the remaining area (the other 50%) remains at natural height. This is generally associated with portions of the HHIA and the LFCC engagement zones.
- 15% Vegetation Maintenance Level – Vegetation within 15% of the total area is maintained at 2-3 ft AGL and the remaining area (the other 85%) remains at natural height. This is generally associated with fire and maneuver/movement corridors that lead to tactical objectives.

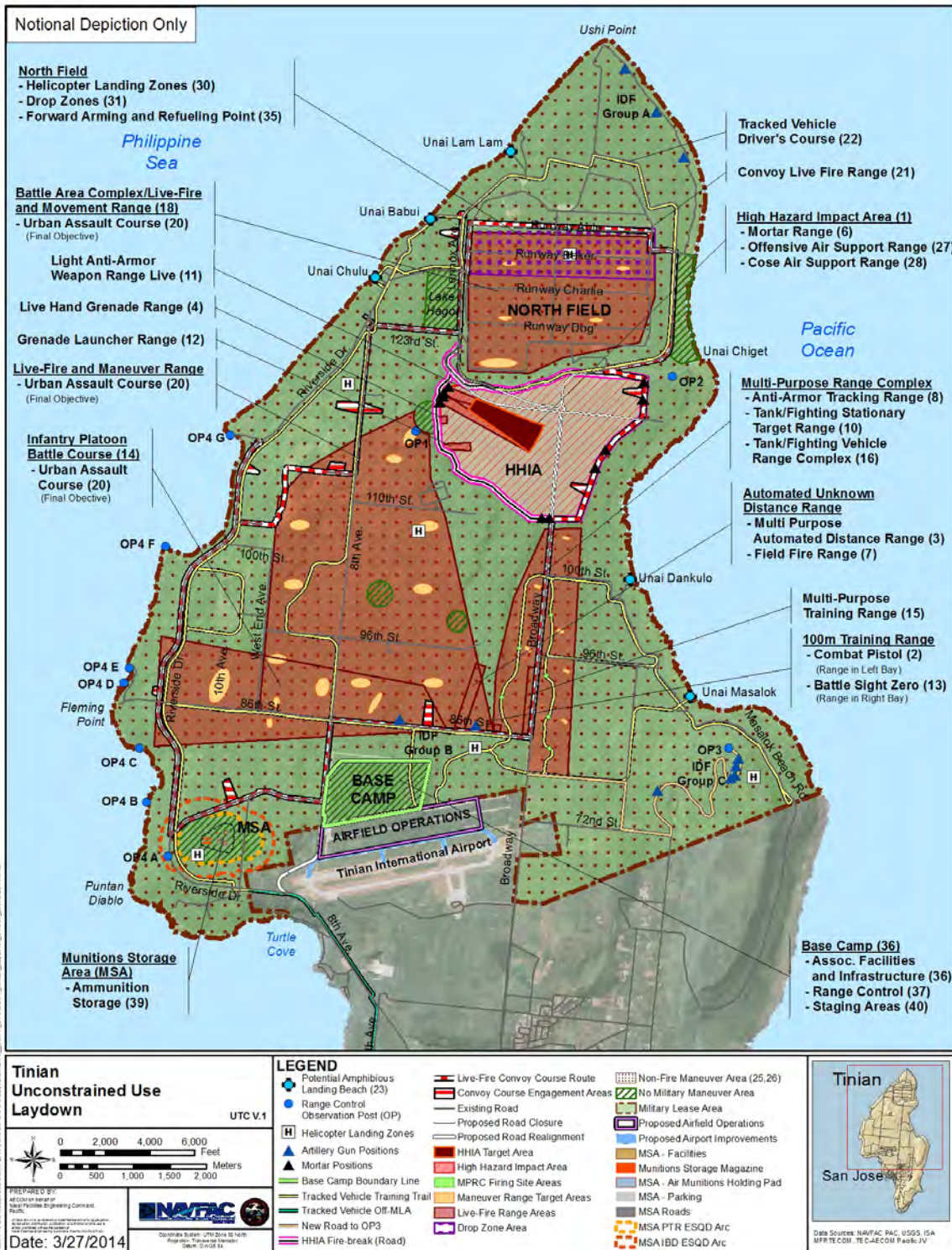


Figure 2-1. Tinian Unconstrained Use Laydown

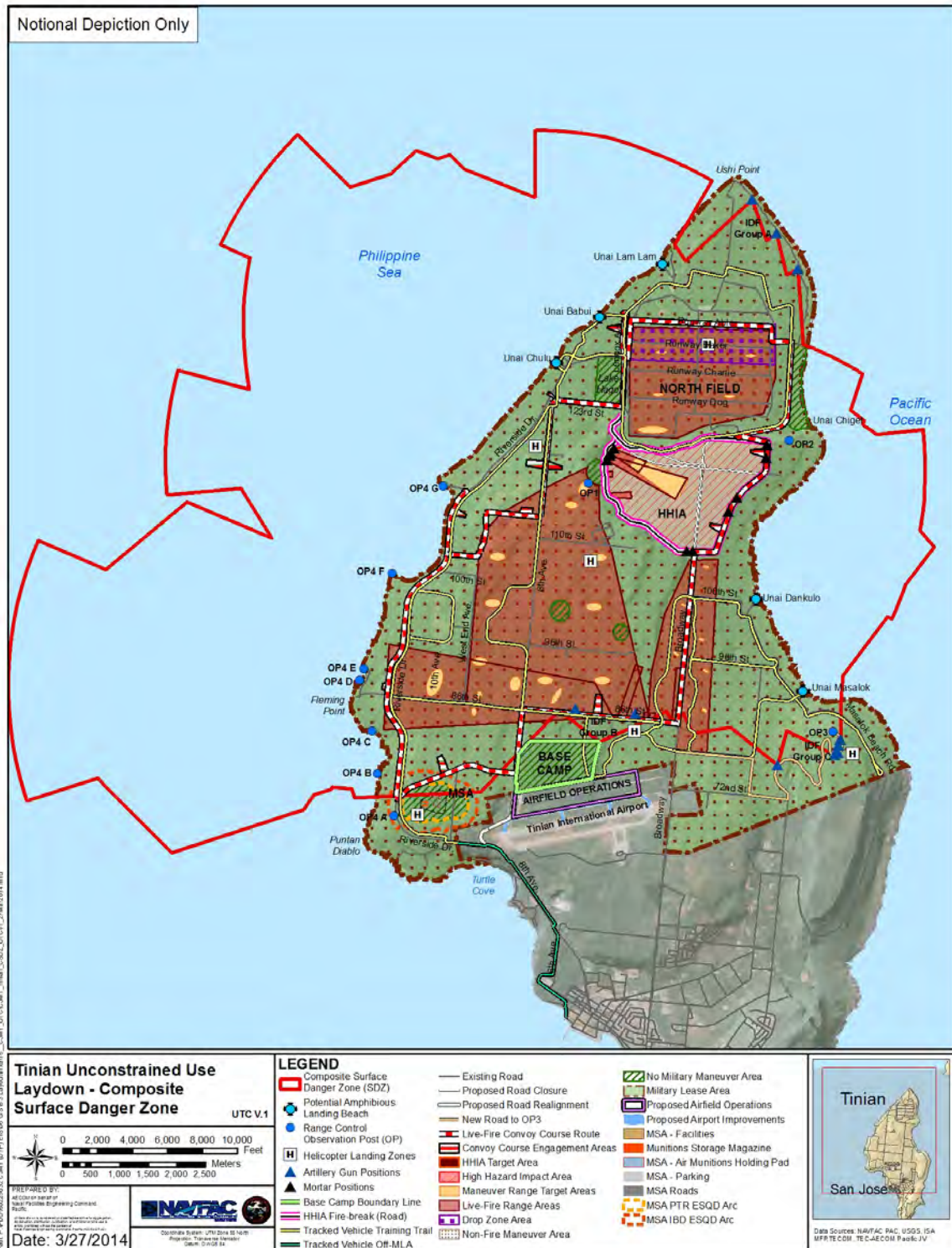


Figure 2-2. Tinian Unconstrained Use Laydown – Composite Surface Danger Zone



Figure 2-3. Tinian Unconstrained Use Laydown – Vegetation Maintenance Areas

2.3 UNIT LEVEL LIVE-FIRE RANGES AND TRAINING AREAS

Based on the unconstrained laydown presented and the Unit Level Tinian Training Cycle, the following provides further detail on the live-fire ranges and training areas:

- The overall, optimized Tinian use is estimated at approximately 45 weeks per year. Training weeks are seven days. The basic two-week company-training cycle would be replicated three times per battalion in sequence: Company A for two weeks, Company B for two weeks, and Company C for two weeks. This contiguous company training series occurs once for each Unit Deployment Program battalion. As there are two Unit Deployment Program battalions which both swap out after six months, the Tinian ranges and training areas would support four major battalion cycles per year. BLT attachments, such as the artillery battery, would be in general support of all infantry battalion training cycles on Tinian. Unit level training by other entities, such as a bi-lateral unit, fills out the remaining weeks of the 45 planned.
- RTAs would primarily be used during day hours; however, 15-20% of the total training time is planned during night hours. In general, all RTAs are capable of supporting night training. “Day” is defined for noise level determinations as 7 a.m. to 10 p.m. and is used similarly within this document. When units are deployed to Tinian, training would occur daily, with make-up days planned for weather cancellations and other potential training delays. Not all ranges and training areas would be used every day. Some may be used for only specialized training events of short duration, while others may be used for longer periods of time over a two week training cycle.
- Acreages described below do not include SDZs.
- Representative Marine Corps Training & Readiness (T&R) codes, which specify training event requirements, are linked to ranges and training areas based on use where they provide an example of the training envisioned.
- At the completion of daily training periods, expended bullet casings (brass) and other used items would be gathered and retained by range personnel for recycling or disposal as appropriate.

Impact Area Dudded (#1). This training area is also known as an HHIA and is sited just south of North Field.

This area is intended to contain an array of targets for weapon system engagement. Certain air-delivered ordnance, artillery, mortars, and direct-fire weapons require the use of an HHIA for training. The use of these systems may on occasion produce dudded ordnance, such as an air-delivered bomb that fails to detonate properly. The HHIA is therefore an area with access restrictions. Since the HHIA is not a standalone range, range activities and usage are captured in other range categories. It supports other training venues that require its characteristics. A demolition area is planned in support of engineer and infantry assaultman explosives training.

Factors related to siting the HHIA included the terrain and location within the MLA. Once sited, access would be restricted through this impact area.

The planned HHIA would include the following features:

- A total footprint of approximately 960 acres (390 hectares [ha]) which would be required to be regularly kept at the 100% vegetation maintenance level. During the normal course of operations, vegetation should remain low due to the anticipated heavy use of this range. Periodic controlled burns may be used to control vegetation growth. If targets require replacement, this would occur concurrently with vegetation control as part of an Operational Range Clearance program.
- Two range observation towers, 35 ft (10 m) high, for manned and unmanned (camera) use.
- Required specific communications support: radio.
- Steel metal dimensional silhouettes would be used to realistically replicate combat vehicles. These targets would be placed in various arrays within the center of the impact area.
- The perimeter would be fenced and a 120 ft (40 m) fire break established along the perimeter. This fire break would provide a road for range maintenance and unit training support.
- Explosive ordnance disposal range sweeps would occur when required, as determined by an assessment program keyed to the types and quantities of ordnance delivered over time. Certain vegetation level maintenance would also occur at the same time, in order to maintain access and to supplement targets.
- Roads leading into the HHIA would be gated and secured to prevent access by training personnel and the public. Explosive ordnance personnel conducting range clearance and others performing range maintenance functions would be authorized entry after approval from Range Control.

Various indirect firing weapons systems require an HHIA for high explosive (HE) training support. Representative systems are listed below with their minimum and maximum employment or engagement distances:

- 155 mm artillery. Minimum – 1.9 miles (mi) (3 km); maximum – 15 mi (24 km)
- 120 mm mortar. Minimum – 650 ft (200 m); maximum – 4.5 mi (7,200 m)
- 81 mm mortar. Minimum – 260 ft (80 m); maximum – 3.7 mi (6,000 m)
- 60 mm mortar. Minimum - 250 ft (75 m); maximum – 2.2 mi (3,500 m)

Combat Pistol Range (Automated) (#2). This range is grouped near other small arms ranges in the southern portion of the MLA. This range is the western portion of a contiguous, small complex with the Battle Sight Zero Range (#13) as the eastern portion. The primary factor related to siting this range is the attainment of sufficient lateral SDZ deconfliction with other ranges in order to conduct concurrent training, to the maximum extent possible. The planned Combat Pistol Range (Automated) would include the following features:

- The footprint would be graded and leveled. The total area of ground disturbing activities would be approximately 330 ft × 740 ft (100 m × 225 m).

- Left, right, and impact berms (13 ft [4 m] high, earthen), would be built. Berm maintenance, including lead removal would be monitored by range personnel and conducted in accordance with applicable Marine Corps range sustainability mandates.
- This range's footprint would be kept at the 100% vegetation maintenance level.
- 25 firing positions/lanes, suitable for 5.56 mm, 9 mm, .45 caliber weapons, and shotguns.
- Fully automated stationary targets would be run on battery power and recharged at a site away from this range. Ground electrical power would be furnished to this range for land-line phone, but not down range to each target.
- Required specific communications support: public address, target control, scoring, and radio.

Personnel required to conduct annual pistol sustainment training (staff sergeants and above in rank) arrive at this range via foot from the base camp with weapons and ammunition and receive a range safety and environmental brief from the Range Safety Officer. Based on their specific course of fire (stages), individuals would fire at targets as they appear down range from their individual firing positions. Sustainment training with the service pistol is allotted 160 rounds of 9 mm Ball M882 ammunition per individual (Infantry T&R code 0306-WPNS-1001).

Multipurpose Automated Unknown Distance Range (#3). This range is grouped near other small arms ranges in the southern portion of the MLA. The primary factor related to siting this range is the attainment of sufficient lateral SDZ deconfliction with other ranges in order to conduct concurrent training, to the maximum extent possible. The Multipurpose Automated Unknown Distance Range would include the following features:

- The footprint would be graded and leveled. The range dimensions are 1,310 ft × 3,280 ft (400 m × 1,000 m). The total area of ground disturbing activities would be approximately 100 acres (40 ha).
- A 26-32 ft (8-10 m) high, earthen, impact berm would be built. Berm maintenance, including lead removal would be monitored by range personnel and conducted in accordance with applicable Marine Corps range sustainability mandates.
- This range's footprint would be kept at the 100% vegetation maintenance level.
- 25 firing positions/lanes, suitable for 5.56 and 7.62 mm, and .50 caliber Special Application Scoped Rifle weapons.
- Fully automated stationary and moving targets would be run on battery power and recharged at a site away from this range. Ground electrical power would be furnished to this range, but not down range to each target.
- Required specific communications support: public address, target control, scoring, radio, and telephone.

Personnel would arrive at this range with weapons and ammunition, receive a safety and environmental brief, and begin to fire at targets as they appear down range from their individual firing positions. An example use of this range is the support of Marine Automatic Rifleman sustainment training every six months with an Infantry Automatic Rifle, firing from various distance stages using 165 rounds of 5.56 mm Ball M855 ammunition (T&R code 0311-M27-2002).

Live Hand Grenade Range – (as part of a multipurpose range) (#4). This range is sited near other live-fire ranges that generally have associated usage, such as a grenade launcher range. During a typical training period, while some individuals are training with grenade launchers, others would conduct live hand grenade training and then rotate between ranges and training areas. The primary factor related to siting this range is its distance to other ranges and training areas generally associated with the type of training conducted (grenade or rocket). The Live Hand Grenade Range would include the following features:

- Four throwing positions/pits with 6 ft (1.8 m) high earthen berms between each position. The immediate range area is 660 ft × 330 ft (200 m × 100 m).
- This range's footprint would be kept at the 100% vegetation maintenance level to safely permit an unimpeded grenade throw from the throwing position to the intended target.
- Stationary targets within throwing distance, approximately 100 ft (30 m) downrange.
- Required specific communications support: radio and telephone.

Personnel would arrive at this range, receive a safety and environmental brief, enter a throwing pit or bermed area, throw their grenade at an individual target, and exit the pit upon grenade detonation. An example use of this range is in the support of annual sustainment training in the employment of a fragmentation grenade. Three inert practice hand grenades and one M67 live hand grenade are allotted for this training (T&R code 0300-DEMO-1002).

Field Artillery Indirect Fire Range (#5). This range, which supports artillery and large mortar training, consists of three indirect firing positions, one at Tinian's northern tip and two, spread east and west, at the southern portion of the MLA. The HHIA would contain targets for engagement. The primary factor related to siting this range is its minimum distance requirement from firing position to targets within the HHIA, and the training requirement specifying more than one firing position. The Field Artillery Indirect Fire Range would include the following features:

- Three groups of 120 mm mortar and 155 mm howitzer gun positions (depicted as Groups A, B, and C), with two to three mortar or gun positions at each group. Each position is capable of supporting one of these systems at a time.
- Firing positions would be 660 ft × 660 ft (200 m × 200 m) and of less than 5% slope, require graded and cleared road access, and would be kept at the 100% vegetation maintenance level at each position.
- Required specific communications support: radio.

Artillery personnel would arrive at this range's firing position via trucks towing the artillery and ordnance, set up their weapons, and fire rounds at targets based on a forward observer's target location information, shifting fire to bring impacts onto targets. The artillery unit would then re-establish a different firing position and continue their training from this different location. When complete, crews would retain spent cases for recycling. An artillery battery training sustainment interval for conducting indirect fire missions is two months (T&R code ARTY-BTRY-6113), which entails firing 143 rounds of 155 mm HE M795, along with other types of ordnance.

Mortar Range (60 mm, 81 mm) (#6). This range consists of multiple indirect firing positions, all of which are contiguous with the HHIA, for mortar training. The HHIA would contain an array of

targets for weapon system engagement. The primary factor related to siting this range is its location contiguous to a HHIA. The Mortar Range would include the following features:

- Five separate areas, each internally containing 60 mm and 81 mm mortar firing positions, would be located contiguous to the HHIA. Each group would form a lazy “W” within a 330 ft × 33 ft (100 m × 10 m) area, with specific mortar firing positions spaced along the “W”.
- Firing positions require road access and would be kept at the 100% vegetation maintenance level.
- Required specific communications requirements: radio and telephone.

Mortar teams would arrive at this range via vehicles with mortars and ordnance, set up their weapons, and fire rounds at targets based on their own observations or forward observer’s directions, shifting fire to bring impacts onto targets. Mortar teams would then establish a differing firing position, and continue their training from this different location. This range supports many mortar training events, varying in complexity based on the training scenario. A basic six month sustainment event entails a mortar team’s emplacement and firing standard missions, using 16 rounds of 60 mm HE M720A1 and 16 rounds of 81 mm HE M889/M889A1 (T&R code INF-MORT-5003). An advanced 12 month sustainment event entails providing mortar support of an infantry company attack, using 16 rounds of 60 mm HE M720, 16 rounds of 60 mm HE M888, and 48 rounds of 81 mm HE M889/M889A1 (T&R code INF-MAN-7001).

Field Fire Range (Automated) (#7). The capability to support this requirement would be met with the development of the Multipurpose Automated Unknown Distance Range (#3).

Anti-Armor Tracking Range (Automated) (#8). The capability to support this requirement would be met with the development of the Multi-Purpose Training Range (MPTR) Complex (#16).

Tank/Fighting Vehicle Stationary Target Range (#10). The capability to support this requirement would be met with the development of the MPTR Complex (#16).

Light Anti-Armor Weapon (LAW) Range Live (#11). This range consists of firing positions, all of which are contiguous with the HHIA, for LAW training. The HHIA would contain an array of non-automated target system for weapon system engagement. The primary factor related to siting this range is its location contiguous to the HHIA. The LAW Range Live would include the following features:

- 10 firing positions within a 330 ft × 33 ft (100 m × 10 m) area contiguous to the HHIA.
- This range would be kept at the 100% vegetation maintenance level.
- Suitable for the M72 LAW (66 mm) system.
- Required specific communications support: radio and telephone.

LAW-firing personnel would arrive at this range, receive a safety and environmental brief, and establish their firing positions, firing on various armor target representations within the HHIA. A basic 6 month sustainment event entails engagement of an armor target representation with one 66 mm HE M72A7 LAW per individual (T&R code 0300-WPNS-1004).

Grenade Launcher Range (#12). This range consists of firing positions, all of which are contiguous with the HHIA, for grenade launcher training. The HHIA would contain an array of non-automated target system for weapon system engagement. The primary factor related to siting this range is its location contiguous to a HHIA. The Grenade Launcher Range would include the following features:

- 10 firing positions within a 330 ft × 33 ft (100 m × 10 m) area contiguous to the HHIA.
- This range would be kept at the 100% vegetation maintenance level.
- Suitable for M203 and M320 40 mm HE ordnance.
- Required specific communications support: radio and telephone.

Grenade Launcher firing personnel would arrive at this range, receive a safety and environmental brief, and then establish their firing positions, aim and fire upon various armor target representations within the HHIA. Two basic 6 month sustainment events entail: (1) zeroing a M203 grenade launcher using five 40 mm Practice XM1110 grenades per individual, and (2) engagement of various target representations with ten 40 mm HE M433 grenades per individual (T&R code 0300-M203-1004 and 1005).

Battle Sight Zero Range (built to 100-yard Non Standard Small Arms Range) (#13). This range would be placed adjacent to the Combat Pistol Range (Automated) (#2) and would be used for weapon aim point calibration. The primary factor related to siting this range is its location contiguous to another range where weapons are required to be zeroed prior to firing. The Battle Sight Zero Range would include the following features:

- The footprint would be graded and leveled. The total area of ground disturbing activities would be approximately 330 ft × 33 ft (100 m × 10 m). Left, right, and impact berms (13 ft [4 m] high, earthen) would be built. Berm maintenance, including lead removal, would be monitored by range personnel and conducted in accordance with applicable Marine Corps range sustainability mandates.
- This range would be kept at the 100% vegetation maintenance level and would be suitable for 9 mm, .45 cal, 5.56 mm weapons, and shotgun.
- Required specific communications support: radio and telephone.
- Paper targets would be placed on wooden/plastic stands for field-expedient battle sight zeroing.

Personnel would arrive at this range, receive a safety and environmental brief, and establish their firing positions, firing individual rounds and adjusting the weapon aiming sights for accurate target engagement. A basic annual sustainment event consists of ensuring the weapon point of aim equals the point of impact, firing 15 rounds of 5.56 mm Ball M855 ammunition, in three groups of 5 rounds each (Infantry T&R code 0300-M16-1006).

Infantry Platoon Battle Course (IPBC) (Automated) (#14). This range is sited in the southern portion of the MLA and firing occurs from east to west. The primary factor related to siting this training area is its location affording the greatest available area for variable SDZ placement. The greater the available area, the more varied the firing positions and target placements would be to provide a realistic training scenario. The IPBC would include the following features:

- One platoon lane, suitable for 5.56 mm, 7.62 mm, 40 mm training practice round, Anti-Tank (AT)-4 training practice round, and SMAW training practice weapons. Inert 60 mm mortars would be fired such that their impacts would land in the objective areas.
- Fully automated moving and stationary infantry targets, armor targets, and obstacles would be run on battery power and recharged at a site away from this training area. Ground electrical power would be furnished to this range, but not down range to each target. Gravel would be placed under these targets.
- Range footprint of approximately 13,123 ft (4,000 m) in length, and from 1,650 ft (500 m) to 4,920 ft (1,500 m) in width, or 990 acres (400 ha). Minor grading to support target objective maintenance access roads would be required based on terrain.
- This range would require selective vegetation maintenance. The five objective areas would be kept at the 100% vegetation maintenance level. They vary from 1,650 ft × 660 ft (500 m × 200 m) to 500 ft × 330 ft (150 m × 100 m) in size. The largest and final objective target area would contain between 20 and 28 training devices (open roof, one-story buildings) to support live-fire urban operations training.
- Required specific communications support: target control, scoring, simulation, radio, telephone, and Instrumented Tactical Engagement Simulation System (I-TESS).

A platoon would arrive at this training area's assembly area, receive a brief on the enemy situation, develop an attack plan, and move toward the platoon's objectives on foot. Individuals and teams would engage pop-up enemy targets, executing reactive battle drills, firing and maneuvering through this course. Simulated enemy bunkers and improvised explosive devices may be encountered. Helicopters may provide simulated support on this training area. At "cease fire" the platoon would conduct weapon safety checks and either end training or repeat a similar scenario. An annual sustainment training event entails an infantry platoon with attachments, conducting a deliberate ground attack on foot through enemy emplacements to seize an objective. Over 30 different ordnance types, such as rifle, machine gun, grenade, mortar, are listed as potentially supporting this event, notably 800 rounds of 5.56 mm 4-Ball M855/1-Tracer M856 per weapon (M16 rifle), and 800 rounds 7.62 mm 4-Ball M80 /1-Tracer M62 linked per weapon (M240 machine gun), (Infantry T&R code INF-MAN-5001).

MPTR/MPTR (Automated) (#15). This range is sited along the east coast of the MLA with firing occurring from north to south. The primary factor related to siting this range is its location affording the greatest available area for variable SDZ placement. The MPTR would include the following features:

- This training requirement is met by establishing Known Distance 1000 Meter and Known Distance battle sight zero ranges, built to the same requirement as a Known Distance Range.
- This range's footprint would be graded and leveled. The total area of ground disturbing activities for 32 firing lanes is 1,050 ft × 3,300 ft (320 m (26-33 ft (8-10 m) high impact berm would be established. This range would be kept at the 100% vegetation maintenance level.
- Suitable for 5.56 mm, 7.62 mm, and .50 cal weapons.

- Target lifting devices would be manually operated.
- Required specific communications support: public address, radio, telephone, and I-TESS.

Units would arrive at this range's assembly area, receive a safety and environmental brief and proceed to firing positions. This range supports the annual sustainment interval for executing numerous Intermediate Combat Rifle Marksmanship firing tables. These tables provide detailed performance requirements, specifying the position and distances at which targets must be successfully engaged for completion, and ammunition allocated per individual. For example, Table 4C Unknown Distance Day, specifies the use of 60 rounds of 5.56 mm Ball M855 ammunition (T&R code 0300-M16-1016).

Tank/Fighting Vehicle Multi-Purpose Range Complex/MPRC (#16). This range is sited along the east coast of the MLA with firing occurring from north to south. The primary factor related to siting this range is its location affording the greatest available area for variable SDZ placement. The Tank/Fighting Vehicle Multi-Purpose Range Complex/MPRC would include the following features:

- This range consists of various firing positions along a vehicle trail with six target objective areas containing a variety of stationary and mobile armor targets.
- Minor grading would be required for the vehicle trail, target objective area, and target maintenance access paths.
- Similar to the IPBC, this range would be kept at the 100% vegetation maintenance level within the five smaller 66 ft × 66 ft (20 m × 20 m) objectives, and the larger final target objective containing between 20 to 28 training devices (one-story buildings).
- Automated stationary targets would be run on battery power and recharged at a site away from this range. Ground electrical power would be furnished to this range, but not down range to each target.
- Required specific communications support: target control, scoring, radio, telephone, and I-TESS.

A representative user of this range would be the LAR platoon, completing LAV-25 gunnery tables 1-14, each with a six month sustainment training interval. These tables provide detailed crew performance requirements for use of the 25 mm and 7.62 mm weapon systems organic to the LAV-25. Table 11 specifies the use of 71 rounds of 25 mm TPDS-T M910 Linked, 250 rounds of 7.62 mm 4-Ball/1-Tracer Linked, and 55 rounds of 25 mm Training Practice-Tracer M793 Linked ammunition to complete the event (T&R code LAV-WPNS-3811).

Company Combined Arms Live-Fire and Maneuver Range (#18). Also termed a BAX, two separate non-contiguous locations are envisioned in the unconstrained laydown. The northern sector is termed a BAX Live-Fire and Movement Range. The southern sector is termed a Live-Fire and Maneuver Range. The primary factor related to siting this training area is its location affording the greatest available area for variable SDZ placement. The Company Combined Arms Live-Fire and Maneuver Range (BAX) would include the following features:

- Two company lanes, suitable for 5.56 mm, 7.62 mm, 40 mm training practice, AT-4 training practice, and SMAW training practice rounds. Inert 60 mm mortars would be fired such that their impacts would land in the objective areas.

- All trenches, bunkers, and target emplacements would replicate threat scenarios and would contain battle sound effects simulators. Mortar simulation devices emplacements would be located in areas where enemy mortar fire would be simulated. Thermal targets, night illumination devices, and visual flash simulators would be incorporated to produce a realistic and adaptable training environment. Targets would be run on battery power and recharged at a site away from this training area. Ground electrical power would be furnished to this range, but not down range to each target.
- Similar to the IPBC, this range would require selective maintenance of a portion of the vegetation, entailing clearance of small bushes and grass with a “bush hog” type machine, establishing a clear line-of-sight from firing points to targets. The various intermediate objective areas would be kept at the 100% vegetation maintenance level, their size varying from 1,600 ft × 660 ft (500 m × 200 m) to 500 ft × 330 ft (150 m × 100 m). The largest and final objective target area would contain between 20 and 28 training devices (open roof, one-story buildings) to support urban operations training.
- Required specific communications support: target control, scoring, radio, telephone, and I-TESS.

This training area provides the next greater level of training complexity from the IPBC and is focused on an infantry company’s live-fire and movement/maneuver training requirements. The essence of this training area is the synchronization of fire and movement/maneuver among the three platoons making up the infantry company. Safe and effective coordination of movement and supporting fires from artillery or aviation units is the training objective. A company would arrive at this training area’s assembly area and the three separate platoons within the company, directly supported by a weapons company, would proceed along the training area trails, engaging various stationary and pop-up enemy targets, as the platoons fire and maneuver toward objective areas. These pop-up targets would be remotely activated by range control personnel in a trailing vehicle, based on the planned training scenario. As with the IPBC, over 30 different ordnance types (rifle, machine gun, grenade, mortar) are listed as potentially supporting this six month sustainment training event, notably 800 rounds of 5.56 mm 4-Ball M855/1-Tracer M856 per weapon (M16 rifle), and 800 rounds of 7.62 mm 4-Ball M80/1-Tracer M62 linked per weapon (M240 machine gun), (T&R code INF-MAN-6001).

UAC/Military Operations on Urban Terrain UAC (#20). The capability to support this requirement on Tinian would be met with the development of the final target objectives within the IPBC (#14) and the Company Combined Arms Live-Fire and Maneuver Range (#18). These objective areas would consist of various urban micro-terrains, such as several simulated one story buildings arrayed as a small village.

Convoy Live-Fire Range (#21). The Convoy Live-Fire Range (Figure 2-4) would include the following features:

- Engagement areas/zones would include a target box, along roads. These target boxes vary in total area, from 3.5 to 6 acres (15,000 to 25,000 square meters). Areas outside the target boxes and considered part of the larger engagement area vary in size from 1.5 to 9 acres (6,600 to 37,000 square meters).

- The target boxes within each larger engagement zone would be kept at the 100% vegetation maintenance level. Outside the target box, but within the engagement area would be kept at the 15% vegetation level.
- Suitable for 5.56 mm, 7.62 mm, .50 caliber, and 40 mm training practice rounds.
- Fully automated, event specific target scenarios targets would be run on battery power and recharged at a site away from this range. One stationary armor target, one mobile armored target, and eight stationary infantry targets within each target box.
- Required specific communications support: target control, scoring, radio, telephone, and I-TESS.

A unit would arrive at this range's assembly area near the base camp and progress through the course to its planned objective, reacting to the various threat scenarios, such as the simulation of a pop-up enemy target, or the sighting of an improvised explosive device. Various scenarios would present the convoy with escalation of force and primary/alternate route decisions, differing during each circuit. An annual sustainment training event specifies the use of 400 rounds 5.56 mm 4-Ball/1-Tracer, 500 rounds 7.62 mm 4-BALL M89/1 Tracer, and 500 rounds .50 cal 4 APIM8/1AP ammunition for each Marine or weapon (T&R code 0306-CSW-1001).

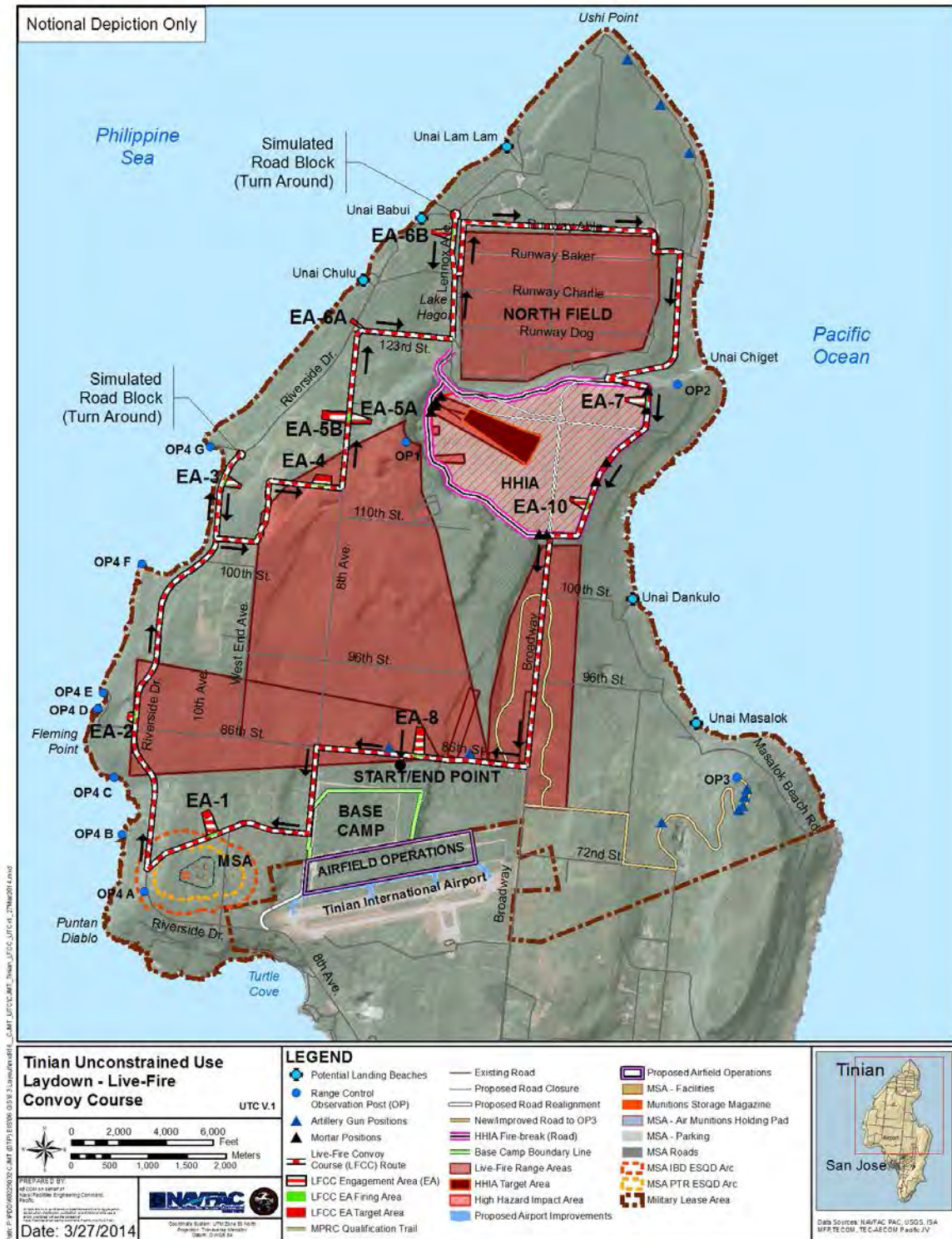


Figure 2-4. Tinian Unconstrained Use Laydown – Live-Fire Convoy Course

CAS Range (Air-to-Ground Range) (#28). This range is centered within the HHIA. The planned Tinian SUA would support this range. The CAS Range (Air-to-Ground Range) would include the following features:

- Vegetation maintenance of the HHIA as previously provided.
- Given the location and size of the HHIA and other ranges and training areas, the following can be supported on Tinian:
 - Helicopters and Tilt-Rotor: 7.62 mm, .50 cal., and 20 mm gun ammunition, and 2.7 inch rockets.
 - Fixed Wing (jets): small inert bombs (MK-76, BDU-33, BDU-45), 2.75 and 5.00 inch rockets, laser guided training rounds, 500-pound inert bombs, and 20 mm and 25 mm gun ammunition.
- Observation posts (OPs) and other potential vantage points would be manned by personnel observing and controlling CAS platforms via radio and other devices such as laser or infra-red pointers.
- Required specific communications support: simulation and radio.

Two example training scenarios are as follow:

- Two fixed wing aircraft arrive and loiter in dedicated Tinian airspace above 15,000 ft. They receive an attack brief from ground forward air controllers/joint terminal attack controllers who are in visual contact with the target area. The aircraft commence their attack run from an area off shore and east of Tinian, heading northwest directly toward the HHIA. They descend through 5,000 ft, proceeding directly to the target area between 2,000 and 3,000 ft. A mortar team may provide a “mark” near the target via a smoke round. From where this smoke round lands, the ground controller would provide a direction and distance to the intended target. When the ground controllers confirm that the aircraft are targeting the correct area, the aircraft drop their weapons separately, and egress to the northwest. The aircraft then climb to 15,000 ft, proceed to the southeast holding airspace and await re-attack directions. On a subsequent re-attack, they may fly the same profile, this time observing either a laser or infrared designation from the ground controllers and received by the aircrew through various sensors. This training benefits both ground units and aviation units. A forward air controller six month sustainment event requires this range (T&R code TAC-OAS-1130) as well as the support of artillery to visually “mark” a target with a round that produces smoke on impact. An FA-18 training event supports this type of scenario (T&R code CAS-291).
- Two rotary wing attack helicopters loiter below 2,000 ft, within the southeastern area, offshore to the east of Tinian. They receive an attack brief from ground forward air controllers/joint terminal attack controllers who are in visual contact with the target area. The aircraft proceed directly to the target area between 200 and 1,000 ft. When confirmed by the ground controllers that the aircraft are targeting the correct area, the aircraft fire their weapons, such as rockets or guns separately, and egress via a rapid turn to the east, returning to the southeastern area, and loiter in this area for re-attack directions. A forward air controller six month sustainment event requires this range (T&R code TAC-OAS-1131) as well as the support of artillery to visually “mark” a target with a round that produces smoke on impact. An AH-1 training event supports this type of scenario, specifying 500 rounds of 20 mm and seven 2.75 inch rockets (T&R code OAS-261).

2.4 UNIT LEVEL NON-LIVE-FIRE TRAINING AREAS

Based on the unconstrained laydown presented and the Unit/Tinian Training Cycle, Appendix B the following provides further detail on the non-live-fire training area:

Tracked Vehicle Driver's Course (#22). Gravel paths, approximately 15 ft (4.5 m) wide and parallel to various roads throughout the MLA would support this training area (Figure 2-5). An administrative tracked vehicle transit path is also depicted between the Tinian port and the MLA. Where these paths cross over current roads, a concrete pad would be constructed to preserve the existing paved road structure. The primary factor related to siting this training area is the availability of roads, suitable landing beaches and exit paths, and the locations of other training areas. This training area would include the following features:

- Required range specific communications support: radio, and I-TESS.
- This range would require vegetation maintenance along the paths if not part of the main roadway system.

Tactical Amphibious Landing Beaches (#23). Beaches within the MLA would provide areas for AAV and LCAC beach landings and departures, combat swimmer training, and rigid-hulled inflatable boat landings. The primary factor related to siting this range is the availability of suitable beaches. AAV landings could continue to occur in and around San Jose harbor in support of contingency purposes. This range would include the following features:

- Required range specific communications support: radio, and I-TESS.
- This range would be kept at varying vegetation maintenance levels dependent on location, to permit vehicle movement ashore and inland.
- Unai Babui and Unai Chulu have been tentatively designated AAV landing beaches. Potential underwater construction to facilitate these landing craft missions is currently under consideration.
- Unai Babui and Unai Chulu have been tentatively designated LCAC landing beaches. Unai Dankulo and Unai Masalok would support some near shore LCAC training.
- Unai Babui, Unai Chulu, Unai Lam Lam, and Unai Dankulo have been tentatively designated combat swimmer and rigid-hulled inflatable boat landing beaches.

Maneuver Area, Light Forces (#25). The entire MLA, not including the HHIA, provides area for this training requirement. The primary factor related to siting this training area is the availability of suitable terrain. This training area would include the following features:

- Required specific communications support: radio, and I-TESS.
- This would not require specific vegetation maintenance.

Maneuver Area, Amphibious Forces (#26). Along with #23 and #25 directly above, the MLA contiguous to the landing beaches supporting AAV and LCAC training, provides area for this training requirement. The primary factor related to siting this training area is the availability of suitable terrain contiguous to suitable beaches.

- Required specific communications support: simulation, radio, and I-TESS.

This training area would be kept at varying vegetation maintenance levels, depending on location, based on the siting of other ranges and training areas, such as the beach egress roads/lanes.

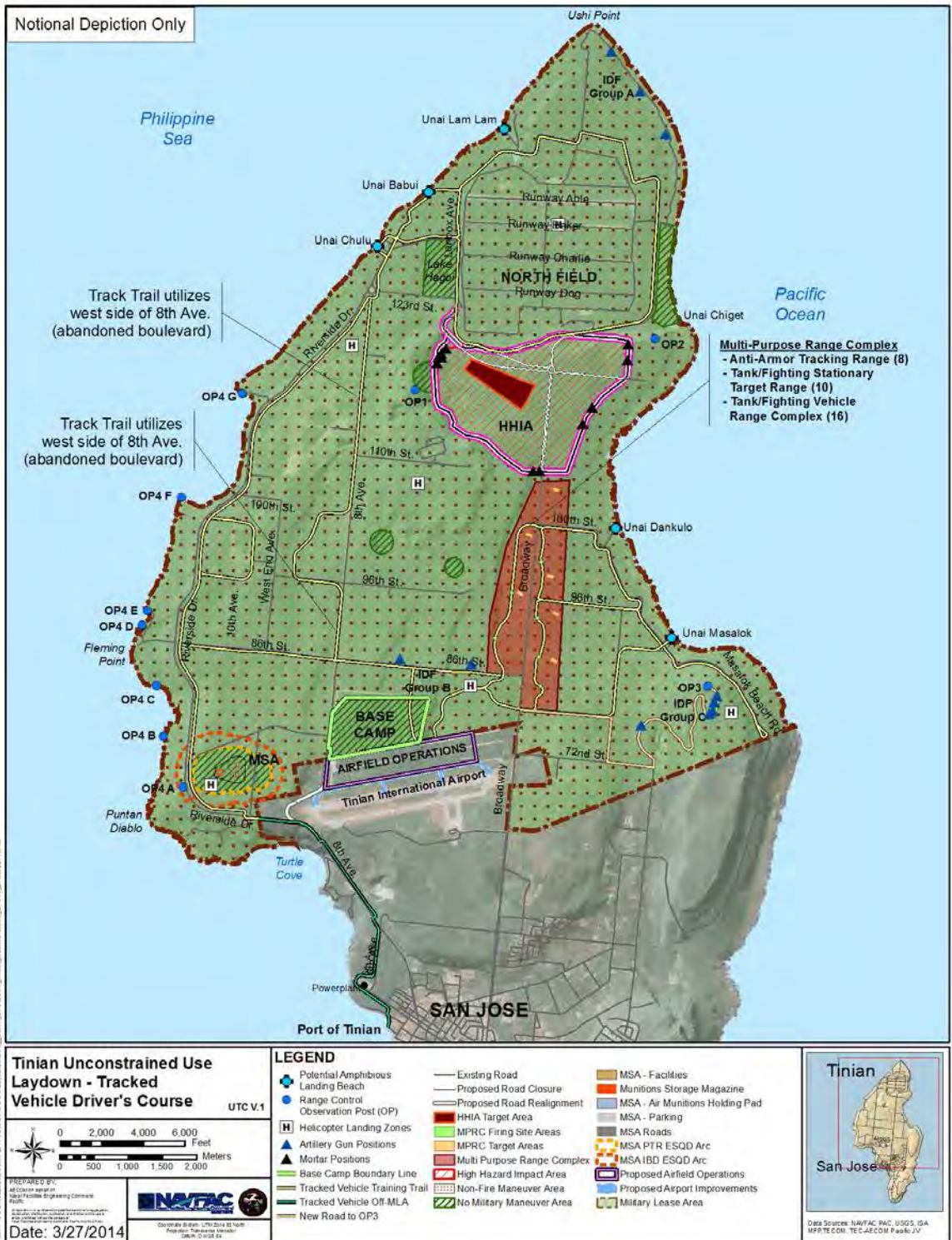


Figure 2-5. Tinian Unconstrained Use Laydown – Tracked Vehicle Driver’s Course

LZs (#30). In order to conduct movement of personnel and equipment by rotary wing, fixed wing, and tilt-rotor aircraft, suitable LZs are required. Tinian's North Field is intended for use as a LZ for training; LZs are annotated with an "H". The primary factor related to siting this training area is the availability of an existing runway or relatively level and cleared areas near training objectives. This training area would include the following features:

- The base camp and MSA LZs would consist of prepared surfaces and are intended for administrative use only. Remaining LZs would support tactical training and would require minimal preparation. All LZs would support MV-22, CH-53 and H-1 aircraft. Anticipated tempo of use for the tactical LZs is approximately twice weekly per each zone.
- Required specific communications support: radio.
- LZs noted within the MLA would be kept at the 100% vegetation maintenance level to afford safe aircraft landings and take-offs. These LZs would be at least 380 ft × 380 ft (115 m × 115 m) and would require an access road for zone maintenance and movement of cargo and personnel.

DZ (#31). A primary DZ is intended for Tinian North Field to support aircrew and ground personnel training as well as support of potential logistical resupply requirements. The DZ would be located in the area of Able and Baker runways, approximately 2,500 ft × 8,200 ft (750 m × 2,500 m). The primary factor related to siting this training area is the availability of suitable terrain. This training area would include the following features:

- Required specific communications support: radio.
- This training area would be kept at the 100% vegetation maintenance level.
- Tinian International Airport would be a secondary DZ, requiring coordination with the CNMI Port Authority.

UAS Operating Areas (#32). Large UAS currently require Restricted SUA to support flight operations. The planned Tinian SUA, detailed in Chapter 4 of this UTC, would support this training requirement and is described in a following chapter. This training area would include the following features:

- Ground stations would operate from Tinian's North Field, conducting take-off and landings from Able or Baker runways (the two northernmost runways), or similarly, with airspace coordination, from Tinian's International Airport.
- Required specific communications support: radio, and Air/Position Location Information.

AAW Range (#33). Various segments of SUA, described in Chapter 4, would support this training requirement. This range would include the following features:

- Required specific communications support: radio and Air/Position Location Information.

TERF Maneuver Area/Route (Rotary Wing/Tilt Rotor) (#34). Aircraft transiting between the Mariana Islands may fly at altitudes below 1,000 ft AGL, using terrain, where available over the Tinian MLA, to practice evading threat radar detection. Due to the scarcity of land in the CNMI, no specific route is designated to support this training requirement.

Forward Arming and Refueling Point (FARP) (#35). A FARP is intended for Tinian in order to provide fuel, ordnance loading and arming/dearming in support of helicopter flight operations and training. No permanent structures are required for the FARP. By definition, the FARP is temporary and transitory in nature and is established to meet the basic needs of its users for a specific mission. A planned FARP on Tinian's North Field is intended to support rotary wing training on Tinian. FARPs have been established on both Tinian's North Field and International Airport to support past exercises. The primary factor related to siting this support facility is the availability of suitable terrain and past location use. This training support area would include the following features:

- Required specific communications support: radio, and telephone.
- This training area would be kept at the 100% vegetation maintenance level along the runways and taxiways in order to permit safe air and ground operations.

2.5 LOGISTICAL SUPPORT OF UNIT LEVEL TRAINING

Requirements to logistically support the intended training audience are:

Base Camp and associated facilities and infrastructure (#36). A base camp directly north of Tinian International Airport would support 1,500 trainees in permanent facilities, and an additional 1,500 surge trainees in tents. Approximately 100 personnel would reside/work year-round at the base camp. The planned camp layout is depicted in Figure 2-6.

The following facilities would be situated within the Tinian base camp:

- Base camp headquarters, security, fire station, public works, fueling station, warehouse, armory, aid station, helicopter LZ, range maintenance shop, recycling center, dining facility, and cold storage.
- For training units:
 - 15 open bay barracks to accommodate 1,500 personnel
 - Administrative space, unit work space and parking for unit vehicles, and training spaces such as a drill field and physical training fields
 - Surge expeditionary camp area for tents and mess hall to temporarily accommodate 1,500 additional personnel (total of 3,000 personnel)
 - Organic Unit Equipment for Tinian Unit Level Training. A planning assumption is that units training on Tinian would bring their organic equipment required for training. These would include high mobility multipurpose wheeled vehicles, Medium Tactical Vehicle Replacements 7-ton trucks, AAVs and LAVs.
 - Tinian Base Camp Motor Pool. Various types of military and commercial vehicles are planned for permanent support of administrative and range maintenance functions. Eight buses, two cars, and five commercial flatbed trucks would be used for transporting training personnel to and from the port to the base camp. Forklifts, dump trucks, fire trucks, firefighting water supply trucks, commercial 4-wheel drive trucks, and mowers would be dedicated to base functions.

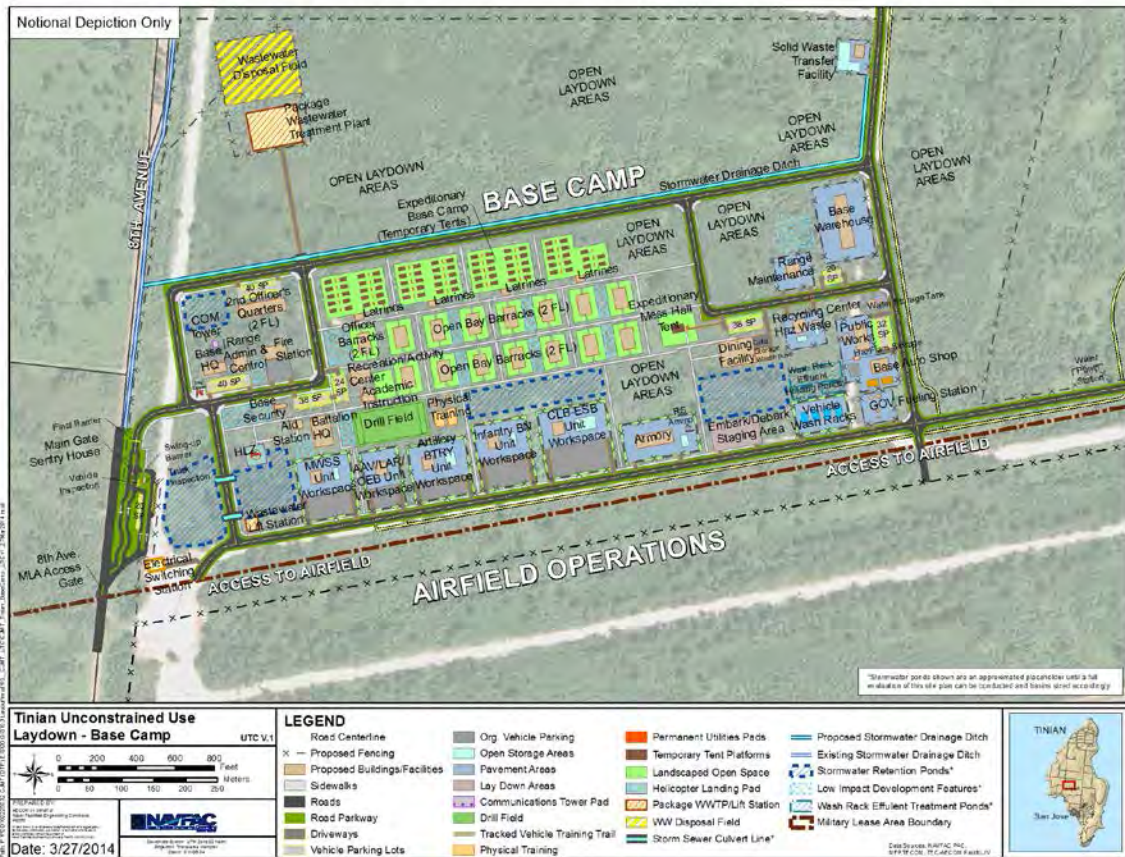


Figure 2-6. Tinian Unconstrained Use Laydown – Base Camp

Range Control (#37). This facility would be used as a physical and communication node for range control, safety, and maintenance functions and would be sited within the base camp headquarters facility.

Data Transfer Infrastructure (#38). An area distribution node within the base camp and a supporting 200 ft (60 m) relay tower on Mount Lasso, located in north-central Tinian, would be sited. Options for supporting specific communications layouts have been developed to support envisioned training.

Ammunition Storage (#39). Ammunition Storage, located in a Munitions Storage Area (MSA), would support live-fire training on Tinian and is sited just west of the base camp. Four ordnance storage areas with a 1,476 ft (450 m) inhabited building Explosives Safety Quantity Distance arc, and a 1,090 ft (332 m) public traffic route distance arc are planned for the laydown. This support facility would include the following features:

- The area immediately surrounding the MSA out to 50 ft (15 m), and both sides of the security fence area would be kept at the 100% vegetation maintenance level for fire break and security purposes. Vegetation within the outer MSA fence line and external to the MSA themselves, does not require vegetation control measures.

- Required specific communications support: video, Electronic Security System (ESS), telephone, and a Utility Monitoring and Control System (UMCS).

Munitions would be transported between Guam and the Tinian MSA using either sea or air transports. One example of such munitions movement would be via trucks loaded with munitions, on board a JHSV. These munitions-laden trucks would remain in a transit mode and would immediately roll off the vessel to a biosecurity inspection facility, as necessary, enroute to the MSA. Munitions may also arrive by airlift. As with sea transportation, the airlift of munitions would require coordination among the various agencies including explosive safety, biosecurity, and civilian aviation to assure a compatible plan is developed. Munitions transportation routes would also require designations, and an example is depicted in Figure 2-7.

Staging Area (administrative and tactical) (#40). Areas within the port, base camp, and the planned airport ramp space north of Tinian International Airport runway would support the administrative movement of personnel and cargo to and from Tinian via aviation platforms such as the C-130 and C-17. Various RTAs, such as the IPBC and BAX have tactical staging areas at their training course start points.

- Required specific communications support: radio, video, ESS, telephone, and UMCS.

Adequate waterfront piers, harbor, and infrastructure (to include aviation support) (existing or new construction) (#41). Areas within Tinian's port would be planned for administrative staging areas that would support the movement of personnel and cargo between Tinian and other ports.

Figure 2-7 depicts improvements that would support CJMT training. If the current Tinian port public boat ramp were to continue to be used for administrative movement of AAVs, improvements and upkeep may be required to accommodate these movements (launch and recovery) for follow-on training at specified Tinian amphibious training beaches or other ranges and training areas in the MLA. Other improvements include a military biosecurity facility for the wash down and inspection of vehicles and equipment prior to movement. A military bulk fuel storage area would be established on Tinian, either at Tinian International Airport, the port, or a combination of both locations. The fuel would be replenished from docked ships via tanker trucks from a fuel storage facility at the port, or via air resupply from such platforms as a KC-130. A 30 day fuel capacity of 500,000 gallons (1,892,706 liters) is envisioned to support CJMT training and other potential activities on Tinian. As with munitions movement, a logistical support plan that coordinates explosive safety, biosecurity, and commercial port and airport requirements will be developed in coordination with the Defense Logistics Agency.

Planning considerations include the following:

- Transportation of training units, support personnel, and equipment to and from Tinian's port could include commercial and military shipping such as barges, ferry, JHSVs, military amphibious ships, or Military Sealift Command platforms.
- The JHSV is considered the primary mode of transporting personnel and equipment in support of the training cycle; air movement is a secondary mode. Capable of transporting 600 short tons (544 metric tons), 1,200 NM (2,222 km) at an average speed of 35 knots (65 km per hour), the JHSV has a shallow draft just under 15 ft (4.6 m), a flight deck for helicopter operations and a ramp for quick vehicle off load. Seating would accommodate 312 embarked personnel. JHSVs have supported previous military training exercises on

Tinian. A single infantry company (approximately 182 personnel) and its projected supporting unit's personnel (approximately 120 personnel) would require at least one JHSV sortie to Tinian. A BLT infantry company and its supporting BLT units (approximately 650 personnel) would require at least three JHSV sorties for personnel transport.

- Military amphibious ships are large combat vessels that would not dock at Tinian, but would provide a seaborne launching point for both AAVs and LCACs, offshore from Tinian. These vehicles and craft would transit from the ship to shore, transporting personnel and equipment to Tinian for follow-on training. Also, Landing Craft Mechanized (LCM) and Landing Craft Utility (LCU) are capable of supporting transportation requirements from amphibious ships to and from shore, and would only use existing harbor infrastructure when offloading or on loading in Tinian's port. Amphibious ships have supported previous military training exercises on Tinian.
- Commercial shipping such as barges would also support transporting personnel and equipment to and from Tinian, as required to supplement JHSV use. Commercial shipping, such as barges, has supported previous military training exercises on Tinian.
- The specific number and type of vessels required to move unit equipment would depend on the numbers and types of vehicles staged on Tinian for rotational training use and the using unit's specific training requirements.
- All Guam Marine-Air Ground Task Force units moving to Tinian via ship would embark from Apra Harbor and debark at Tinian's commercial port. Potential aviation transportation support to and from Tinian include the use of organic U.S. military aircraft and contracted commercial air carriers. Organic Marine Corps rotary wing (CH-53) and tilt-rotor aircraft (MV-22) are planned to be based at Andersen Air Force Base, Guam. Marine fixed wing aircraft (KC-130) may also provide personnel and equipment lift to Tinian. These aircraft may use either Tinian International Airport or Tinian's North Field. Other modes of aviation movement include Air Force Air Mobility Command C-17 or C-130 aircraft. The airport on Tinian has a recently renovated 8,600 ft × 150 ft (2,600 m × 50 m) runway with a parallel taxiway. The runway is designed for wide body commercial aircraft and has adequate load bearing capacity and length for military transport aircraft.
- A single infantry company (approximately personnel) and its projected supporting unit's personnel (approximately 120 personnel) would require at least three C-17 sorties (flights) to Tinian. A BLT infantry company and its BLT attachments (approximately 650 personnel) would require at least seven sorties for personnel transport. Movement of unit equipment would depend on the numbers and types of vehicles staged on Tinian for rotational training use.

Tinian harbor is a commercial harbor and coordination among the Commonwealth Ports Authority, MARFORPAC and the U.S. Army Corps of Engineers will assure Tinian harbor remains capable of accepting necessary military vessels envisioned for the required logistical support of military training.

Required specific communications support: video, ESS, telephone, and UMCS.

Tinian International Airport is a civilian airport and coordination with Commonwealth Ports Authority and FAA will be conducted, including approval of an airport laydown plan. However, the following specific improvements are required for envisioned military training on Tinian (Figure 2-8):

- Control tower
- Taxiway and parking apron on the north side of the airport to support personnel and cargo transit
- Combat Aircraft Loading Area for loading aviation ordnance
- Hot Cargo Pad for the transfer of certain cargo requiring special handling
- Aviation ordnance arm and de-arm pads
- Helicopter landing pads
- Carrier and amphibious ship simulated practice landing areas
- Bulk fuel storage
- Refueling pits (aircraft parking locations for refueling while the aircraft is operating)

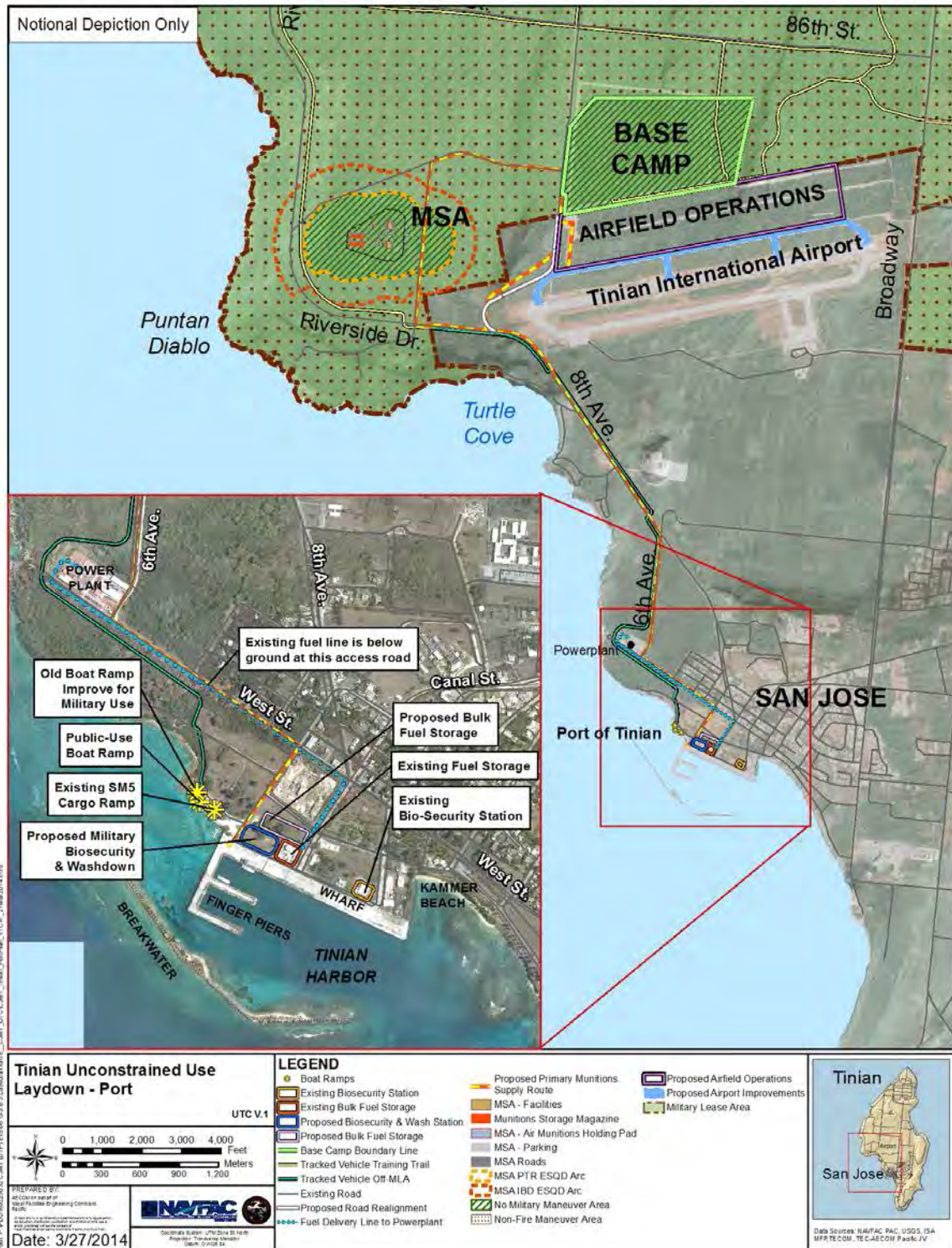


Figure 2-7. Tinian Unconstrained Use Laydown – Tinian Port

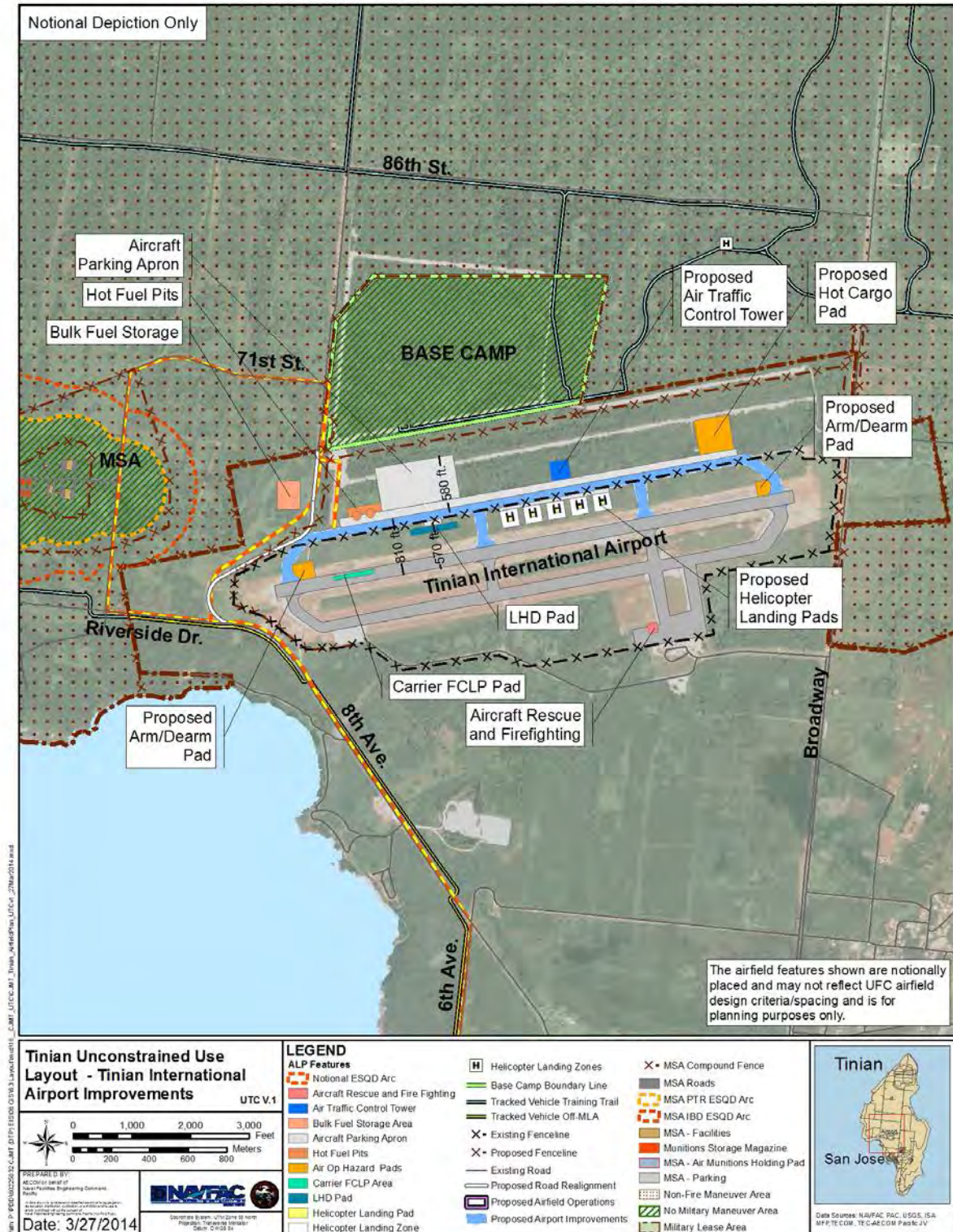


Figure 2-8. Tinian Unconstrained Use Laydown – Tinian International Airport Improvements

Adequate roads, utilities, and infrastructure for training areas, ranges, and facilities (existing or new construction) (#42). Some road improvements on Tinian are required to allow improved access to ranges and training areas or to support specific training activities. Figure 2-9 depicts the planned road improvements, fence lines and gates required to support the establishment of suitable mobility and security for CJMT training. Potential road improvements are summarized as follows:

- 8th Avenue and 6th Avenue: rebuild/resurface to support utilities and access to MLA
- 8th Avenue at MLA: realign current unpaved and build new paved road to support access to base camp
- 71st Street (MSA access): clear and grade for MSA access
- 8th Avenue: East lane, rebuild for public use and utilities/West lane, clear and grade for tracked vehicles
- Riverside Drive: clear and grade for convoy course and tracked vehicle use, implement erosion measures
- North Field Runways: clear for various training uses
- Access road to north Tinian: clear and grade for various training uses
- HHIA Firebreak/Access road: clear and grade
- Broadway: repave east lane
- East Tinian roads (Masalok Beach Road): clear and grade for military vehicle use
- Broadway (MLA Access): improve for public and military training access
- New dirt or gravel roads are planned for access to OP 3 and the artillery firing positions nearby
- Access to other OPs and various ranges and training areas objective areas for range maintenance do not require roads, but would be kept at the 100% vegetation maintenance level for access. OPs along the western MLA shoreline would consist of above ground bunker type structures.

Proposed gates and fences are depicted in Figure 2-9.

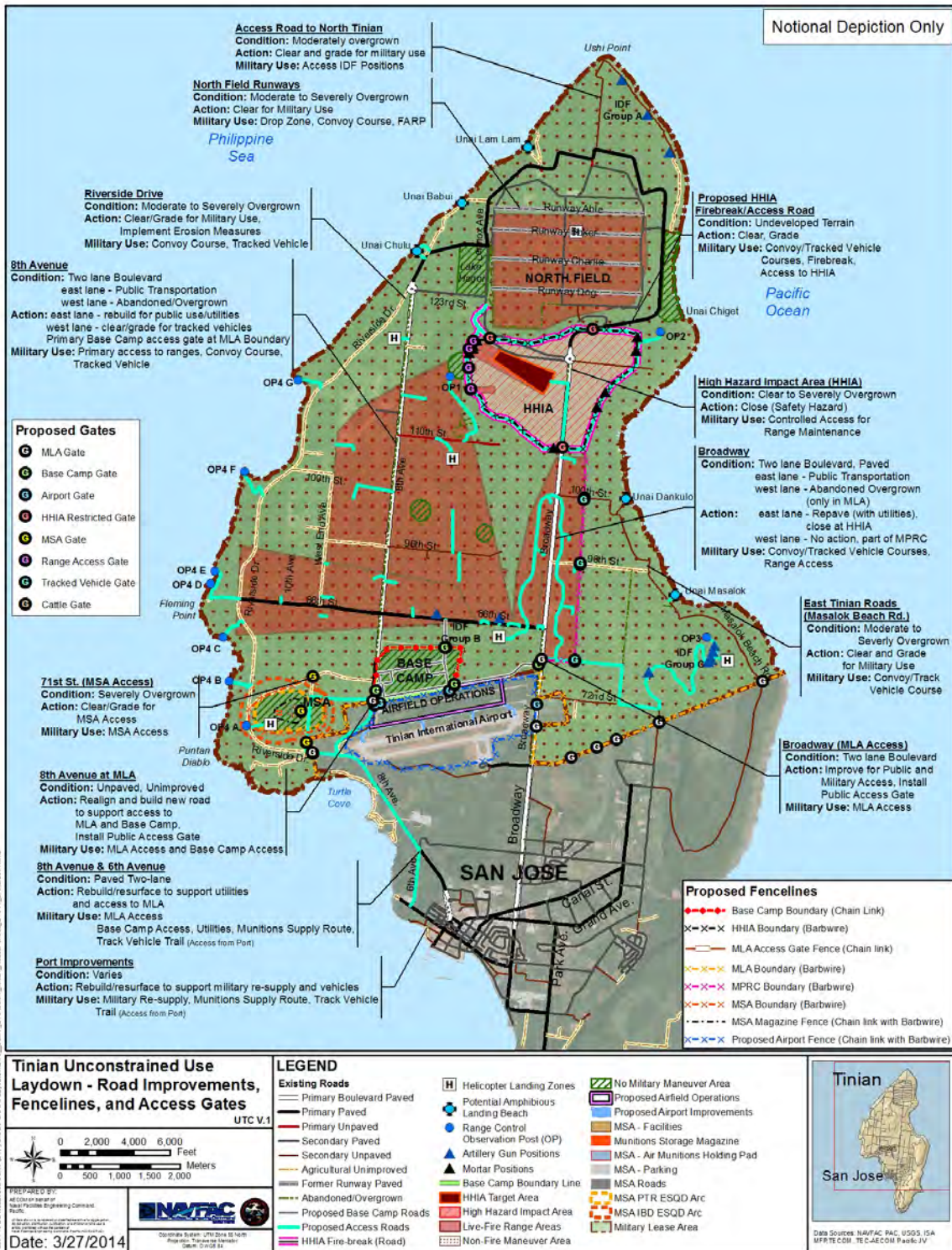


Figure 2-9. Tinian Unconstrained Use Laydown – Tinian Road Improvements, Fence Lines, and Access Gates

Power. The island wide power system is owned by the Commonwealth Utilities Corporation and fully operated by Telesource CNMI Inc., including generation, transmission, and distribution. The Telesource contract has approximately 20 years remaining, and includes operations and maintenance of the transmission and distribution infrastructure.

The generating facilities are approximately 10 years old and in excellent condition. They consist of four 2.5 megawatt (MW) and two 5 MW diesel generators, with ready expansion capability for two additional 5 MW diesel generators. There is an above ground fuel delivery pipe that extends from the dock area to a storage tank adjacent to the power plant. Current peak demand is less than 5 MW, having been reduced from prior peak demand of 8.5 MW. With the current configuration, the practical peak capacity is 15 MW, which would allow one 5 MW unit or two 2.5 MW units in reserve for maintenance backup.

The main base camp has an anticipated load of 1.03 MW and would be served by a new underground line. The range facilities would have a much smaller demand and would be served by lower voltage distribution in the northern portion of Tinian. These facilities are anticipated to have a connected load of less than 0.3 MW when in use and average demand of less than 0.15 MW. Range facilities, such as the OPs and small arms ranges such as the Combat Pistol Range, would be fed power via underground lines, to the maximum extent possible, and all above ground lines would be concrete poles, placed along the roadways to the various ranges requiring power.

Improvements for the main base camp would include service switchgear and metering equipment located near the entrance control facility that would interconnect with the existing 13.8 kilovolt distribution feeder. Internal underground distribution would be installed to the planned facilities through a series of manholes and transformers.

Water System. The water system is owned and operated by Commonwealth Utilities Corporation. The primary water source is one horizontal well that is reportedly approximately 200 ft (61 m) below ground surface.

There are two storage tanks in the system, a 1/4 million gallon tank and a 1/2 million gallon tank.

Water would be provided by a new well and distribution system.

Wastewater. There is currently no central wastewater system on Tinian. Most users have their own septic tanks with leach fields or cesspools. Waste disposal during the training events would include use of portable sanitary facilities for initial expeditionary training operations. Initially, an existing leach field in the MLA would be evaluated for use to dispose of wastewater. A new packaged treatment plant would be installed at the base camp to treat wastewater from the base facilities and range portable toilets. Wastewater would be discharged into the ground via filtration basins.

Solid Waste. There is an unlined open landfill south of the airport that the CNMI Department of Public Works operates and is non-Environmental Protection Agency compliant. The landfill uses open burning to reduce the volume of trash. There is no trash pickup; the residents take their trash to the dump for disposal. In the absence of an Environmental Protection Agency compliant and permitted landfill on Tinian, all U.S. military waste would be transported to Saipan or Guam for disposal at approved disposal sites.

2.6 SUPPORTING ACTIVITIES

Security. Ground access to RTAs and the base camp would be controlled by fences and traffic control points on existing roads as depicted in Figure 2-9.

Various types of gates would provide the required level of access control for the Tinian International Airport, base camp, cattle areas, specific ranges and training areas, and the MLA boundary. Locations for chain link and barbed wire fences are also noted on Figure 2-9.

Public Access. Military training would initially continue at current levels (approximately 16 weeks per year), increasing to 30 weeks per year as ranges, training areas, and support facilities are developed. At full development, training on Tinian would occur for approximately 45 weeks per year. Units planning to conduct training on Tinian would schedule their training through the Range Facility Management Support System approximately six months prior to the training event.

Training periods would be published electronically by the U.S. military using current methods of public notification and with posted signs. As training cycles are refined, a public MLA access plan would be developed to address various requests.

The following would be considered as “no access” areas within the MLA:

- The entire Dudded Impact Area (HHIA)
- MSA
- Base Camp
- All fenced and gated RTAs
- OPs

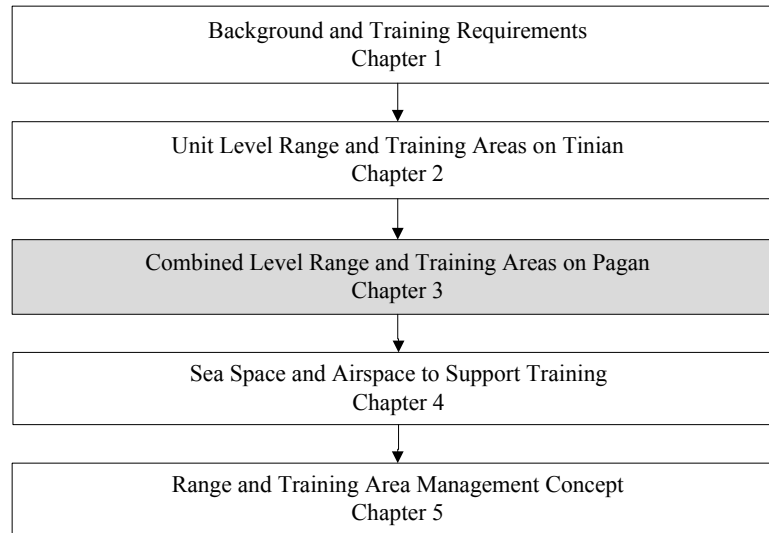
RTAs would be patrolled before use to ensure no unauthorized individuals are present. In addition, the main gate to the base camp would be manned.

Emergency Services. Units training on Tinian would be accompanied by medical personnel and equipment. A battalion aid station within the base camp is planned to provide facilities for delivery of immediate medical care. A medical evacuation plan would address how the “golden hour” rule, wherein a critically injured individual receives definitive medical treatment within one hour, would be met with the available resources within the larger area (i.e., Naval Hospital Guam).

A fire management plan would be developed to address the preventative and immediate actions required to address the fire hazards connected with training on Tinian. Water resources and manpower would be made available to ensure safe training and protection of individuals and property on the island.

Biosecurity Plan. All movement of personnel and equipment to and from Tinian would require bio-security measures (USDA 2011). Brown treesnake control and interdiction practices are particularly crucial during cargo, equipment, and vehicle shipments from Guam to Tinian. Specific control procedures would be developed to address potential invasive species impacts associated with this effort. The procedures would comply with mandated actions and include risk assessments for invasive species and procedures to avoid, minimize, and mitigate these risks. Specific biosecurity measures would be implemented to supplement existing practices on Tinian. Example include brown treesnake and non-native mammal, insect, and plant species controls, inspection requirements, and procedures to address potential unintentional transport and introduction of non-native invasive species to Tinian.

CHAPTER 3. COMBINED LEVEL RANGE AND TRAINING AREAS ON PAGAN



3.1 COMBINED LEVEL TRAINING EVOLUTION SCENARIO

The concept for Pagan is to provide the conditions necessary for combined level training and exercises, such as a MEU (Special Operations Capable [SOC]) Combined Arms Live-Fire Exercise, a Naval Carrier Strike Group exercise, or other similarly fashioned multi-national force and exercise venues. An expeditionary combined arms live-fire training complex is envisioned on Pagan. Combined level training is more beneficial to the training audience when there are opportunities to create varied and unique training scenarios. The intent is for Pagan to provide the maximum available flexibility in tactical training scenario development. This translates into an ability to develop training plans in a nearly unconstrained environment, responsive to the evolving nature of warfare. Training units would develop a detailed plan for overall coordination and integration of amphibious assault, ground maneuvers, air, artillery, mortar, and naval gunfire, in order to achieve training objectives.

The duration of training on Pagan is anticipated to be 40 weeks per year. A BLT cycle on Pagan would be two weeks, as would be the full, non-BLT infantry battalion's cycle. Over a one year period, there would be four of these two week cycles. Along with these, individual companies would train on Pagan for two weeks each. Other units, such as transiting MEU and multi-national forces, would use Pagan for the remaining weeks.

Training on Pagan is envisioned to be expeditionary in nature. Only those infrastructure improvements required to support transportation of training personnel and their immediate logistical requirements would be undertaken. This would entail upgrading the current air strip and construction of a dock/pier facility. Units would bring all their required support equipment and personnel. No permanent personnel would be assigned to Pagan.

Training Audience. For planning purposes, the representative training audiences for range and training area use on Pagan are a BLT as part of a MEU, and a Marine Corps infantry company. The BLTs would train in a larger exercise scenario, using the full resources available to a MEU, to potentially include the transportation support of an Amphibious Ready Group, in order to carry out large scale, amphibious live-fire training. Infantry companies would use the Pagan ranges and training areas for fire and maneuver training in combined arms scenarios (naval gunfire and certain aviation weapons) that would not be available at the Tinian ranges and training areas and other ranges in the Marianas.

The Combined Level Pagan Training Cycle, Appendix C, provides the basic templates of anticipated range and training area use on Pagan for an infantry battalion, BLT, a MEU (SOC), or an infantry company.

3.1.1 Typical Operating Scenario – Infantry Battalion/BLT/MEU (SOC): The two-week infantry battalion training period depicts the main training effort for each TD. A day-by-day synopsis of training actions follows:

- Prior to TD 1, units arrive offshore of Pagan aboard amphibious shipping.
- TD 1. Elements of the embarked infantry battalion would execute reconnaissance of the intended landing beaches and tilt-rotor aircraft LZs, and potentially direct naval gunfire support or air-delivered ordnance to engage enemy targets.
- TD 2. Units would move from amphibious ships to various beach locations on Pagan via amphibious vehicles or aircraft. This ship-to-shore movement would use the most suitable landing beaches on Pagan, based on the tactical scenario. Table 3-1 reflects the estimated amphibious operations/beach use for Pagan.

Table 3-1. Estimated Amphibious Operations/Beach Use - Pagan

<i>Type of AAV-7 Landings</i>	<i>Planned Training Frequency</i>	<i>Training Vehicles</i>	<i>AAV Drop Off Point from Beach (Nautical Miles)</i>
AAV Company Assault	28 days/year	(4) AAV-7	2 NM from beaches
MEU Infantry Battalion Landing	28 days/year	(15) AAV-7	4 NM from beaches
Other Amphibious Unit	21 days/year	(6) AAV-7	4 NM from beaches
	Total Annual 77 days/year		

- TD 3-4. Infantry units would consolidate and move toward their intermediate objectives, traversing Pagan’s terrain via the applicable maneuver corridor. Units would engage various targets within the maneuver areas with non-dud producing weapons. Other targets, within the HHIA, would be engaged with suitable weapons.
- TD 5-10. Throughout this period, the companies within a battalion would conduct training such as independent offensive attacks, patrolling, establishing defensive positions, and firing individual weapons into the HHIA with types of weapon systems that may be restricted from use on Tinian due to SDZ size and range and training area orientation. Units may return to the expeditionary base camp for resupply, or remain deployed throughout Pagan. The training would include both daytime and nighttime scenarios.

- TD 11-12. All battalion units would participate in a combined arms exercise involving all units and weapon systems in a series of coordinated day and night offensive attacks, maintaining defensive positions, and maneuvering during concurrent indirect fire missions.
- TD 13. The units would prepare for withdrawal and execute a retrograde to amphibious beaches or tilt-rotor LZs.
- TD 14. The units would conduct clean up and pack out, departing via the same transportation modes as they arrived.

3.1.2 Typical Operating Scenario – Company Level Training. The two week company training cycle is similar to the battalion cycle, but involves fewer personnel and weapon systems. These units would potentially maneuver over the same terrain and engage the same targets as the battalion. A day-by-day synopsis of training actions follows:

- Prior to TD 1, company personnel would arrive at Pagan via air or sea transportation, establish an expeditionary camp, receive range safety, environmental, and familiarization briefs, and prepare for the first day of training. Their equipment would arrive via sea at the pier and be staged near the expeditionary camp.
- TD 1. Infantry platoons would depart the camp and move to various maneuver corridors via tilt-rotor/helicopter insert or by foot.
- TD 2-4. Platoons would conduct independent offensive operations, moving along maneuver corridors, conducting reconnaissance, engaging appropriate target arrays by adjusting and shifting direct fire, pursuing to the limit of advance and then consolidating on the objective.
- TD 5-7. Platoons would establish command post sites and conduct patrolling operations during day and night, establishing sectors of fire and ambush locations.
- TD 9-10. Platoons would conduct defensive operations, establishing sector defense plans and local security, occupy hasty positions, and establish mutual supporting fire and barriers.
- TD 11-12. The company would establish platoon positions with access to the HHIA, and engage targets within that area with weapons organic to the company. The combined arms training aspect of this period involves employment of indirect fire, such as air-delivered ordnance, onto the target array, by company ground controllers. These specific training periods would occur first during daylight, then at night.
- TD 13. The company would conduct a synchronized attack, directing the fire and movement of the three platoons as they fire and maneuver together, transiting through their assigned maneuver corridors.
- TD 14. The company would conduct clean up and pack out, departing via the same transportation mode as they arrived.

3.2 PAGAN - COMBINED LEVEL

The unconstrained training laydown developed for Pagan includes the following minimum requirements:

- Establishing an expeditionary base camp support structure, such as concrete pads for repeated tent and messing facilities use.
- Constructing a breakwater and pier to support seaborne transport of personnel and equipment to and from the island.
- Improving the World War II-era air strip, making it C-130/C-17 capable (e.g., semi-prepared/unpaved, grass and compacted lava runway and parking apron) for air transport of personnel and equipment to and from Pagan.
- Partial vegetation maintenance and clearing of lava flows to enable basic, unimpeded ground access throughout major sections of the island and to target arrays.
- Placing and redistributing temporary target arrays would occur periodically. Target arrays for weapons that may produce a dud would be placed in the HHIA. Other target arrays for non-dud producing weapons would be placed throughout the maneuver areas, based upon the scenario's tactical training objectives.

3.2.1 Pagan Unconstrained Training Laydown

The Unconstrained Training Laydown for Pagan (Figure 3-1) is designed to facilitate greater flexibility for supporting arms training by developing the largest possible HHIA for surface-fired (to include naval gunfire) and air-delivered ordnance. The larger northern impact area would provide for a larger variety of target placement and engagement scenarios. Conversely, given the zero-sum nature of potential land area on Pagan, it provides less maneuver area for ground training and therefore less flexibility to develop varying tactical scenarios where maneuver would be a key element of training.

Given the terrain, there are three major axis of travel available for ground movement through the live-fire sector of Pagan:

- A clockwise rotation, starting from the air strip heading north to the northwest tip of Pagan, until reaching the HHIA
- A counterclockwise rotation, starting at the air strip heading east then north, until reaching the HHIA
- South, starting at the air strip, heading east, then due south along the isthmus

A southern, non-live-fire area provides a venue for helicopter or tilt-rotor insertion of reconnaissance units for specialized training via methods which do not require actual landing, such as fast roping.

Figure 3-2 is an SDZ composite for the ranges, and training areas, and weapon systems as described for Pagan. The nature of live-fire maneuver training as envisioned for Pagan does not lend itself to a set SDZ template. Rather, the training unit would establish its fire support plan (coordinating weapons employment with ground maneuver) based on its training objectives, which may differ between units and levels of support. The WDZs for intended aviation-delivered ordnance are wholly contained within the composite SDZ depiction.

Figure 3-3 depicts potential areas requiring regular vegetation maintenance to support training uses.

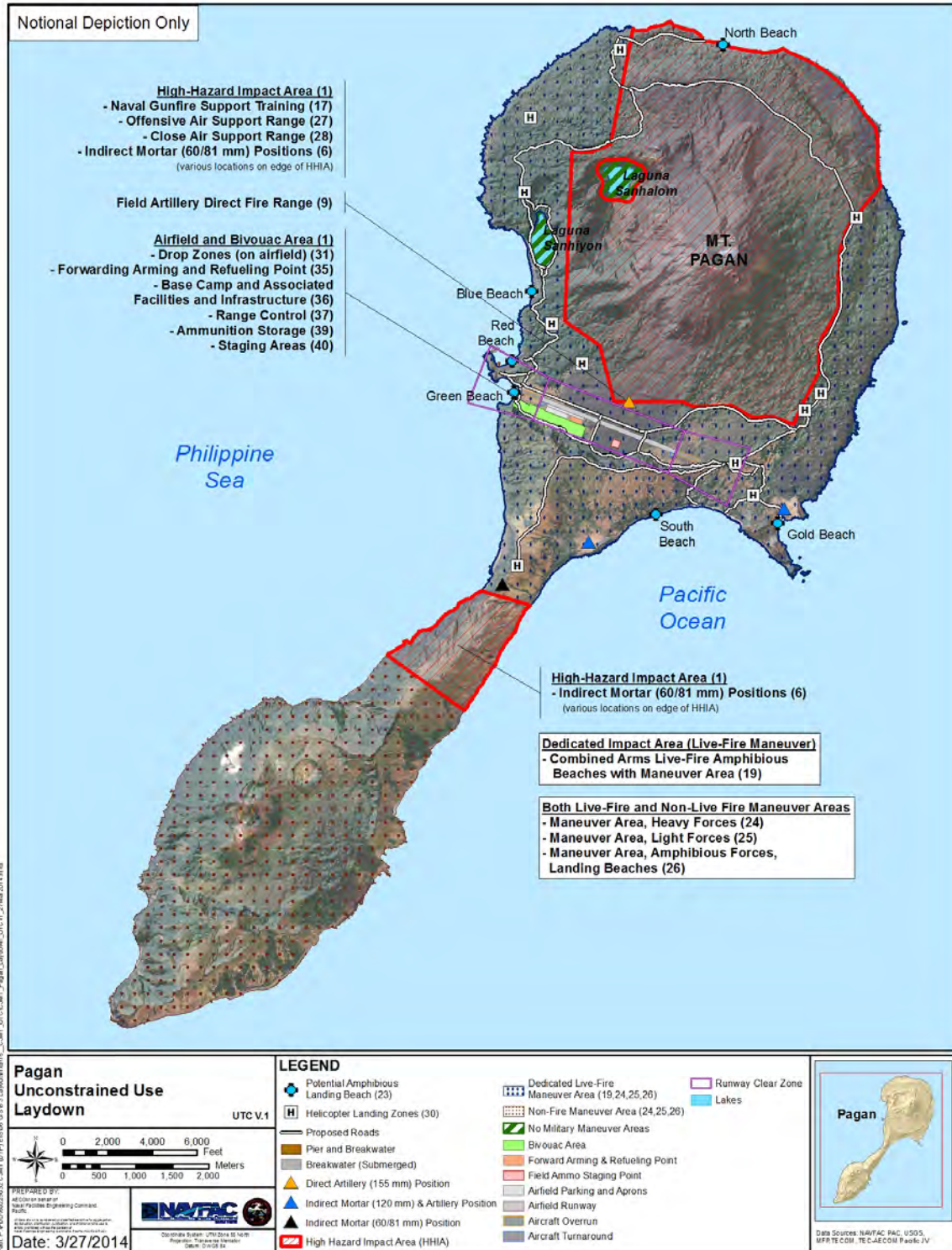


Figure 3-1. Pagan Unconstrained Use Laydown

3.3 COMBINED LEVEL LIVE-FIRE RANGES AND TRAINING AREAS

Based on the unconstrained use of Pagan for training and the Combined Pagan Training Cycle, Appendix C, the following provides further live-fire range and training area details:

- Pagan combined level live-fire training is estimated at 40 weeks per year. Of the 40 weeks, 24 represent company-level training periods, 8 represent BLT-level training periods, and 8 represent MEU-level training periods, with other various uses (potentially large force exercises). BLT attachments, such as the artillery battery, would be in general support of all infantry battalion training cycles on Pagan.
- Ranges and training areas would primarily be used during daylight hours; however, training may occur during night time hours for up to 50% of a 24 hour training period. When units are deployed to Pagan, training would be daily, with some make-up days planned for weather cancellations and other potential training delays.
- Approximate acreages required to support training requirements are described below do not include SDZs.
- Placement of targets would be accomplished by vehicle or helicopter insert by using units.

Impact Area Dudded (#1). The unconstrained use of Pagan for training would site two HHIA, one in the north and one on the isthmus. The primary factor related to siting the HHIA is the availability of suitable terrain and the intent to retain the areas as restricted/un-trafficable once established. The planned HHIA would include the following features:

- Northern HHIA: is 4,260 acres (1,700 ha)
- Southern HHIA: is 380 acres (150 ha)
- Range observation towers, 30 ft (10 m) high, for manned use.
- Enemy target replications would be placed in a random array within the HHIA.
- The northern HHIA would have a 150 ft (50 m) fire break established along its perimeter, where required. Intended target placement locations would be where no or sparse vegetation exists. The volcanic nature of the northern Pagan provides many suitable areas and tactical scenario development would take this factor into account.
- The southern HHIA would have a 150 ft (50 m) fire break established along its perimeter, where required.
- Outside the HHIA, vegetation maintenance would be limited to minimum requirements for target acquisition from ground firing positions and to inhibit uncontrolled fires.

Various indirect firing weapons systems require this range for HE training support. Representative systems are listed below with their minimum and maximum employment or engagement distances:

- 155 mm artillery. Minimum – 1.9 mi (3 km); maximum – 15 mi (24 km)
- 120 mm mortar. Minimum – 650 ft (200 m); maximum – 4.5 mi (7,200 m)

- 81 mm mortar. Minimum – 260 ft (80 m); maximum – 3.7 mi (6,000 m)
- 60 mm mortar. Minimum - 250 ft (75 m); maximum – 2.2 mi (3,500 m)

Field Artillery Indirect Fire Range (#5). This range consists of indirect firing positions, spread throughout the central section of the island, which support artillery and mortar training. The HHIA would contain an array of targets for weapon system engagement. The primary factor related to siting this range is the availability of suitable terrain for a firing position and distance (minimum and maximum) to an HHIA. The planned Field Artillery Indirect Fire Range would include the following features:

- Use of all the HHIA's.
- Firing positions, each 820 ft (250 m) in diameter, with engineer-built access roads.
- Vegetation maintenance would be needed to permit firing position access, weapon system set-up, and firing.

Field Artillery Direct Fire Range (#9). A direct fire position is located south of Mount Pagan and oriented to the north. The primary factor related to siting this range is the availability of suitable terrain and a firing position affording direct line-of-sight to the northern HHIA. The planned Field Artillery Direct Fire Range would include the following features:

- Use of the northern impact area only, with a single firing position directly north of the air strip.
- Potentially suitable for 155 mm HE, Javelin HE, tube-fired, optically-tracked, wire-guided missile, and AT-4 HE weapons.

Artillery units would position howitzers at the designated firing position and engage targets positioned within a direct line-of-fire in the northern HHIA.

Battle Sight Zero Range (built to 100-yard Non Standard Small Arms Range) (#13). This range would be sited in an area north of the air strip, where targets would be placed at defined intervals so that personnel can calibrate their weapon system aim points. A 36 yard (33 m) zeroing target would be placed at various sites for field expedient battle sight zeroing. This action generally includes personnel firing their weapon, such as an M-16, using 10 rounds of 5.56 mm ammunition to adjust their weapon sights. The primary factor related to siting this range is the availability of suitable terrain. This is an expedient range (non-permanent) with no construction involved. No additional vegetation maintenance would be required as the temporary nature of this range would permit its location in natural occurring open areas.

Combined Arms Training Range to support CAS and Naval Gun Fire Support Training (#17). The planned HHIA's would support this training requirement. The primary factor related to siting this range is the availability of suitable terrain for ground observation of weapon impacts, location allowing naval gunfire support, and the ability for ground forces to concurrently maneuver while aviation or naval vessels engage targets. The planned Combined Arms Training Range to support CAS and Naval Gun Fire Support Training would include the following features:

- Use of both HHIA's for naval gunfire and CAS.
- Suitable for air-delivered and naval weapons.
- Vegetation would be maintained so as to inhibit uncontrolled fires.

Ground forces would maneuver to various locations on Pagan, predicated on the exercise design, and at such time that enemy forces, represented by targets brought to Pagan as part of pre-exercise set-up, are “activated” by exercise controllers, aviation and naval vessels would engage targets within the duded impact area. Air and naval gunfire controllers on the ground or in airborne platforms would provide observation of weapon impacts and provide targeting corrections. Ground force maneuver would occur simultaneously with target engagement.

Combined Arms Live-Fire Amphibious Beaches with Maneuver Area (#19). This training area is inclusive of the previous (#17) and following three training areas (#23, #24, and #25).

Tactical Amphibious Landing Beaches (#23). Three of the named beaches on Pagan, (Green, Red, and Blue), would be used for AAV and LCAC amphibious training operations. These three beaches, along with Gold and South Beaches would provide areas for combat swimmer training and rigid-hulled inflatable boat landings.

- Beach egress would lead to a perimeter road network to facilitate access to inland training areas. Areas near these beaches would accommodate specific target placement in various locations along the beachfront. The primary factor related to siting this training area is the availability of suitable hydrography for amphibious landings and follow on land maneuver. North Beach provides no potential to support AAV landings and is in the northern HHIA, and Gold Beach wave patterns appeared to be unpredictable. South Beach has a long and challenging terrestrial ledge precluding feasible beach exit.
- Amphibious forces would maneuver from naval platforms via water or air to various locations on Pagan, predicated on the training exercise design. Enemy forces would be “activated” by exercise controllers and maneuvering forces would engage these targets in a synchronized fashion. Engagement duration would depend upon exercise design.

Maneuver Area, Heavy Forces (#24). The central area of Pagan provides an area for this training requirement. Vehicle maneuver would be on and near the established roadways.

Maneuver Area, Light Forces (#25). All trafficable portions of Pagan provide areas for this training requirement except planned HHIA's. Maneuver on the southern portion of Pagan would consist of units up to and including infantry squads in size, the total number of personnel reaching approximately 40, as separate squads would maneuver in separate areas.

Maneuver Area, Amphibious Forces (#26). Along with #23, the central portion of Pagan, contiguous to the landing beaches, provides suitable area for this training requirement.

Electronic Warfare Training Range (Integrated Air Defense System/Counter Integrated Air Defense System) (#29). To be addressed a separate planning action.

3.4 COMBINED LEVEL NON-LIVE-FIRE TRAINING AREAS

Based on the unconstrained use of Pagan for training and the Combined/Pagan Training Cycle, Appendix C, the following provides further details of the non-live-fire training area:

LZs (#30). Numerous LZs for helicopter and tilt-rotor borne operations are envisioned and depicted on Figure 3-1. These training areas include the following features:

- LZs are planned to be kept at the 100% vegetation maintenance level. Zones measure 380 ft × 380 ft (115 m × 115 m), suitable for two MV-22s to land and take off, along with access paths from the perimeter road, where required. LZs would be used by other platforms such as CH-53, AH-1, and UH-1 helicopters. All LZs would be considered tactical and would require minimum surface preparation. The MV-22 would be the representative aircraft used to support training, and one or two LZs would be used daily, dependent on the tactical training scenario. On Pagan, all LZs would be considered tactical. The air strip would support both administrative and tactical requirements.
- To make the current grass runway C-130/C-17 capable would require extending the current 2,000 ft (610 m) grass runway to 6,500 ft (1,220 m), with turnarounds at either end of the runway. This requires filling World War II-era bomb craters and clearing lava flows at the east end of the existing runway.

DZ (#31). A DZ corresponding to Pagan's landing strip, once cleared of lava, would support aircrew and ground personnel training as well as support for potential logistical resupply requirements.

UAS Operating Areas (#32). All SUA associated with Pagan, as described in Chapter 4, would support this training requirement. Ground based control systems would be established near the improved runway.

AAW Range (#33). Various segments of SUA over and surrounding Pagan would support this training requirement and are described in Chapter 4.

TERF Maneuver Area/Route (Rotary Wing/Tilt Rotor) (#34). Aircraft transiting between the Mariana Islands may fly at altitudes below 5,000 ft AGL, using terrain where available, to practice evading threat radar detection.

FARP (#35). A FARP is intended for Pagan's landing strip in order to provide fuel, ordnance loading and arming/dearming in support of helicopter flight operations and other training. Doctrinally no permanent structures are required for a FARP. Due to the recurrent nature of training, a concrete fuel bladder containment berm is envisioned to facilitate such use of the FARP site, which would be equipped with expedient refueling systems. The FARP area is noted on Figure 3-4 and the concrete containment berm would be situated within that location. Fuel delivery to Pagan would consist of KC-130 offloading approximately 5,000 gallons (18,930 liters) of jet fuel per delivery.

Base Camp (#36). The maximum estimated number of military personnel using the Pagan ranges and training areas at any one time is approximately 3,000 (surge to over 4,000 during Large Force Exercises) roughly corresponding to two infantry battalions and various supporting units. Not all of the infantry battalion may be present on Pagan for any specific training period; however, this represents a maximum figure for planning. A minimum of 300 personnel would be present for a company-sized training evolution. An area is envisioned to provide a site for expeditionary life support to training forces (Figure 3-4). There are minimal or no permanent buildings planned for Pagan. A bivouac area would consist of crushed and compacted lava.

Range Control (#37). No permanent Range Control facilities are envisioned for Pagan. Tactical satellite communications would be used to maintain safety nets and advise the Guam range control of exercise status.

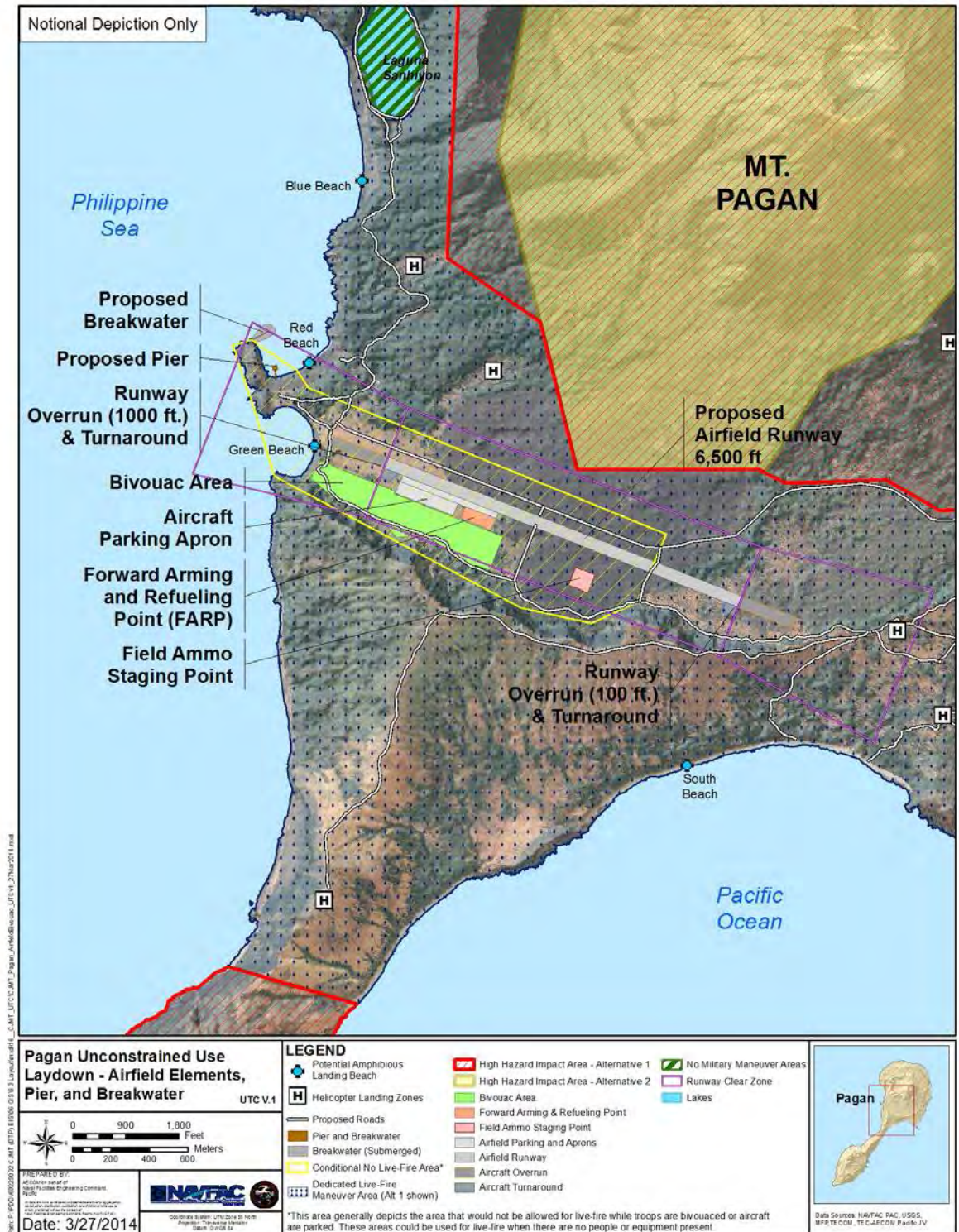


Figure 3-4. Pagan Unconstrained Use Laydown – Pagan Airfield Elements, Pier, and Breakwater

Data Transfer Infrastructure (#38). No permanent data transfer infrastructure is envisioned on Pagan. Communications for range use and safety, as well as administrative support, would be provided by the training units, primarily via satellite communication.

Ammunition Storage (#39). Live-fire training on Pagan would require a temporary ammunition staging area to support training evolutions. The use of ready service lockers is envisioned, wherein the required type and quantity matching the using unit's expenditure plan is stored just before or concurrent with unit arrival. Ammunition-loaded trucks would transit via the JHSV directly to a temporary ordnance area.

Staging Areas (Administrative and Tactical) (#40), Adequate Waterfront Piers, Harbor, and Infrastructure (#41). A planned 200 ft (60 m) dock and 300 ft (90 m) breakwater would be located on the west side of Pagan, at the southern end of Red Beach (Figure 3-4). The dock/breakwater would support loading/off-loading operations for a JHSV, LCM, and LCU. Research using computer wave height modeling, refined through three months of actual wave data collection at the site, along with consultation with JHSV operators, indicates this is a viable option for dock/breakwater placement. U.S. Navy amphibious ships would not necessarily require the potential dock and breakwater. Off load could be accomplished via helicopter movement or via LCAC, given suitable beach landing areas such as Red and Blue Beaches. The dock and breakwater would accommodate LCM and LCU logistical operations, and possibly a Littoral Combat Ship. Biosecurity inspections and wash downs of vehicles and equipment would be conducted in these areas.

Adequate Roads, Utilities, and Infrastructure for Training Areas, Ranges, and Facilities (#42). A planned expeditionary road network depicted in Figure 3-5 would require varying degrees of construction in order to facilitate movement on northern Pagan. Much of the road system would be over existing all-terrain vehicle roads or trails that would need to be cleared, widened, stabilized and improved. A storm water pollution prevention plan would be developed to address this type of challenge. Portions of the road network are over terrain where no roads or trails exist.

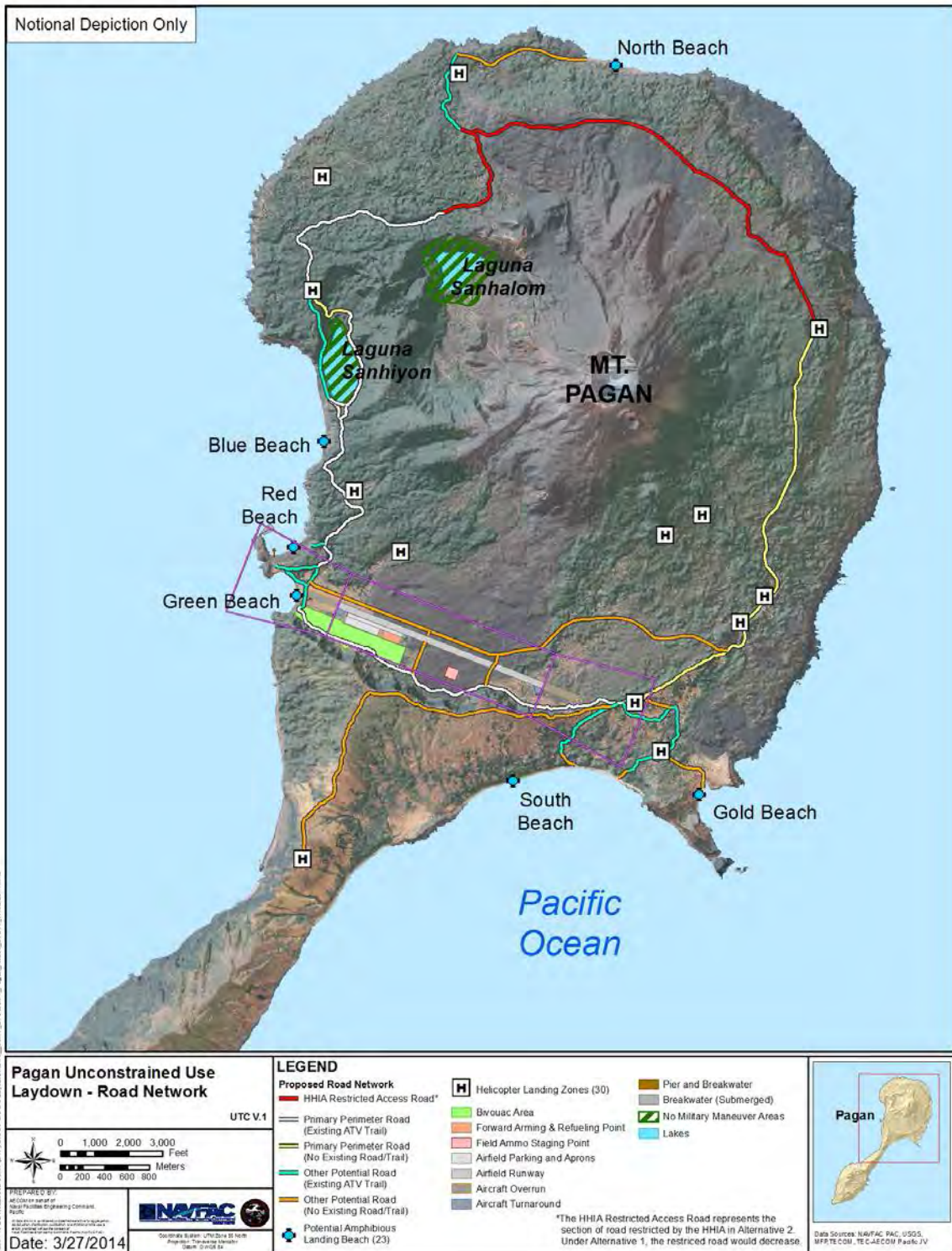


Figure 3-5. Pagan Unconstrained Use Laydown – Road Network

3.5 LOGISTICAL SUPPORT OF COMBINED LEVEL TRAINING

Logistical support envisioned on Pagan is based on the premise that this area would not be permanently staffed nor would permanent facilities be constructed, aside from a potential dock/breakwater, road and runway improvements, and concrete pads to facilitate establishing recurrent bivouac and fueling support. Training on Pagan is envisioned to be expeditionary in nature with a minimum investment in infrastructure improvement. Pagan is planned to support company level up to MEU combined arms training and amphibious operations.

Primary considerations in executing the Combined Level Pagan Training Cycle are the modes and availability of suitable transportation assets and other logistical requirements within the Marianas. The JHSV is considered the primary mode of transportation of personnel and equipment. Air movement is considered secondary. Potential ship transportation modes to Pagan include the use of a JHSV, naval vessels, or contracted commercial shipping. As with the movement of ammunition to Tinian, movement to Pagan would primarily be via ammunition loaded trucks on the JHSV. Some training exercises on Pagan would entail the support of naval vessels with organic ammunition transportation capabilities.

Organic rotary wing (CH-53) and tilt-rotor aircraft (MV-22) are planned to be based at Andersen Air Force Base, Guam. The unrefueled flight radius of a CH-53E is 480 NM (890 km) and 1,000 NM (1,850 km) for an MV-22. Use of these two aircraft would require inflight or ground refueling between Guam and Pagan. Marine fixed wing aircraft (C-130) may also provide personnel and equipment lift to Pagan.

Power. Training units would provide their own power sources such as mobile, diesel engine, electric power generator sets.

Water System. Training units would provide their own potable water source, such as a reverse osmosis water purification unit. Salt water can be desalinated with a Marine Corps Tactical Water Purification System or similar system.

Wastewater. Expeditionary procedures would be used to handle wastewater. This could entail use of portable collection facilities with leach fields.

Solid Waste. Training units would provide for the collection, bundling, and shipping of trash for proper disposal under a “carry in/carry out” concept. Trash would be transported to suitable facilities in the Marianas.

3.6 SUPPORTING ACTIVITIES

Security. Units training on Pagan would provide their own security.

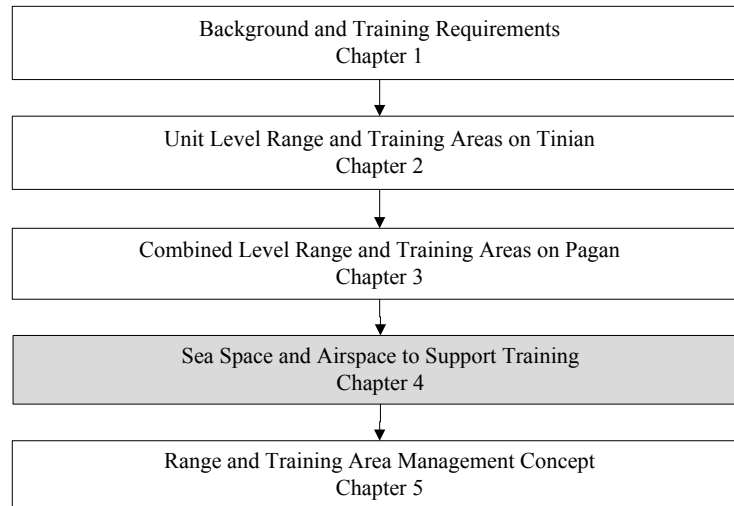
Public Access. During large force exercises, the entire island of Pagan and a danger zone extending up to 12 NM (22 km) from the shoreline would be placed off limits by non-participating personnel during live-fire training events. During other periods of training, the southern portion of Pagan may be accessible by the public. Training periods would be scheduled in advance and published electronically via current methods of public notification by the U.S. military. Sufficient lead time before live-fire training would be planned to ensure range area clearance. UXO hazard signs would be posted around the HHIA.

Emergency Services. Units training on Pagan would be accompanied by suitable medical personnel and equipment. A medical evacuation plan would cover how the “golden hour” rule, wherein a critically injured individual receives definitive medical treatment within one hour, would be addressed.

A fire management plan would be developed to address the preventative and immediate actions required to address the fire hazards connected with training on Pagan. Water resources and manpower would be made available from the training unit to ensure protection of individuals and property on the island.

Biosecurity Plan. All movement of personnel and equipment to and from Pagan would require biosecurity measures (USDA 2011). Specific procedures would be developed to address potential invasive species impacts associated with this effort, which would include risk assessments for invasive species and procedures to avoid, minimize, and mitigate these risks. Specific biosecurity measures would be implemented to support transit to and from Pagan. These would include, for example, non-native mammal, insect, and plant species controls, inspection requirements, and procedures to address potential unintentional transport and introduction of non-native invasive species to Pagan. Provisions for conducting inspections onboard ships would facilitate realistic combat training.

CHAPTER 4. SEA SPACE AND AIRSPACE TO SUPPORT TRAINING



4.1 SEA SPACE AND AIRSPACE IN SUPPORT OF TRAINING

To provide for the safe conduct of military training, both for the public and the training participants, designated sea space and airspace are envisioned to support training for the Tinian and Pagan laydowns. Both the planned sea space and airspace would be scheduled for use during training and these active time periods would be provided to the public via the current notice to mariners and notice to airmen processes.

4.2 SEA SPACE

As defined by 33 Code of Federal Regulations, Navigable Waters, Part 334, (Danger Zone and Restricted Area Regulations), the sea space immediately underlying the airspace is intended to include both danger zones and restricted areas. In compliance with this regulation, specific danger zones and restricted areas will be promulgated to the public. Danger zones and restricted areas are discussed further as follows:

- **Danger zone.** A defined water area (or areas) used for target practice, bombing, rocket firing or other especially hazardous operations, normally for the armed forces. Danger zones may be closed to the public on a full-time or intermittent basis, as stated in the regulations. Consistent with military safety requirements, danger areas will be open to the public when the hazards are minimized to assure safety of the non-participating public.
- **Restricted area.** A defined water area for the purpose of prohibiting or limiting public access to the area. Restricted areas generally provide security for Government property and/or protection to the public from the risks of damage or injury arising from the Government's use of that area.

4.3 AIRSPACE

SUA is airspace wherein activities must be confined or limited due their nature. For example, artillery firing must be confined to SUA to ensure public aviation safety. Also, public aviation must be limited from the use of certain SUA to ensure their safety. As depicted in Figure 4-1, three types of SUA are planned to meet the safety and control aspects of military training. These three the types of SUA are:

- Military Operations Area (MOA) – airspace designated to separate or segregate certain nonhazardous military activities from other air traffic and to identify where these activities are conducted. MOAs are designated to contain nonhazardous, military flight activities including, but not limited to, air combat maneuvers, air intercepts, low altitude tactics, etc. MOAs must not be established offshore beyond the U.S. 12 NM (22 km) territorial limit.
 - A planned Tinian MOA is defined by a 12 NM (22 km) boundary, from and parallel to the Tinian shoreline, from 3,000 ft mean sea level (msl) up to but not including flight level (FL) 180. FL180 is equal to 18,000 ft above msl.
 - The Tinian Air Traffic Control Assigned Airspace is FL180-FL300 above the MOA.
- Warning area (W) - A warning area is airspace of defined dimensions, extending from 3 NM (5.6 km) outward from the coast of the U.S., that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning areas is to alert nonparticipating pilots of the potential danger of military training. A warning area may be located over domestic or international waters or both.
 - A planned warning area, W-14, is a quadrilateral, roughly 60 NM × 80 NM (111 km × 148 km), with Pagan roughly centered. Airspace vertical boundaries are the surface to FL 600. This SUA supports the AAW Range (#33).
- Restricted area (R) - Restricted areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Activities within these areas must be confined because of their nature or limitations imposed upon aircraft operations that are not a part of those activities or both. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. (FAA Air Information Manual).
- Planned Restricted areas above and surrounding Tinian (R-7203 North, South, East, and West) are irregular shapes depicted in Figure 4-1. Airspace vertical boundaries are surface to FL 180.
- A planned three part Restricted area above and surrounding Pagan (R-7204) is described by a 12 NM (22 km) boundary from and parallel to Pagan’s shoreline, with airspace vertical limits of surface to FL 600, divided into high/low. This SUA, along with W-14, supports the AAW Range (#33).

Figure 4-1 depicts Saipan Airport’s Class D airspace. It extends 4.3 NM (8 km) from the airport center with vertical limits of surface to 2,700 ft msl. This type of airspace requires aircraft to have two-way communication with the airport control tower before entering.

4.4 ESTIMATED SEA SPACE AND AIRSPACE USAGE

The planned sea space and airspace activation would serve to segregate non-participating aircraft and ships from potentially hazardous military training. Based on the representative training cycles, Table 4-1 provides estimated average daily SUA usage during Tinian and Pagan training.

Tinian’s R-7203 is subdivided into North, South, East, and West areas. In some instances, only a portion of each training day would require SUA activation in support of live-fire training. This window would typically include night training, which may be up to 20% of the total training window for one 24-hour period. The East and West sectors, appearing as “wings”, would provide SUA for fixed wing and assault helicopter aviation support of ground training.

Pagan’s R-7204 is subdivided into A, B, and C areas.

- R-7204A covers the northern portion of Pagan and would be activated to support the preponderance of live-fire training, as it is generally concentrated on this northern sector.
- R-7204B covers the Pagan air strip and the area to its immediate south. This sector provides articulated airspace control when the training scenario requires use of both Pagan’s northern and central sections. At times, this sector may not be required and this partitioning allows for access for non-military use.
- R-7204C surrounds Pagan and would be used to support large force exercises that require this larger airspace. Activation of this sector would normally include activation of the other two areas at the same time.

Table 4-1. Estimated Average Daily Special Use Airspace Usage – Tinian and Pagan

<i>Airspace</i>	<i>Tinian MOA</i>	<i>R-7203 N</i>	<i>R-7203 S</i>	<i>R-7203 E</i>	<i>R-7203 W</i>	<i>W-14</i>	<i>R-7204</i>
Average Daily Use per Year	135	315	315	135	150	280	280

Table 4-2 provides the estimated number of annual aircraft events (i.e., training mission such as a helicopter transport of personnel or cargo from one location to another) as well as approximate altitudes and time periods in support of Tinian training cycles.

Table 4-2. Estimated Annual Aircraft Sorties Special Use Airspace - Tinian

Aircraft Type	Annual No. of Events	No. Aircraft per Event	Average Minutes/Day(per single Type Aircraft)	
			In Transit	In Mission Area
Fighter	250	2	30	45
Transport Tilt-Rotor	600	2	30	60
Transport Rotary Wing	380	2	45	60
Attack Helo	260	2	60	45
Transport Fixed Wing	100	1	35	45
Unmanned	100	1	N/A	240

Table 4-3 provides the estimated number of annual aircraft sorties as well as approximate altitudes and time periods in support of Pagan training cycles.

Table 4-3. Annual Aircraft Sorties - Pagan

Aircraft Type ¹	Annual No. of Events	No. Aircraft per Event	Average Minutes/Day(per single Type Aircraft)	
			In Transit	In Mission Area
Fighter	150	2	60	45
Transport Tilt-Rotor	360	2	60	25
Transport Rotary Wing	180	2	75	30
Attack Helo	220	2	80	45
Transport Fixed Wing	200	1	35	45
Unmanned	150	1	N/A	240

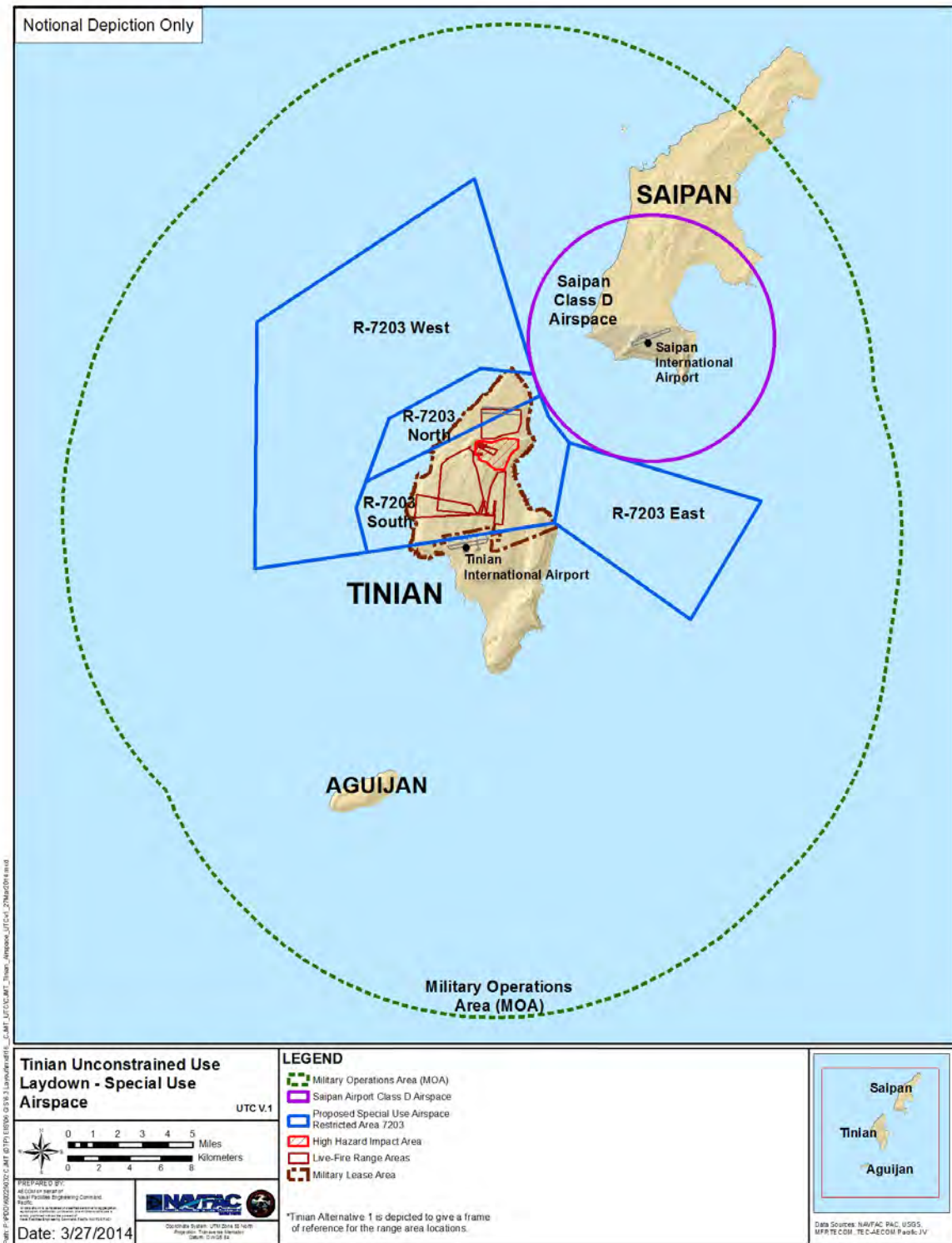
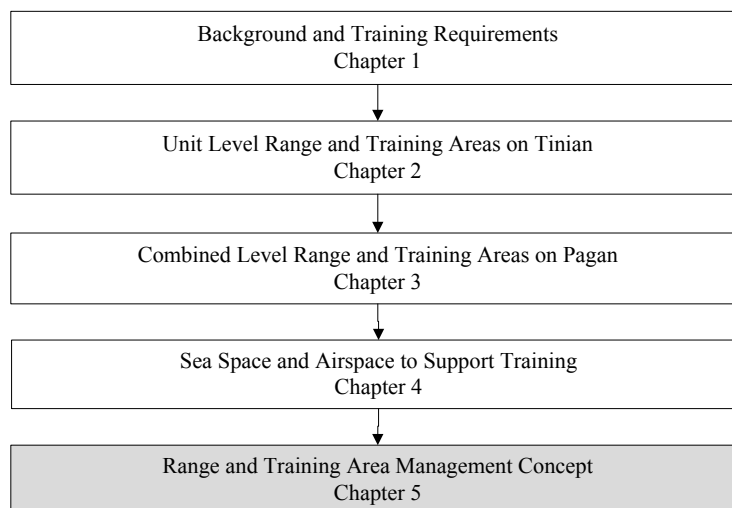


Figure 4-1. Tinian Unconstrained Use Laydown – Special Use Airspace

CHAPTER 5. RANGE AND TRAINING AREA MANAGEMENT CONCEPT



The management of ranges and training areas addressed within this document are envisioned to be linked to the overall management of the Joint Region Marianas Mariana Islands Range Complex. As the Executive Agent for PACOM for this action, Marine Corps policies and procedures are assumed to provide the basis for joint and multi-national range and training area management. *MCO P3550.10 Policies and Procedures for Range and Training Area (RTA) Management*, establishes Marine Corps responsibilities and prescribes policies and procedures concerning safety and management of Marine Corps operational ranges and training areas, to include associated training facilities (Marine Corps 2005). An organization such as a Marine Corps Guam Range Management Division is envisioned as the designated range control facility organization with responsibility for the Tinian and Pagan ranges. This organization would provide safety, control, maintenance, environmental compliance, and administrative functions for aviation, ground, and combined arms training events within ranges and training areas, to include both live-fire and non-live-fire events. Approximately 100 personnel on Tinian would be required for base camp support, range management, range operations, and range maintenance. The following are anticipated Range Management Division responsibilities:

- Safety: Establish and implement required safety regulations such as a Range Safety Program that includes specific safety regulations for each type of training and each range facility. Develop, publish, and coordinate procedures for medical emergency response and evacuation and explosive ordnance disposal response management. Conduct training, face-to-face personnel briefs with required individuals, and conduct inspections when required.
- Control: Schedule, publish notices (electronically and other) to the public, operate a fire desk, and provide management of airspace, control personnel and aircraft movement and access. Provide and coordinate communications and radar surveillance.
- Maintenance: Provide and coordinate range clearance and environmental compliance and monitoring; construct and maintain targets and training devices; provide and maintain range boundary signs, fences, security cameras and gates; and coordinate range maintenance.

Range maintenance on Tinian may be performed by the using units, a civilian workforce, or contract workers.

- Range Management Branch personnel would conduct required Range Control Officer functions on Tinian and Pagan. This team would establish and man the physical range control (local) facility on Tinian. A web-enabled scheduling system, the Range Facility Management Support System, would be used to schedule Tinian and Pagan ranges and training areas, providing a standard, integrated system to efficiently assist scheduling and managing firing ranges and training areas and providing training support for units.

5.1 TINIAN RANGE CONTROL

A range control facility, physically established and manned on Tinian, would oversee safety, control, maintenance and administrative functions for aviation, ground, and combined arms training activities within Tinian and Pagan ranges and training areas. The range control facility would include range use de-confliction and SUA surveillance. Range control would monitor and control access of personnel, vehicles, aircraft and UAS activities within the MLA and supporting SUA. Range control would also observe the sea-space and airspace areas affected by live-fire effects, executing procedures to support safe passage of intruding watercraft and aircraft. Planned live-fire ranges would be specified in published range regulations, with detailed procedures to accommodate the cease fire of activities in response to intruder aircraft or watercraft. Real-time communications between on-site range safety personnel, range users, aircraft, and oversight personnel would be in place at all times during range use. Procedures would be implemented and enforced to ensure the cessation of all live-fire activities in the event of conflicting aircraft over flight, or transit of watercraft or personnel. The establishment of charted SUA and danger zones on aeronautical and surface navigation charts provides safety information to the public including vertical hazard altitudes that could be a danger to other airspace users. Application of these safety and notification procedures would ensure safety of flight, water operations, and non-training personnel.

Warning signs would be placed at 660 ft (200 m) intervals or less, or in a way that ensures that persons attempting to enter the range would see at least one sign within a legible distance.

Information is offered below to provide an overall representation of Tinian range management items in one location:

- Vegetation maintenance levels for specific ranges are depicted in Figure 2-3.
- Generally, pop-up infantry targets and separate armor targets would be kept cleared via manual, hand clearing. Larger armor targets would be emplaced and maintained using Bobcat-type vehicles. All similar targets would have a layer of gravel or concrete pad underneath to support repeated use. Access roads would be developed leading to the training objective areas.
- Range clearance is the destruction or removal and proper disposition of UXO, munitions and target debris, and munitions packaging and crating material. This clearing would occur based on tabulated range usage. Clearance of Tinian live-fire ranges with impact berms is estimated to occur every five years. Range clearance of other live-fire ranges would occur on a case-by-case basis, predicated on analysis of expenditure information and visual inspections of the range (Marine Corps 2008b).

5.2 PAGAN RANGE CONTROL

Range personnel deployed to Pagan during training would oversee safety, control, maintenance and administrative functions for aviation, ground, and combined arms training activities on Pagan. This would occur via remote communications and surveillance capabilities supported by participating tactical training agencies and assets. No permanent range control facilities are envisioned on Pagan. As with Tinian, range control personnel on Pagan would oversee access of personnel, vehicles, aircraft, and UAS activities for direct fire, indirect fire and aviation activity training. They would also coordinate with exercise participants to ensure observation of the sea space areas surrounding Pagan impacted by live-fire effects to ensure procedures are executed to support safe passage of transiting watercraft.

Pagan range management items include:

- Vegetation management levels are depicted in Figure 3-3.
- Units training on Pagan would bring and install various target replicas, via either ground or air.
- Range clearance is the destruction or removal and proper disposition of UXO, munitions and target debris, and munitions packaging and crating material. This would occur based on tabulated range and training area usage. Pagan live-fire range clearance would occur on a case-by-case basis, predicated on analysis of expenditure information and visual inspections of the ranges.

This page is intentionally left blank.

CHAPTER 6. REFERENCES

- Chairman of the Joint Chiefs of Staff (CJCS). 2012. *Joint Training Policy and Guidance for the Armed Forces of the United States*. CJCSI 3500.01G. Washington. 15 March.
- Naval Sea Systems Command (NAVSEA). 2001. *Ammunition and Explosives Safety Ashore*. NAVSEA OP 5. Revision 7, Change 9. Washington. 1 July 2010.
- U.S. Department of Agriculture. 2011. *Brown Treesnake Containment Plan for Guam*. Barrigada, Guam. September.
- U.S. Air Force. 2007a. *Air Force Instruction 13-217, Drop Zone and Landing Zone Operations*. Headquarters U.S. Air Force, A3OS, Washington. May.
- U.S. Air Force. 2007b. *Air Force Instruction 13-212, Range Planning and Operations*. Headquarters U.S. Air Force, AF/A3O-AR, Washington. November.
- U.S. Army. 2004. *Training Land*. Training Circular TC 25-1. Headquarters, Department of the Army. Washington. March.
- U.S. Army. 2010. *Training Ranges*. Training Circular TC 25-8. Headquarters, Department of the Army. Washington. May.
- U. S. Department of Defense. 2001. *Unified Facilities Criteria, Military Harbors and Coastal Facilities*. UFC 4-150-06. with Change 1, 19 October 2010. 12 December.
- U. S. Department of Defense. 2004. *Unified Facilities Criteria (UFC), Pavement Design for Roads, Streets, Walks, and Open Storage Areas*. UFC 3-250-01FA. 16 January.
- U. S. Department of Defense. 2004. *Unified Facilities Criteria (UFC), Wastewater Collection*. UFC 3-240-04A. 16 January.
- U. S. Department of Defense. 2004. *Unified Facilities Criteria (UFC), Wastewater Treatment Systems Augmenting Handbook*. UFC 3-240-02N. 16 January.
- U. S. Department of Defense. 2005. *Unified Facilities Criteria (UFC), Water Supply Systems*. UFC 3-230-19N. 8 June.
- U. S. Department of Defense. 2006. *Unified Facilities Criteria, Airfield and Heliport Planning and Design*. UFC 3-260-0. Washington. May.
- U.S. Department of Defense. 2011. *Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms*. Washington. November.
- U.S. Department of the Army. 2012. Pamphlet 385-063. *Range Safety*. Washington, DC. January.

- U.S. Department of the Navy. 2012. *Training Needs Assessment: An Assessment of Current Training Ranges and Supporting Facilities in the U.S. Pacific Command Area of Responsibility*. Honolulu, Hawaii. April.
- U.S. Department of the Navy. 2013. *Commonwealth of the Northern Mariana Islands Joint Military Training Requirements and Siting Study*. Honolulu, Hawaii. January.
- U.S. Department of the Navy. 2013a. *Joint Region Marianas Instruction 3500.4A (Marianas Training Manual [MTM]) Commander Joint Region Marianas*. Guam. October.
- U.S. Marine Corps. 2005. *Marine Corps Order P3550.10 w/CH 1. Policies and Procedures for Range and Training Area (RTA) Management*. Headquarters, U.S. Marine Corps, Washington. May.
- U.S. Marine Corps. 2007. *Marine Corps Order P8020.10B, Marine Corps Ammunition and Explosives Safety Program*. Headquarters, U.S. Marine Corps, Washington. October.
- U.S. Marine Corps. 2008a. *NAVMC 3500.19, Marine Corps Common Skills (Volume 2) Training and Readiness Manual*. Headquarters, U.S. Marine Corps, Washington. February.
- U.S. Marine Corps. 2008b. *MCO 3550.12, Operational Range Clearance Program*. Headquarters, U.S. Marine Corps, Washington. August.
- U.S. Marine Corps. 2009. *Marine Corps Reference Publication 3-0C, Operational Training Ranges Required Capabilities*. Headquarters, U.S. Marine Corps, Washington. May.
- U.S. Marine Corps. 2010a. *NAVMC 3500.2A Assault Amphibious Vehicle Training and Readiness Manual*. Headquarters, U.S. Marine Corps, Washington. July.
- U.S. Marine Corps. 2010b. *MSTP Pamphlet 5-0.3, MAGTF Planner's Reference Manual*. Headquarters, U.S. Marine Corps. Washington. October.
- U.S. Marine Corps. 2011. *NAVMC 3500.42A, Tactical Air Control Party Training and Readiness Manual*. Headquarters, U.S. Marine Corps, Washington. May.
- U.S. Marine Corps. 2012a. *NAVMC 3500.44A, Infantry Training and Readiness Manual*. Headquarters, U.S. Marine Corps, Washington. July.
- U.S. Marine Corps. 2012b. *NAVMC 3500.107, Group 1 Unmanned Aerial System (UAS) Training and Readiness Manual*. Headquarters, U.S. Marine Corps, Washington. October.
- U.S. Marine Corps. 2012c. *NAVMC 3500.7A, Artillery Training and Readiness Manual*. Headquarters, U.S. Marine Corps, Washington. November.
- U.S. Marine Corps. 2012d. *NAVMC 3500.16A, Light Armor Reconnaissance Training and Readiness Manual*. Headquarters, U.S. Marine Corps, Washington. November.

- U.S. Navy. 2007. *Ammunition and Explosives Safety Ashore*. Commander, Naval Sea Systems Command. Washington. August.
- U.S. Department of the Navy and Department of the Army. 2010. *Record of Decision for Guam and CNMI Military Relocation*. Assistant Secretary of the Navy (Energy, Installations and Environment). Washington. September.

This page is intentionally left blank.

APPENDIX A
PHYSICAL DESCRIPTIONS AND INTENDED USE OF THE RANGES
AND TRAINING AREAS

This page is intentionally left blank.

A.1 Physical Description and Intended Use of the Ranges and Training Areas

This section describes each range, training area, and supporting facility's physical description (to include terminology differences from training manuals where necessary), intended use, representative weapon systems, and, if available, depiction. Where indicated, ranges with automation indicate use of remotely actuated, powered targets, such as pop-up silhouettes with sequenced movement directed by range control personnel.

Various representative weapon systems that may be used on specific ranges and training areas are presented to help identify the particular spectrum of training actions or events. Weapon systems described are not intended to be definitive, but rather represent the category of systems that may be used for training.

1. Impact Area Dudded

Physical Description. An Impact Area Dudded is defined as having permanently delineated boundaries within which all potentially dud producing ordnance (i.e., high explosive mortar rounds and aviation delivered bombs) would detonate or impact. Potentially dud producing ordnance includes ammunition or explosives that may fail to detonate on time or on command, resulting in a dangerous, potentially unstable condition. Some ordnance, such as artillery or naval gunfire rounds, may be fired from outside the physical boundary of an impact area, with the weapon impacting within this area. Certain live-fire mortars, rockets and grenades must be fired at the edge of a high hazard impact area (HHIA), a certain category of impact area that would normally be established to strictly control access due to the hazard of dud ordnance. This type of training is anticipated as part of the envisioned joint training. Therefore, this supporting range (Impact Area Dudded) is referred to as an HHIA in this document. Various enemy vehicle replications would be placed in this impact area to act as targets for direct and indirect fire training with artillery, mortars, missiles, rockets, and bombs. The primary function of the impact area is to contain weapons effects as much as possible using earthen berms or natural terrain features. The impact area would contain exploded ordnance fragments and potentially unexploded ordnance and therefore may not be used for maneuver.

Vegetation maintenance in and around this range would serve two purposes: provide an observer with line-of-sight for weapon system-target engagement, and serve as a fire break. The degree of vegetation maintenance would depend on the type of targets, type of vegetation, and specific terrain features. Observation towers would provide visual observation of the impact area for safety and target engagement purposes. Cameras would also provide the means to conduct these actions from a central range control facility. This area would be fenced to control access, where feasible and practical.

Intended Use. This range would be used to support both unit and combined levels of training. An HHIA would be used by military combat units that train with weapon systems that could produce dudded ordnance. The representative users of this range would be ground combat forces, such as an infantry company, an artillery battery, aviation units in support of ground units such as Close Air Support (CAS) attack aircraft, and naval ships. Ground units would fire weapons such as mortars from firing positions that are contiguous with the HHIA. Artillery units would fire weapons that have been authorized for overhead fire from firing positions external to the impact area and of a certain distance further than the system's minimum engagement range. Aviation units delivering potentially dud producing ordnance such as rockets and bombs would also use this range. Ships would fire naval guns at targets on land within this range.

Representative Weapons Systems. Mortars and artillery are two representative weapon systems with ordnance that may dud, therefore requiring an HHIA.

2. Combat Pistol Range, Automated

Physical Description. A Combat Pistol Range, Automated is designed to meet training and qualification requirements with combat pistols and revolvers. This range title varies slightly from the Training Circular (TC) 25-8 terminology for this range, with TC 25-8 information presented as it constitutes the intent of this range. All targets are fully automated and the event specific target scenario is computer driven and scored from the range operations center. Training manuals call for a 131 yard [yd] × 33 yd (135 meter [m] × 30 m) area with 15 firing lanes and stationary infantry targets arrayed at various distances from the firing line. Personnel firing remain stationary. The range area is subject to terrain contour grading to level and vegetation would be maintained to afford a line-of-sight between firing positions and targets. A notional Combat Pistol Course diagram is shown in (Figure A-1).

Intended Use. This range would be used to support unit level training. This range is used to train and test personnel on the skills necessary to identify, engage, and hit stationary infantry targets. The representative users of this range would be ground combat forces, such as an infantry company, military police forces, and various combat support units. From separate firing points, personnel would simultaneously engage various targets with their weapons as the targets appear. The target presentations are activated from a central location.

Representative Weapons Systems. Weapons trained on this range may include 9 mm and 45 caliber pistols (Photo A-1), and shotgun.



Photo A-1. Soldier Firing 9 mm Pistol

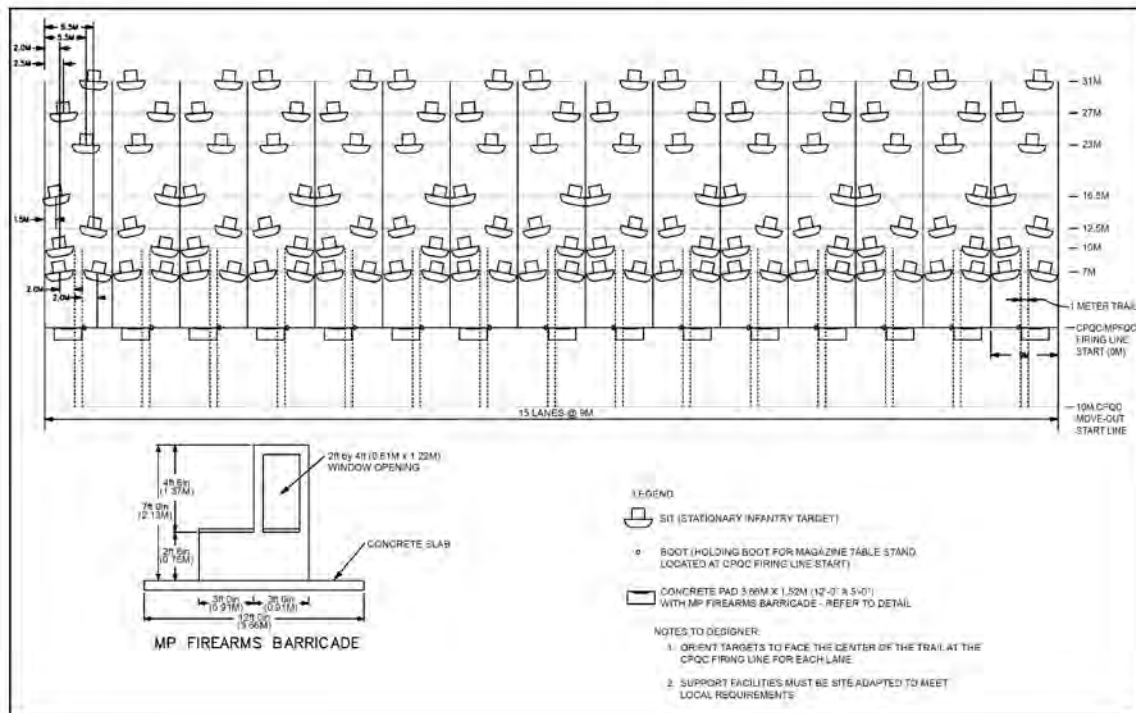


Figure A-1. Notional Automated Combat Pistol Course (U.S. Army TC 25-8)

3. Multipurpose Automated Unknown Distance Range

Description. A Multipurpose Automated Unknown Distance Range (1,000 yd [900 m]), is designed to support combat marksmanship training and qualification requirements. The range would have a width of 100 yd (91 m) and a length of 1,000 yd (914 m). Firing line berms and back-stop berms are planned, along with support facilities. The range area is subject to grading and vegetation would be maintained to afford a line-of-sight between firing positions and targets. The total amount of ground disturbing activities, to fully meet this requirement, is approximately 1,050 yd (960 m) × 100 yd (91 m).

Intended Use. This range would be used to support unit level training. This range is used to train and qualify personnel on the skills necessary to detect, identify and engage stationary and moving infantry targets in a tactical array at unknown distances out to 1,000 yd. The representative users of this range would be ground combat forces, such as an infantry company. From separate firing points, personnel would simultaneously engage various targets with their machine guns or rifles, as the targets appear.

Representative Weapons Systems. Weapons trained on this range may include the M16, and M4 carbine rifles, and 7.62 millimeter (mm) and .50 caliber sniper weapons and machine guns (Photo A-2).



Photo A-2. Marine Scout Sniper Firing M-40A5 Rifle

4. Live Hand Grenade Range (Support for Multi-Purpose Range)

Physical Description. A Live Hand Grenade Range is designed to satisfy the training requirement of throwing live fragmentation grenades. No automation is required for this facility. This range should be located in close proximity to other ranges, affording units an ability to conduct qualification and/or refresher training before moving to more complex training evolutions with live hand grenades on other ranges. Dedicated throwing pits would be approximately 10 feet (ft) \times 10 ft [3 m \times 3 m] and 5 ft (1.5 m) deep. Targets are typically placed 100 ft (30 m) down range from each throwing pit. The range area is subject to grading and vegetation would be maintained to establish clear throwing lanes to the targets. A notional Live Hand Grenade Range diagram is shown in (Figure A-2). The throwing pits are similar in concept to the firing positions of other ranges and training areas.

Intended Use. This range would be used to support unit level training. This range familiarizes military personnel with the effects of live fragmentation grenades. The representative users of this range would be ground combat forces, such as an infantry company. From a designated position (throwing pit, or similar area), personnel would throw hand grenades at a static target.

Representative Weapons Systems. The weapon trained with on this range is the M67 fragmentation grenade (Photo A-3).



Photo A-3. Soldier Throwing M67 Hand Grenade

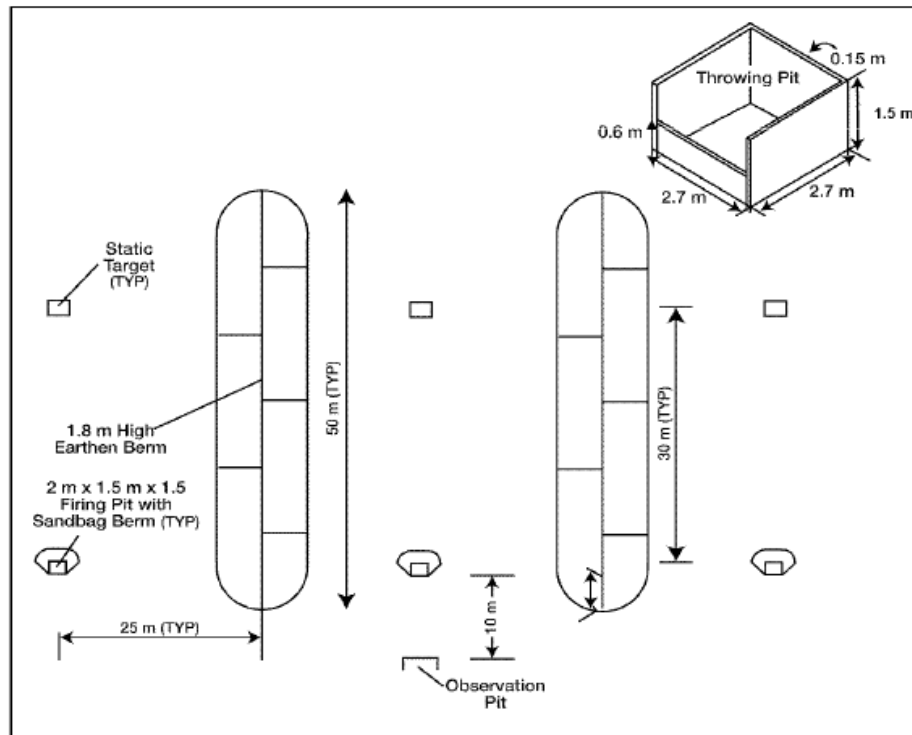


Figure A-2. Notional Live Hand Grenade Range (U.S. Army TC 25-8)

5. Field Artillery Indirect Fire Range

Physical Description. A Field Artillery Indirect Fire Range is designed to meet the training and qualification requirements of field artillery units. No automation is required. Firing positions would be sized to fit a battery of six to eight weapon systems, approximately 660 ft x 660 ft (200 m x 200 m). Firing position area grading and vegetation clearance is based on the number of weapons systems envisioned for simultaneous position use. This range requires an HHIA. Observer line-of-sight to the target area would determine the requirement for observation towers and vegetation clearance. A notional field artillery indirect fire range is depicted in (Figure A-3). The range contains one or more firing positions and an array of various representative targets, spread in azimuth and distance. The range dimensions shown in the depiction are not absolute as training could be accomplished in varying range areas.

Intended Use. This range would be used to support both unit and combined levels of training. This range is used to train field artillery crews on the skills necessary to apply fire mission data, engage, and hit stationary targets in a tactical array with indirect fire. The representative users of this range would be artillery units such as an artillery battery firing 155 mm howitzer or 120 mm mortar rounds into an HHIA. From a designated firing position, artillery units would fire their systems onto targets within the HHIA using target location information provided by various observers. These observers would subsequently provide the firing unit with aiming corrections, bringing the weapon impact onto the intended target. Various firing positions would be used by the firing units to simulate rapid repositioning.

Representative Weapons Systems. Weapons trained on this range may include the 105 mm howitzer, the M777 155 mm howitzer, and the 120 mm mortar (Photo A-4).



Photo A-4. Marine M777 155 mm Howitzer

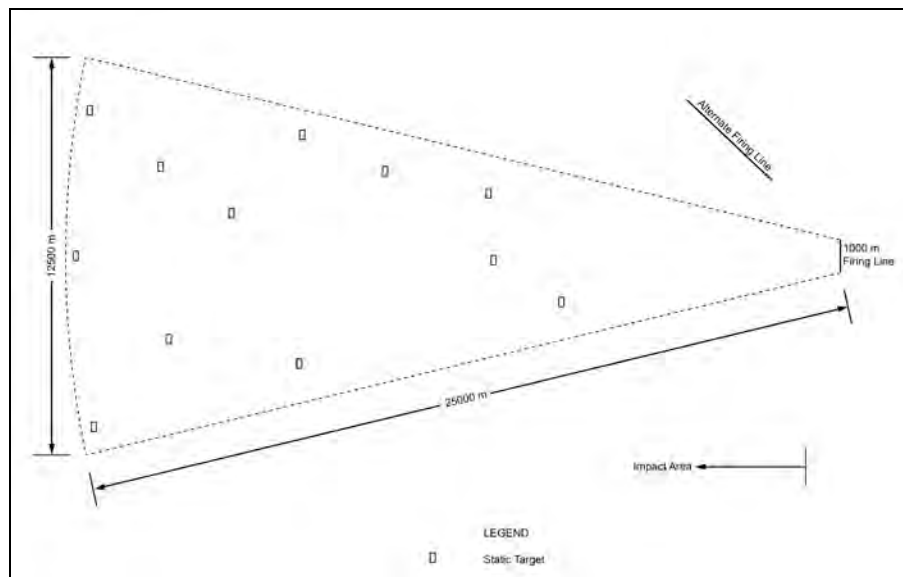


Figure A-3. Notional Field Artillery Indirect Fire Range (U.S. Army TC 25-8)

6. Mortar Range (60 mm, 81 mm)

Physical Description. A Mortar Range is designed to meet the training requirements of mortar crewmen. Firing positions contiguous with the HHIA would be used to set up and fire mortar rounds on targets in the HHIA. No automation is required. Firing position area grading and vegetation clearance is based on the number of weapons systems envisioned for simultaneous position use by a mortar platoon. A typical mortar range is depicted in (Figure A-4). As with the indirect artillery range, this range contains one or more firing positions and an array of various representative targets. The range dimensions shown in the depiction are not absolute as training could be accomplished in varying range areas.

Intended Use. This range would be used to support unit level training. This range is used to train mortar crews on the skills necessary to calculate mortar elevation angle (using distance and azimuth to target, wind velocity), engage, and hit stationary targets in a tactical array using live-fire mortars.

The representative users of this range would be mortar platoons within the weapons company of an infantry battalion. Mortar teams would set up firing positions contiguous to an HHIA and engage targets within the HHIA, applying aiming corrections to bring the mortar impact onto the intended target.

Representative Weapon Systems. Weapons trained on this range may include the M224 60 mm mortar and the M252 81 mm mortar (Photo A-5).



Photo A-5. Marine Loading M252 81 mm Mortar

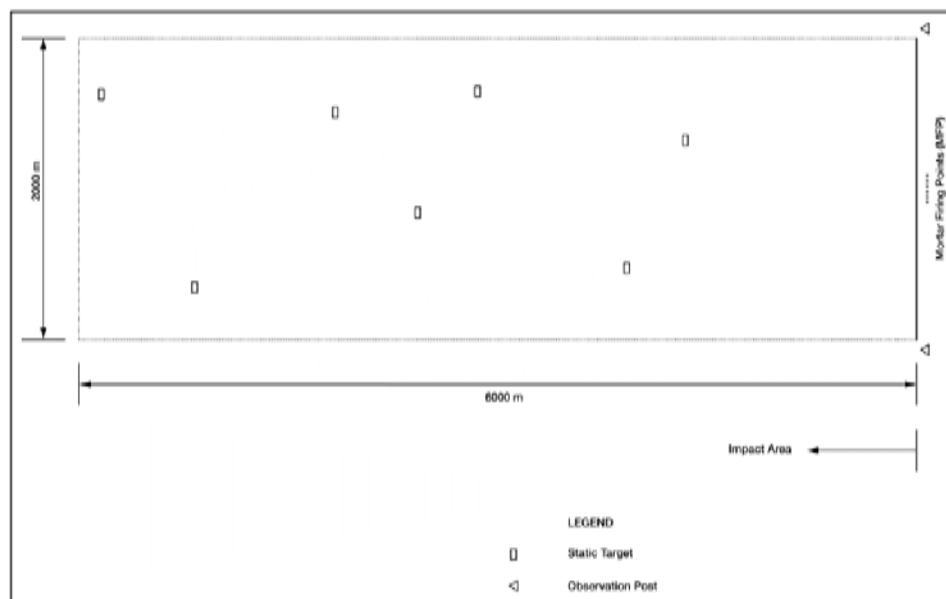


Figure A-4. Notional Mortar Range (U.S. Army TC 25-8)

7. Field Fire Range (Automated)

Physical Description. A Field Fire Range (Automated) is designed for training target engagement techniques with rifles. This range title varies slightly from the TC 25-8 terminology for this range, with TC 25-8 information presented as it constitutes the intent of this range. A Stationary Infantry Target is designed to expose and conceal a human size target to an individual or unit conducting live fire. All targets are fully automated and the event specific target scenario is computer driven and scored from a range operations center. Training manuals specify this range requires 96 stationary

infantry targets, 32 defensive fighting positions, and a 350 yd × 330 yd (320 m × 300 m) area. The range area is subject to grading and vegetation clearance to establish clear line-of-sight to the targets. A notional Automated Field Fire Range is depicted in Figure A-5.

Intended Use. This range would be used to support unit level training. This range is used to train and familiarize personnel in the skills necessary to identify, engage, and hit stationary infantry targets. The representative users of this range would be infantry units, such as an infantry company. From separate firing points, personnel would simultaneously engage various targets with their rifles as they appear.

Representative Weapon Systems. Weapons trained on this range would include the M16 and M4 carbine rifles and M249 squad automatic weapon (SAW) (Photo A-6).



Photo A-6. Army National Guardsman Engaging Target With M16

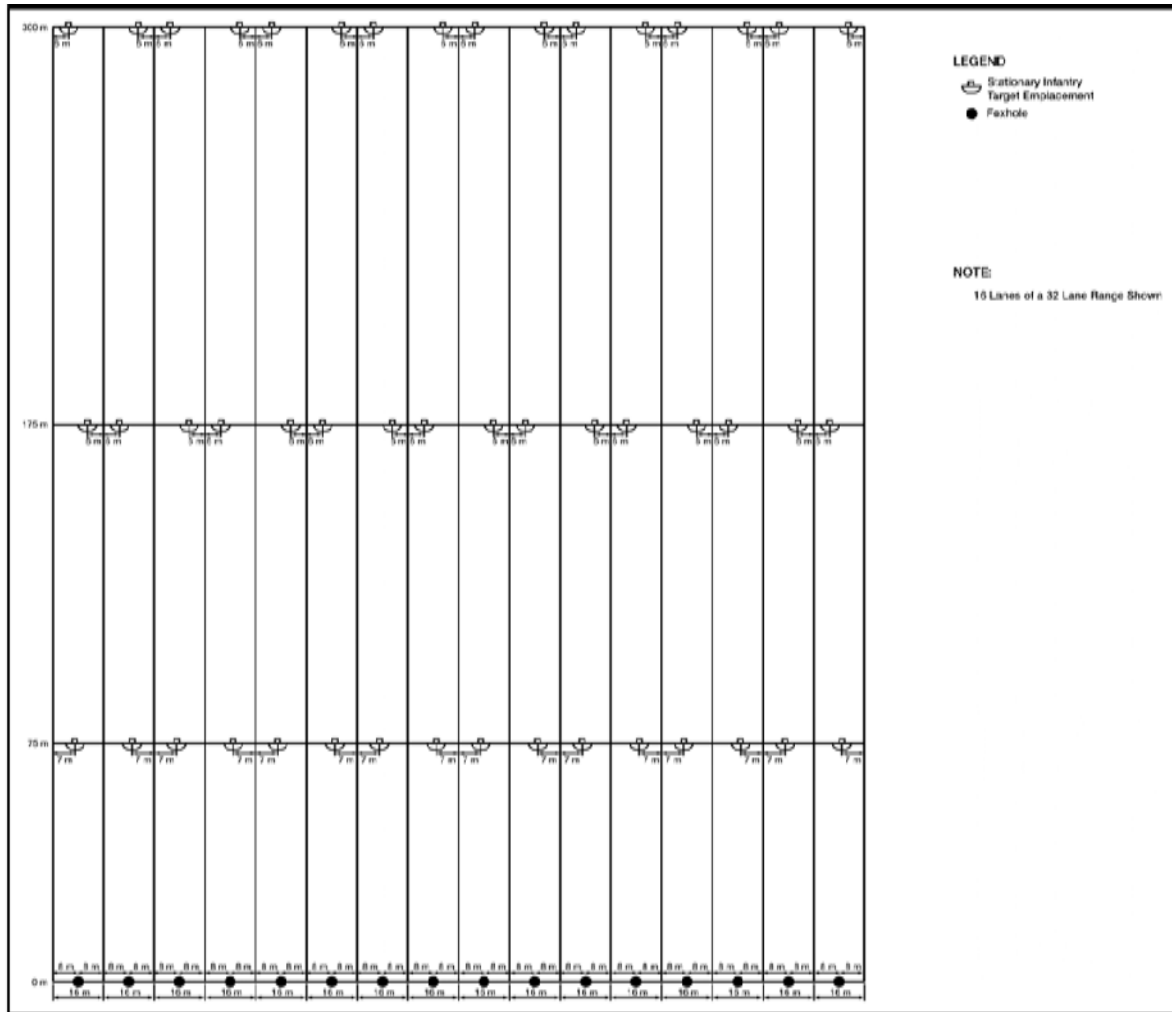


Figure A-5. Notional Automated Field Fire Range (U.S. Army TC 25-8)

8. Anti-Armor Tracking Range (Automated)

Physical Description. An Anti-Armor Tracking Range (Automated) is designed to meet training and qualification requirements with medium and heavy anti-armor weapons systems (e.g., Javelin; Tube-fired Optically-tracked Wire-guided [TOW] Missile, Shoulder-Launched Multi-Purpose Assault Weapon [SMAW]). This range is used to train and test personnel on the skills necessary to employ the weapon, identify, track, engage, and defeat stationary and moving armor targets presented individually or as part of a tactical array. All targets within this range are fully automated, computer driven, and scored from the range operations center. One lane is designed to accommodate up to 10 gunners/weapons. Training manuals call for a 1,100 yd × 5,500 yd (1,000 m × 5,000 m) area. Vegetation clearance would be required for line-of-sight observation and the immediate firing position. The range area is subject to grading to establish clear line-of-sight to the targets. A notional anti-armor tracking range (automated) is depicted in Figure A-6. The range contains a firing line and an array of various representative armor targets, spread in azimuth and distance. Stationary and automated moving armor targets present weapon crews with various targeting challenges, depending on the planned training scenario.

Intended Use. This range would be used to support unit level training. The representative users of this range would be infantry units, such as the weapons company of an infantry battalion. Personnel would establish stationary firing positions at designated locations on a firing line, and engage armor target representations as they appeared. Target actuation and movement would be directed by range controllers.

Representative Weapon Systems. Weapons trained on this range may include inert versions of the Javelin, TOW, and SMAW systems (Photo A-7).



Photo A-7. Marine Firing a Shoulder-launched Multipurpose Assault Weapon

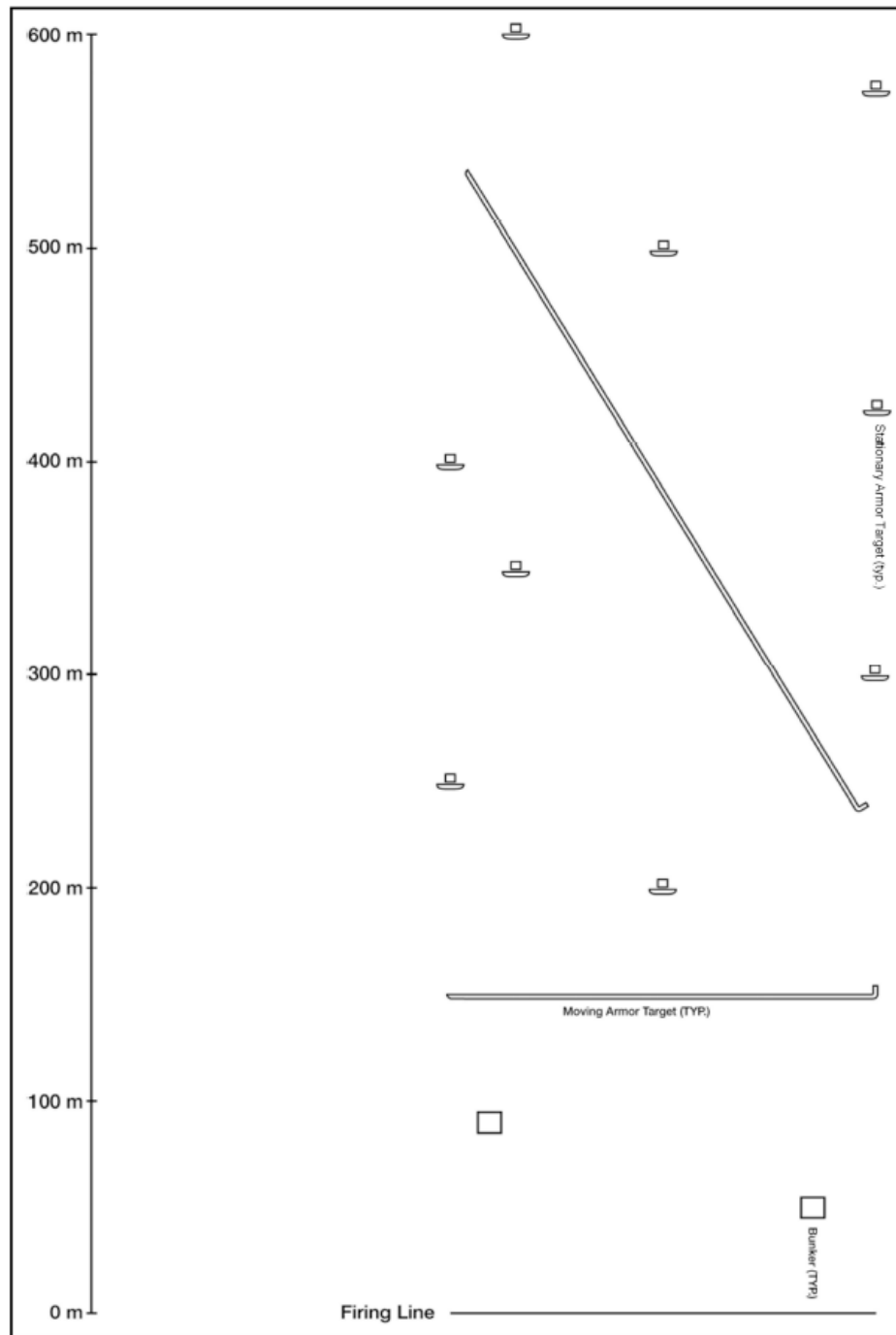


Figure A-6. Notional Anti-Armor Tracking Range (Automated) (U.S. Army TC 25-8)

9. Field Artillery Direct Fire Range

Physical Description. A Field Artillery Direct Fire Range is designed to meet training requirements of field artillery crews. No automation is required. Training manuals call for a 0.6 mile (mi) × 3.1 mi (1 kilometer [km] × 5 km) area. This range requires an HHIA. Vegetation at and surrounding the firing position would be cleared to allow unimpeded, direct weapon-to-target firing.

Intended Use. This range would be used to support combined level training. This range is used to train field artillery crews on the skills necessary to employ direct fire gunnery techniques with indirect fire equipment against stationary targets in a tactical array using live direct fire artillery. The representative user of this range would be an artillery battery. The battery would establish a firing position where the artillery would be able to conduct direct fire, firing artillery rounds and applying aiming corrections to bring ordnance impact onto the intended target.

Representative Weapon Systems. Weapons trained on this range would include the 155 mm howitzer (Photo A-8).



Photo A-8. Army Soldiers Conducting Artillery Direct Fire Training

10. Tank/Fighting Vehicle Stationary Target Range

Physical Description. A Tank/Fighting Vehicle Stationary Gunnery Range is designed for conducting weapons system bore sighting, screening, zeroing, and harmonization. This range title varies slightly from the TC 25-8 terminology for this range, with TC 25-8 information presented as it constitutes the intent of this range. Armor, infantry, and aviation crews would use this range. The range contains vehicle firing positions along a road course, moving and stationary armor targets, and clusters of infantry targets at various distances. Within this range, targets may be fully automated and scored from the range operations center. Training manuals call for a 0.6 mi × 2.5 mi (1 km × 4 km) area, however range dimensions are not absolute as training could be accomplished in varying range area configurations. Vegetation clearance would be required for line-of-sight observation and the immediate firing position. A notional Tank/Fighting Vehicle Stationary Gunnery Range is depicted in Figure A-7.

Intended Use. This range would be used to support unit level training. The representative users of this range would be tank, Stryker, and light armored reconnaissance (LAR) units. Vehicles would fire their weapon systems at various targets from dedicated firing positions.

Representative Weapon Systems. Weapons trained on this range would include the M2 .50 caliber machine gun, the MK19 40 mm grenade launcher, 25 mm and 120 mm munitions (Photo A-9).



Photo A-9. Army Stryker Fire Support Vehicle

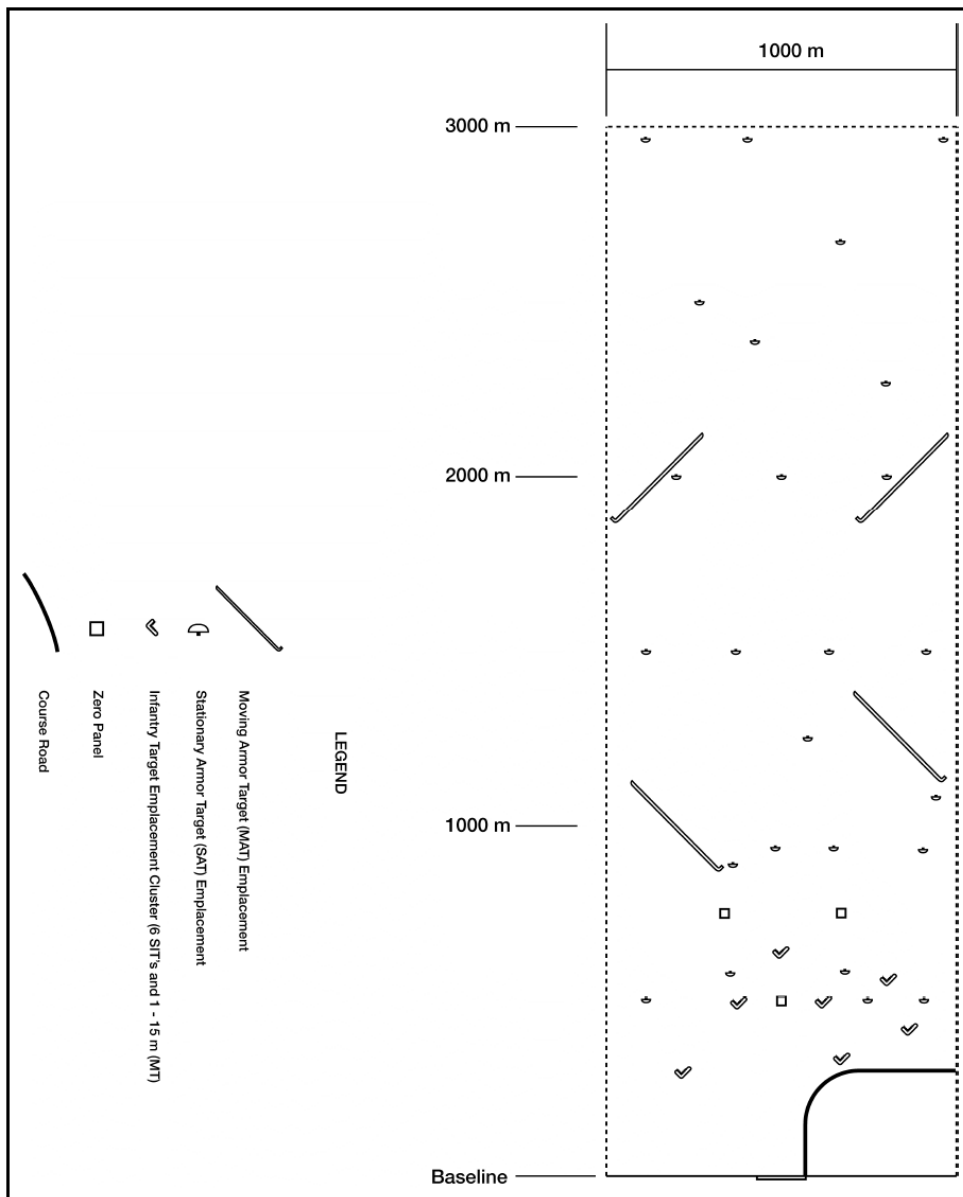


Figure A-7. Notional Tank/Fighting Vehicle Stationary Gunnery Range (U.S. Army TC 25-8)

11. Light Anti-Armor Weapon Range Live

Physical Description. A Light Anti-Armor Weapon (LAW) Range Live is designed for training target engagement techniques with light anti-armor weapons (e.g., M72 LAW, Anti-Tank (AT)-4). Targets are not fully automated and/or the scenarios are not computer driven or scored. Training manuals call for a 220 yd × 650 yd (200 m × 600 m) area. Vegetation clearance would be required for line-of-sight observation and the immediate firing positions. An HHIA is required to support live-fire training. A notional LAW range is depicted in Figure A-8.

Intended Use. This range would be used to support unit level training. This range is used to train personnel on the skills necessary to employ the weapon and hit stationary and moving targets using live rockets or a sub-caliber training device and requires a dudded impact area for live munitions. The representative users of this range would be the anti-tank section of a weapons company. From various firing positions contiguous to an HHIA, individuals would fire upon targets within the HHIA.

Representative Weapon Systems. Weapons trained on this range may include the M72 LAW and the AT-4 (Photo A-10).



Photo A-10. Soldier Firing AT-4

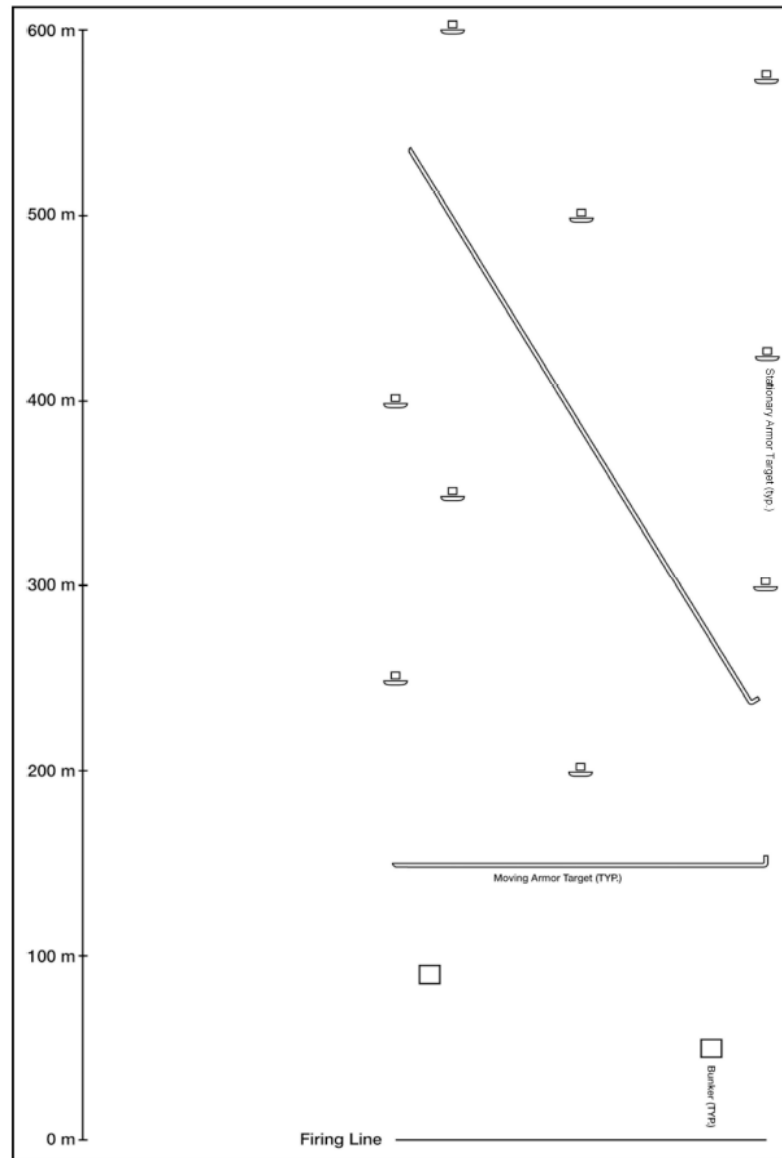


Figure A-8. Notional LAW Range Live (U.S. Army TC 25-8)

12. Grenade Launcher Range

Physical Description. A Grenade Launcher Range is designed to meet training and qualification requirements for the M203 Grenade Launcher (40 mm) and the M320 Grenade Launcher Module. This range requires an HHIA for high explosive munitions. No automation is required. Each firing point is counted as a collection of points or lanes that allows completion of training objectives. Training manuals call for a 35 yd × 560 yd (30 m × 500 m) area. Vegetation clearance would be required for target line-of-sight observation and the immediate firing position.

Intended Use. This range would be used to support unit level training. This range is used to train and test personnel on the skills necessary to engage and defeat stationary emplacements with the 40 mm grenade launcher. The representative users of this range would be an infantry company. From

various firing positions contiguous to an HHIA, individuals would fire upon targets contained within the HHIA.

Representative Weapon Systems. Weapons trained on this range would include the M203 grenade launcher, attached to an M16 or M4 rifle (Photo A-11).



Photo A-11. Marine With M16 and M203 Grenade Launcher Attached

13. Battle Sight Zero Range Built to 100-yd Non-Standard Small Arms Range

Physical Description. A Battle Sight Zero Range Built to 100-yd Non-Standard Small Arms Range is designed for training shot-grouping and zeroing exercises with rifles and machine guns. This range requires no automation. Training manuals call for a 110 yd × 30 yd (100 m × 25 m) area to support a standard Battle Sight Zero range. The non-standard caveat extends the length of the range from 30 yd to 110 yd (25 m to 100 m). The range area is subject to grading and vegetation maintenance to establish clear line-of-sight to the targets. A notional Basic Firing Range (Zero) is depicted in Figure A-9.

Intended Use. This range would be used to support both unit and combined levels of training. This range is used to train individual personnel on the skills necessary to align the weapon sights and practice basic marksmanship techniques against stationary targets. The representative users of this range would be all units equipped with M16 and M4 carbine rifles. Individuals would fire a series of bullet rounds at targets, adjusting their weapon sights to bring the bullet impact to the target center.

Representative Weapon Systems. Weapons trained on this range would include the M16 and M4 carbine rifles.

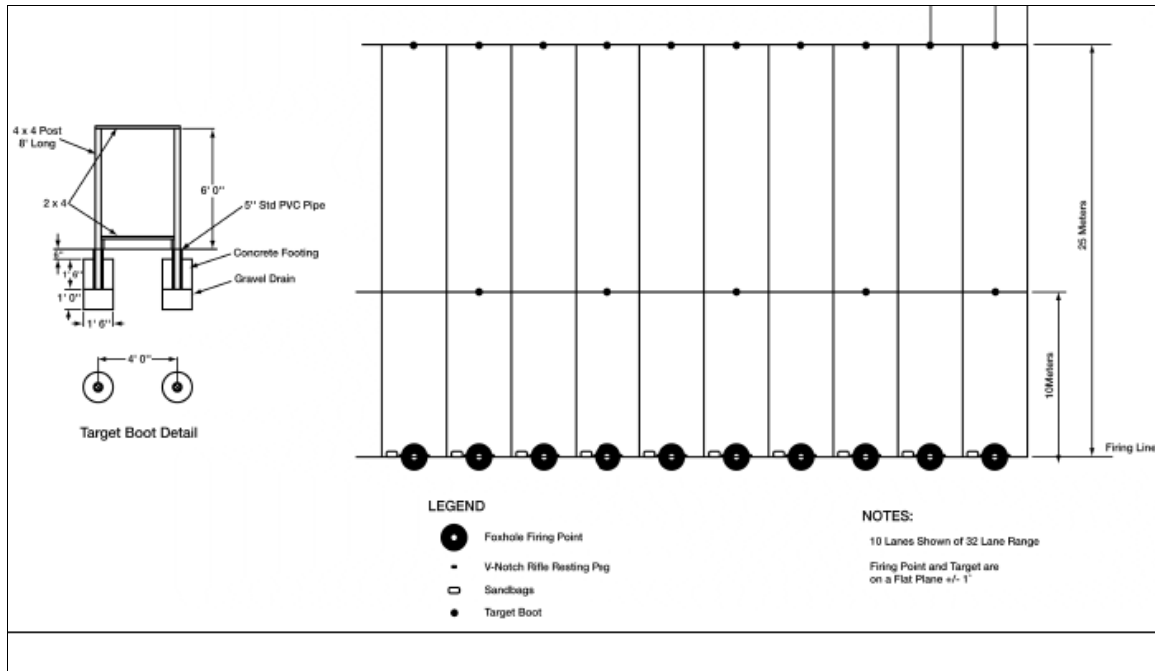


Figure A-9. Notional Basic Firing Range (Zero) (U.S. Army TC 25-8)

14. Infantry Platoon Battle Course (Automated)

Physical Description. An Infantry Platoon Battle Course (IPBC) (Automated) is designed for the training and qualification requirements of infantry platoons on movement techniques and operations, either mounted or dismounted. This complex is used to train and test platoons on the skills necessary to conduct tactical movement techniques, detect, identify, engage, and defeat stationary and moving armor and infantry targets in a tactical array. All targets are fully automated and the event specific target scenario is computer driven and scored from a range operations center. Training manuals call for a 1,650 yd x 5,500 yd (1,500 m x 5,000 m) area. The range area is subject to grading to establish clear line-of-sight to the targets and a portion of the vegetation would be maintained, where required for movement and target visibility. A notional IPBC (Automated) is depicted in Figure A-10.

Intended Use. This range would be used to support unit level training. The representative users of this range would be infantry platoons. Platoons would assemble at an initial departure location and progress by squads to individual objectives, coordinating fire and movement between each squad. Targets would be engaged as directed by the platoon and squad leaders.

Representative Weapon Systems. Weapons trained on this range would include the M16 and M4 carbine rifles, the M249 SAW, M240 7.62 mm machine gun, and other platoon support weapons (Photo A-12). Intended targets would appear as commanded by range/training personnel, according to a specific training scenario (Photo A-13).



Photo A-12. Japanese Soldier Executing Platoon Level Fire and Movement Techniques



Photo A-13. Example Pop-up Stationary Infantry Target

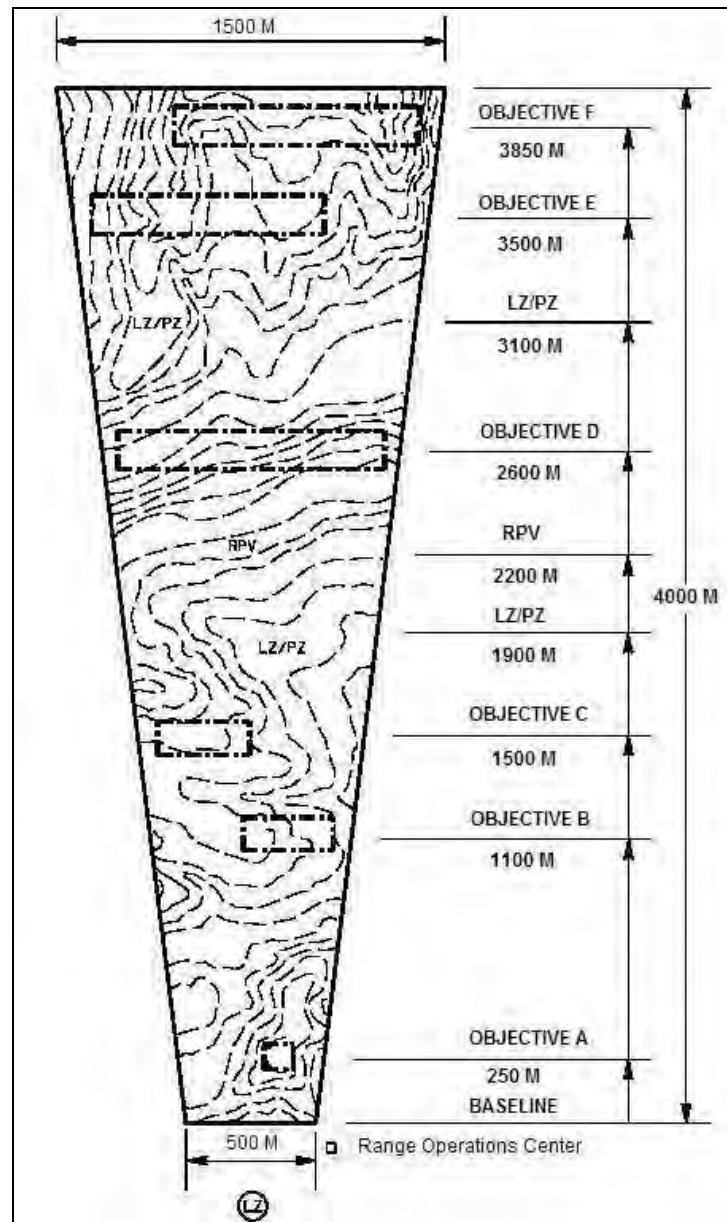


Figure A-10. Notional Infantry Platoon Battle Course (Automated) (U.S. Army TC 25-8)

15. Multi-Purpose Training Range/Multi-Purpose Training Range (Automated)

Physical Description. A Multi-Purpose Training Range is specifically designed to satisfy the training and qualification requirements for the crews, teams, and sections of combat units. This range supports dismounted infantry squad tactical live-fire operations either independently of, or simultaneously with supporting vehicles. When automated, an event specific target scenario is computer driven and scored from the range operations center. Each range lane is defined as a range to support training for two vehicles. Training manuals call for a 1,100 yd × 4,400 yd (1,000 m × 4,000 m) area. The range area is subject to grading to establish clear line-of-sight to the targets and a portion of the vegetation would be maintained, where required for movement and target visibility. A notional Multipurpose Training Range is depicted in Figure A-11.

Intended Use. This range would be used to support unit level training. This range is used to train and test armor, infantry, and aviation teams, crews and sections on the skills necessary to detect, identify, engage, and defeat stationary and moving armor and infantry targets in a tactical array. The representative users of this range would be infantry and supporting units such as aviation and light armor reconnaissance units.

Representative Weapon Systems. Weapons on this range would include weapons associated with an infantry weapons company such as the M2 .50 caliber machine gun, MK19 automatic grenade launcher (40 mm), and the M240 machine gun (Photo A-14 to Photo A-16). The range also supports light armored vehicle (LAV), Amphibious Assault Vehicle (AAV), tank, TOW/AT-4, and helicopter gunship training.



Photo A-14. Solider Firing M2 .50 Caliber Machine Gun



Photo A-15. Marine Firing MK19 Automatic Grenade Launcher 40 mm



Photo A-16. Marine Firing M240 Machine Gun

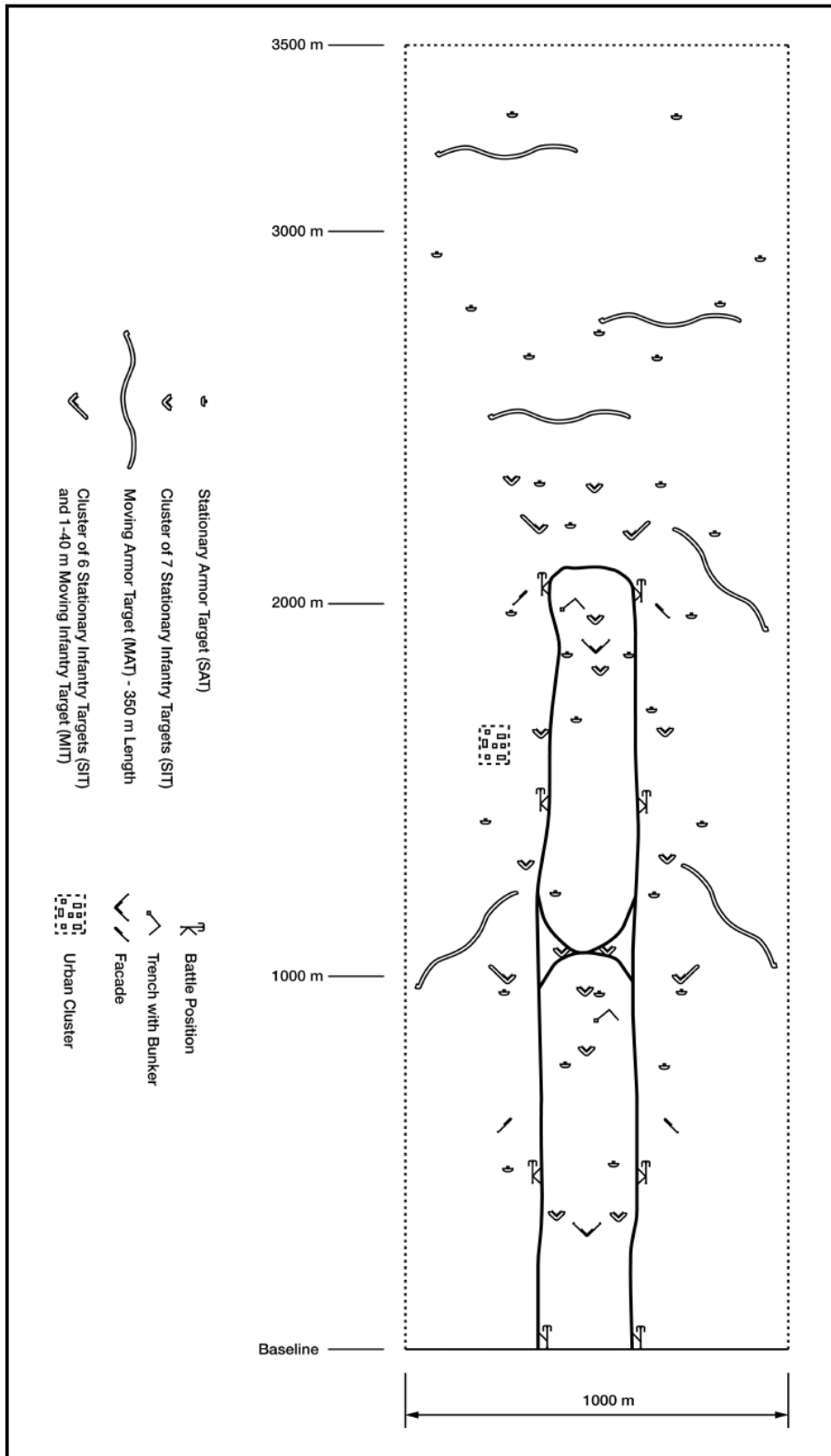


Figure A-11. Notional Multipurpose Training Range (U.S. Army TC 25-8)

16. Tank/Fighting Vehicle Multi-Purpose Range Complex/Multi-Purpose Range Complex (Automated)

Physical Description. A Tank/Fighting Vehicle Multi-Purpose Range Complex/Multi-Purpose Range Complex (Automated) is specifically designed to satisfy the training and qualification requirements for the crews and platoons of armor, infantry and aviation units. This complex supports dismounted infantry squad tactical live-fire operations either independently of, or simultaneously with supporting vehicles. Training manuals call for a 1,700 yd × 5,500 yd (1,500 m × 5,000 m) area. The range area is subject to grading to establish clear line-of-sight to the targets and a portion of the vegetation would be maintained, where required, for movement and target visibility. A notional Multipurpose Training Complex is depicted in Figure A-12.

Intended Use. This range would be used to support unit level training. This range is used to train and test armor, infantry, and aviation platoons, sections, teams and crews on the skills necessary to detect, identify, engage, and defeat stationary and moving armor and infantry targets in a tactical array. The representative users of this range would be tank, Stryker, AAV, and LAR units, as well as other vehicle-mounted weapons systems (e.g., Medium Tactical Vehicle Replacement with gun ring mounts, armored High Mobility Multipurpose Wheeled Vehicle). All targets are fully automated and the event specific targets scenario is computer driven and scored from the range operations center.

Representative Weapon Systems. Weapons trained on this range would include the M2 .50 caliber machine gun (Photo A-17), the MK19 40 mm training practice (TP) grenade launcher, M240 machine gun, and 25 mm TP.



Photo A-17. Marine Firing Vehicle-mounted .50 Caliber Machine Gun

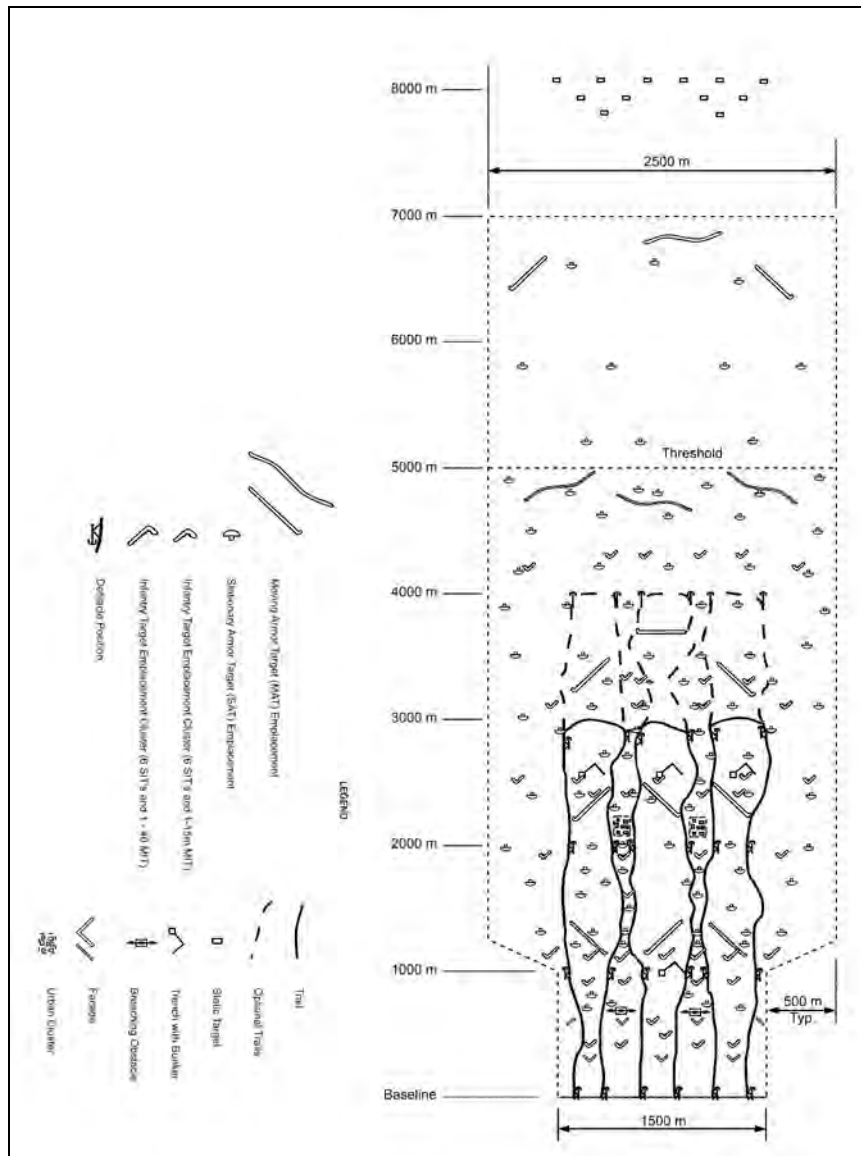


Figure A-12. Notional Multipurpose Range Complex (U.S. Army TC 25-8)

17. Combined Arms Training Range to Support Close Air Support and Naval Gunfire Support Training

Physical Description. Training manuals specify that a land area of five square nautical miles (NM²) (9 square kilometers [km²]) should be cleared for live-fire naval surface fire support ordnance training. They also specify sufficient airspace for the use of stand-off air-to-ground weapons and land attack cruise missiles. Proximity of the target area to suitable contiguous operating sea space for ships to safely maneuver is also required. Targets would be placed in various arrays, representing static and moving forces. This range requires an HHIA to support live-fire training. This type of range is unique, designed based upon the availability of terrain for target location, coast hydrology for naval ship access, and suitable airspace for aviation weapon employment.

Intended Use. This range would be used to support combined level training. The representative users of this range would be combined arms units, such as an amphibious task force, with attack aviation and naval gunfire support ship capability. Ground units would execute tactical maneuver around or near an HHIA, whereas observers would direct engagement of these targets within the HHIA by aviation and naval units, based upon the tactical training scenario.

Representative Weapon Systems. Weapons trained on this range would include aviation delivered ordnance such as 500 pound high explosive bombs, and 5-inch naval gunfire high explosive rounds (Photo A-18).



Photo A-18. Royal Australian Navy Frigate Fires 5-inch Gun

18. Company Combined Arms Live-Fire and Maneuver Range

Physical Description. Previous studies defined this requirement as a facility that would support an infantry company executing live-fire and maneuver, using combined arms (units external to the infantry company such as an artillery battery). This is similar to the TC 25-8 description of a Battle Area Complex (BAX) and therefore, a BAX would be used to specify this requirement. The BAX is used to train and test the Stryker Brigade Combat Team and Infantry Brigade Combat Team crews, sections, platoons, companies, and dismounted infantry squads on the skills necessary to detect, identify, engage, and defeat stationary and moving infantry and armor targets in a tactical array in both open and urban terrain environments. This complex also supports tactical live-fire operations independently of, or simultaneously with, supporting vehicles in free maneuver. Training manuals call for a BAX that is 2,600 yd X 4,400 yd (2,400 m X 4,000 m) in dimension. The range area is subject to grading to establish clear line-of-sight to the targets and a portion of the vegetation would be maintained, where required for movement and target visibility. A notional Battle Area Complex is depicted in (Figure A-13).

Intended Use. This range would be used to support unit level training. The representative users of this range would be an infantry company and its supporting arms entities such as the weapons company. Platoons would fire and maneuver toward various objectives in a coordinated fashion, observing and engaging targets within their specific zones of action. Integrating the complexity of controlling the multiple fields of fire provides the company with a challenging command and control training opportunity.

Representative Weapon Systems. Weapons trained on this range would include all weapons systems previously discussed (except naval and aviation weapons), primarily M16 and M4 rifles, M203 and .50 caliber machine guns, and various vehicle-mounted weapon systems.

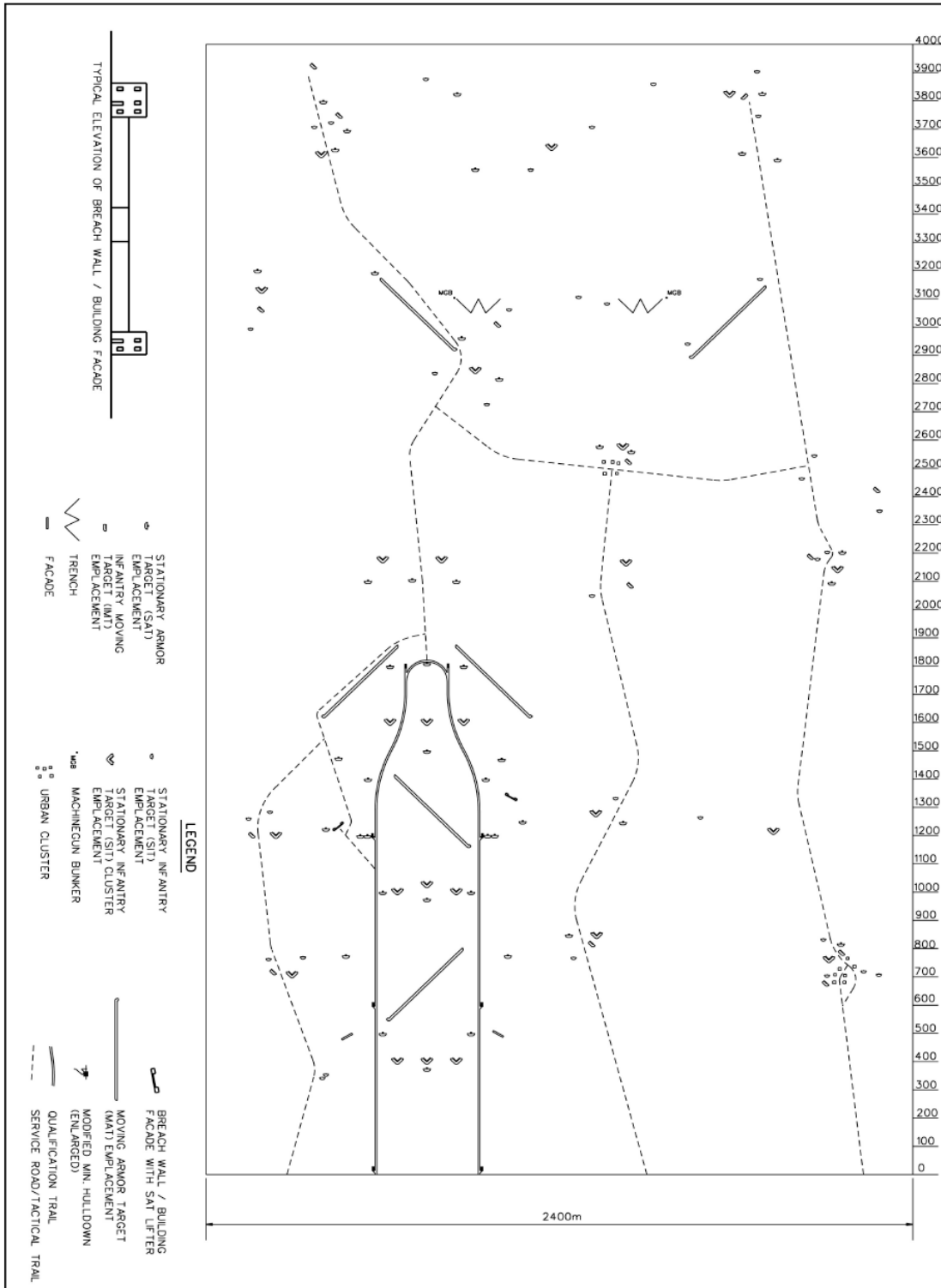


Figure A-13. Notional Battle Area Complex (U.S. Army TC 25-8)

19. Combined Arms Live-Fire Amphibious Beaches with Maneuver Area

Physical Description. Previous studies defined this training area as similar to the marine expeditionary unit (MEU) level training live-fire and maneuver requirement. The physical attributes are as follows: airspace of 50 nautical miles (NM) × 80 NM (90 km × 150 km); sea space of 7,500 NM² (19,400 km²); and land space of 150 square miles (mi²) (390 km² or 96,000 acres). A dedicated beachfront is required for amphibious operations training and some or all of the land should be cleared for use of live Naval Surface Fire Support (naval gunfire), aviation ordnance, naval special warfare, indirect, and direct fire weapons for both high explosive and training practice ammunition. The range area within the land space is subject to grading to establish clear line-of-sight to the targets and a portion of the vegetation would be maintained, where required for movement and target visibility. This training area is unique, designed with suitable amphibious beaches, as well as sufficient maneuver space based upon the size and training objectives of the amphibious task force.

Intended Use. This training area would be used to support combined level training. The representative users of this training area would be an amphibious task force, including units such as a MEU, previously described. Amphibious units would move to their objective area on land from ships at sea, via amphibious and air cushioned vehicles, and from aircraft. Suitable beaches support the amphibious mode of transit, while suitable landing zones are used for aviation delivered personnel. Coordinated live-fire is conducted before and during this movement, using aviation and ship delivered ordnance, and artillery, once ashore. After landing, units maneuver as necessary to seize their assigned objective area.

Representative Weapon Systems. Weapons trained on this range would include all those previously discussed, specifically naval gun fire and aviation delivered ordnance, as well as ground weapon systems.

20. Military Operations on Urban Terrain/Urban Assault Course

Physical Description. Training manuals describe the Military Operations on Urban Terrain/Urban Assault Course as a facility that is used to train individuals, squads, and platoons on the tasks necessary to effectively operate within a built-up/urban area, and call for an approximately 330 yd × 220 yd (300 m × 200 m) area to support various structures within this facility. The range area would be subject to grading and vegetation maintenance to establish the following five stations:

- Individual and Fire Team Trainer
- Squad and Platoon Trainer
- Grenadier Gunnery Trainer
- Urban Offense/defense Trainer
- Underground Trainer

A notional Urban Assault Course is depicted in (Figure A-14).

Intended Use. This training area would be used to support unit level training. The representative users of this training area would be an infantry platoon. Squads would progress from station to station, executing a planned Military Operations on Urban Terrain scenario at each.

Representative Weapon Systems. Weapons trained on this range may include the M16 and M4 rifles, SMAW trainer, and 40 mm grenade training rounds (Photo A-19).



Photo A-19. Marines Conducting MOUT Training

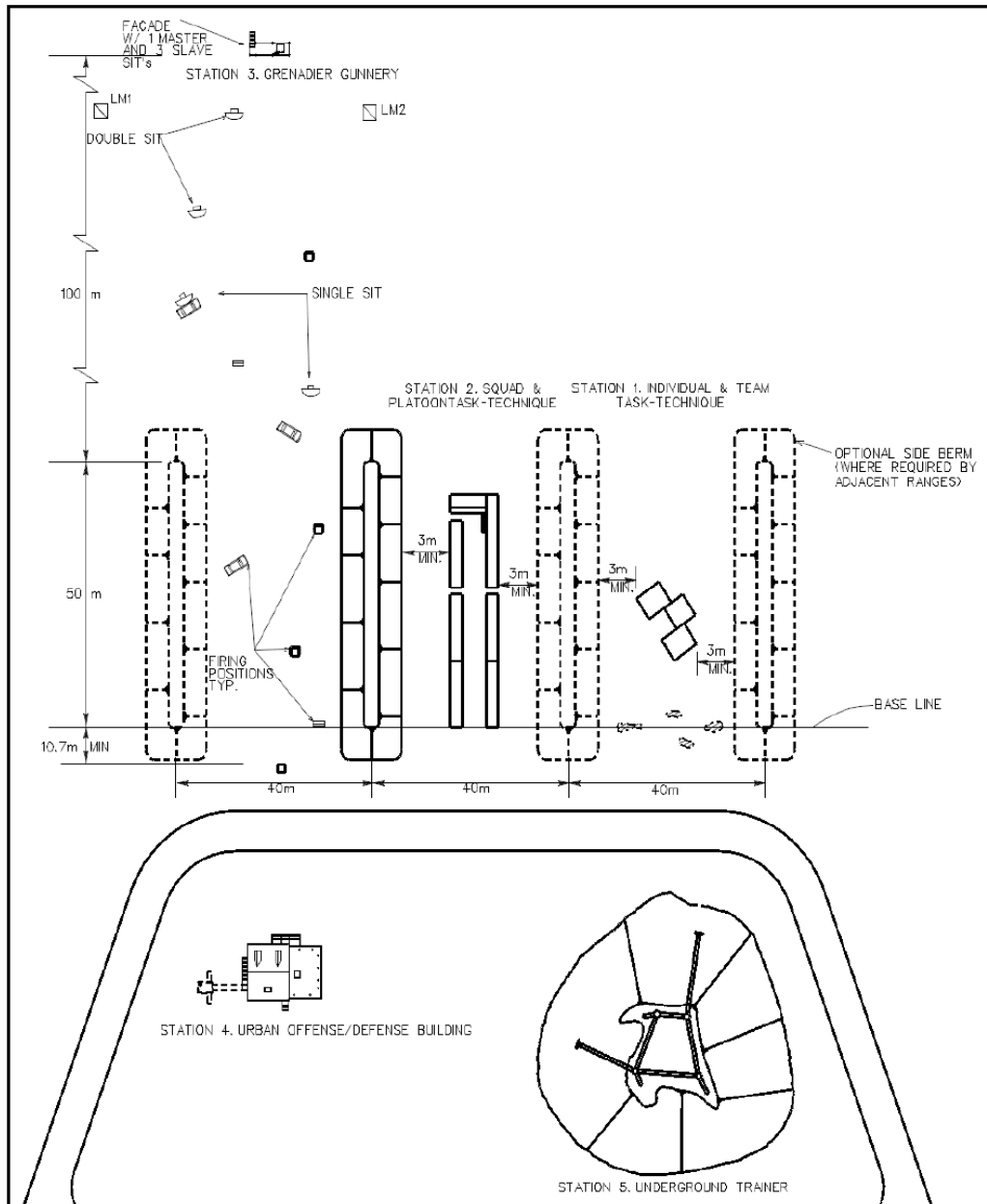


Figure A-14. Notional Urban Assault Course (U.S. Army TC 25-8)

21. Convoy Live-Fire Range

Physical Description. The Convoy Live-Fire Range, alternatively called the Live-Fire Convoy Course throughout this document, consists of a designated road along which engagement zones representing potential ambush locations and improvised explosive devices are placed. Example responses include: react to a near ambush, react to a double-sided ambush, react to an obstacle, and react to an improvised explosive device. Vegetation would be maintained to create various roadside engagement zones. A notional Convoy Live-Fire Range is depicted in Figure A-15.

Intended Use. This range would be used to support unit level training. The representative users of this range would be units required to tactically transit hostile areas, predominately vehicle-mobile units. Many logistical support units also require this range for sustainment training. It is used to train and test convoy crews, platoons, and companies on the skills necessary to detect, identify, engage, and defeat stationary and moving vehicle and infantry targets from a stationary or moving platform using all assigned weapons and weapon systems. The targets may be presented individually or as part of a tactical array in an open or urban environment. This range is also used to train and test individuals to engage and defeat vehicle and infantry targets from multiple firing points as part of an Entry Control Point.

Representative Weapon Systems. Weapons trained on this range would include the vehicle-mounted M2 .50 caliber machine guns, (Photo A-20), MK-19 40 mm TP, M240G medium machine gun, M249 SAW, M16/M4, and M203 TP.



Photo A-20. Marines Conducting Convoy Training

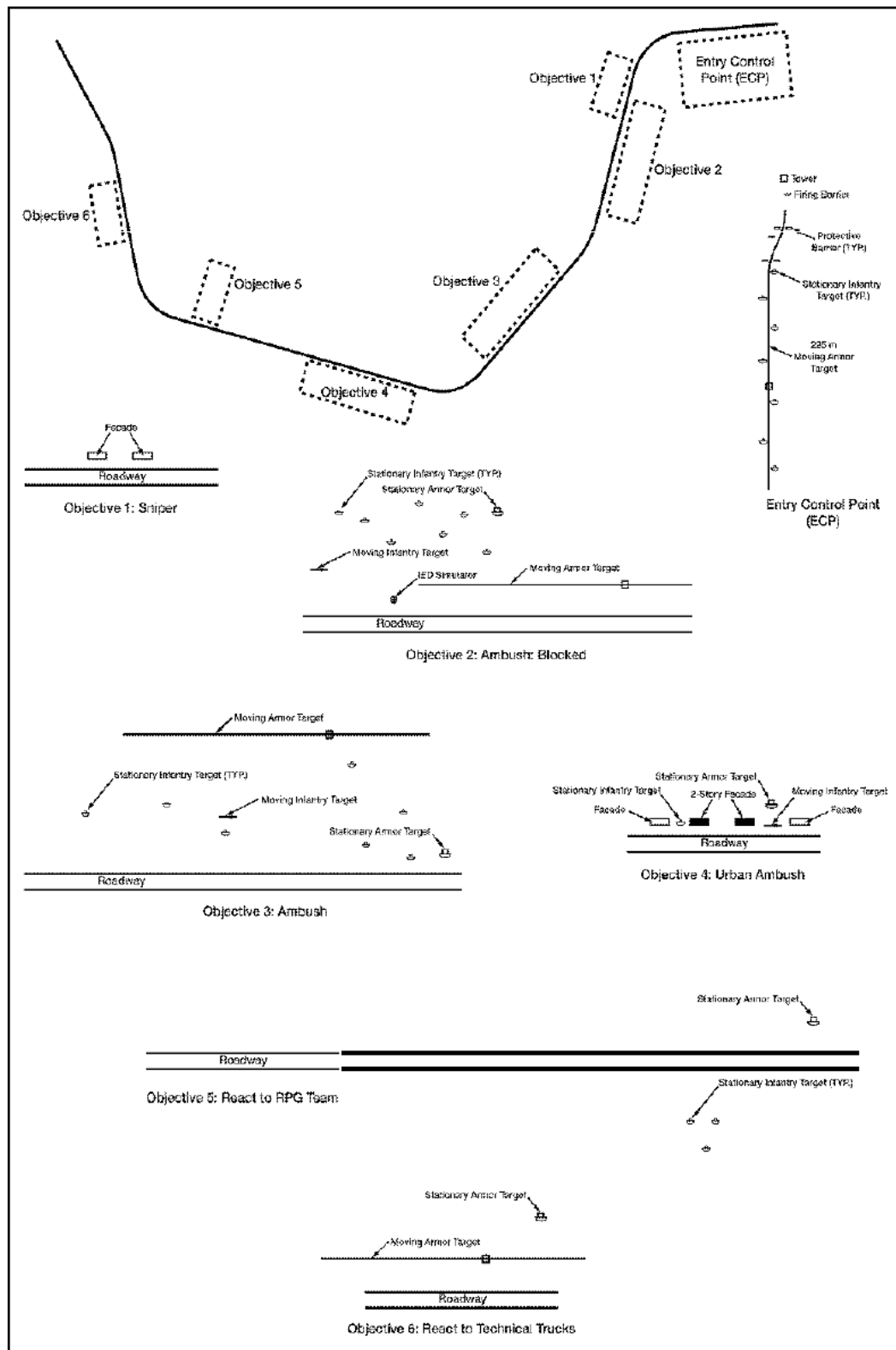


Figure A-15. Notional Convoy Live-Fire Range (U.S. Army TC 25-8)

22. Tracked Vehicle Driver's Course

Physical Description. A Tracked Vehicle Driver's Course is an area used to teach the basic driving skills of steering and gear shifting of a tracked vehicle on a level course. The facility may also contain a hilly course for developing advanced tracked vehicle driving skills such as turning on slopes and negotiating steep grades. Training manuals do not cite specific criteria for this course. The course would be subject to grading, gravel fill, and vegetation maintenance, where required, for unimpeded movement. Certain areas of roads where tracked vehicles cross over would be reinforced with concrete for road stability. This is a unique training area, designed based upon available area for course construction, available road system, and terrain.

Intended Use. This training area would be used to support unit level training. The representative users of this training area would be ground units with tracked vehicle such as AAVs. For sustainment level training, AAV drivers would navigate between various locations, executing safe driving skills. This could entail transiting from an amphibious landing beach to a live-fire range.

Representative Weapon Systems. The type of vehicle would include the AAV-7A1 (Photo A-21).



Photo A-21. Marine AAV-7A1

23. Tactical Amphibious Landing Beaches

Physical Description. Certain characteristics for amphibious assault vehicle, air-cushioned landing craft, and small boat employment are germane to training on tactical amphibious landing beaches. For AAV training, water depth over any near-shore steep gradient such as a reef or sea wall should be at least 3 ft (1 m) to allow for track engagement. For air-cushioned landing craft, typically a 150 ft (45 m) diameter area is required for landing ashore, with no walls or terrain relief change greater than 4 ft (1.5 m). Small craft used by reconnaissance units, such as a rigid-hull inflatable boat, may be used in almost any sea, surf, and beach condition to insert combat swimmers on shorelines. Beaches used for tactical amphibious landing training are typically located near other training venues, such as weapon firing ranges or fire and maneuver areas. A contiguous beach and live-fire target area provides greater training synergy than separate venues. The beachfront and contiguous range area would be subject to grading and vegetation maintenance, where required, to facilitate for movement on the beach and to provide target visibility. This training area is unique; its design would be based on available beaches, suitable egress terrain, and contiguous or nearby impact areas.

Intended Use. This training area would be used to support both unit and combined levels of training. The representative users of this training area would be an amphibious task force, such as a MEU, previously described.

Representative Weapon Systems. This training area would be used to support combined level training. Weapon systems trained with on this range would include the spectrum available to a MEU, such as AAV-mounted machine guns.

24. Maneuver Area, Heavy Forces

Physical Description. This training area includes all space for ground combat forces to practice movements and tactics. Different types of units may support one another (combined arms), or may operate independently. The “heavy” designation refers to areas where maneuver is unrestricted and can consist of all types of vehicles and equipment, including tracked vehicles. “Heavy” maneuver/training areas can also be used by “light” forces. Training manuals describe the following space dimensions to support an infantry company, supporting tank platoon, AAV platoon, LAV platoon, artillery battery, and an engineer platoon as: non-live-fire – 144 mi² (370 km² or 92,200 acres), and live-fire – 260 mi² (670 km² or 166,400 acres). The range area would be subject to grading and vegetation maintenance, where required, for tactical and administrative movement and target visibility. This training area is unique; its design would be based on the availability of suitable terrain for heavy force maneuver.

Intended Use. The representative users of this training area would be a combined arms task force, such as the MEU, previously described.

Representative Weapon Systems. This training area would be used to support combined level training. Weapon systems trained on this range would include ground forces weapons previously described.

25. Maneuver Area, Light Forces

Physical Description. The “light” designation refers to areas where maneuver is restricted to only small units or units having only wheeled vehicles. “Light” maneuver/training areas are not typically used by “heavy” or mechanized forces, other than in assembly areas where movement is restricted to roads or trails. This training area includes bivouac sites, base camps, and other miscellaneous training areas. Training manuals describe the space dimension requirements as the same for the Maneuver Area, Heavy Forces. The range area would be subject to grading and vegetation maintenance, where required, for movement and target visibility. This training area is unique; its design would be based on the availability of suitable terrain for heavy force maneuver.

Intended Use. This training area would be used to support both unit and combined levels of training. The representative users of this training area would be combined arms task force, such as the MEU previously described, training without heavy vehicles, such as tanks.

Representative Weapon Systems. Weapon systems trained on this range would include all those previously described, except tanks.

26. Maneuver Area, Amphibious Forces

Physical Description. A Maneuver Area, Amphibious Forces includes all space for ground and air combat forces to practice movements and tactics during amphibious (ship-to-shore) operations. Tasks can include both combat and logistics support. This category also includes areas with bivouac

sites, base camps, and other miscellaneous training areas. Maneuver/training areas may be used for multiple purposes. Training manuals describe the space dimension requirements as the same as for the Maneuver Area, Heavy Forces. The range area would be subject to grading and vegetation maintenance, where required, for movement and target visibility. This training area is unique; its design would be based on the availability of suitable terrain for amphibious force maneuver.

Intended Use. This training area would be used to support both unit and combined levels of training. The representative users of this training area would be combined arms task force, such as the MEU previously described.

Representative Weapon Systems. Weapons trained on this range may include all those previously described.

27. Offensive Air Support Range (Aerial Gunnery and/or Aerial Bombing Range)

Physical Description. An Offensive Air Support Range provides aircrew with operating areas for the development of proficiency in gunnery, bombing, rocketry, missile delivery, strafing, and mine laying.

The Offensive Air Support targets require at least one range complex with at least two separate live/inert weapons target sites, composed of raked and strafe ranges, structural targets, mobile targets, and targets located in revetments. Some of the structural targets should replicate congested urban areas, requiring event participants to discriminate between valid and invalid targets in order to practice minimizing collateral damage. Tactical target complexes should provide a minimum of four targets with four Desired Mean Points of Impact per target, as well as present target identification and discrimination challenges to the aircrew. This does not apply to raked and strafe ranges. Tactical targets should possess visual, radar, and spectral signatures representing threat systems. Building structures, revetted targets, and moving targets must replicate, to the greatest degree practical, the physical characteristics and spectral signatures of the type of targets expected to be encountered in the projected area of operations. At least one target site must allow the use of inert weapons up to 2,000 pounds (910 kilograms) and live weapons (including cluster munitions) up to 1,000 pounds (460 kilograms). At least some of the targets should allow the use of laser designators.

Training manuals call for a 25 NM × 50 NM (50 km × 90 km) range with airspace that extends from the surface to 40,000 ft (12,200 m). The area should be cleared for use of air-to-ground gunnery, free-fall and guided air-to-ground munitions, laser-designating devices, and the expenditure of chaff and flares.

For live weapons, an HHIA is required. The range area would be subject to grading and vegetation maintenance, where required, for target visibility and fire breaks.

This range is unique; its design would be based on the availability of suitable terrain for target placement and supporting airspace for flight maneuvering and separation from civilian air traffic.

Intended Use. This range would be used to support both unit and combined levels of training. The representative users of this range would be aviation units able to deliver ordnance, such as the FA-18 Hornet or F-35 Lightning II (Joint Strike Fighter).

Representative Weapon Systems. Weapons trained on this range may include a laser guided bomb or a forward firing rocket (Photo A-22).



Photo A-22. Air Force Airman Checks Laser Guided Bomb Loaded on Aircraft

28. Close Air Support Range (Air-to-Ground Range)

Physical Description. CAS is air action by fixed-wing and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces. It requires detailed integration of each air mission with the fire and movement of those forces. Various definitions of a CAS range exist within the Service Components' training requirements publications.

This range does not require automation but does require surveillance of the target area. The recommended CAS surface impact area is 16 NM × 20 NM (30 km × 40 km), with minimum restricted airspace radius of 25 NM (50 km), with maximum restricted airspace that extends vertically to the maximum altitude required by the using aircraft (nominally surface to 50,000 ft [15,200 m]) to fully meet this requirement. One control tower and two spotting towers at each designated target site and target illumination for night operations are required.

For live-fire weapons, an HHIA is required. The range area would be subject to grading and vegetation maintenance, where required, for target visibility.

This range is unique; its design would be based on the availability of suitable terrain for close air support weapon employment and ground force maneuver.

Intended Use. This range would be used to support both unit and combined levels of training. This Range is designed to support the training and qualification requirements of CAS aircraft and battalion Tactical Air Control Party. This range is used to train and test aircraft crews on the skills necessary to provide air support to ground forces under varying conditions. The representative users of this range would be units that deliver aviation ordnance within close proximity of friendly ground units. Joint tactical air controllers and ground forward observers use this range to train for the employment of CAS aircraft.

Representative Weapon Systems. Weapons trained on this range may include the AV-8B Harrier or the Apache attack helicopter delivering aviation ordnance such as Global Positioning System guided munitions, direct fire rockets, or bullets fired from guns (Photo A-23).



Photo A-23. Marine Cobra Helicopter Firing 20 mm Gun in Direct Support of Ground Forces Training

29. Electronic Warfare Training Range (Integrated Air Defense System/Counter Integrate Air Defense System)

The development of this range would be addressed by United States Pacific Fleet actions separate from this environmental impact statement/overseas environmental impact statement process.

30. Landing Zones

Physical Description. Landing zones (LZs) are specified ground areas for landing aircraft to embark or disembark troops and cargo. LZ dimensions are dependent on aircraft type, size, and number. Various training manuals specify requirements for landing zones. LZ suitability factors include type of aircraft and zone category (tactical or prepared). For the purpose of this document, tactical LZs are planned for a vegetation maintained space measuring 380 ft × 380 ft (115 m × 115 m), suitable for two MV-22s to land and take off, spaced apart diagonally by at least 50 m (150 ft). Administrative or non-tactical LZs are denoted when required, such as one supporting a medical facility or logistics movements.

Intended Use. This training area would be used to support both unit and combined levels of training. The representative users of this training area would be aviation units capable of operating on short runways, such as helicopters, tilt-rotor aircraft, and various transport aircraft (i.e., MV-22), as depicted in Photo A-24.

Representative Weapon Systems. No weapons would be used in LZs, unless as part of another dedicated training area (i.e., an LZ internal to a BAX), but use of smoke grenades may be used to mark LZ for inbound aircraft.



Photo A-24. Marine MV-22 in a Landing Zone

31. Drop Zones

Physical Description. Training manuals define a drop zone (DZ) as a large, flat, cleared area for personnel and equipment to land following a parachute jump and specifies a 0.3 NM² (1 km²) maneuver area requirement for the conduct of tactical operations by an Army quartermaster airdrop equipment support company.

Some of the variables used to calculate safe DZ operations include type and number of delivery aircraft, delivery system, altitude, number of parachutist, cultural and natural environment, and weather conditions.

Intended Use. This training area would be used to support both unit and combined levels of training. The representative users of this training area would be airborne capable forces and those units that supply equipment via airborne delivery systems.

Representative Weapon Systems. No weapons would be used in DZs (Photo A-25).



Photo A-25. Airborne Forces Landing in a Drop Zone

32. Unmanned Aircraft System Operating Areas

Physical Description. Unmanned Aircraft Systems (UASs) generally have an airborne component and a ground control component. The Unmanned Air Vehicle operates in military-controlled special use airspace (SUA) where they are segregated from civilian aircraft. SUA is not necessarily

dedicated to UAS training only. SUA may be shared internally by units conducting coordinated training. An example of shared and coordinated use is employment of a Unmanned Air Vehicle for artillery spotting. The ground control component is usually sited at an airfield to facilitate UAS take off and landings; however, this may not be a requirement based on the specific UAS requirement. Some UASs are catapult launched and retrieved by airborne capture.

Intended Use. This training area would be used to support both unit and combined levels of training. The representative users of this training area would be units with medium sized UASs, such as Marine Corps RQ-7B Shadow (Photo A-26) that would perform reconnaissance training missions. Other users would be Group 3 UAS (typically operate at medium altitudes and from unimproved areas, may not require an improved runway) and Group 4 UAS (typically large size, medium to high altitude, normally require a runway for launch and recovery). A representative Group 3 UAS is the RQ-7B Shadow, and a representative Group 4 UAS is the MQ-8B Fire Scout.

Representative Weapon Systems. Weapons would be delivered from some UASs, based on systems modifications to current platforms, and its use in training scenarios would be similar to the CAS training scenario previously discussed.



Photo A-26. Shadow Launching From Catapult

33. Anti-Air Warfare Range

Physical Description. Training manuals specify an Anti-Air Warfare (AAW) Range as a 40 NM × 60 NM (70 km × 110 km) range with airspace that extends from the surface to 50,000 ft (15,250 m). The range must support supersonic operations. Some portion of the airspace should overlay land area with significant topography.

Intended Use. This range would be used to support both unit and combined levels of training. The representative users of this range would be AAW ships, aircraft, and ground units with an AAW mission.

Representative Weapon Systems. Weapons training on this range would use internal aircraft and ship-based air search radar systems, predominately occurring without actual weapon system firing. Onboard systems simulate and record missile fly out for training debrief purposes. However, decoy flares and chaff would be dispensed in the conduct of this type of training.

34. Terrain Flight Maneuver Area/Route (Rotary Wing/Tilt Rotor)

Physical Description. Specific Terrain Flight (TERF) Maneuver Area/Route (Rotary Wing/Tilt Rotor) requirement characteristics, such as length of a TERF training course, vary among the different types of helicopters and rotary-wing aircraft that perform TERF training. It is defined as flight over terrain below 200 ft (60 m). Marine Aircraft Wing Orders dealing with Standard Operating Procedures for Flight Operations articulate TERF policy for rotary wing and tilt-rotor wing aircraft. These Orders specify that TERF training shall be conducted in restricted airspace, Military Operating Areas, or published Instrument Routes, Visual Routes, Slow Routes, or other training areas so designated by the respective Wing Commanding General.

Intended Use. This training area would be used to support both unit and combined levels of training. The representative users of this training area would be helicopters and tilt-rotor wing aircraft (such as the MV-22 Osprey), transiting between takeoff and landing areas (Photo A-27).

Representative Weapon Systems. No weapons would be used on a TERF route.



Photo A-27. Marine MV-22 Osprey in Aircraft Mode

35. Forward Arming and Refueling Point

Physical Description. Forward Arming and Refueling Point (FARPs) allow aircraft to rearm/refuel close to a battle/training area to reduce response time. FARPs require no fixed facilities, as they are essential landing zones with a ground crew capable of refueling aircraft via a truck or a Helicopter Expedient Refueling System and an ordnance re-arming crew, if required. The refueling system is portable and can provide four refueling points, with a capacity of up to 18,000 gallons of fuel. No set area requirements are published, as this training area's dimensions are determined by the amount of ordnance and fuel required by the training unit. Refueling and the loading and downloading of ordnance would be conducted as separate and distinct activities. Aircraft land in a pre-staging area to de-arm any loaded ordnance, and then taxi to a separate, designated re-fueling point. When re-fueling is complete, the aircraft is re-positioned and safely oriented at an ordnance loading point, loaded, re-armed, and then departs the FARP. The separation distances involved between re-fueling and re-arming, as well as aircraft orientation, are based on the types of ordnance, such as rockets.

Intended Use. This training area would be used to support both unit and combined levels of training. The representative users of this training area would be aviation ground units supporting helicopter or tilt-rotor flight operations (Photo A-28).

Representative Weapon Systems. No weapons would be used at a FARP.



Photo A-28. Marine UH-1 Refueling and Rearming at FARP

36. Base Camp and Associated Facilities and Infrastructure

Physical Description. A Base Camp contains expeditionary facilities that support forces when deployed to a training area and provide troop housing, food services, electricity, water, sanitation, maintenance, military police, fire, emergency services, and storage facilities. The type and standard of construction would depend on the local environment and projected lifespan of the facilities.

Intended Use. This supporting facility would be used to support both unit and combined levels of training. Base Camp and Associated Facilities and Infrastructure would support units envisioned for unit level training as well as the administrative support personnel charged with maintaining ranges and training areas.

Representative Weapons Systems. None.

37. Range Control

Physical Description. Range Control buildings are designed for the direct support of range management. Such buildings can support a variety of functions for a firing range such as: range operations, administrative support, target storage and issue, equipment storage and maintenance, and ammunition breakdown and distribution, but not ammunition storage. This category includes buildings associated with range operations such as range operations centers and operations/storage buildings. Range control provides real time monitoring and control of on-range events and the range resources that support those events.

Intended Use. This facility would be used to support both unit and combined levels of training. This facility requires the ability to control local ranges and training areas as well as supply status and safety information to a potential central range facility with overall control of multiple training complexes.

Representative Weapons Systems. None.

38. Data Transfer Infrastructure

Physical Description. There is no specific manual that describes this requirement. Marine Corps Reference Publication 3-0C defines Information Exchange Requirements as a common attribute of Marine Corps Ranges. Information Exchange Requirements identify the training range information that is exchanged to support training range-related tasks. They also identify where the information exchange may occur between two or more training range information exchange nodes or between

training range information exchange nodes and non-training range information exchange nodes. They form the basis for ensuring the interoperability of a range infrastructure with other Services' ranges, systems, units, and forces in order to be able to operate together effectively. The Data Transfer Infrastructure should be capable of supporting the transfer of information between all of the following: the Officer Conducting Exercise, participants, Range Control, Range Scheduling, Range Tracking, Range Electronic Warfare, Range Targets, Range Data Collection and Processing Systems, Range Simulation, and Range Debriefing.

Intended Use. This capability would be used to support both unit and combined levels of training. Data Transfer Infrastructure is intended to link potential external ranges and training areas to a main facility.

Representative Weapons Systems. None.

39. Ammunition Storage

Physical Description. Ammunition storage magazines are used to safely store large quantities of live munitions and/or explosives for later distribution. Some examples of munitions generally stored in high explosive magazines include bombs, warheads, naval mines, and demolition charges. The type and amount of material that may be stored in any magazine is dependent on the safety quantity-distance requirements, permissible storage limits, and ammunition compatibility relationships. Sufficient ammunition storage would be required to support deployed unit training evolutions, based on projected training cycles and usage rates.

Intended Use. This facility would be used to support both unit and combined levels of training. Storage of ammunition intended for use by training units. No weapon systems such as rifles or artillery would be stored here and no training would occur within this facility.

Representative Weapons Systems. None.

40. Staging Areas (Administrative and Tactical)

Physical Description. A staging area (administrative) is a general locality established for the concentration of units, transient personnel, and equipment between movements over lines of communications (roads, airways, shipping lanes, etc.). The staging area would typically be located at or near an air or sea point of embarkation at the hub and would support movement to the main training area. Staging areas may include bio-security and/or quarantine facilities to prevent the inadvertent spread of biological contaminants between geographic areas. A staging area (tactical) is a location within certain ranges and training areas where the training audience would position themselves while conducting movement or maneuvers toward their training objectives.

Intended Use. This training area would be used to support both unit and combined levels of training. A staging area (administrative) would support the debarkation of training units and their eventual re-embarkation at the completion of training. This requirement may be suitable for merging with adequate waterfront piers, harbor, roads, and infrastructure. A staging area (tactical) would support unit training within certain ranges such as the IPBC or BAX.

Representative Weapons Systems. None.

41. Adequate Waterfront Piers, Harbor, and Infrastructure

To support envisioned training, locations require an ability to move personnel and cargo via such modes as a Joint High Speed Vessel and air cargo such as a KC-130. Potential modifications to, or development of, adequate infrastructure are provided in Chapters 2 (Tinian) and 3 (Pagan).

42. Adequate Roads, Utilities, and Infrastructure for Training Area (existing or possible construction)

To support envisioned training, locations require an ability to move personnel and equipment from ports and airports to training sites. Potential modifications to, or development of, roads, utilities, and infrastructure are provided in Chapters 2 (Tinian) and 3 (Pagan).

A.2 Anticipated Training Audience

The ranges and training areas described above are envisioned to support all PACOM Service Components. For the purposes of this document a Marine Corps battalion landing team (BLT) with external units that provide aviation and logistic support to the BLT, are the representative units that would be used as the design basis for development of training plans, as these units provide a wide spectrum of training needs (i.e., ground, amphibious, aviation, and logistics). The following provides a synopsis of the BLT organization and weapon systems:

- A Marine Corps BLT consists of an infantry battalion with such attachments as artillery, LAV, and AAV platoons, with just over 1,100 Marines and Sailors.
- An infantry battalion has three rifle companies, a weapons company, and a headquarters and service company. The rifle company represents the basic training entity for Tinian range use planning purposes. The Marine Corps rifle company Table of Organization requires 182 Marines and includes a headquarters section, three rifle platoons, and a weapons platoon, which includes a 60 mm mortar section, a machine gun section, and an assault section.

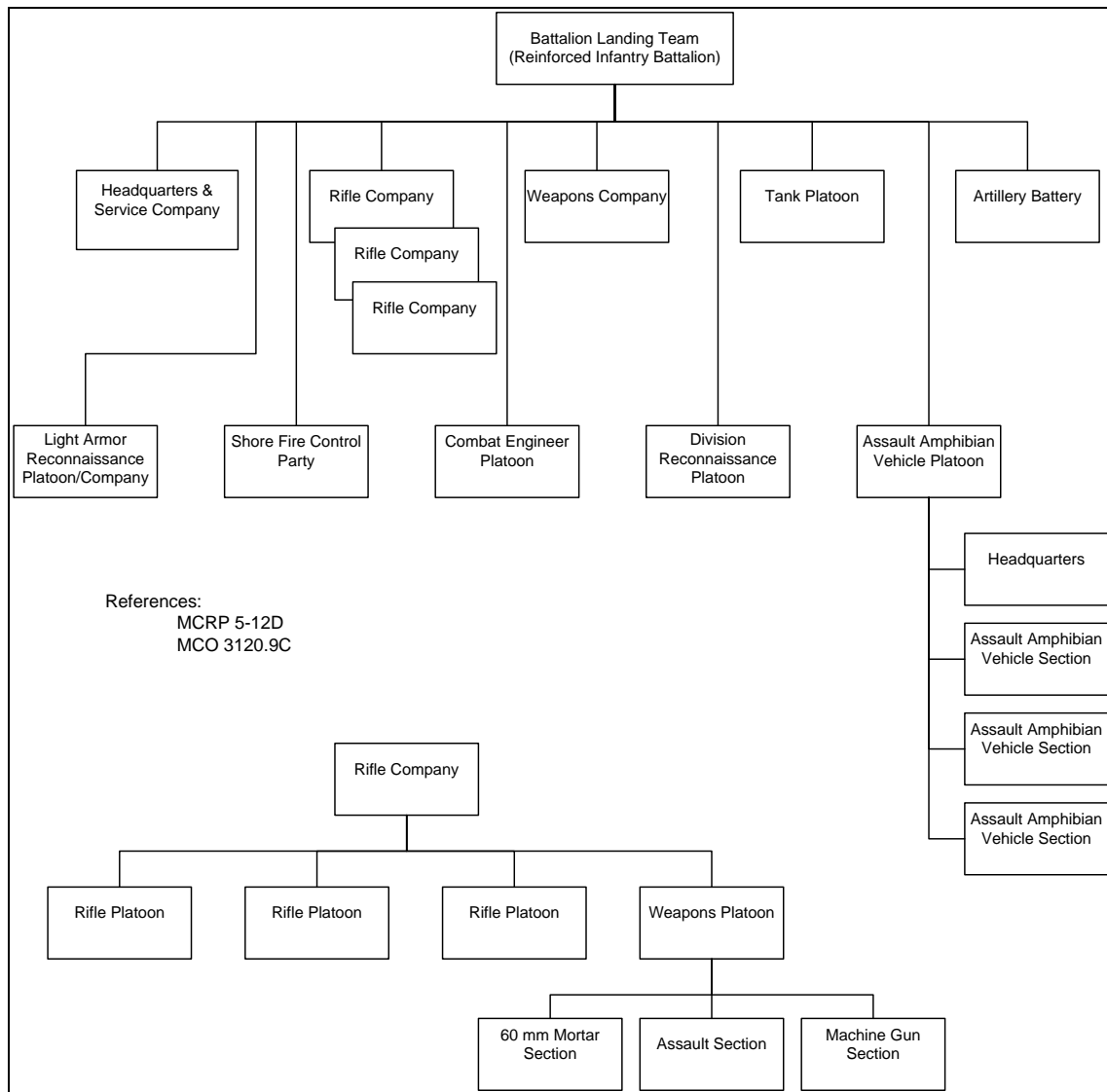


Figure A-16. Notional Battalion Landing Team Organization

- Within a Marine rifle company, each Marine carries a rifle, either the M16A2 or M4. These weapons are capable of attaching a M203 40 mm grenade launcher. Each squad within a rifle platoon has three M249 Squad Automatic Weapon light machine gunners. Within the weapons platoon, the mortar section employs the M224 60 mm mortar. The Machine Gun section employs the M240B 7.62 mm machine gun. The assault section employs the SMAW that fires rockets (total of six SMAWs).
- Within the infantry battalion’s weapons company of approximately 146 Marines, the mortar platoon has eight M252 81 mm mortars, the anti-armor platoon has Javelin and TOW weapon systems, and a heavy machine gun platoon equipped with M2 .50 caliber machine guns, MK-19 40 mm automatic grenade launchers, and the M240 machine guns.

- The Surveillance and Target Acquisition Platoon provide an ability to locate enemy forces at the far ranges of the battalion's operating area using special observation equipment. Sniper teams within the Surveillance and Target Acquisition employ long-range precise weapon systems.
- Attached units to the infantry battalion, making it a BLT, are an artillery battery, an LAR platoon, an AAV platoon, and a combat engineer platoon. A tank platoon consisting of four M1A1 Abrams tanks and a reconnaissance platoon may be attached to the BLT.
- An artillery battery's weapon systems consist of six M777A2 155 mm howitzers and six M327 120 mm towed rifle mortars. The battery consists of 155 Marines.
- An LAR platoon consists of four LAV-25 (LAV-25) amphibious reconnaissance vehicles and crews (Photo A-29). The main armament is the M242 chain gun, the secondary is two FN MAG 7.62 machine guns. The LAR platoon consists of 45 Marines. A variant of the LAV-25 supports an internal 81 mm mortar system. This LAV has opening top hatches and the mortar system on a rotating platform for rapid aiming.



Photo A-29. Marine LAV-25

- An AAV platoon consists of a platoon headquarters with one command and control AAV, one recovery AAV, and three assault amphibian sections of four AAVs each. The vehicles' main armament is the MK 19 automatic grenade launcher (40 mm). The secondary armament is the M2HB .50 caliber machine gun. The command and control and recovery AAV's main armament is the M240B. The AAV platoon consists of 64 Marines.
- A Combat Engineer Platoon consists of three engineer squads totaling 45 Marines.
- The Shore Fire Control Party provides fire support coordination between the BLT and naval gunfire ships such as adjusting naval fires ashore, and consists of approximately 10 Marines and sailors.

Other units combine with a BLT, such as a Marine Corps composite squadron, Marine Corps logistics support units, and a command element, to form a basic Marine Air-Ground Task Force. These following units are planned to support BLT training, and would also use the ranges and training areas for their own training purposes:

- A composite squadron consists of a tilt-rotor squadron of 12 MV-22, a heavy lift detachment of 4 CH-53, and a light attack detachment of 9 H-1 aircraft, and ground support units providing aviation logistics, air command and control, and ground refueling. While these units would be based on Guam, portions would deploy to Tinian and Pagan in support of aviation operations linked to ground unit training. Aviation support of Tinian and Pagan ground unit training would be primarily in the form of close air support and air transport of personnel and equipment. Ground refueling and ordnance rearming would be accomplished by aviation ground units manning planned aviation ground support facilities at Tinian International Airport (also called West Field), an expeditionary FARP location on Tinian North Field, and at Pagan's air strip. Aviation units would also train on some of the ground-focused ranges and training areas, such as the convoy live-fire course, to accomplish their sustainment training. For the purpose of this document, a composite squadron consists of approximately 440 Marines.
- A logistics support element would supply the maintenance, transportation, engineering, Explosive Ordnance Disposal, bulk fuel, and amphibious landing support not resident in previously detailed units. As with the composite squadron, various units within the logistics support element would deploy to Tinian and Pagan in support of ground unit training, as well as to accomplish their own sustainment training. Each Marine carries a rifle, either the M16A2 or M4. For the purpose of this document, a logistics support element consists of approximately 1,250 Marines.

This page is intentionally left blank.

APPENDIX B
TINIAN UNIT LEVEL TRAINING CYCLE

This page is intentionally left blank.

Table B: Tinian Unit Level Training Cycle – Unconstrained Use Planning

Notional Training Cycle Depictions for Planning Purposes Only

A Company		TD 1	TD 2	TD 3	TD 4	TD 5	TD 6	TD 7	TD 8	TD 9	TD 10	TD 11	TD 12	TD 13	TD 14				
1st Platoon	RS/Fam	BZO/Pistol	MPTR Grenade H	MAUDR Grenade L	UAC	LFCC	LFCC	IPBC Day	IPBC Day/Night	BAX N Day	BAX N Day/Night	BAX S Day	BAX S Day/Night	Flex Day	Amphib	Gear Pack	Depart		
2nd Platoon	RS/Fam	BZO/Pistol	MPTR Grenade H	MAUDR Grenade L	UAC	LFCC	LFCC	IPBC Day	IPBC Day/Night	BAX N Day	BAX N Day/Night	BAX S Day	BAX S Day/Night	Flex Day	Amphib	Gear Pack	Depart		
3rd Platoon	RS/Fam	BZO/Pistol	MPTR Grenade H	MAUDR Grenade L	UAC	LFCC	LFCC	IPBC Day	IPBC Day/Night	BAX N Day	BAX N Day/Night	BAX S Day	BAX S Day/Night	Flex Day	Amphib	Gear Pack	Depart		
Machine Gun Section	RS/Fam	BZO/Pistol	MPRC	MPRC	UAC	LFCC	LFCC	IPBC Day	IPBC Day/Night	BAX N Day	BAX N Day/Night	BAX S Day	BAX S Day/Night	Flex Day	Amphib	Gear Pack	Depart		
SMAW Section	RS/Fam	BZO/Pistol	LAW/HEAT	LAW/HEAT	UAC	LFCC	LFCC	IPBC Day	IPBC Day/Night	BAX N Day	BAX N Day/Night	BAX S Day	BAX S Day/Night	Flex Day	Amphib	Gear Pack	Depart		
60 mm Mortar Section	RS/Fam	BZO/Pistol	MP 1-5	MP 1-5	UAC	LFCC	LFCC	IPBC Day	IPBC Day/Night	BAX N Day	BAX N Day/Night	BAX S Day	BAX S Day/Night	Flex Day	Amphib	Gear Pack	Depart		
Weapons Company																			
Heavy Machine Gun Section	RS/Fam	MPRC	MPRC	MPTR	MPRC	LFCC	LFCC	IPBC	IPBC	BAX	BAX	BAX	BAX	Flex/Main	Flex/Main	Flex/Main	Flex/Main		
Antitank Weapons Section	RS/Fam	MPRC	MPRC	MPTR	MPRC	LFCC	LFCC	IPBC	IPBC	BAX	BAX	BAX	BAX	Flex/Main	Flex/Main	Flex/Main	Flex/Main		
81 mm Mortar Section	RS/Fam	Group A	Group A	Group B/C, FiSTEX, CASEX	Group B/C, FiSTEX, CASEX	LFCC	LFCC	Group C	Group C	Group C	Group C	Group C	Group C	Flex/Main	Flex/Main	Flex/Main	Group B/C		
Surveillance and Target Acquisition Section	RS/Fam	MPTR	MAUDR	MAUDR	MPRC	Flex	LFCC	IPBC	IPBC	BAX	BAX	BAX	BAX	Flex/Main	Flex/Main	Flex/Main	Flex/Main		
Headquarters & Support Co	RS/Fam	MPTR			MPTR									UAC			MPTR (A)		
Artillery Battery																			
1st Platoon	RS/Fam	Group C	Group B	Group A	Group A/B/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Flex/Main	Flex/Main	Flex/Main	Group A/B/C
2nd Platoon	RS/Fam	Group C	Group B	Group A	Group A/B/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Flex/Main	Flex/Main	Flex/Main	Group A/B/C
3rd Platoon	RS/Fam	Group C	Group B	Group A	Group A/B/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Group A/C	Flex/Main	Flex/Main	Flex/Main	Group A/B/C
LAR Platoon	RS/Fam	MPRC	MPRC	MPTR	UAC/MPRC	LFCC	LFCC	IPBC	IPBC	BAX	BAX	BAX	BAX	Flex/Main	Flex/Main	Flex/Main	Flex/Main		
AAV Platoon	RS/Fam	MPRC/Track	MPRC/Track	Amphib/Track	UAC/MPRC/Track	LFCC	LFCC	IPBC	IPBC	BAX	BAX	BAX	BAX	Flex/Main	Amphib/Track	Flex/Main	Flex/Main		
Engineering Platoon	RS/Fam	Demo	MPTR	Demo	MPTR	LFCC/Flex	LFCC/Flex	IPBC	IPBC	BAX	BAX	BAX	BAX	Flex/Main	Flex/Main	Demo	Flex/Main		
Reconnaissance Platoon	RS/Fam	BZO/Pistol	MPTR	MPTR	LFCC	LFCC	IPBC Day	IPBC	IPBC	Other	Other	Other	Other	Other	Other	Gear Pack	Depart		
Logistics Combat Element	RS/Fam			BZO/Pistol	MPTR	MAUDR	UAC	LFCC	LFCC					IPBC	BAX	Amphib			

Abbreviations and Acronyms

<i>Amphib</i>	<i>Amphibious beach training (#23)</i>	<i>LAW</i>	<i>Light Anti-Armor Weapon (#11)</i>
<i>BAX</i>	<i>Battle Area Complex (#18) (N = North, S = South)</i>	<i>LFCC</i>	<i>Live-fire Convoy Course (#21)</i>
<i>BZO</i>	<i>Boresight Zero Range 100 yard (#13)</i>	<i>Main</i>	<i>training day allocated for various administrative purposes</i>
<i>CASEX</i>	<i>Close Air Support Exercise (#28)</i>	<i>MP</i>	<i>Mortar position (#6)</i>
<i>Demo</i>	<i>Demolition</i>	<i>MPRC</i>	<i>Multi-Purpose Range Complex (#8/10/16)</i>
<i>FAM</i>	<i>Familiarization</i>	<i>MPTR</i>	<i>Multi-Purpose Training Range (#15) (KD 1000 and KD BZO)</i>
<i>FiSTEX</i>	<i>Fire Support Team Exercise</i>	<i>MAUDR</i>	<i>Multipurpose Automated Unknown Distance Range/Field Fire Range (#3/7)</i>
<i>Flex</i>	<i>flexible training day</i>	<i>Pistol</i>	<i>Combat Pistol Range (Automated) (#2)</i>
<i>Grenade L</i>	<i>Grenade Launcher Range (#12)</i>	<i>PCS</i>	<i>Permanent Change of Station</i>
<i>Grenade H</i>	<i>Hand Grenade Range (#4)</i>	<i>RS</i>	<i>Range Safety and Environmental briefing</i>
<i>Group</i>	<i>Artillery/mortar position (155/120 mm)(#5)</i>	<i>SMAW</i>	<i>Shoulder-launched Multipurpose Assault Weapon</i>
<i>HEAT</i>	<i>High Explosive Anti-Tank Inert (#11)</i>	<i>TD</i>	<i>training day</i>
<i>IPBC</i>	<i>Infantry Platoon Battle Course (#14)</i>	<i>Track</i>	<i>Tracked Vehicle Driver's Course (#22)</i>
<i>LAR</i>	<i>Light Armored Reconnaissance</i>	<i>UAC</i>	<i>Urban Assault Course (#20)</i>

This page is intentionally left blank.

APPENDIX C
PAGAN COMBINED LEVEL TRAINING CYCLE

This page is intentionally left blank.

Table C: Pagan Combined Level Training Cycle – Unconstrained Use Planning

Notional Training Cycle Depictions for Planning Purposes Only

Amphibious Task Force Training with Follow-On - 2 Weeks

	<i>TD 1</i>	<i>TD 2</i>	<i>TD 3</i>	<i>TD 4</i>	<i>TD 5</i>	<i>TD 6</i>	<i>TD 7</i>	<i>TD 8</i>	<i>TD 9</i>	<i>TD 10</i>	<i>TD 11</i>	<i>TD 12</i>	<i>TD 13</i>	<i>TD 14</i>
Arrive	Recon and prepare beaches	Conduct ship-to-shore movement, assault beaches	Move from beach areas to follow-on land objectives	Company Level Training (Offensive, Patrolling, Defensive); Individual Weapons Training (TOW, Javelin, MK-19, LAW/AT-4, etc.), LAR Shoot.						Combined Arms Exercise		Prep Withdrawal	Depart	

Company Level Training Cycle - 2 Weeks

	<i>TD 1</i>	<i>TD 2</i>	<i>TD 3</i>	<i>TD 4</i>	<i>TD 5</i>	<i>TD 6</i>	<i>TD 7</i>	<i>TD 8</i>	<i>TD 9</i>	<i>TD 10</i>	<i>TD 11</i>	<i>TD 12</i>	<i>TD 13</i>	<i>TD 14</i>
Arrive via air	Arrive	Offensive Operations			Patrolling Operations			Defensive Operations			Combined Arms Exercise		Company Attack	Depart
Arrive via ship	Helo Insert	Offensive Operations			Patrolling Operations			Defensive Operations			Combined Arms Exercise		Company Attack	Depart

Abbreviations and Acronyms

<i>AT</i>	<i>Anti-Tank</i>
<i>Helo</i>	<i>Helicopter</i>
<i>LAR</i>	<i>Light Armored Reconnaissance unit</i>
<i>LAW</i>	<i>Light Anti-tank Weapon</i>
<i>Recon</i>	<i>Reconnaissance</i>
<i>TD</i>	<i>Training Day</i>
<i>TOW</i>	<i>Tube launched Optically tracked Wire command link guided</i>

This page is intentionally left blank.