

FROG

Flame-Resistant Organizational Gear protects Marines longer

By Bill Johnson-Miles, Corporate Communications, USMC, June 2009

A few seconds might not sound like a very long time, but it could be the difference between life and death. The new Flame-Resistant Organizational Gear II (FROG II) that has been fielded or is being fielded into theater now (depending on the actual item) gives the warfighter a tested four seconds of protection against flames from improvised explosive devices and other forms of attack.

“This material at a four-second exposure will self-extinguish, which will allow the Marine time to get away from the heat source,” said John Hernandez of Marine Corps Systems Command’s Program Management Office for Infantry Combat Equipment (PM ICE).

The indicated four seconds for FROG II is what the material withstood in controlled testing. The actual length of protection might be different depending on specific combat situations. For those Marines who don’t yet have all FROG II protection items, FROG I apparel still provides plenty of protection.

The current Marine Corps Combat Utility Uniform is an essential part of FROG I, and when worn with collar up, blouse tucked in, sleeves down, body armor on and other requirements stipulated in MARADMIN 252/06, provides protection when exposed to flame for up to three seconds, according to controlled testing results. Additional FROG I items include the light- and mid-weight balaclava (hooded head protection), long-sleeve T-shirt and gloves.

“For exposures greater than three seconds, we have developed FROG II,” said Dan Fitzgerald, program manager for Infantry Combat Equipment. “The latest generation of FROG II is the combat shirt and trousers ensemble. Until fielding is complete, Marines are still being afforded FROG II protection in the form of the current flight suit and the combat vehicle crewman’s (CVC) suit.”

The new gear is made primarily from a blend of materials that includes many flame-resistant fibers. It adds protection, but it is not fire proof.

“This is not a firefighting ensemble,” Hernandez said. “You do not put this on and go in there and save the kitten. That is what firefighters wear.... This is not designed for that. A Marine has to be able to wear what he is wearing and still complete his mission.”

“FROG apparel is not designed for going into burning buildings,” added John Bauer, a materials engineer with PM ICE. “It is designed to minimize an injury.”

According to the program management office, the biggest advantage to wearing the new FROG apparel is the reduction in the amount of second- and third-degree burns. “It is a significant reduction,” Bauer said.

The flame-resistant gear works in conjunction with the rest of the combat equipment a Marine wears “outside the wire.” The helmet, body armor and goggles all provide increased flame protection.

“Just wearing the goggles alone will take a burn that would have been third-degree around the eyes down to zero-degree burns, again, at a four-second exposure,” Hernandez said.

PM ICE also considered the durability and use of the gear. The new flame-resistant gloves are a good example.

“They have a lot of dexterity,” Hernandez said. “We do not want to see Marines cutting fingertips off the gloves, so we have come up with a glove that allows them to still manipulate the weapon.”

Marines in Iraq are wearing the new FROG apparel. The Marine Corps has shipped 120,000 balaclavas, 60,000 of each style, along with 60,000 gloves and 120,000 long-sleeve shirts. All FROG I apparel items are in theater now. Shipments of the FROG II combat shirts and trousers are underway with about 8,000 of each currently in theater.

“We are aggressively working with industry to increase production capacity and reduce delivery timelines for these items with a target date of completing production this calendar year,” Fitzgerald said. “Meanwhile, FROG II flight suits and CVC suits are available.” In fact, Marines can choose to continue to wear flight suits or CVC suits instead of the new FROG II shirts and trousers, if they so desire. Each provides about the same amount of improved protection.

A fully tested four seconds of flame protection is a great improvement, according to Hernandez, but PM ICE is also working hard to increase the length and level of protection.

“It’s a spiral development,” he said. “This is never going to stop until we can find something that is comfortable to wear and provides the level of protection that Marines require over there. We are going to keep going.”



Maj. John Gutierrez of PG16 answers questions concerning Flame-Resistant Organizational Gear and the Modular Tactical Vest during the assistant commandant of the Marine Corps visit. *(Photo by Dedra Jones)*



Anti-microbial and moisture wicking, the FROG I balaclava has been uniquely designed with a hinged face guard that allows the wearer to pull the front portion down in order to expose face without having to remove helmet. There are two styles, light-weight and mid-weight. The mid-weight is made of a heavier fabric for colder conditions. In extreme cold, the light- and mid-weight balaclavas can be worn together. *(PM ICE photo)*



The FROG I flame-resistant gloves includes a gauntlet that provides added protection to the wrist. Wearer should ensure that the gauntlet of the glove is pulled over the sleeve of the outer garment. According to PM ICE, the glove has reinforced stitching in fingers and excellent dexterity. *(PM ICE photo)*



Anti-microbial and moisture wicking, the FROG I long-sleeve T-shirt contains a mock neck design, and according to PM ICE, it should be worn underneath a FROG II item and tucked into the trousers for added protection. *(PM ICE photo)*



A Marine wears the enhanced FROG II combat shirt and trouser ensemble. The torso portion of the combat shirt consists of a flame-resistant anti-microbial and moisture wicking knit fabric that provides added cooling characteristics. The combat trousers are designed similar to the current Marine Corps Combat Utility Uniform trousers with slight pocket modifications and worn in the same manner. Calf pockets have been added to aid in recognition and

usefulness of pockets (cargo pockets are often rendered useless due to drop holster and gas mask). According to PM ICE, blousing of the trousers helps prevent air traveling up the legs, thus eliminating a path and fuel for flames. (PM ICE photo)



When worn in conjunction with the Modular Tactical Vest, the FROG II combat shirt provides upper torso and arm protection. The flame-resistant sleeves resemble the current Marine Corps Combat Utility Uniform. According to PM ICE, the shirt should be worn with FROG I layers and secured all the way to the top with sleeves down, gloves pulled over the sleeve cuff and tucked into trousers. (PM ICE photo)



Gunnery Sgt. Ilich Bello of PG16 wears the entire Flame-Resistant Organizational Gear ensemble including the Lightweight Helmet, goggles and Modular Tactical Vest. *(Photo by Bill Johnson-Miles)*



A Marine Corps Systems Command Marine models Flame-Resistant Organizational Gear during the assistant commandant of the Marine Corps visit. *(Photo by Dedra Jones)*