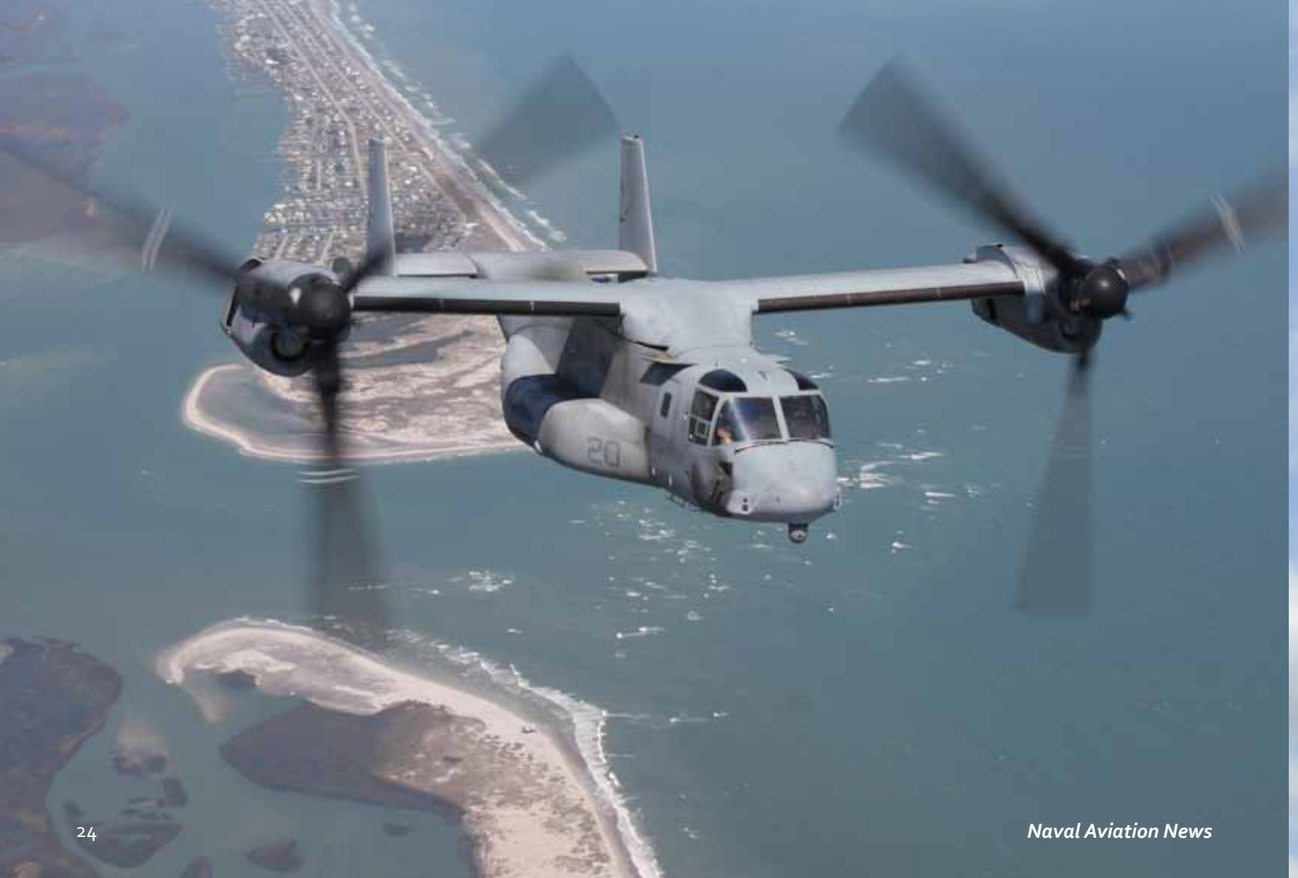
Taking to the Sky

with the VMMT-204

RAPTORS

Written and photographed by Rick and Nicole Llinares

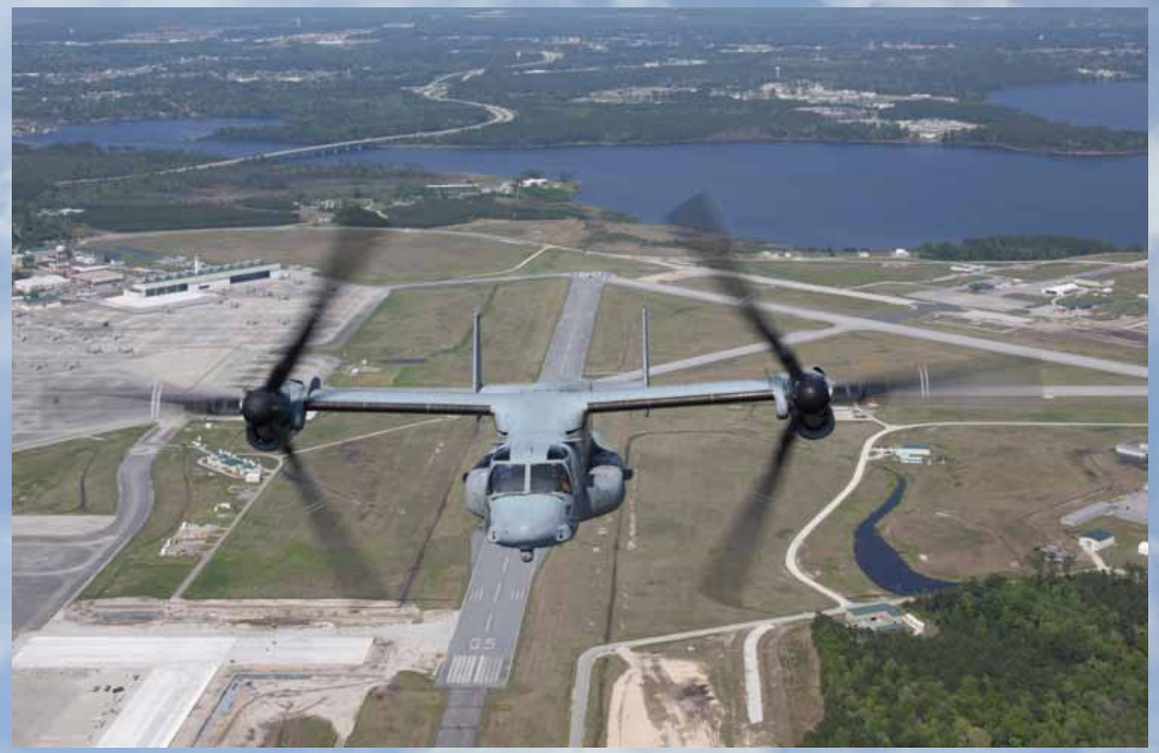


The VMMT-204 Raptors have been leading the charge in training V-22 Osprey crews for almost 10 years, since Marine Corps aviation units began transitioning from the venerable CH-46 Sea Knight helicopter to the MV-22 in 2005. Having long outgrown some initial issues common to the introduction of an advanced, next-generation aircraft, the MV-22 Osprey is now fulfilling the vision forward-thinking Marine aviation planners envisioned so many years ago.

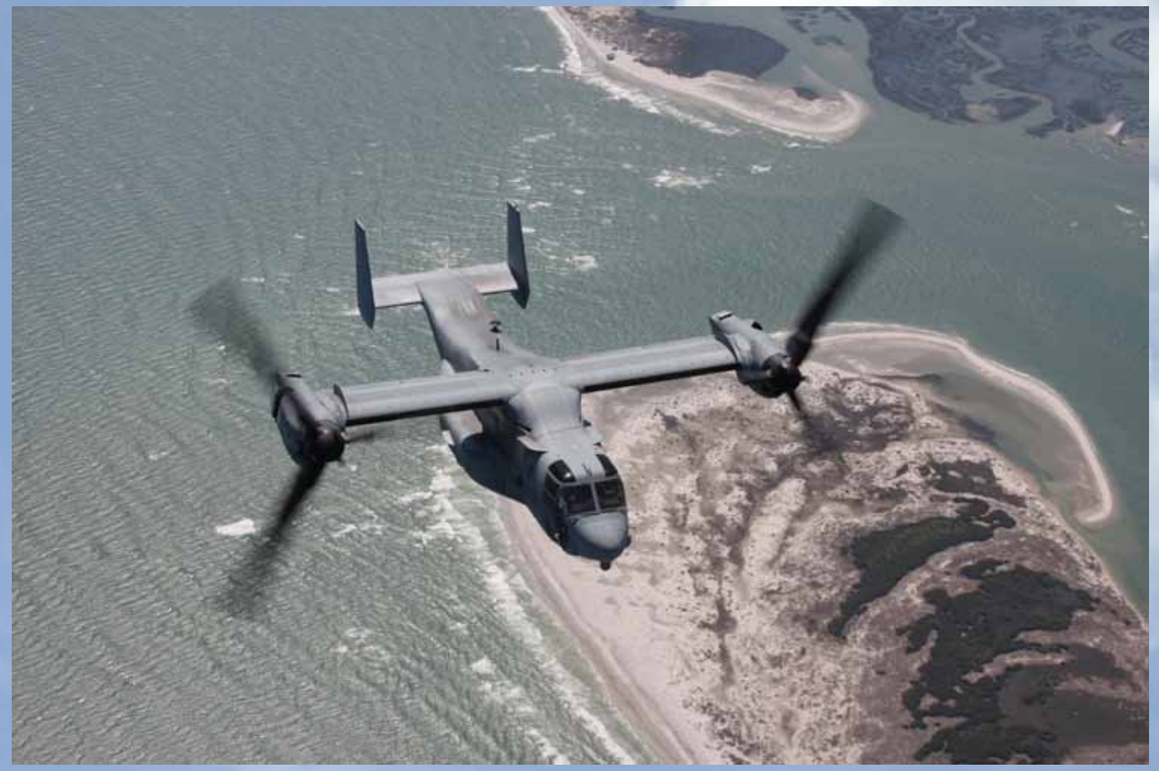
While Marine ground forces can be counted on to be "the first to fight," Marine aviators can be counted on to be the "first to innovate," as they have long understood, valued, and promoted the mastery of vertical flight operations. Besides operating a massive inventory of helicopters, Marine Aviation also introduced the AV-8B Harrier and its successor, the F-35B Joint Strike Fighter. The ability to place aviation assets close by to quickly offer direct support of Marine riflemen has been a staple of Marine Aviation for decades. This requirement has led to innovation, and no aircraft in operation represents a more clear-cut example of this than the MV-22 Osprey. But long before Marine aviators can support their ground force brethren, the aircrews and maintainers need to be thoroughly trained by specialized squadrons.

The VMMT-204 Raptors train pilots for the Air Force and Marines in the MV-22 Osprey: a 5th generation platform, and the only tilt rotor aircraft serving in the U.S. military which performs as both a helicopter and high-speed aircraft. The Raptors trace their roots to May 1972, when activated as Marine Helicopter Training Squadron 204 (HMT-204) for training both CH-46 and CH-53 Sea Stallion helicopter crews.

In 1988, HMT-302 assumed responsibility for CH-53 training. Several years later, HMT-204 became the sole fleet readiness squadron (FRS) training unit for the CH-46, becoming one of the largest squadrons in all of Marine aviation. In 1999, the squadron underwent another change in operating the Osprey, thereby requiring a re-designation to VMMT-204. The squadron is curremtly part of MAG-26, 2dMAW.



"I don't think we can overstate the value of our mission at VMMT-204. Simply put, we provide initial training to all Marine Corps and Air Force V-22 Pilots, and Marine Corps air crew," said VMMT-204 Commanding Officer Lt. Col. Brett Hart. "[Since] the introduction of the V-22, we've seen a revolution in military assault support capability, a leap not seen since the first introduction of helicopters more than 50 years ago. VMMT-204 made this recent revolutionary



capability possible by providing initial training to personnel required to operate the aircraft."

Years of effort to adopt aviation training best practices were recognized by the Commander, Naval Air Forces last year, when the Raptors received the Commander Theodore G. Ellyson Aviator Production Excellence Award for their performance during fiscal year (FY) 2012. This prestigious award recognized VMMT-204 as the top-producing FRS in Naval Aviation.

Every aircraft, aircrew, and Marine assigned to Marine Aviation ultimately has one singular goal: support the Marine rifleman. The Ospreys ability to fly higher, farther, and faster makes the Marines the MV-22 supports more effective. This increased capability allows Marines to achieve the element of surprise and, when needed, support Marines to rapidly build up combat power, while also giving ground force commanders options previously unavailable.

VMMT-204 occupies a cavernous new hangar facility at MCAS New River, a growing air station and the premier facility on the east coast for Marine Corps rotary flight operations. On any given day, a large assortment of aircraft can be seen overhead including AH-1 Cobras, UH-1 Hueys, CH-53 Super Stallions, and MV-22 Ospreys. VMMT-204 is one of the largest tenants on base and possesses 21 aircraft, most of which are the older Block A variant. The squadron also has seven newer Block B aircraft.

The squadron flew approximately 3,883 flight hours in FY13, with the vast majority devoted to training. The Raptors have an average of 440 Marines assigned to the squadron, of which 250 are dedicated to maintenance, 20 are instructor pilots, and 15 are crew chief instructors. The squadron also has three U.S. Air Force instructor pilots. VMMT-204 trains approximately 115 pilots and 115 crew chiefs per year. This number, along with annual flight hours, is projected to increase in the coming years.

Training is the main focus for the unit. According to Capt. Dave Driscoll, a Raptors flight instructor and student control officer, the basic pilot syllabus includes 136 academic hours, 68 simulator hours, and 30.5 flight hours. The basic crew chief syllabus has 284 academic hours, 8.5 simulator hours, and 28.5 flight hours.

Student pilots complete a core skill introduction phase of training at the FRS. This is segmented into the following stages: academic, familiarization, navigation, instrument, confined area landings, formation, low altitude tactics, night systems, and review.

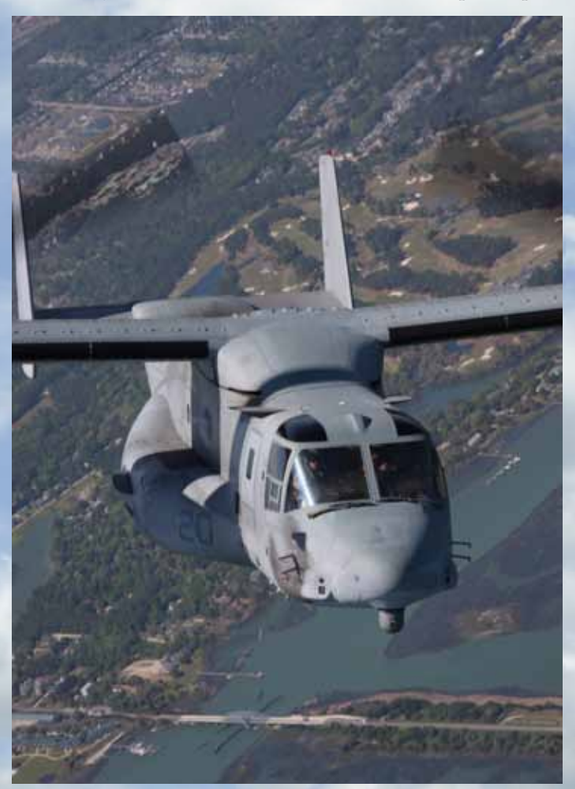
"Upon completion of the NATOPS check, flight students will be designated as a qualified tiltrotor second pilot," said Driscoll. "For crew chiefs, the breakdown generally mirrors the pilot syllabus, with a focus on crew chief responsibilities during each stage and crew resource management."

The sheer complexity of the Osprey is apparent as soon as you get close to one. Learning to operate effectively in either rotary or fixed-wing capacity is difficult enough on aircrews new to the fleet, mastering both could appear daunting. Driscoll notes this is a particluar challenge for those students learning to fly this complex and unique aircraft.

"For the initial accession students, the V-22 is the most complex aircraft they've flown. When they begin flying, they have to learn to function as part of a crew," he said. "This is new for them because they don't get much experience flying with crew chiefs in flight school. From the perspective of an instructor, as student's progress through the syllabus, their skill level and confidence improves exponentially."

According to Maj. Carleton Forsling, a VMMT-204 pilot and the squadron's executive officer, the V-22 is easy to fly, but harder to fly well due to the skill it takes to operate it tactically and with precision.

"From a stick-skills perspective, they have to combine the use of both nacelles and nose to control the aircraft," he said. "They also have to switch over from helicopter inputs to airplane inputs and back again when they transition and convert. Almost as importantly, they have to know when they should be in conversion mode and when they should be in airplane."



Having had the opportunity to fly in the Osprey with VMMT-204, I can attest to the smoothness of the ride. Takeoffs are quick and there isn't the same level of vibration one experiences in a traditional helicopter. The transition from helicopter-to-airplane mode is relatively quick and once in airplane mode the ride is surprisingly calm. The rear cabin of the Osprey is spacious, as is the cockpit which houses both pilots and includes a jump seat in between and aft of their seats.

The Osprey, when flying in helo (or vertical take-off and landing) mode, has the same control inputs as a traditional helicopter. The primary difference is that the thrust control levers operate opposite in manner from that of a standard collective in that the pilot places more pressure on the control for power compared to the standard collective in a helicopter. The nacelles also assist in making fine adjustments to the aircrafts speed and attitude.

The transition from vertical helicopter-to-airplane mode is called "conversion" in the Osprey community and represents a third, albeit transitory, regime. The nacelles are positioned in a 45 degree angle in this mode and the aircraft begins to take on the characteristics of a fixed-wing aircraft. According to Forsling, once converted into airplane mode, the Osprey takes on the characteristics of a medium-size turboprop aircraft.

Life at VMMT-204 from an instructor's viewpoint is made all the more interesting due to the various flight regimes and variety of missions the MV-22 can handle. Both instructors and students may fly basic familiarization flights one day, then find themselves conducting a low-level tactics flight the next.

Despite the initial difficulty and learning curve associated with flying this dynamic aircraft, the pilots at VMMT-204 are ready for the challenge.

"We are not done improving," said Hart. "We aren't satisfied. We are looking at ways to improve our instructor and student training, and innovating maintenance practices."

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