



## PMA202: Aircrew Systems for Today, Tomorrow and the Future

By Jack Stewart and Dan Steber

The business card for Capt. CJ Jaynes, PMA202 program manager, says, “Service to the Fleet,” and a visit with her team revealed it’s more than just a motto.

This NavAir program office provides the Navy and Marine Corps with cost-wise and safe aircrew systems. They make sure personal equipment does what it’s supposed to do when aviators or maintainers need it—lives depend on it.

Capt. Jaynes sums up her department’s work with a simple statement: “If you’re going to change anything on the human, see 202 first.”

A big challenge for her team is their work on a wide variety of programs, including aircraft systems and aircrew, survival electronics, chemical-biological defense, and fleet-support systems.

Continually improving aviation gear, PMA202 focuses on getting users what they need. They not only rely on feedback reports but also visit with and talk to the fleet to ensure the right products are developed. This firsthand look, or “boots on the ground” effort, allows for valuable dialog and a better understanding of the fleet’s needs.

Cdr. Tom Wheaton, who works the class desk, explained, “Warfighters look for tools to get the job done, and they want them now. But now is difficult to do. Developing, acquiring, fielding, and supporting take time. Quality takes time, and the gear needs to work the first time, every time.”

Here’s an overview of several programs and projects that PMA202 currently is working on:

**Aircraft-mounted systems:** Tracking aircraft-mishap trends, using reported incidents and information from the Naval Safety Center, is the foundation

for many of our projects, according to Gary King of the aircraft mounted-systems team. This mishap data inspired development of the mobile aircrew restraint system (MARS), which protects crew members in the cabin during a hard landing or mishap. The system uses a modified inertial reel originally developed for crash-worthy seats and integrated to the airframe and aircrew vest.

Another mishap trend indicated the need for a new crash-protection system, the common crash-resistant troop-seat system (CCRTSS), which PMA202 qualified in 2004. It is the best crash-attenuating passenger seat in the Navy today and is being fielded in all new production UH-1Y aircraft.

The premier ejection seat in use today is the Navy aircrew common ejection seat (NACES). To meet the needs of a new mission, the NACES modular design can be upgraded without a total redesign to the seat. This capability supports a wider aircrew population, including female pilots, and ensures safe ejection for both the smaller and larger aircrew. Phase II of its development included a new digital sequencer that controls critical seat functions to improve seat performance and



reduce seat cost. Phase III is planned for 2009 and will improve high-speed ejection-seat performance through the NACES stability improvement program (SIP). This is done with a new drogue stabilization system. NACES upgrades will replace older escape systems in various USMC FA-18s.

PMA202 is developing an alternative oxygen solution for the E-2D, Advanced Hawkeye, with installation of an onboard oxygen-generating system (OBOGS), instead of LOX bottles. The transition to OBOGS across all naval aircraft eventually will eliminate LOX infrastructure and reduce costs.

“People often can’t appreciate the work it takes to get a product properly integrated to the aircraft and out the door,” King said; for example, seat cushions that meet the requirements for extended missions.

King pointed out a Hornet mishap where an unauthorized cushion had been installed. He added, “You can’t simply install a cushion in the seat. As a sub-component of an ejection seat, these seats are complex systems that are sensitive to weight, center of gravity, or structural changes. The same analysis is being done to safely integrate the joint helmet-mounted cueing system (JHMCS) with current ejection seats.

*POC: Gary King, 301-757-6985*

**Aircrew-mounted systems:** An ongoing in-service program improves gear that aviators and maintainers currently use. “Fleet support teams,” according to Dex Hansard, “work with the fleet users to identify deficiencies.” With this information, the teams obtain funding and get the fixes in place.



All future aviators will fight with the next generation of helmet, the joint helmet-mounted cueing system, which interfaces with the aircraft’s computers, weapons, and sensor hardware. It currently is flying in the Hornet. JHMCS boasts a man-mounted, ejection-compatible, helmet-display system that optically projects aircraft, weapons and target information on the helmet visor.

The flight-deck cranial and flight helmet are being redesigned. “If you include the other services,” Hansard says, “27 different configurations of flight helmets are in use, with three display modules. The intent is to develop a common helmet and cranial, with two varia-

tions: one for rotary aircraft and one for fixed wing.” Night-vision devices (NVDs) and noise-protection requirements are being integrated into the flight-deck cranial. The next generation of NVDs in development significantly will improve night visual acuity and the field of view. The JHMCS night-vision cueing and display (NVCD) will integrate image-intensifier capabilities into the existing day-capable system for night operations.

The proliferation of battlefield lasers requires protection against hostile wavelengths. Improved laser spectacles and the joint aircrew laser eye-protection visor (JALEPV) will provide day and limited night protection for tactical and rotary aircrew.

A specific PMA202 success story is the multi-climate protection (MCP) system. MCP is a multi-layered clothing ensemble made with state-of-the-art fabrics that insulate without being bulky or heavy. The program office expedited cold-weather ensembles for Marines in Afghanistan.

*POC: Dex Hansard, 301-757-6972*

**Survival electronics and equipment:** The PRC-149A and the URT-140 radio beacon replace legacy radios not compatible with the SARSAT system. New radios offer enhanced search-and-rescue (SAR) location and will operate on all three internationally recognized SAR frequencies.

PMA202 is developing a helicopter egress system for passengers (HESP). This system integrates inflatable flotation with an underwater breathing air bottle to make it easier for troops to escape from a sinking aircraft. HESP is being developed in cooperation with the Marine Corps Combat Development Command (MCCDC).

Ricardo Springs, program manager, also pointed out the state-of-the-art survival item (SOASI) program, which “fast tracks” the process to qualify items for use. SOASI items are usually commercial items currently available to recreational outdoorsmen, such as flashlights, knives, signals, and some high-tech clothing.

*POC: Ricardo Springs, 301-757-6955*

**Chemical-biological defense:** This division works very closely with joint programs, which are important because the Navy has many unique requirements that must be factored into DoD programs. This division provides and services three types of equipment: individual protection, detection and decontamination.

Current programs include the joint protective aircrew ensemble (JPACE); joint-service aircrew mask (JSAM), which protects aircrew; joint chemical-warfare

