



News Release

News Release No. 7

For Information: Don Kennedy, 410-436-7118

22 December 2010

ECBC Engineering Helps JPM-IP Lead the Way in Military Respiratory Protection

Aberdeen Proving Ground, Md. — Each month the Joint Project Manager for Individual Protection (JPM-IP) fields 10,000-15,000 Joint Service General Purpose Masks (JSGPM) to the U.S. Armed Services — an achievement that would not be possible without the U.S. Army Edgewood Chemical Biological Center (ECBC).

The JSGPM represents more than 10 years of engineering and testing efforts that resulted in providing the warfighter with state-of-the-art respiratory protection against known chemical and biological agents and radioactive particles. And throughout the course of the mask's development, ECBC has provided matrixed support to the JPM-IP.

According to Bill Fritch, product manager of Joint Service Ground Masks (JSGM), the JSGPM establishes cohesion among the Services by replacing the previous protective masks used by the Army, Marine Corps, Air Force and Navy.

Unlike legacy protective masks that were designed specific to each Service, the JSGPM was designed to be used by all U.S. Armed Services. The catalyst for the development of the JSGPM was the need for continued exceptional respiratory protection, but with improved operative capabilities.

Among the myriad of operative capabilities achieved, comfort, visibility and hydration improvements obtained by the JSGPM provide a more ergonomic design for the warfighter with increased optical clarity, and efficient weight distribution to lower the mask's profile. Unique to the JSGPM is the external dual filter design which reduces breathing resistance by half and provides 24 hours of respiratory protection; an enhancement over legacy masks' eight hours of protection.

"Not only do these Joint Service General Purpose Masks greatly improve the ability of the warfighter to perform, logistics are reduced, the cost goes down as a result of producing so many, and it is easier to support," said Leroy Stitz, a chemical engineer in ECBC's Protection Factor Toxic Chamber (PFTC) Branch. ECBC's PFTC supported the development of the JSGPM through extensive testing, designing additional testing techniques to account for the mask's nuances.

Fulfilling required mission capabilities across each of the four Services proved to be one of the greatest challenges when developing the JSGPM. Each of the Services had specific requirements for integrating with weapons systems, communication systems and other mission-critical functions.

“There was a lot of market research that was conducted. Once all of these technologies were analyzed and evaluated, we started on a more definitive concept approach based on what would meet the warfighter’s requirements,” Fritch said.

What started as rough sketches and clay modeling eventually evolved into this first-of-its-kind Joint respiratory protection solution for the U.S. Army, Navy, Air Force and Marine Corps.

“The program had a lot of concept wrangling early on to determine which technologies we needed to invest in, in order to support a variety of design approaches,” Fritch said. “We did some modeling with clay and rough sketches that the CAD engineers would convert into computer models. These would then be sent to rapid prototype companies that would build crude prototype components that we would assemble and conduct testing.

“We continually repeated the CAD modeling/prototype fabrication cycle until we obtained designs that were gaining warfighter acceptance. This work and knowledge was captured in reports and prospective contractors were given the information to build their approach to completing the design work and getting the design to production,” Fritch added.

Since 2001, more than 300,000 soldiers have trained on or been deployed with this respirator. Their feedback and contributions to the development of the JSGPM resulted in a product that is one of the most heavily-tested pieces of Individual Protective Equipment ever developed by the Department of Defense.

Chemical Engineer Steve Yurechko of ECBC’s PFTC branch, said the new joint service concept and dual filter design necessitated new testing processes. “We implemented standard military testing, work testing, and obstacle courses for the soldier and civilian personnel. But, when new concepts like the dual filters are introduced, we must design new testing exercises in order to adequately stress the critical areas of concern,” he added..

In his 28 years of experience with mask development and production, Fritch said the success of a program like JSGPM is a result of an exceptional integrated product team. “As long as everyone works together to overcome some of the inevitable obstacles and issues that arise, things will go smoothly and the process will be enjoyable,” Fritch said.

To date, 313,000 JSGPM’s have been fielded since 2008. In the past two years the masks have primarily been rolled out to the Air Force and Marine Corps; however, the Navy has a small allotment of them and eventually the Army’s requirements will be filled.

For more information about ECBC, visit <http://www.ecbc.army.mil/>.

ECBC is the Army’s principal research and development center for chemical and biological defense technology, engineering and field operations. ECBC has achieved major technological advances for the warfighter and for our national defense, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. ECBC is a U.S. Army Research, Development and Engineering Command laboratory located at the Edgewood Area of Aberdeen Proving Ground, Maryland. For more information about the Edgewood Chemical Biological Center, please visit our web site at <http://www.ecbc.army.mil/> or call (410) 436-7718.