

“HMX-1 is the place
where helicopter innovations
began and where they continue today
in the squadron’s Operational Test
and Evaluation Department.”



Lt. Gen. T. R. Dake
Deputy Chief of Staff for Aviation (Marine Corps)



HMX-1

“The First and Finest”

By Chuck Lloyd and Rick Llinares

Everyone likes to feel special on their birthday, and Marine Helicopter Squadron (HMX) One is no exception. But it has always been easy for the *Nighthawks* to stand out from the crowd. HMX-1 is the sole helicopter transport squadron for the president of the United States, and stands alone in its role of testing and evaluating helicopter systems for the Fleet Marine Force. Celebrating its 50th birthday this year, HMX-1's greatest distinction may be its special place in history as the first U.S. Marine Corps helicopter squadron ever established.

From Flying Bananas to Hueys

The Marine Corps took its first serious look at rotary-wing aircraft in 1932 with an evaluation of a Pitcairn autogyro, but determined that it was not yet practical for military use. In 1939, Igor I. Sikorsky successfully demonstrated his rotary-wing VS-300 and recaptured the interest of the U.S. armed forces. Sikorsky developed early designs for the Army, which deployed the helicopter for rescue and observation missions in the Pacific during the later part of WW II. The helicopter industry grew rapidly and other manufacturers emerged, such as Piasecki and Bell.

The 18th Commandant of the Marine Corps, General Alexander A. Vandegrift, realized the impact that the helicopter might have on Marine warfighting doctrine and was impressed by Lieutenant General Roy S. Geiger's thinking on how atomic weapons would alter future tactics. Lt. Gen.

Geiger witnessed early atomic weapon tests and was deeply concerned about the weapon's capability to destroy a Marine invasion force. He successfully urged Gen. Vandegrift to pursue the helicopter as a component of traditional amphibious landing tactics.

A special board was convened under the leadership of Major General R. C. Shepherd to draw up the initial design specifications for a Marine Corps helicopter. The Marines envisioned an aircraft that could travel 200 to 300 miles at a speed of 100 knots carrying 5,000 pounds of payload at altitudes between 4,000 and 15,000 feet. In December 1946, the Shepherd board recommended formal research of the helicopter and the establishment of a Marine helicopter squadron for training and indoctrination. The commandant endorsed the board's recommendations and forwarded them to the Chief of Naval Operations. Postwar budgetary constraints limited the initial efforts; however, approval was given to create a

A familiar sight: an HMX-1 VH-3D *Sea King* landing on the south lawn of the White House.



Marine helicopter development squadron.

The establishment of HMX-1 at Marine Corps Air Station (MCAS), Quantico, Va., on 1 December 1947 started a revolution in Marine Corps aviation and tactical doctrine. On 3 December 1947, the Commandant of the Marine Corps tasked



HMX-1 to “develop techniques and tactics in connection with the movement of assault troops by helicopter in amphibious operations; evaluate a small helicopter as a replacement for the present OY type aircraft to be used for gunfire spotting, observation and liaison missions in conjunction with amphibious operations.” The

Nighthawks began with 7 officers and 3 enlisted men, and quickly grew to 18 pilots and 81 enlisted men. In the spring of 1948, HMX-1 received its first helicopters, five Sikorsky HO3S-1s, and commenced pilot training and qualifications.

HMX-1 wasted no time in executing its mission by engaging in

an annual exercise in the spring of 1948. The squadron’s role in this operation was to participate in the amphibious assault by carrying troops over water to specified shore points, simulating a regimental combat team being airlifted by a Marine helicopter air group. The HO3S-1 carried only three troops in addition

to the pilot, but the operation would eventually shape the developing doctrine of vertical assault.

On 18 May 1948, HMX-1 pilots flew their five HO3S-1s from Quantico to Norfolk, Va., and embarked aboard *Palau* (CVE 122). The squadron's commanding officer, Colonel Edward C. Dyer, described the initial fly-on as "a complete shambles. There were sailors running all over the place in mortal danger of walking into tail rotors, and the Marines were totally disorganized as well. It was complete bedlam, there was no organization and no real system developed."

Col. Dyer and *Palau's* commanding officer, Captain Bob

Dixon, met that evening to remedy a clearly dangerous situation, and decided to adopt the procedures being used for fixed-wing aircraft.

The next day these procedures were put in place, resulting in safe and functional operations. According to

Col. Dyer, the only remaining task was to "devise a systematic method of embarking the troops." Specific routes were developed to move Marines from their berthing compartments on the ship to the aircraft, minimizing the dangers of the flight

deck. This basic system is still employed today, using painted foul lines on the ship's deck to guide the scrambling Marines.

On 23 May 1948, the first airborne ship-to-shore movement began at Onslow Beach, Camp Lejeune, N.C. The first wave of the assault commenced with all five HO3S-1s taking off from *Palau* and arriving 30 minutes later in the landing zone. HMX-1 pilots made continuous flights, putting 66 Marines in the right place at the right time.

The squadron proceeded to develop and demonstrate a number of other helicopter capabilities, including laying communications



Clockwise from left: from the beginning, HMX-1 tested some unique helicopter designs, such as the Gyrodyne YRON-1 rotorcycle; the Piasecki HRP "Flying Banana" helped demonstrate the usefulness of helicopters in tactical situations; a squadron H-34 *Seahorse* conducts testing in the 1960s; and HMX-1 performed the first troop lift in a turbine-powered helicopter, then designated HSS-2, in 1961.



wire and spotting artillery fire. Pilot training and the investigation of the helicopter's warfighting capabilities continued. Included was the testing of an airborne public address system for air-to-ground communications, rules for formation flight and evasive tactics to be used against enemy aircraft.

A year later, in May 1949, HMX-1 participated in another exercise, deploying eight Piasecki HRP's, three Sikorsky HO3S's and a single Bell HTL. The squadron and aircraft performed beyond expectations. Flying over choppy seas that swamped several landing craft, the HRP's—known as "Flying Bananas"—quickly put 230 troops and 14,000 pounds of cargo in the designated landing zone. These troops went on to seize a tactically significant road junction five miles inland. The HTL was embarked on a tank landing ship and the three HO3S's were shore based to provide search and rescue capabilities. The successful performance of the rotary-wing aircraft and crews was a key factor in the integration of the helicopter into the Marine Corps.

In 1950, the expansion of the American role in Korea accelerated the introduction of helicopter squadrons into the Fleet Marine Force, and resulted in more missions for HMX-1. Pilot training and additional experimental work with helicopters included mounting litters on the skids of the aircraft to assist in the evacuation of wounded, as well as attaching rocket launchers to the skids. These efforts paved the way for the UH-1E *Iroquois* or "Huey" gunship later used in the Vietnam War.

In the squadron's early years, other experiments included dropping bombs from helicopters and advancing capabilities in search and rescue, command and control, anti-submarine warfare, aircraft camouflage, instrument flying techniques and heavy-lift operations, as well as working with manufacturers on modifications and developments in helicopter design.

Operational Test and Evaluation

With the helicopter firmly entrenched in Marine warfighting doctrine, HMX-1's mission evolved into developmental testing of new helicopter systems and products destined for the Fleet Marine Force. Today, HMX-1's Operational Test and Evaluation (OT&E) Department evaluates new technology for the CH-46E *Sea Knight*, CH-53E *Super Stallion* and the UH-1N "Huey." OT&E is also



HMX-1 tested the capabilities of the CH-46 in the late 1960s. The *Sea Knight* is now a central part of the squadron's stable.

working with the Chief of Naval Operations and the Air Force to determine the effectiveness of the MV-22 *Osprey* and to prepare the CH-46 community for eventual transition to this tilt-rotor aircraft.

HMX-1's OT&E Department evaluates new systems designed both by manufacturers and Marines in the fleet. For example, one squadron developed a lip-activated light that is compatible with night vision goggles, which allows pilots to read maps and publications without taking their hands off the controls. OT&E determined that this would be useful to the fleet, and it is now used throughout the Marine Corps.

OT&E also recommends options for introducing valuable technology to the fleet despite budgetary con-

straints. For example, the squadron's tests of the Forward Looking Infrared (FLIR) system on the CH-53 determined that it could be of great use to the fleet. However, a full rollout of the FLIR system was cost-prohibitive. Rather than canceling the entire program, it was recommended that the Marine Corps install all the hardware and wiring required to support the FLIR system in every CH-53 in the fleet and use the remaining funds to purchase a limited amount of FLIR packages. The existing units can be deployed

wherever necessary to accomplish a given mission, and new ones can be installed whenever additional funding comes available.

The Presidential Mission

In 1957, HMX-1 unexpectedly acquired another important mission: transporting the president of the United States. Previously, the squadron had conducted only operational tests and evaluations of helicopters from various manufacturers to determine their utility as a means of emergency evacuation for the president.

On 7 September 1957, President Dwight D. Eisenhower was vaca-

The VIPs . . .



HMX-1 provides helicopter transportation for the executive branch and visiting dignitaries. Clockwise from left, President Eisenhower, Pope John Paul II, President Clinton and President and Mrs. Ronald Reagan.

and urban assault tactics.

HMX-1 personnel also assist the Marine Air Wing Training Squadron (MAWTS) One classes in Yuma, Ariz. The squadron frequently sends members from the OT&E Department to brief MAWTS-1 classes on current state-of-the-art projects and emerging technologies that fleet aviation units might see in the near future. If the assets are available, the squadron provides one or two of its CH-53Es or CH-46Es, with the actual equipment being evaluated mounted on the airframe, for the students to see and sometimes fly to gain hands-on experience.

Organization

With over 700 personnel assigned, HMX-1 is the largest helicopter squadron in the Marine Corps. Accordingly, it incorporates some departments not usually found in a squadron. The medical department has two flight surgeons and



five corpsmen who may deploy on presidential trips and provide medical support to the squadron and air facility at Quantico. As the only aviation unit assigned to MCAF Quantico, HMX-1 has a dedicated fiscal and aviation supply department, and its safety and standardization department is similar to that found in a composite helicopter squadron with several different types of aircraft. The operations depart-

ment juggles the squadron's busy flight schedule at both Quantico and the support facility at Naval Station, Anacostia, D.C.

In addition, HMX-1 has several departments that are unique to its executive transport function. The communications department's 17 communication systems operators are responsible for providing an instantaneous worldwide communications capability for the president

The Helos . . .

Left, a VH-3D leads a parade of HMX-1 aircraft: the VH-60N, CH-46 and CH-53E. The VH-3D, below, is used for transporting the president, vice president and visiting heads of state; and the VH-60N, bottom, is used for other executive transport functions. Opposite, the squadron's CH-46s have all undergone the service, reliability and maintenance upgrade.



The Executive Flight Detachment, known as the “White Side” of HMX-1, employs two unique aircraft types: the Sikorsky VH-3D *Sea King* and VH-60N *Blackhawk*. The V designates the aircraft as configured for use by VIPs. Because of their distinctive color schemes, these helos are often referred to as “White Tops.”

The VH-3D is capable of transporting 14 people, and is the primary helicopter used for transporting the president, vice president and visiting heads of state. The Sikorsky

VH-60N seats up to 11 passengers and is used for various White House missions. Both helos require a pilot, copilot and crew chief, and the VH-60N crew also includes a communications systems operator. The VH-60N is smaller than the VH-3D and, because it folds easily for loading onto an Air Force C-5A *Galaxy* transport, it is ideal for overseas assignments on short notice. The HMX-1 Marines can prepare a VH-60N for loading on a C-5 in less than two hours.

The VH-3D has been in use for

over 20 years, and the VH-60N for over 10. An extensive Special Progressive Aircraft Rework at predetermined intervals, plus a review of the communication and navigation systems every three or four years, keep these aircraft in superior condition. (See “The Pride of the Marines: Marine One Crew Chiefs,” p. 20, about the “Green Side” of HMX-1.)

Support Mission

In addition to its executive transport and OT&E missions, HMX-1 also supports the Marine Corps Combat Development Command (MCCDC) at Marine Corps Air Facility (MCAF), Quantico in the development of helicopter tactics and techniques. HMX-1’s CH-46Es and CH-53Es provide helicopter indoctrination training for new combat ground Marines and support advanced training, such as fast-roping exercises. MCCDC maintains a training facility called “Combat Town,” where HMX-1 Marines participate in the training of assault troops in hostage rescue scenarios

tioning at his summer home in Newport, R.I., when his immediate presence was required at the White House. Typically, a return trip to Washington, D.C., from Rhode Island required an hour-long ferry ride across Narragansett Bay to the awaiting presidential transport, *Air Force One*, followed by a 45-minute flight to Andrews AFB, Md., and a 20-minute motorcade ride to the White House.

Recognizing the urgent need for his presence in Washington, President Eisenhower directed his aide to find a way to get him to *Air Force One* more quickly. The aide informed the president that a helicopter was on station in Rhode Island in case of an emergency and



could be used to fly him to the awaiting plane. President Eisenhower approved the idea, setting a precedent with the seven-minute trip in an HMX-1 UH-34 *Seahorse*.

Shortly thereafter, the president's naval aide asked HMX-1 to evaluate the possibility of landing a helicopter on the south lawn of the White House. Preliminary evaluations and test flights determined that there was ample room for a safe landing and departure. Once formal procedures were finalized, HMX-1 began flying the president to and from the south lawn of the White House to Andrews AFB, the home of *Air Force One*.

In 1976, the Marine Corps was assigned the sole responsibility and mission of providing helicopter transportation to the president of the United States and other executives. This function was previously shared with the Army.

while aboard the VH-60N. Several HMX-1 officers assigned to the White House Liaison Office plan the squadron's logistics for presidential trips and brief the detachment prior to each mission. The plans department at Quantico manages the classified planning portion of all presidential support missions. HMX-1's security department provides security at the squadron's facilities at Quantico and Anacostia, and at every HMX-1 trip site where the presidential helicopters are used.

Unlike any other unit in the Marine Corps, HMX-1 has three distinct chains of command. The Marine Corps Deputy Chief of Staff for Aviation issues orders for all tasks that HMX-1 executes in conjunction with Marine Corps activities, while the White House Military Office directs the squadron's presidential missions. The squadron's OT&E Department reports to Commander, Operational Test and Evaluation Force, Norfolk, Va.

With its unique mission and structure, HMX-1 is like no other squadron in the Marine Corps. And as they celebrate their 50th anniversary, the *Nighthawks* continue to exemplify their motto: "The First and Finest." ✈

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... and the Marines of HMX-1



The Marines of HMX-1 make it all happen. Clockwise from left, shortly before his retirement, MGsgt. Tom Downey passes some words of wisdom to MGsgt. Joseph Jeffra in the maintenance control office; Maj. Timothy Hanson is ready to go in a CH-46 *Sea Knight*; and Marine One crew chief Sgt. John Delbalso makes sure "his" helo is shipshape.

