CHAPTER 6. EMERGING CONCEPTS AND CAPABILITIES

Seabasing of OAS aircraft requires detailed advance planning. Due to limited deck space, the planning staff will need to determine the number and type of aircraft required to accomplish a mission prior to assembling the time-phased force and deployment data (TPFDD). OAS assets may compete with assault support assets for deck space in a sea-based scenario. Using the EMW concept, OAS aircraft may operate exclusively off an aircraft carrier or other amphibious platform.

Future developments concerning fighting in built-up or urban areas will change OAS tactics. New equipment may be developed to minimize collateral damage of both infrastructure and people. New weapons may be introduced to solve this problem or use of precision-guided munitions may be employed. Advances in unmanned aerial vehicles (UAVs) may evolve to the point where Marines fighting in urban areas will direct fires from an uninhabited combat air vehicle circling in an overhead station instead of calling for manned aircraft.

Experiences in Mogadishu and Chechnya have shown that the urban environment is especially dangerous for rotary-wing aircraft operations. The lethality of enemy fires employed from concealed locations may prevent rotary-wing assets from prosecuting urban targets with a reasonable margin of safety. Fixed-wing OAS aircraft may be more difficult to target by enemy air defenses in an urban environment due to their greater speed and altitude capability. However, these abilities by fixed-wing aircraft to avoid the threat also make it more difficult for them to identify targets.

EXPEDITIONARY MANEUVER WARFARE

EMW is the Marine Corps capstone operational warfighting concept for the 21st century. EMW applies the philosophy of maneuver warfare and our expeditionary culture to Marine Corps operations across the spectrum of potential 21st century conflict. This capstone concept specifies necessary capabilities to organize, deploy, and employ Marine forces across the spectrum of conflict and enables a single, integrated force in conjunction with the Navy. It provides for more effective strategic agility by expanding our current capabilities to a more scalable, expeditionary, forward presence, combined arms force that is organized, trained, and equipped to project sustainable power ashore without reliance on host-nation infrastructure or support.

EMW will also expand our operational reach from expeditionary sites to objectives further within the theater of operation and increase tactical flexibility to sequence from one mission profile to another without needing to reorganize, re-equip or retrain.

JOINT STRIKE FIGHTER

The joint strike fighter (JSF) program will provide the Marine Corps' next generation aircraft, replacing the AV-8B and F/A-18C/D with a single STOVL platform. It will solve the tactical aircraft age and attrition problems and meet Marine aviation's goal to neck-down to a single type of fixed-wing aircraft. But more importantly, the JSF program will provide the Marine Corps with a superior performance, stealthy, state-of-the-art, multimission jet aircraft that can operate with full mission loads from amphibious class ships or austere expeditionary airfields. To maintain the Marine Corps' force-in-readiness responsibilities, Marine aviation must sustain the OAS capabilities of its legacy aircraft until they are replaced. The JSF's combination of stealth, basing flexibility, and superior performance will revolutionize OAS.

WEAPONS

The road map for precision weapons leads to JDAMs, JSOWs, and future improvements to the family of JDAM and JSOW variants. JDAM and JSOW have

GPS/inertial navigation system (INS) guidance that provides the capability of an accurate weapon in all weather, day or night, giving it a true precision capability. With the introduction of these GPS-guided weapons (GGWs), ground commanders can now schedule preplanned OAS missions, either on-call or scheduled, and not be restricted by previous weather limitations that were imposed on MAGTF OAS aircraft.

JDAM is a variant of the 1,000 and 2,000-pound general purpose bomb. JSOW has variants of antiarmor and antipersonnel cluster munitions, as well as a variant of the general purpose bombs. Both types of GGWs possess the capability for aircrews to release the ordnance and have the ordnance successfully guide to the target without the aircrews ever seeing the target.

These two families will replace laser-guided weapons and complement cluster and general-purpose munitions. As these GGWs continue to increase the capabilities for OAS employment, their new capabilities have some of the following limitations:

Target Location Error

These weapons require a TLE of less than 55 feet in the horizontal plane and 75 feet in the vertical plane to be effectively employed. Until the target location, designation, and hand-off system (TLDHS) is fielded by TACPs, GPS/INS-guided weapons will be limited to AI and preplanned CAS missions. Immensurated coordinates within the TLE for GGWs are currently obtained for AI and CAS mission planning through imagery obtained on targets or target areas in the battlespace. CAS, AR, and SCAR aircraft currently do not possess the capability to accurately locate targets within the maximum TLE for these weapons.

Reasonable Assurance

These weapons are only as accurate as the target coordinates that the weapons receive from the host aircraft. The inaccuracy of the coordinates that JDAM and JSOW receive reflects the circular error probable (CEP) that these weapons may miss their target. During conditions that preclude aircrew from positively identifying the target, supported ground commanders only available option for CAS may be through the employment of GGWs with reasonable assurance on the TLE. The supported ground commander assumes the acceptable risk level in allowing aircrews to attack targets by releasing ordnance without positive control. Reasonable assurance is not a routine procedure. Precise guidelines for the use of reasonable assurance when employing GGWs will need to be established and distributed throughout the MAGTF and supporting forces. One of these guidelines will be the requirement to establish GGWs risk estimate distances to friendly ground forces when employing these weapons in close proximity to friendly ground forces during CAS operations. See MCWP 3-23.1 for more information on positive control and reasonable assurance.

Nonfixed or Mobile Targets

GGWs are currently employed on fixed targets. Targets that have the capability to move during the time of flight of the weapon may not be affected by GGWs. GGWs currently are targeted at precise coordinates and guide terminally to that point in the battle space. Until GGWs possess the capability to track moving targets during the terminal phase of the weapon to impact on the target, other munitions are better suited for employment against mobile targets. PGMs like helicopterborne fire-and-forget missile (HELLFIRE); tube-launched, optically-tracked, wire command-linked guided missile (TOW); IR maverick; laser maverick; and LGBs, as well as nonprecision weapons like the MK-20 Rockeye and general purpose bombs, will have a better CEP (more effective), pose less of a risk for fratricide, and be a more efficient use of limited MAGTF aviation assets at engaging nonfixed or mobile targets.

THEATER BATTLE MANAGEMENT CORE SYSTEM

TBMCS is the follow-on program to the contingency CTAPS. It is composed of a 27-workstation host system located in the TACC, with remotes located throughout the MAGTF. Employed at the force and unit level, TBMCS provides the JFACC and subordinate staffs with a single point of access to real or near real time information and planning data necessary. TBMCS software can be divided into five functional categories: planning, execution management, resource

management, reporting and analysis (intelligence) and common tools.

TBMCS will provide the JFACC and subordinate staffs with an automated spectrum of C2 capabilities, enabling the planning and execution of air operations. Within the MAGTF, TBMCS provides the ACE commander the tools necessary to generate, disseminate, and execute the ATO in a joint, coalition, and USMC-only contingency. It is modular and scalable, allowing the commander the ability to support ATO requirements for any size MAGTF, to include JFACC capability.

TARGET LOCATION, DESIGNATION, AND HAND-OFF SYSTEM

The TLDHS is a modular, man-portable equipment suite that will provide the ability to quickly acquire targets in day, night, and near-all-weather visibility conditions. When used in conjunction with the digital advanced communication terminal, operators will be able to accurately determine their own locations as well as that of their targets, digitally transmit (hand-off) data to supporting arms elements, and designate targets for laser-seeking, precision-guided munitions (PGMs) and laser spot trackers (LSTs). The TLDHS will be fielded to FO teams, naval gunfire (NGF) spot teams, tactical air control parties (TACPs) and reconnaissance teams.

The TLDHS is composed of two subsystems: the target locator, designator subsystem, which is the lightweight laser designator range-finder (LLDR), and target hand-off subsystem (THS). The LLDR and THS can be used independently or together as the TLDHS to provide the target location, designation, and hand-off capability.

TLDHS provides increased accuracy and timeliness of fire support and improved effects of fires on target for surface and air-delivered munitions. It also provides increased operator mobility due to the reduction in size, weight, and modular design over existing systems and reduction in fratricide due to accuracy of enemy target location.

TLDHS is currently in the engineering, manufacturing, and development phase. IOC is scheduled for FY03 with FOC in FY05.

SUMMARY

The inherent flexibility of the Marine Corps combined arms doctrine, maneuver warfare philosophy, expeditionary nature, and versatile C2 system create a MAGTF that is well prepared for the 21st century. To meet the challenges of the future, OAS doctrine continues to evolve with new MAGTF operational capabilities. Changes to equipment bring an enhanced capability to project power when and where it is needed, while new tactics enable the employment of OAS aircraft and ordnance with maximum advantage.