APPENDIX A

TRAINING REQUIREMENTS AND SCENARIOS AT MAKUA MILITARY RESERVATION (MMR)

Training at MMR The Army trains at MMR primarily within the Pilila‘au Range Complex Company Combined-Arms Assault Course (CCAAC), which is a 457-acre (185-hectare) training course in the southwestern portion of MMR. The CCAAC is used for both live-fire and non live-fire maneuver training exercises. Vegetation is manicured in the approach corridor and is densely matted with nonnative grasses in other areas. Company Combined Arms Live Fire Exercise (CALFEX) training at MMR uses approximately 1,136 acres (460 hectares) of land, which includes the CCAAC, land north of the CCAAC, and acreage outside the firebreak roads for establishing Surface DangerZones (SDZ). The training area north of the CCAAC, and inside the north firebreak road, includes areas used during training for parking, bivouac (encampment), ammunition storage, and staging. Artillery firing points are located within and outside of the CCAAC, but all ammunition is fired at targets within the CCAAC. The Army does not conduct training exercises on the nearby Makua Beach. The north and south firebreak roads border the training area; the south firebreak road borders the CCAAC, and the north firebreak road borders the northern portion of the training area. The Mokule‘ia Forest Reserve, Pahole Natural Area Reserve, and the Makua Kea‘au Forest Reserve border the reservation’s north, south, and southeastern boundaries. Training exercises are staged throughout the CCAAC in eight areas that are referred to as objectives. Five of the eight objectives—Deer, Fox, Coyote, Wolf, and Badger—are used for maneuver training at the CCAAC. Units are authorized to enter Objective Badger and set up fire support when attacking the final objective. Objective Deeds is used for support-by fire and long-range (sniper) shooting. While Objectives Elk and Buffalo are closed for maneuver training due to the proximity of cultural resources, Objective Buffalo is used as a firing point. In addition to the established objectives, the Army can also create new objectives for training exercises. Any new objectives used by the Army would be located within the same corridor as the existing objectives in the CCAAC.

Training at MMR would be conducted primarily on the 812 acres (329 hectares) situated inside the north and south firebreak roads. The CCAAC would be used for live-fire maneuver training exercises and non live-fire maneuver exercises. The training area north of the CCAAC would be used for bivouac areas (described in the paragraphs below), support for CALFEX training, support for squad, section, and platoon maneuver training, artillery firing points, sniper training, and other non-maneuver training. Areas outside the firebreak roads would be used to establish the required SDZs. Support activities would include conducting reconnaissance of activities at the CCAAC and approach of objectives on the CCAAC by additional troops.

Artillery firing points are those locations considered optimal for firing weapons into the ordnance impact area. They are used for weapons such as 105mm and 155 mm rounds.

Bivouac training consists of setting up camp for rest, resupply, refit, maintenance, and support. Bivouac sites vary, depending on unit size and mission. Depending on unit size, bivouac sites can contain areas for vehicle and weapons maintenance and parking, general supply, munitions supply, medical service, helicopter landing zones, and vehicle off-loading. A bivouac site consists of a series of tents and temporary structures covered with camouflage nets housing the unit. Bivouac is normally done in level or gently rolling areas that provide vehicle and aircraft access. Open fires are not allowed during bivouac. Munitions used in bivouac typically consist of grenade and artillery simulators and blank ammunition. These weapons are used to defend against an attack.

Live-fire training follows the Army standard training methodology in Army Field Manual 7-10. The individual Soldier qualifies with an assigned weapon and then progresses through squad-, platoon-, and company-level live-fire exercises. Live-fire training entails an individual Soldier, a crew of a weapon system, or a collective unit firing at targets from a range facility. Live-fire exercises may incorporate free maneuver within the established safety zones of a range. The requirement for live-fire training varies depending on individual and unit mission, weapons assigned, and ammunition available. Each Soldier must demonstrate proficiency on the assigned weapon system once or twice per year. Unit commanders must ensure that live-fire training meets readiness standards. Weapons proficiency, or qualification, is scored and recorded for each individual or crew and is reported collectively by unit. At MMR, live-fire training includes basic weapons marksmanship ranges, grenade training, urban/village assault and entrenched enemy training, small unit live-fire and maneuvers, artillery and mortar firing, infantry demolition training, and use of mines and Bangalore torpedoes (10-foot [3-meter] tubes packed with explosives).

Planning Live Fire Training Surface danger zones are designed for each military range and training event, in accordance with Army Regulation 385-64, *Ammunition and Explosives Safety Standards.* SDZs ensure a proper buffer zone to the range and ordnance impact area and prevent accidental injury and exposure to live weapons outside the designated training area. Prior to training, specific firing points (i.e., firing locations) are designated for the firing of most munitions, including claymore mines and artillery. The company provides the range office with the training scenario in accordance with the US Army-Hawai‘i and 25th ID Regulation 210-6, *Installation Ranges and Training Areas* and a range -specific MMR standard operating procedure (SOP). The MMR Range Office builds an SDZ to fit the training scenario and gives the unit a safety card. The safety card specifies the right and left firing limits for mortars as well as the minimum and maximum range for firing to ensure that the mortar falls within the ordnance impact area. CALFEXs conducted at MMR do not include aerial bombardment (dropping bombs from aircraft), use of tracked armored vehicles, or training on Makua Beach but would include the delivery of direct fire aerial munitions from Army helicopters such as .50 Cal machineguns, and 7.62mm machineguns.

Vehicles and aircraft that would be used during training include the following:

- High Mobility Multi-Purpose Wheeled Vehicles (HMMWVs), used on existing roads (approximately six vehicles);
- 2.5-ton or 5-ton cargo trucks (two);
-UH-60 Blackhawk helicopters (up to six);
-OH-58D Kiowa Warrior helicopters (up to four);
- CH-47 Chinook helicopters (two);
-Strykers (up to five);
- Any wheeled vehicle in the Army inventory; and
- Unmanned aerial vehicles (UAVs).

The Stryker is a wheeled vehicle, with a 350-horsepower engine and a weight of 19 to 20 tons. Up to five Strykers would operate primarily from stationary positions on existing roads, trails, and paved areas at MMR. There would be no off-road use of Strykers at MMR. Stationary Strykers would be used to fire MK 19 (40mm), 7.62mm, and .50-caliber machine guns and 120mm mortars from existing trails towards range objectives in the CCAAC and ordnance impact area. The Stryker incorporates an advanced targeting system that gives its weapons improved accuracy and reduces the potential for off-target rounds. Strykers also would be used as command and control vehicles. SBCT forces would conduct six to nine company-level CALFEXs per year.

Although Marine Corps units have used tracked vehicles as transportation to MMR in the past, no tracked combat vehicles would be used in the training area. In the past, the Army, Marine Corps, Navy, Coast Guard, Army Reserve, and Hawai‘i Army National Guard have trained at MMR. It would also include Soldiers assigned to the 8th Theater Support Command. It is likely that forces from other countries hosted by the 25th ID as part of the US Pacific Command Theater Security Cooperation Plan would use these training resources from time to time. These military units would be limited to a company-level CALFEX as the maximum level of training and would be required to adhere to the same MMR range-specific training constraints as the 25th ID and . Additionally, these units would adhere to 25th ID and policies regarding transport of ammunition to and from these ranges.

SPECIFIC TYPES OF TRAINING

1. Intelligence Scenarios - Military Intelligence (MI) is interested in finding out what an enemy force is doing - essentially who, what, when, where, and why. To this end over the years the MI proponents have developed several ways to obtain this information. At MMR, the most likely scenario to be used by Intelligence personnel is the employment of Surveillance Radar or other electronic intelligence gathering devices to monitor the status of the "enemy" - a bank of electrically operated targets. The radar section would set up on a Hill, where the Radar Dish could "see" the enemy. Once the targets were lifted and visible, the radar section would use radios to communicate the fact that the enemy were approaching to the operational unit charged with defending the area. Another use might be for the radar section to guard key avenues of approach into an area, so that the unit charged with keeping an area secure would not have to post human guards there. If any intruders were present, the radar section would again alert

the operational unit. Unmanned sensors and manned observation posts are used to collect information on the movement and disposition of enemy forces - the electrically operated targets inside MMR with reports provided to the training unit by either voice or digital transmission. Unmanned Aerial Vehicles (UAVs) are also used to gather enemy situational and battlefield awareness and site enemy locations via remote safe operations.

a. Unmanned Aerial Surveillance (UAS) Training. UAVs are remotely piloted or self-piloted aircraft that can carry cameras, sensors, or communications equipment. They greatly improve the timeliness of battlefield information while reducing the risk of capture or loss of manned reconnaissance assets. Army UAVs enable the combat commander, from platoon to Joint Task Force, with a means to conduct intelligence, surveillance, and reconnaissance (ISR), battle damage assessment, targeting, persistent stare for continued operations, convoy protection and anti-ambush (C-IED) training. UAVs are digitally linked and provide real-time information to the commander on the ground. UAV systems support land warfare operations across the spectrum of conflict. Infantry, Cavalry, Scout, Intelligence, Aviation, Artillery, and even medical units benefit from the availability of UAVs. Current experience has demonstrated the value of employing UAVs down to lower tactical levels. Tactical UAVs are now organic in many of our Army combat formations. Integrating UAVs into training exercises is an essential element of realistic training and readiness.

b. Unmanned aerial vehicle (UAV). The UAV can be likened to a large radio controlled model airplane. The UAV would allow tactical commanders a view into heavily protected battle space that could not be penetrated by other intelligence assets or that presents a high risk to piloted aircraft. It is a remote-controlled, gas-powered vehicle. The UAVs would take off from MMR or would be flown in from Wheeler Army Airfield (WAAF) before a Training Exercise to obtain pictures for reconnaissance and photo observation. The UAV would be used either during training exercises or independently for UAV crew training and testing.

2. Maneuver Scenarios - This is the largest type of user; indeed this category accounts for most of the units that come to MMR, for it is a maneuver live fire facility. Infantry, Aviation, Military Police, and other Combat Support/Combat Service Support (CS/CSS) units fall into this category. The most frequent users are Infantry. Infantry can operate at squad (9 men), platoon (27-33 men), company (100 men), or battalion (500 men) at MMR. Typically, Infantry units follow a progressive training regimen, building events on others as they get better at the easier ones. To illustrate these missions, they are listed below. All of these missions may be performed at platoon and company level, though at MMR they are usually done by companies and battalions, for the objectives are very large and require a large number of men to attack and overwhelm them.

a. Infantry Company/ Platoon/ Squad Attack. Training exercises are staged throughout MMR in eight areas that are referred to as objectives. Five of the eight objectives—Deer, Fox, Coyote, Wolf, and Badger—are used for maneuver training at the CCAAC. Units are authorized to enter Objective Badger and set up fire support

when attacking the final objective. Objective Deeds is used for support-by-fire and long-range (sniper) shooting. Objectives Elk and Buffalo are closed for maneuver training due to the proximity of cultural resources; however, Objective Buffalo is used as a firing point. In addition to the established objectives, the Army can also create new objectives for training exercises. Any new objectives used by the Army would be located within the same corridor as the existing objectives in the CCAAC.

The most common CALFEX is attacking a strong point, which can be anything from forces defending a built-up area to forces defending from a trench line. The following paragraphs describe a five-day course of events, during which one company uses the training areas at MMR. While this exercise is generally conducted over a five-day period, the Army may modify or compress the schedule of a CALFEX. During a CALFEX event, the infantry company is augmented at a minimum by a combat engineer squad and is supported by at least battalion mortars and direct support artillery. When available, attack and assault lift aviation, primarily helicopters, participate in the exercise.

CALFEXs are conducted at MMR are at the platoon or company-level. CALFEXs are defined by the integration of different arms, such as infantry, aviation, artillery, engineers, and others, to achieve a combined effect on the enemy greater than if each weapon system were used individually. A typical company-level CALFEX would include a maneuver ground force of dismounts with small arms weapons (M4, M16A1/A2, M249 SAW, M240B machine gun, M203 grenade launcher). Weapons used by other military units training at MMR would be substantially similar to those used by the Army. Units conducting a typical CALFEX would be supported by indirect fire and aviation units. Indirect fire support would include the company and battalion mortars (two 60mm mortars, two 81mm mortars, and the120mm mortar), as well as the platoon 105mm artillery (three howitzers); 155mm howitzers would be used interchangeably with the 105mm weapons. Aviation units would provide aerial fire support using 50 cal machinegun, 7.62mm machinegun s from OH-58Ds(Kiowas) , UH-60s (Blackhawks) , or CH-47s (Chinooks) . In the case of the USMC using AH-1Ws (Cobras) it would include 20mm Cannon as well.

Planning for the Exercise

In accordance with the 25th ID and Regulation 210-6, *Installation Ranges and Training Areas,* planning a typical training exercise at MMR begins at least eight weeks prior to the event. The unit commander provides a detailed written plan of the exercise scenario, which includes the following:

- A maneuver and fire support plan;
- Weapons, ammunition, and targets to be used;
- Control measures and means of communication;
- Limits of advance; and
- SDZs for all weapons systems.

The unit commander also provides a risk assessment for the exercise. The risk assessment provides analysis of safety threats to Soldiers in combat situations. The unit commander's superiors (the battalion and brigade commander—a lieutenant colonel and colonel, respectively) and the division commander's range safety supervisors and range officer must approve the exercise plan.

Movement to Makua Military Reservation

Moving an infantry company to MMR typically involves a maximum of 150 Soldiers and supporting elements, which depart Schofield Barracks Military Reservation (SBMR) with up to 30 military vehicles or in multiple serials of lift helicopters. Aviation units fly out in helicopters at scheduled times prescribed in the training scenario While a maximum of one company conducts a single training exercise at MMR, as many as three companies (one battalion) may be transported to MMR at one time. Movements are scheduled to avoid peak commute times and school transit hours. Travel may be in convoys or individual vehicles dispersed throughout the traffic flow. The bulk of the unit moves down public highways (including Interstate Highways H-1 and H-2) from SBMR and then up Farrington Highway, with participating artillery and engineering units following the same route. The unit ammunition section from the battalion support platoon draws ammunition to be used for the exercise at the ammunition storage point at Wheeler Army Airfield (WAAF), at the naval magazines at Lualualei, or at West Loch, where ammunition types for military units in Hawai‘i are stored in specially designed facilities. Section leaders sign for the exact quantities of ammunition issued, and any unused ammunition is accounted for and returned at the end of the exercise.

When possible (i.e., weather permitting), ammunition (and even personnel) are flown into MMR to avoid transporting them through the local community. The Army airlifted all ammunition used for CALFEX training from 2001 to 2003.Vehicles used to transport ammunition must pass a rigorous safety inspection before they are allowed to enter any ammunition storage facility. All personnel involved in transporting ammunition are trained in accordance with Army, federal, and state standards and are certified to transport hazardous materials. Artillery and mortar ammunition are packed separately from ignition fuses to preclude accidental detonations. In addition, all ammunition is stored in specialized packing materials designed to withstand an impact 15 times greater than the force of gravity, further minimizing the risk of accidental explosion. All vehicles used in moving ammunition are powered by diesel fuel or JP-8 (kerosene), fuels that are much less volatile than gasoline.

If ground transport of ammunition is required, the ammunition is transported with a front and back escort at a maximum speed of 45 miles (72 kilometers) per hour, in accordance with all State of Hawai‘i Department of Transportation (HI DOT) rules and regulations for the transport of explosive materials. Vehicles transporting explosives, grenades, mines, artillery rounds, anti-tank rounds, and mortar rounds avoid using Farrington Highway from 5:00 AM to 7:00 PM. Vehicles transporting other munitions and ordnance on Farrington Highway avoid using the highway during peak traffic hours and at times when children are traveling to and from school (5:30 AM to 8:30 AM

and12:30 PM to 6:30 PM). These restrictions combine to substantially reduce the risk of vehicle accidents involving ammunition transport vehicles and public exposure to potential accidental explosion of munitions should a vehicle accident ever occur.

Preparation and Dry Fire

Training units arrive at MMR and bivouac in designated areas. Their ammunition is stored at the ammunition supply points in the vicinity of the exercise and is guarded throughout the exercise. Soldiers subsist on packaged meals-ready-to-eat or on delivered hot foods, and they use portable toilets. Planning and instruction generally lasts two days. Unit personnel practice their exercise without live-fire and conduct other tasks associated with preparing for the actual live-fire exercise. Popup targets and blast simulators are sometimes placed in the training area to replicate enemy contact. Unit leaders (Captains, Lieutenants, and Sergeants) receive briefings from the US Army Garrison, Hawai'i (USAG-HI), Directorate of Plans, Training, Mobilization, and Security (DPTMS), Range Division and from USAG-HI Directorate of Public Works (DPW) Environmental Division staff on the locations of threatened and endangered species and habitat, locations of known cultural resource sites, fire hazards, and fire prevention measures and procedures. Where necessary, the scenario is modified to reduce the risk of fire and other damage to the environment. The unit leaders brief every Soldier in the unit on the importance of protecting endangered species and habitat and cultural sites and of preventing wildfires.

Twenty Soldiers from the unit are designated as firefighters and remain on standby during CALFEXs, and in the event of a fire they assist the five permanent professionally trained firefighters who are on-site during all CALFEXs. A helicopter dedicated to firefighting is always present on the range during live-fire exercises, with an additional helicopter at WAAF available for backup and additional support. Safeguards contained within the Integrated Wildland Fire Management Plan IWFMP are designed to reduce the likelihood of fires. Fires contained within the firebreak road that circumscribes the actual training site do not imperil any threatened or endangered species and habitat. Smoking may be permitted only in the administrative bivouac site or other designated areas. In the event of a fire at any location, training is stopped immediately and the unit takes all appropriate actions to put out the fire.

Live-Fire Exercise

On days three and four, unit personnel conduct their actual training exercise. On day three, only blank ammunition is fired, and live mortars and artillery are aligned, calibrated, and fired. Training exercises conducted on both days typically last approximately three hours and begin at dawn. The company generally moves with three platoons of approximately 30 to 40 Soldiers (or nine squads of five to ten Soldiers, plus personnel operating machine guns and support personnel) toward the objectives. Soldiers in the lead platoon fire their rifles and machine guns at the objective or target. The mortar section fires 60mm mortars at the objective, while the lead platoon moves toward it. When the lead platoon makes contact with the objective, the platoon leader

moves squads to a position of advantage and, by spreading out Soldiers to ensure they can hit every target, gains fire superiority over the “enemy.” In an operation called fire and maneuver, the platoon leader advances the lead squad, while the squad behind observes the area and provides fire cover for other maneuvering units. The platoon continues to fire and maneuver across the objective until there are no more targets to shoot. The platoon leader consolidates the troops, reorganizes by determining the number of Soldiers wounded and the amount of ammunition remaining, and organizes the forces to defend the land just taken. The unit is on the first objective, with another objective in front of it. The company commander may elect to continue moving the first platoon forward or to hold the lead platoon and bring another platoon forward.

Most exercises present advancing platoons with the problem of trench lines, mine fields (simulated), and concertina-wire obstacles. Confronted with these situations, platoons must practice the skills required to enter and clear a trench line, to conduct a company deliberate attack, to conduct a platoon and squad attack, to knock out a bunker, and to conduct an initial breach of a mine field/obstacle. Some simulated minefields would be cleared with the aid of engineers attached to the company. Bangalore torpedoes may be used to blast routes through such locations. A simulated minefield and a concertina wire obstacle usually protect the bunker entrance. The company commander would order the engineer squad to reduce the obstacle with a Bangalore torpedo designed to focus the blast in a cutting line that explodes mines, cuts wire, and allows Soldiers to walk over the site. Several Bangalore torpedoes may be combined to clear a wider path. After the minefield and wire obstacle have been cleared, the Soldiers run through the breach to the trench complex. Two Soldiers roll into the trench and fire down its length to engage any enemy present. The squads and platoon follow, and as each lead Soldier comes to a turn in the trench line, other Soldiers provide shield. The unit Soldiers continue down the trench to the first bunker or room, where four-person fire teams clear the bunkers with fragmentation hand grenades. The lead Soldier guards the opposite approach, and the remaining three Soldiers position themselves close to the door in a “stack.” The lead Soldier tosses a grenade in, and the three Soldiers rush the room following detonation, pointing their rifles at different prearranged locations in the bunker, covering any “enemy” remaining. Soldiers continue clearing the trench in this manner. Upon seizing their objectives, units must prepare for any counterattack. A company commander may direct the emplacement of claymore mines (small, command-detonated antipersonnel mines) in front of the unit. If artillery is employed in the scenario, the company commander may distribute its fire in advance of an attack or direct its fire toward a target to suppress counterattack. The commander may also direct the company’s anti-armor section to position its missile launchers to prevent any enemy tanks from overrunning the just-taken objective (e.g., the trench line). Once the enemy counterattacks and is repelled by the company, the exercise is over.

Cleanup

On day five and sometimes at the end of day four, units remove any target equipment they may have provided, gather brass casings from spent rounds, remove

litter, and otherwise make every effort to restore the range to its condition prior to their use. Explosive ordnance disposal (EOD) specialists destroy all identified (UXO). Ordnance normally is destroyed where it is found, whether it resulted from the training being conducted or from earlier exercises; no known unexploded rounds are left in place at the conclusion of a training exercise. These procedures ensure that training would not increase the amount of UXO on the site and may reduce it, if possible.

Sometimes, due to unexpected occurrences, the EOD specialists are not available to dispose of UXO immediately after a training exercise. In this case, UXO would be disposed of once the specialists are available and prior to use of the area for new training. Excess propellant charges from mortars and artillery is burned in a burn pan. Any ash generated from powder burn operations is removed from the burn pan and collected in a 55-gallon (208-liter) drum. Unexpended ammunition is repackaged and returned to the ammunition supply point from which it was drawn. When the cleanup is complete, the units load their equipment on their vehicles and return to SBMR via the same route described above, again avoiding peak traffic hours to the extent possible. Army personnel also conduct surveys of archaeological/cultural resources after the clean-up has been completed to determine if they have been disturbed.

b. **Convoy Live-Fire Training (CLFX)**

Convoy LFXs have become an increasingly important pre-deployment training requirement based on lessons learned in Iraq and Afghanistan. Live-fire convoy training provides realistic training for convoy operations and an opportunity to employ direct and limited point and area fires in support of tactical movements. Convoy live-fire training is designed to train units to react to enemy contact during tactical movement. This training is required for all types of units including combat arms, combat support (CS) and combat service support (CSS). Units in a formation must be able to react to direct fire, indirect fire, and Improvised Explosive Devices (IEDs) attacks on convoys. IEDs are the enemy's preferred asymmetric weapon against U.S. forces while deployed in a hostile environment.

Company-level training that allows commanders to train adequately and evaluate their units while integrating and controlling combined arms assets in a realistic training environment is critical to success on the modern battlefield. Collective live-fire training provides this critical training. Threats against a moving convoy may include, but are not limited to, the following:

1) Blocked Ambush (Daytime or Nighttime) with direct and indirect fires.
2) Unblocked Ambush (Daytime or Nighttime) with direct and indirect fires.
3) Snipers
4) Mines (any type)
5) IEDs/VBIEDs: Homemade explosive devices (can be found any time, any where).
6) Human intervention: This may include a crowd or individuals of a hostile or desperate nature looking for food, etc.

7) Suicide bombers: May include one person, many people, or a vehicle.
8) Hostile aircraft

In keeping with the crawl/walk/run concept, each squad or platoon will first conduct a dry-fire iteration. The purpose is to familiarize soldiers with the range and the safety procedures for conducting a convoy live-fire training scenario. After successfully completing the dry-firing, the squads and platoons may execute a Multiple Integrated Laser Engagement System (MILES)/blank fire iteration. The soldiers wear MILES gear and are armed with blank ammunition only. The opposing forces (OPFOR) will also wear MILES gear and will be armed with blank ammunition. Hits and near misses are recorded by the observers/controllers (O/Cs) moving with each vehicle in the serial. After successfully completing the MILES/blank-fire iterations, the units are prepared to conduct the live fire portion.

A training event can consist of 5 to 20 wheeled vehicles (usually five to six due to space limitations) in a convoy formation with at least two individuals per vehicle. Convoy will be lead by either an officer or non-commissioned officer. Vehicles will have communications and possess small arms mounted and soldier held weapons. Vehicles will start down an existing road or trail and will be attacked either via simulated enemy fire, mine, or IED. At a pre-arranged signal, the leader in the convoy pushes a button on an electronic remote control box that sends a signal to a bank of target lifters that are positioned very close to the road that the vehicles are traveling on. The lifters spring up, bringing e-type silhouette targets with them that look like enemy Soldiers holding rifles. This can be accompanied with a signal to a pneumatic machine gun, a simulator that faithfully produces the sound of an enemy machine gun being fired at you. Once that occurs, the rest of the Soldiers in the column of trucks know that their convoy has been ambushed. They dismount their vehicles very quickly, and immediately return fire and overwhelm the enemy with superior firepower. Once the counter-ambush is over, the leaders exit the area.

Also, an IED can be simulated to explode with an approved air compressed IED simulator. This simulator replicates a large “boom” and gives off a small cloud of smoke. These devices produce no fire hazards. A blocked ambush scenario will cause the convoy to stop and create a defensive perimeter and return fire. Return fire will be at designated targets that serve as “enemy” forces with approved SDZs for vehicle mounted and dismounted small arms fire. Several of the dismounted soldiers may engage in an offensive scenario by advancing towards the enemy in order to neutralize the threat. The “enemy” will be targets downrange. An unblocked ambush scenario would dictate that the convoy continue through the area, and return defensive fire from the vehicles until reaching a safe distance. Once the counter-ambush is over, the leaders exit the area.

Aviation gets incorporated into CLFX as well, usually in the form of Close Combat Attacks in support of convoys once in contact and then Medical Evacuation training to evacuate simulated causalities.

c. Additions/modifications to the above scenarios:

Air assault. When air assault is part of a CALFEX, Soldiers board helicopters (either six UH60s or two CH47s) at SBMR and fly to the approved landing zone north of the range control buildings. The helicopters land one or two at a time, discharge their loads and fly off. Some vehicles and equipment may be rigged for external transport beneath the helicopters (a practice known as sling-loading), allowing the aircraft to transport both the Soldiers and their equipment to a given location at the same time. Sling loads are not generally carried over populated areas.

Aviation support. A typical scenario includes four attack helicopters fighting in two teams of two. One team is typically maneuvering, providing observation and attack support to ground forces while another team is rearming and refueling. When firing, aircrews direct all fire including .50-caliber and 7.62mm machine guns and 20 mm cannon fire into the ordnance impact area and are in constant radio contact with Soldiers on the ground to ensure that the correct targets are engaged.

***Artillery support*.** Artillery, in this case weapons no larger than 155mm, is an integral part of combined-arms training. A typical exercise involves at least two gun sections, with four Soldiers per section. Firing is conducted from a point at the valley's western edge at targets within the southern firebreak road. In some scenarios, gun sections may be transported by UH-60 Blackhawk helicopters, with the guns sling-loaded below the helicopters and flown forward into the CCAAC. Such a scenario also includes up to six HMMWVs and two five-ton trucks to haul ammunition. All ordnance fired at MMR is aimed to fall within the impact area.

d. Aviation

Air Assault: The 25th ID would use MMR as a possible air assault objective. The components of the air assault are similar to the CALFEX, the primary exception being that artillery and troops would be brought in by air, moments before the attack begins, to practice the element of surprise. The objective would be suppressed with aviation fire (.50-caliber), and troops would be airlifted into the valley in close proximity to the objective. Actions on the objective might include conducting a breach (use of a Bangalore torpedo), then entering and clearing a trench. The actual objective may vary but is not likely to require any other weaponry. Another typical scenario for the aviators is the same as outlined in air support section above. Typically, the helicopters will fly-in from the ocean direction and occupy an attack by fire position (hover in place) and acquire (find) their target. Once they find the target, they will alternately fire, first one helicopter then the other, to suppress or neutralize the target. The pilots are in communication with the soldiers on the ground at all times via FM radios, and the leaders on the ground tell the pilots when to leave or what to suppress next in support of the ground attack

Aircraft Lasing. Aircrews may employ their aiming, locating, and designating lasers while maneuvering. Aiming lasers are employed on the .50 Cal MGs of OH-58Ds as

well as on the 7.62mm Door Guns of UH-60s and CH-47s. They are a visual sighting aid to aircrews under NVGs and help the crews accurately deliver aerial machine gun fire. OH-58Ds also employ a powerful target location and designation laser in its Mast Mounted Sight (MMS) during its reconnaissance and attack roles. This laser can be used to locate targets and determine their grid coordinates relative to the aircraft's known location. Crews can then report the targets to ground forces for intelligence and targeting by direct or indirect fire. The MMS laser can also be used to designate targets and steer laser guided munitions such as Hellfire missiles. In MMR, live Hellfire missiles are not employed. However, OH-58D aircraft sometimes carry inert training missiles that are capable of receiving laser energy, allowing the aircrew to practice all the steps to fire a Hellfire missile properly without ever firing any missiles from its rails. This type of activity can be done safely in support of both live fire and non-live fire maneuver training, and with no impact to environmental or archeological sites.

Aircraft Maneuvers. There are two primary corridors or flight patterns between WAAF and MMR used by helicopters participating in exercises at MMR: 1) due north from WAAF to the east of Hale'iwa, a left turn over Waialua Bay paralleling the north coast of O'ahu to off Ka'ena Point, and then south to MMR and the restricted area complex; 2) due west from WAAF over the Kolekole Pass Highway and then straight to MMR (see Figure 3-4). When weather conditions prevent use of the primary flight corridors, a third corridor is used; from WAAF, the helicopters fly due south over Kunia Road to Ewa Beach, then north along the coast to MMR. Altitudes flown are 2,000 feet (640 meters) above ground level (AGL), except over the water where the helicopters fly at a 300-foot (91-meter) minimum altitude above the ocean. Over land, helicopter traffic pattern altitudes, in accordance with AR 95-1, Aviation Flight Regulations, are at least 700 feet (213 meters) AGL, but may be set at different altitudes based on noise abatement, "fly neighborly" policies, or other safety considerations. Flight schedules are not provided to the community in advance.

When transiting the north shore off DMR and around Ka'ena Point, helicopters fly one or two nautical miles (two to four kilometers) offshore; if they are flying into Dillingham Airfield to stop before an exercise, or to stop at the Forward Area Rearm and Refuel Points (FARRP), they would typically fly at 1,000 to 1,500 feet (305 to 457 meters) offshore. During these flights, the aircraft altitude would be 700 feet (213 meters) both day and night when flying without aids and 300 feet (91 meters) when using night vision goggles. The Dillingham FARRP is south of the runway in the "Boondocks" training area close to the northern boundary of the R-3110 B & C restricted area. During CALFEXs, OH58 (Kiowas) and UH60 (Blackhawks) are used. The exercise typically requires four OH58sand one helicopter for standby with a water bucket in case of a wildfire, with one exercise in the morning and one in the afternoon. During the exercise, there is typically a ground rehearsal, a fly by rehearsal, and then the actual close-air support firing exercise with the regular .50-caliber M-2 rounds. Over the five-day CALFEX, there would be up to five helicopter approaches during the non live-fire day and up to five approaches during each of the daytime and nighttime live-fire iterations. In addition, two CH-47 Chinook helicopters would transport troops and equipment from SBMR to MMR.

During the exercises, the helicopters would depart MMR and re-arm and refuel at the FARRPs located at DMR and at SBMR just off the Kolekole Pass Highway, approximately five miles (eight kilometers) west of WAAF. On average, each helicopter flies to the FARRP four times during each exercise. On the way to MMR for a live-fire exercise, the helicopters typically stop to pick up ammunition at either the DMR FARRP, or at the Kolekole Pass Highway FARRP. They would then proceed to MMR, participate in the exercise, and fly back to one of the FARRPs to rearm and refuel. Fuel and ammunition temporarily stored at the FARRPs for the duration of the exercises is brought in by truck from the fuel depot and permanent ammunition storage areas. The command and control helicopter typically flies orbits (to conserve fuel) over the ocean at 300 to 400 feet (91 to 122 meters) above sea level. Its distance from shore ranges from about one-quarter 0.25 mile (0.4 kilometer) to one-half 0.5 mile (0.8 kilometer), and at times one mile (1.6 kilometer) offshore. The pilots watch for marine mammals and avoid them when spotted. At no time do they go beyond the jurisdictional waters of the United States. Typically, air assault exercises are conducted less frequently than CALFEXs. There is also ongoing basic training of new pilots assigned to Hawai‘i, involving one or two flights per day familiarizing them with the terrain and training areas. OH58s, CH-47’s or UH60s are used for this training. About 45 percent of this training is conducted at night. Inclement weather (ceiling visibility and wind turbulence) affects flying about 25 percent of the time.

e. Other Types of Training. The following training exercises would be conducted independently or in conjunction with a CALFEX.

Military Operations on Urbanized Terrain (MOUT). MOUT training provides troops with the opportunity to train in a realistic urban environment (e.g., using bunkers and other man-made structures) and to experience as much realistic stress as possible. MOUT training may include limited use of short-range training ammunition (SRTA, also known as blue-tip ammunition), which uses a plastic projectile. Although SRTA is classified as live-fire training in accordance with AR 385-63, the maximum range of this ammunition is only 300 to 700 yards (274 to 640 meters), depending on the caliber used.

Sniper Training. Due to the limitation of sniper ranges on SBMR, MMR is the place to support static sniper firing. In general, this includes using a M24 sniper rifle firing a 7.62mm round at targets up to 3,281 feet (1,000 meters) away. The M107 heavy sniper rifle that fires .50-caliber ammunition also can be used. Snipers would frequently participate in CALFEXs at MMR. For stationary target practice, snipers would position themselves near range control while shooting toward targets at Objective Deer.

Demolitions Training. Demolitions training at MMR would take place at the ordnance impact area and could include a range of activities, such as the following:

.-Use of low levels of explosives to destroy such materials as steel and wooden structures.

.-Use of explosives to gain entry to buildings.

.-Placement and detonation of shape charges at the ordnance impact area. Shape charges are composed of C4 plastic and would be used as 15-pound (6.8-kilogram) charges (up to 80 times a year) and 40-30 pound (18-kilogram) charges (up to 36 times a year). The shape charge would create a narrow hole in the ordnance impact area.

-Detonation of cratering charges at the ordnance impact area following the detonation of the shape charge. The M039 cratering charge, filled with ammonium nitrate, is placed within the hole created by the shape charge. The typical maximum amount of ammonium nitrate that would be used at any one time would be up to 150 pounds (68 kilograms), and possibly up to 300 pounds (136 kilograms). Training using cratering charges would occur up to twice a month (24 times a year).

Staging Base for Ground or Air Movement. MMR can also be used as a staging base for ground or air movement. Army training is normally conducted in a dispersed or distributed fashion to better reflect fighting over a large battlefield with extended distances between organizations.

Ground Movement. MMR would be used as a staging base for ground movement (Field Manual 21-18). An infantry Soldier's primary means of mobility is by foot, and all infantry units train heavily on foot movements while carrying heavy loads. The 25th ID would use MMR as a staging base to begin foot movements and to provide a final destination. The unit size conducting foot movements can range anywhere from platoons to battalions.

Air Movement. The 25th ID is also likely to use MMR as a possible pickup zone for air assault operations conducted at other training areas (FM 90-4). The size of the units would be platoons and companies. Air assaults, depending on the size, can include moving not only troops, but also artillery pieces and vehicles.