

*History Of Innovation*



**A PROVEN FORCE IN  
READINESS**

**NAVAL CHARACTER**

Unlike any military force in the world, the naval character of the Navy-Marine Corps team singularly gives our Nation an enduring means to shape and influence global events.

**MAGTF**

Marine Air Ground Task Forces are how Marines organize to fight. It is the integration of air and ground forces with supporting logistics and state-of-the-art command and control. A MAGTF can be as large as a Marine Expeditionary Force (46,000 Marines) or as small as a Marine Expeditionary Unit (2,200 Marines).

**MEU OPERATIONS**

Marine Expeditionary Units (Special Operations Capable) are 2,200 heavily armed Marine air and ground crisis response forces capable of conventional or special operations. MEUs are forward-deployed and

**History Of Innovation**

Today it is hard to imagine a Marine Corps in which excellence in marksmanship was not the rule, but such was the state of the Corps in the 1890s. Through the leadership of a few Marines, beginning with Commandant Maj. Gen. Charles Heywood, the Corps developed the marksmanship techniques and training that would lead to the domination of competitive shooting and the accurate rifle fire identified



with latter-day Marines. The creed “every Marine a rifleman” became reality on the battlefields of France in World War I, in the Pacific during World War II, and in the wars in Korea, Vietnam, and the Persian Gulf.

The Corps’ attention to improvements in individual weapons, and its policy of insisting that every Marine qualify in their use, has paid great dividends. Marines provided the impetus for improvements in the M-14, and later M-16 rifle, leading to today’s more accurate and reliable M-16A2.

The development of amphibious warfare techniques and equipment is the area where Marine Corps innovation has played the most important role in warfighting doctrine. From the time of the Barbary Wars in the early 19th century, the Navy-Marine Corps team had proven to be a forceful instrument for projecting U.S. power and protecting U.S. interests. The

lessons of the Spanish-American War made it apparent that offensive assault missions from the sea could best be fulfilled by the Marine Corps. Marine visionaries and pioneers, who saw the close relationship between the exercise of sea power and the more narrow issue of seizing a hostile shore against entrenched opposition, developed and codified over the next several decades the doctrine needed to conduct an amphibious assault.

Writing to the General Board of the Navy in February 1922, Maj. Gen. John A. Lejeune asserted the importance of having “a mobile Marine Corps force adequate to conduct offensive land operations against hostile naval bases.” This fresh direction for the Corps culminated in publication of the Tentative Landing Operations Manual in 1935. Annual fleet landing exercises were conducted with the Navy until the outbreak of World War II.

With the developments in doctrine and techniques came the need for specialized equipment to lift men and weapons ashore against hostile fire. After experimenting with the British-designed “Beetle boat” and “Christie tank,” a ramp-type boat designed by Andrew Higgins was adopted and the LCVP (landing craft, vehicle, personnel) and LCM (landing craft, mechanized) became a reality—landing craft that would hit every beach from Guadalcanal to Normandy. Marine pioneers, foreseeing the need for a vehicle that could operate on land and water, pushed for the development of a military amphibian vehicle based on Donald Roebling Jr.’s “Alligator” rescue tractor. From the arrival of the first LVTs (landing vehicle, tracked) in July 1941, Marine innovators continued to be a driving force for improvements and modifications of the LVT throughout World War II.

During World War II many additions and variations were made on the tactics and techniques involved in amphibious operations. Perhaps the greatest improvements came in the

**logistically self-contained on amphibious assault ships on patrol in strategic areas of the world. MEUs are trained to respond to contingencies in less than six hours.**

#### ***MPF ENHANCEMENT***

**The Maritime Prepositioning Force is a key element of the Marine Corps’ expeditionary capability. The Marine Corps’ MPF(E) program will add an additional ship to each squadron (for a total of three ships). The MPF remains a cost-effective, proven, and relevant capability for use in responding to crises overseas.**

#### ***FORCE STRUCTURE***

**The Marine Air-Ground Task Forces are tailored for an expeditionary forward presence, rapid expansion, and warfighting. Whether it’s Desert Storm or restoring hope in a third world country with humanitarian aid, our structure continues to demonstrate the versatility to project decisive action across the range of operational situations.**

## ***INNOVATION AT WORK***

### ***EMW***

**Expeditionary Maneuver Warfare is the Marine Corps' capstone operational warfighting concept for the 21st Century. It is applicable across the range of military operations, from Major Theater War (MTW) to smaller scale with the combined arms power of the MAGTF give the Marine Corps a powerful forced-entry capability.**

### ***MV-22***

**The V-22 Osprey is a joint, multi-mission, vertical/short take-off and landing (VTOL) tilt-rotor aircraft. It performs a wide range of VTOL missions as effectively as a conventional helicopter while achieving the long-range cruise efficiencies of a twin turboprop aircraft. The Osprey is the Marine Corps' top aviation acquisition priority.**

use of naval gunfire to support landing forces, the perfection of close air support, and the development of fire support coordination centers to act as clearing houses for battlefield requests for close support.

Marine aviators made impressive contributions in the tactics and techniques of aerial warfare. Beginning in Nicaragua in 1927, Marine aviators experimented with dive-bombing. Later they developed and adopted the tactic of relying on ground troops to direct air attacks. They also demonstrated the effective use of aircraft in medical evacuation and resupply. These techniques and skills, further developed in World War II, were refined into arts in Korea and Vietnam.

The Marine Corps pioneered three material innovations during the Korean War that proved successful and were adopted by the other services—the thermal boot, individual body



armor, and the helicopter; all were first combat-tested in Korea's rugged hills.

While helicopters had been flown experimentally toward the end of World War II, it was the Marine Corps that, beginning in 1947, pioneered the development of combat techniques using the rotor-driven aircraft as a

means of enhancing its amphibious assault capabilities. The Corps also developed tactics for “vertical envelopment” as an extension of assault operations. In addition to the practical



use of the helicopter, several refinements in Marine Corps fixed-wing close air support proved to be decisive factors in a number of Korean War battles.

In the post-Korean War period the Marine Corps focused on further development of the Fleet Marine Force to support its force-in-readiness mission, along with adapting amphibious techniques and equipment to meet Cold War requirements. Among these pioneering efforts were the reconfiguration of a number of former attack aircraft carriers into helicopter carriers and the development of the short tactical airfield and fuel-handling systems.

Vietnam occasioned a refinement in the evolution of tactical mobility through the expanded use of helicopters, along with participation in pacification—more specifically, civic action, which became an integral part of Marine operations in Vietnam.

In the 1970s and 1980s Marine innovators continued to invigorate the traditional force-in-readiness concept of ground combat units supported by air with the establishment of the

### ***ADVANCED AMPHIBIOUS ASSAULT VEHICLE***

The AAV will allow naval expeditionary forces to eliminate the battlefield mobility gap and, for the first time in the history of Naval warfare, maneuver ashore in a single stroke giving both the ships and landing forces sufficient sea space for maneuver, surprise, and protection. The AAV is the Marine Corps' number one ground acquisition priority.

### ***JOINT STRIKE FIGHTER***

The JSF will be a single engine, stealthy, supersonic, strike-fighter aircraft capable of short take-offs and vertical landing. It will combine the basing flexibility of the A/V-8B with the multi-role capabilities, speed, and maneuverability of the F/A-18 to fulfill both air-to-ground and air-to-air requirements.

**INNOVATION AT  
WORK**

**MARINE CORPS  
WARFIGHTING LAB**

This military applications laboratory serves as the cradle and test-bed for the development of new operational concepts, tactics, and procedures for future wars. The lab is helping us build the Corps of the 21st Century.

**URBAN WARFARE**

The Marine Corps is emphasizing urban warfare training. The world's coastlines are becoming more urbanized and the Corps is training its Marines to fight in a high-tech, close quarter battlefield.



Marine Air-Ground Task Force structure and the flexible rapid-deployment force (RDF). The RDF, in turn, provided the impetus for the Navy-Marine Corps Maritime Prepositioning Ship program which puts preloaded supply ships in strategically important locations in the world's oceans, allowing Marines to respond more quickly to crises around the world.

The introduction of the high-speed LCAC (landing craft, air cushion) greatly increased Marine Corps operational mobility and reach. Similarly, the introduction of the AV-8 Harrier vertical/short takeoff and landing attack aircraft (the most forward-deployed U.S. or coalition tactical aircraft in the Persian Gulf area during Desert Storm) represented a major evolutionary development in Marine Corps aviation.

This pattern of vision, experimentation, and innovation is a hallmark of our Corps. It continues today. For example, our Chemical-Biological Incident Response Force is a new, one-of-a kind unit that provides America a better ability to respond to the consequences of chemical-biological terrorism.

And at the dawn of the 21st Century, we are ushering in the MV-22 Osprey tilt-rotor aircraft, Advanced Amphibious Assault Vehicle (AAAV), Joint Strike Fighter (JSF), Medium and Light Tactical Vehicle Replacement (M/LTVR) Programs, Logistics Vehicle System Replacement (LVSR) Program, Lightweight 155MM Howitzer (LW155), and the San Antonio Class Landing Ship LPD-17 which promise to enhance the Corps' firepower, mobility and mission flexibility in the future. The MV-22 will join the AAAV, LCAC and LPD-17 as an integral part of the Corps' concept of for enhanced power projection. These major contributions to the development of warfighting concepts, weaponry, and equipment enable the Corps to face the dawn of the 21st Century with a confidence born from a proud heritage of innovation, ingenuity, and a willingness to continually adapt to changes across the spectrum of conflict.

In fact, so fundamental is our commitment to the future that we have established a Warfighting Laboratory that is responsible for developing and field testing future operational and technological concepts. Sea Dragon is the Marine Corps' name for the laboratory's process to foster rapid military innovation. We intend to "ride the dragon of change" into the 21st Century, and continue to take advantage of the opportunities it brings.



## ***NON LETHAL WEAPONS***

**The Marine Corps is fielding and training with a new class of weapons designed to stun and incapacitate without causing permanent injuries or gross physical destruction to property. NLW will expand the range of options open to commanders in Military Operations other than War.**

## ***CBIRF***

**Chemical Biological Incident Response Force is a national asset provided by the Marine Corps that is manned, trained, and equipped to respond to chemical or biological terrorist incidents. CBIRF is a rapid response, initial detection, decontamination, and treatment capability trained to respond after a chemical or biological attack.**