



QUARTERLY

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(inside front cover)

From the DAR . . .

In August, Brigadier General Philip M. Mattox reported to SBCCOM as the Deputy for Acquisition and Readiness (DAR). The DAR has oversight of SBCCOM's RDA Enterprise. He is also the Post Commander for the Soldier Systems Center at Natick, MA. BG Mattox was previously the Director for Logistics, Engineering and Security Assistance (J4), United States Pacific Command, Camp H.M. Smith, Hawaii.



BG Mattox graduated in 1970 with a Bachelor of Science degree in Physical Education from North Georgia College. Upon graduation, he received a reserve commission as an Armor Officer through ROTC. He holds a Master of Education in Educational Administration from Virginia State University. His military education includes the Armor Officer Basic Course, Armor Officer Advance Course, Command and General Staff College, Advanced Operational Studies Fellowship (Senior Service College).

BG Mattox has served in a variety of command and staff positions. These include Platoon Leader and Company Executive Officer, 4th Infantry Division; Company Commander, Battalion S-4, 3d Infantry Division; Assistant Professor of Military Science Virginia State University, Petersburg, Virginia; Assistant Chief of Staff for Services, Chief Supply Management Division, 3d Support Command; Battalion Executive Officer 19th Maintenance Battalion; Commander, Division Materiel Management Center, 2ID; Logistics Staff Officer, The Pentagon; Commander, 703d Main Support Battalion and G-4, 3d ID; a seminar leader, School of Advanced Military Studies, Fort Leavenworth; and Commander, Division Support Command, 4th Infantry Division (Mechanized), Fort Carson, Colorado. BG Mattox served as the III Corps Assistant Chief of Staff, G4, in Fort Hood, Texas, before reporting to the United States Pacific Command in June 1997.

BG Mattox's awards include the Legion of Merit (with 2 Oak Leaf Clusters); the Meritorious Service Medal (with 4 Oak Leaf Clusters); the Army Commendation Medal (with 3 Oak Leaf Clusters); the Army Achievement Medal; the National Defense Service Medal (with Oak Leaf Cluster); and the Army Staff Badge.

Beginning with the December 2000 issue of the CB Quarterly, BG Mattox plans to have a column relating to the responsibility and challenges of SBCCOM's Deputy for Readiness and Acquisition.

Headquarters of the U.S. Army Soldier and Biological



Chemical Command is located at the Edgewood Area of Aberdeen Proving Ground, MD. Within SBCCOM's RDA Enterprise is the Research, Development and Engineering Center (RDEC). The RDEC consists of the Natick Soldier Center and the Edgewood CB Center. This publication is prepared at the Edgewood CB Center, incorporating CB-related information from the entire RDE Center.

We publish this information under the auspices of AR 70-45, R&D Scientific and technical Information Program, which states that "The objectives of the S&TI Program are to—

a. Improve the flow of technical information into, through and from the Department of the Army in order to

- (1) Secure economies by reducing RDTE lead time and by eliminating unnecessary duplication of effort,
- (2) Improve RDTE program management and execution, and
- (3) Support the information needs of scientists, engineers, and managers."

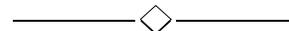
AR 70-45 further states "Department of the Army elements will provide for adequate interchange of technical information among themselves and with their contractors, the other military departments and Federal agencies, and, to the maximum extent consistent with national security, the US scientific, technical, and academic communities."

This document is distributed to over 900 addressees throughout the Joint Services, industry, and academic R&D community, and it could be a vehicle to publicize what is going on where you are. Please submit articles to Director, Edgewood Chemical Biological Center, ATTN: AMSSB-RAS-C, Aberdeen Proving Ground, MD 21010-5424, or by electronic mail to the Corporate Enhancement Team at cet@sbccom.apgea.army.mil. All submissions are accepted at the discretion of the editor and are subject to editing. This journal is prepared for publication by ECBC's Corporate Enhancement Team.

For additional information, please contact our editor at commercial (410) 436-5385 or DSN 584-5385.

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<http://www.sbccom.apgea.army.mil/RDA/ecbc/quarterly/index.htm>

REORGANIZATION OF THE OFFICE OF THE PROJECT MANAGER FOR NBC DEFENSE SYSTEMS

Joann Brucksch and Joanne Coale



The Office of the Project Manager for Nuclear, Biological and Chemical Defense Equipment provides centralized, life-cycle management for assigned NBC Defense programs. We have numerous systems, which we have managed for many years.

In July 2000, we reorganized, doubling in size both in our programs and our people. The PM-NBC Defense Systems now consists of two Product Managers, two Product Directors, and 22 product lines. The Product Managers are PM-Reconnaissance and PM-Obscuration and Decontamination Systems, formerly the PM-Smoke/Obscurants. Product lines under PM-Obscuration and Decontamination Systems include all obscurant systems as well as Sorbent Decontamination System, Modular Decontamination System, and Joint Service Sensitive Equipment Decontamination System. The Product Directors are PD-Masks and PD-Detection. We now manage not only Joint NBC program but Army programs.

By combining obscuration and decontamination with the systems already managed by the PM-NBC Defense Systems, we provide support that reflects a field focus with a combined purpose. A field commander now knows where to go to get the support he needs because all the NBC systems are managed by one product manager. This also reflects the responsibility of the PM for complete life cycle (*cradle-to-grave*) management.

Adding an R&D responsibility to the Office of the PM brings with it a tough technology challenge; e.g., the Joint Service Sensitive Equipment Decontamination System which, should transition in October to Engineering Manufacturing Development.

PM-Reconnaissance:

Fox NBC Reconnaissance System, M93A1 Block I Modification
Fox NBC Reconnaissance System, M93A1 Block II Modification
Fox Training System
Joint Service Lightweight NBC Reconnaissance System

PM-Obscuration and Decontamination Systems:

Countermeasure Discharger, M6
Grenade, M90
Grenade Discharger, Anti-Riot, Irritant, CS, XL96E1
Grenade Discharger, Anti-Riot, Practice, XL97E1
Grenade Launcher: Non-Lethal, Distraction, XM98
Grenade Launcher: Non-Lethal, Blunt Trauma, XM99
Joint Modular Decontamination System M21 DP/M22 HPW
Joint Service Sensitive Equipment Decontamination System
Lightweight Vehicle Obscuration Smoke System
Mechanized Smoke Obscurant System, M58--"The Wolf"
Sorbent Decontamination System, XM100
Smoke Generator Set, M157A2,
and M1059/M1059A3 Smoke Generator Carrier -- "The Lynx"
Smoke Generator System, M56--"The Coyote"

PD-Respiratory Protection:

Mask Program, M40
Mask, M45
Joint Services General Purpose Mask

PD-Detection:

Automatic Chemical Agent Alarm, M21
Automatic Chemical Agent Alarm, M22
Chemical Agent Monitor Simulator
Improved Chemical Agent Monitor
Joint Chemical Agent Detector
Joint Services Lightweight Standoff Chemical Agent Detector
Joint Warning and Reporting Network
Multipurpose Integrated Chemical Agent Alarm
Pocket Radiac AN/UDR-13
Radiac Set AN/PDR-75
Radiac Set AN/PDR-77
Radiac Set AN/VDR-2
Surface Sampler Probe: XM279
Virtual Emergency Response System

As the PM-NBC Defense Systems organization grows and evolves, it is an exciting time.



Also, as part of the reorganization, the PM-NBC Defense Systems added Assistant Program Managers to assist all the teams with Digitization, Logistics, Fielding, and Test & Evaluation.

Another large function of the PM-NBC Defense Systems program is "Army Transformation." This program is intended to transform today's force from a cold-war force to an early 21st century force. There are three independent but related efforts within this transformation program.

- Recapitalization (maintain structure to fight and win war). The focus is to evaluate existing equipment for upgrading or improvements.

- Interim Brigade (being established at Fort Lewis). This will be the transition force, taking existing and early next generation equipment and developing new tactics, techniques, and procedures. For example, the IAV, which is in procurement now, will become the

next generation Fox vehicle. Applying obscuration and decontamination in technologies to support the Interim Brigade by providing smoke to protect soldiers in urban areas as well as from designer obscuration or enemy obscuration. The goal is for a brigade to be deployed in 96 hours and 5 divisions to be deployed in 30 days.

- Objective Force 2010 and Beyond (most effort is going on in the laboratories at Natick and Edgewood). The PM is looking at how to plug technology into existing equipment. Many of these programs will evolve into technology demonstrations. Some of the things being looked at are "how to integrate sensors to optimize soldier performance," "how do we design a helmet/mask to be all things to all soldiers," "how to interface with Land Warrior," "what is best man/machine interface." The Natick Soldier Center is also looking at things such as dermal feeding patches, clothing, and

helmets that will integrate maps, laser and ballistic protections, etc. Force Provider is a good example of the emphasis being placed on the health and welfare of our soldier. It is lightweight and designed so that a soldier can spend long periods of time in bare base operations.

As the PM-NBC Defense Systems organization grows and evolves, it is an exciting time.

For additional information, please contact COL Stephen V. Reeves, Commercial (410) 436-2566, DSN 584-2566, email stephen.reeves@sbccom.apgea.army.mil

MISSION GROWTH AND CHANGING TIMES

“Own the Night . . . And the Day”

The Product Manager for Smoke/Obscurants (PM Smoke) was reorganized in July 2000. The organization is now an integral part of Project Manager, Nuclear, Biological and Chemical Defense. Our new name is Product Manager for Obscuration and Decontamination Systems. New teams, Modular Decontamination System (MDS); Joint Service Sensitive Equipment Decontamination (JSSED), and Sorbent Decontamination Systems (SDS), joined the M56 Coyote Motorized Smoke Obscuration System; Light Vehicle Obscuration Smoke Systems (LVOSS); Rapid Obscuration System (ROS); M58 Wolf Mechanized Smoke System; and M157A2/M1059 Lynx Smoke Generators.

PM Smoke has had a long and distinguished history. First chartered by the Secretary of the Army on 5 August 1976, the Project Manager Smoke/ Obscurants was given three broad responsibilities: Life cycle management of smoke materiel, conducting field smoke tests, and chairing the Army Materiel Command's (AMC) Smoke/ Aerosol Steering Group.

PM Smoke was created to develop and maintain smoke equipment. The organization provided a development and test support

structure to assist in the evaluation of smoke and obscurant effects on systems. The office was established on 9 August 1976 under the command of Colonel Henry Shelton, an Infantry Officer. The office was directed to develop a variety of new smoke and obscurant materiel that would increase battlefield capability in three ways:

tactical smoke and obscurants that would provide a combat multiplier;

new obscurants that would counter new high technology weapons being introduced by threat forces,

and extension of smoke/ obscurant technology in screening to better hide our forces.

PM Smoke was responsible for monitoring and guiding conceptual phases of smoke and electro-optical systems acquisition.

Smoke and obscurants provides complete screening for troop movements, denying information to the enemy on the “digitized battlefield” of the future and gives our troops the advantage. Since you can't hit what you can't see, our systems defeat whole groups of weapons. One former PM, Colonel George Birdsong, stated, “Fog oil smoke can make soldiers,

tanks, and even airfields disappear from an enemy that is equipped with things like binoculars, night vision goggles, laser range finders, and designators.

Against an enemy that has more sophisticated equipment, like thermal viewers, we switch over to our infrared. smoke and disappear again.” This concept gave birth to PM Smoke's slogan, “Own the Night...And the Day.”

There have been nine PMs who have piloted PM Smoke through ever changing mission requirements. They are

COL Henry Shelton
(Jun 76 - Jun 79)
COL Samuel Eure
(Jun 79 - Jun 83)
COL Morton Brisker
(Jul 83 - Aug 86)
COL Francis Durel
(Aug 86 - Jul 88)
COL Joseph Phillip
(Jul 88 - Jul 90)
COL John Gorrell
(Sep 90 - Jul 93)
COL George Birdsong
(Jul 93 - Jun 96)
COL Christopher Parker
(Jun 96 - Jun 99)
LTC Billy Welch
(Jun 99 - present)

Once again an Infantry Officer is guiding our new beginning.

Until the early 1990s, PM Smoke sponsored and participated in annual Smoke Weeks and Smoke Symposiums. The annual smoke symposium served as a forum to disseminate information on the effects of smoke and obscurants on electro-optical systems.

Representatives from the Army, Navy, Air Force, industry, the academic world, and allied nations were invited to participate.

In addition, during Smoke Week, PM Smoke provided a smoke environment for electro-optical system developers who recorded how their systems performed during the test. The data was collected by PM Smoke for the Smoke Week Report. Many systems availed themselves of the Smoke Week testing while in various stages of development.

PM Smoke celebrated its 19th anniversary in July 1995. It successfully type classified an unprecedented five pieces of equipment. That year PM Smoke began making the transition from research and development to production, becoming more involved in the fielding and training of its systems. The organization is emphasizing new equipment training, putting the equipment into the soldiers' hands and making sure they know how to use it.

What distinguishes PM Smoke is the dedication and closeness of the employees for over two decades. At any function, the attendance by alumni far exceeds the current employees. There is an obvious pride and satisfaction in the work that is being accomplished here.

Even though the name has changed, the basic mission has not. PM Obscuration and Decontamination Systems will continue to provide the best equipment and training into the hands of our soldiers on the battlefield.

For additional information, please contact LTC Billy H. Welch, Commercial (410) 436-2804, DSN 584-2804, email billy.welch@sbccom.apgea.army.mil



NATIONAL PROTECTION CENTER

Jane Benson

SBCCOM's National Protection Center (NPC) is working to enhance the safety and survivability of the nation's military and civilian emergency responders by striving for not only uniformity and compatibility in their protective clothing and equipment, but also access to the best protective clothing and equipment that science can offer at the best price.

Established in September 1999, the NPC is a joint agency pilot program located in Natick, MA. The center operates in conjunction with the NASA Ames Research Center and National Institute for Justice Office for Law Enforcement and Corrections Technology Commercialization as a consolidated central source of expertise in protective technology and in anticipating threats.

Technological hub

The NPC location capitalizes on the Natick Soldier Center's almost 50-year-old reputation as a hub of scientific and technological excellence in the area of individual protection and sustainment.

Specifically, the NPC has access to the Natick Soldier Center's world-class textile and materials research capabilities, individual protective equipment design and development expertise, and unique testing



facilities, including man-rated environmental chambers. Also located at Natick is the Navy Clothing and Textile Research Facility and Army Research Institute for Environmental Medicine, which will be participating in the center's

activities. The center will help leverage the efforts of federal, state, and local government as well as industry and academic researchers in an attempt to avoid duplication of effort.

“The NPC is part of SBCCOM’s ongoing efforts to reach out to other communities beyond the military to share knowledge, information, and technology,” said Rita Gonzalez, acting director of the NPC. “The NPC supports SBCCOM Commander MG John Doesburg’s vision for expanding our customer base to meet as many national goals as possible.”

Gonzalez added that the center will attempt to meet the needs of many users and missions, including peacekeeping, firefighting, civil disturbance management, space exploration, and law enforcement.

“Firefighters respond to structural fires and hazardous materials spills every day in every city and town,” said Bill Haskell, the NPC’s technical program development manager. “Police get injured and killed every day all over the country. The NPC will enhance the safety of the very people protecting our communities.”

Saving time, money

Haskell said that the NPC is committed to developing dual-use technologies for civilian and military applications. The NPC philosophy is to apply an “integrated system” approach, encouraging the development of protective equipment that can be used in multiple missions against multiple threats. This method saves time and money.

“Why should taxpayers fund the same types of research and development two or three times? Why should emergency responders

have to wait for the very latest technology? The National Protection Center addresses these concerns and will help eliminate duplication and fragmentation of (research and development) efforts,” Gonzalez said. “Just as importantly, it gives emergency responders a voice. The NPC encourages their input and takes into consideration their protection needs.”

Haskell said the NPC is in the process of building visibility and confidence in the program. It takes suggestions as well as solicits ideas of what’s needed.

“Emergency responders put their lives on the line for our communities,” said Lynn Valcourt, NPC staffer. “It is only right that they have access to the very latest and very best protective clothing and equipment. The NPC gives them that access.”

Unmistakable value

Members of the emergency responder community recognize and appreciate the value of the NPC.

“The potential benefits of technology transfer between the NPC and the emergency responder community cannot be underestimated,” said Capt. Douglas Wolf of the Sarasota, FL, Fire Department. “The firefighting community is already benefitting from the thermal imaging and infrared imaging technology that was transferred from the military. I envision that future technology transfers from the NPC to

emergency responders will greatly enhance our domestic preparedness.”

Elaine Sudanowicz, deputy commissioner of the Boston Transportation Department, Mayor’s Interagency Liaison-Boston Emergency Management Agency, said the center is critical to safety at all levels of government.

“The NPC is a catalyst to the newest research and development initiatives in protective equipment for all users,” Sudanowicz said. “I commend SBCCOM for having the vision to create the National Protection Center, our most vital national team of intergovernmental partners.”

Lt. Toby Bevelacqua, of the Orlando, FL, Fire Department, said the NPC is valuable as a knowledge base and clearing house for protective clothing and equipment.

“We are truly in an age when fire and police protective equipment needs to be evaluated on a scientific basis,” he said. “The NPC has the scientific expertise necessary to enable fire and police to make the best decisions regarding new equipment purchases.”

Defending with science

The Natick Soldier Center’s NPC personnel take to heart SBCCOM’s motto *cum scientia defendimus*, or “with science we defend.” For example, the Natick Soldier Center has a cooperative agreement with the University of Massachusetts at

Dartmouth to jointly develop smart textiles that can sense and react to ever-changing physical and chemical environments. Such textiles and other protective items will serve not only military personnel and emergency responders but also the apparel, medical, and communications industries.

The researchers and scientists at Natick form the backbone of the NPC and make such an arrangement possible.

“Over the years, the Natick Soldier Center has been a pioneer in evaluating the protection and operational needs of soldiers on the battlefield under many types of environmental and threat scenarios,” said Gonzalez. “Many lessons have been learned, among them is the simple fact that adding more technologies to those worn or used by the operator does not necessarily make for a better or more efficient operator. We have learned to look at the human being as a system and evaluate the impact of each piece of equipment or technology on a person’s ability to perform their mission safely and effectively. Thus, the NPC’s focus is on the most valuable and fragile operating system: the human being.”

Key connections

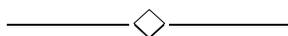
The NPC has the best available scientists and facilities, and people who have ties to the organizations the center hopes to serve.

For instance, Haskell has facilitated ongoing agreements between the

Natick Soldier Center and the Commonwealth of Massachusetts Executive Office of Safety. He also serves on the National Fire Protection Association’s Technical Committee for Hazardous Materials Protective Clothing and Equipment, and the Department of Defense/Department of Justice Interagency Board for Equipment Interoperability and Standardization. Gonzalez is a member of the International Association of Chiefs of Police and the Office of Law Enforcement Technology Commercialization Advisory Committee. She has helped coordinate numerous research and development agreements between the Natick Soldier Center, industry, and academia. One of Natick’s past agreements resulted in a retrofitted military water heater for Boston Fire Department’s mobile decontamination truck.

The creation of the NPC reflects the Natick Soldier Center’s longtime commitment to the warfighter, the emergency responder, the local community, and to the safety and security of the nation.

Lt. Richard Parker, hazardous materials officer for the Boston Fire Department agrees. “It is great to have access to military technology and expertise,” he said. “Natick is truly helping us better carry out our duties.”



NATIONAL PROTECTION CENTER FINDS SIMPLE, EFFECTIVE SOLUTION

Sometimes solutions developed or overseen by SBCCOM’s National Protection Center are amazingly simple, yet highly effective.

Such was the case during a Joint Chemical Terrorist Exercise that took place at the Bowdoin Street MBTA station in Boston, MA, in February. The exercise simulated a hostage incident that resulted in the detonation of an explosive device and release of chemical warfare agent. The scenario then involved the discovery of a secondary explosive device within the already contaminated subway station.

The exercise was based on a real-life incident, which happened on the Tokyo subway system. During the Tokyo attack, Sarin gas was released into the underground railway system, killing 12 people and injuring thousands.

The Boston Police Department, Fire Department, Hazardous Materials Team, Bomb Squad, Emergency Medical Service, MBTA Police, and National Guard Civilian Support Team participated in the exercise. The NPC provided the Boston Police Bomb Squad with portable wireless communications systems for their six-man entry team, as well as an Incident Commanders Radio Interface (ICRI) prototype unit to tie together the various departments’ handheld radios.

The ICRI proved to be a simple solution to a highly dangerous

problem. Duplication of effort, or worse yet, confusion and chaos can ensue when firefighters, police and other emergency responders can communicate within their own groups but not with one another. The NPC found a viable solution in adapting an available commercial technology.

The value of the NPC's insight and expertise in such a situation cannot be underestimated. Lt. Eric Hahn, commander of the Boston Police Department's Environmental Safety Group, participated in the Joint Chemical Terrorist exercise.

"Efficient communications between team members and supervisory personnel are essential. The ability to talk and plan during the process greatly enhances the performance of the team," Hahn said. "We tried a wireless communications system during the exercise, which allowed all team members to be in constant communication, and it proved to be vastly superior to the existing equipment which is so dysfunctional that it is rarely even taken off the truck."

The NPC's solution enabled all responders to coordinate efforts and quickly communicate with one another, a capability that would save lives during a real emergency.

For additional information, please contact the Public Affairs Office at Natick, Commercial (508) 233-4300, DSN 256-4300

MARINE CORPS TEAM AT EDGEWOOD CB CENTER

A team of ECBC engineers and scientists has been established to provide direct support to the USMC PM Marine/NBC Combat Support Logistics Equipment (CSLE). This PM is responsible for NBC equipment for the Marine Soldier, Contamination Avoidance, Decontamination, Shelters, Collective Protection, and Medical Equipment. The team is operating within the Engineering Directorate of the Edgewood CB Center attached to the Acquisition Management Business unit.

A successful Marine team at Natick is effectively managing a select number of soldier equipment-related engineering projects, using the resources and expertise within the Natick Labs. The Edgewood team likewise has available the resources of organizations within SBCCOM, the tenants of Aberdeen Proving Ground, and all associated contractors.

Because of a broad range of NBC technical areas addressed in the Edgewood area, there is the potential for the Edgewood team to assume a correspondingly broad scope of responsibilities addressing Marine NBC areas of concern in consequence management, contamination avoidance, collective protection, and decontamination.

The responsibilities include direct program management of select projects, representing the Marine interests at Joint Service acquisition programs, assisting current Marine project staff, providing technical assistance to Marine decision makers, and the potential of establishing a one-stop NBC R&D service at Edgewood. The team would serve as the focal point for the Marines and be responsible for tasking and managing Marine funded research and engineering projects using the resources of ECBC and Natick and its associated contractors.

Currently, the team consists of senior level scientists and engineers that include a Mechanical Engineer, Electrical Engineer, Chemist, Biologist (Ph.D.), Aerosol Scientist, and Logistics Specialist. Experience ranges from Decontamination and Demilitarization technologies, to Software Supportability and Equipment Logistics, to Detection Technologies, including knowledge of current Foreign NBC equipment and technologies.

The Edgewood team was patterned after a successful Marine team at Natick.

Since establishment in Third Quarter FY00, the team has been actively interfacing with Marine project staff, familiarizing them with Edgewood's resources and team capabilities, establishing a presence, and assuming responsibilities in all the on-going Joint Service Decontamination and Contamination Avoidance programs.

For additional information, please contact Mr. Howard M. Smalley, Commercial (410) 436-4933 or DSN 584-4933

DOD DECONTAMINATION SCIENCE AND TECHNOLOGY PROGRAM

Dr. John F. Weimaster, SBCCOM

Dr. John Ontiveras and Mr. Imran Baig, Battelle Edgewood Operations

The decontamination program area of the Joint Science and Technology Panel for Chemical and Biological Defense (JSTPCBD) has seen the attainment of many goals in 1999. The JSTPCBD has primary responsibility for management and oversight of projects in the areas of 1) basic research, 2) supporting science and technology, 3) chemical and biological detection, 4) individual and collective protection, 5) decontamination, and 6) modeling and simulation. The wide range of these projects encompasses basic research, advanced research, and advanced technology development. This article will describe the achievements of 1999 and 2000 to date, and outline the planned activities for the remainder of 2000 for decontamination program area.

Present Achievements. It is important to note that in the area of decontamination, several key activities were accomplished in fiscal year 99 (FY99). Most importantly, a comprehensive Front-End Analysis (FEA) was conducted. This consisted of an exhaustive literature search in combination with a world-wide market survey to identify technologies, equipment and projects associated with

decontamination. Additionally, care was taken to identify on-going decontamination projects conducted at the Department of Energy (DOE), Defense Advanced Research Projects Agency (DARPA), Army Research Office (ARO), and the Technical Support Working Group (TSWG), as awareness and collaboration are integral elements to successful planning and the judicious use of common resources. These efforts led to the development of a comprehensive and insightful ten-year decontamination research Master Plan that identifies technologies having potential application to projected DOD decontamination acquisition programs. Copies of the Master Plan were distributed at the Decon 99 conference held at Nashville, TN.

The main thrust for 2000 is the Joint Service Sensitive Equipment Decontamination - Block I program.

Second during FY99, candidate decontaminants for the Joint Service Fixed Site Decontamination (JSFXD) program were identified, based largely on information collected during the FEA and on recent test results from

large panel tests conducted at Dugway Proving Ground. Identification of the candidates allowed the JSFXD program to initiate a series of investigations designed to evaluate performance of those decontaminants and determine potential suitability.

Finally, a Joint Service Sensitive Equipment Decontamination (JSSED) transition team was established to coordinate the transition and maturation of technologies that are applicable for the decontamination of sensitive equipment. The transition team will continue its efforts through FY00.

Current and Future Programs. The main thrust for 2000 is the JSSED- Block I program. This program addresses the need to decontaminate CB agents from sensitive equipment such as avionics, electrical, electronic and environmental systems equipment. This program is scheduled for transitioning in FY01. Figure 1 summarizes the planned DoD decontamination acquisition programs and the anticipated dates for transition from research to engineering.

The **JSSED - Block II/III** program emphasizes decontamination of vehicle and aircraft interiors and also addresses the need for “on-the-

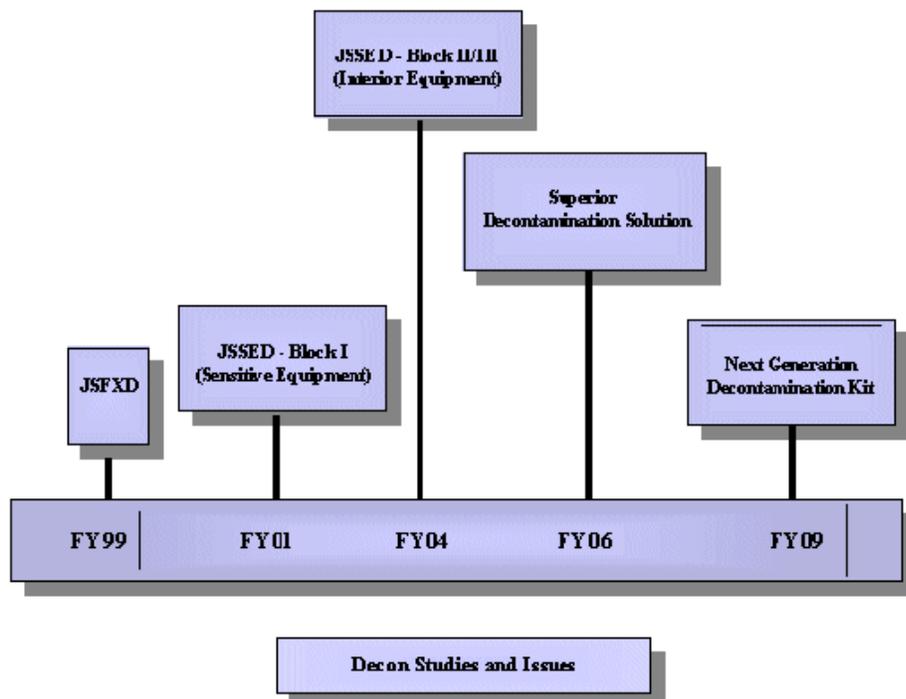
move” decontamination. The **Superior Decontamination Solution** program consists of a series of projects that target the replacement of DS2 and the development of other decontaminating solutions. The **Next Generation Decontamination Kit** encompasses a new category of solid decontaminants such as reactive sorbents (e.g., zeolites and nanoparticles). These will serve as a product improvement to replace the current developmental sorbent in the M295 Decontamination Kit and also have other applications.

To conclude Figure 1, there are several issues, such as the environmental fate of agents and the behavior of agents on surfaces, that impact all programs and these are collectively represented in the category Decon Studies and Program Issues.

FY00 Project Descriptions. Currently, there are thirteen funded projects that fall under the programs described above.

• **JSSSED- Block I:**

Supercritical Carbon Dioxide (SCCO₂) for Sensitive Equipment Decontamination to determine the feasibility of employing SCCO₂ or liquid CO₂ extraction technology for military purposes. It will be necessary to evaluate the technical benefits and challenges associated with the development of such a system. Additionally, the required testing for determination of material compatibility and cleaning efficiencies will be conducted.



Decontamination Key Tech Base Transition Programs

Environmentally Friendly Sensitive Equipment Decontamination (Solvent Wash) to develop a system that uses non-ozone depleting solvents to decontaminate electronic equipment, precision parts, and other sensitive equipment effectively and efficiently. In both these technologies, however, the solvent removes agent from the surface that must later be destroyed. A reactive sorbent, once developed, may be able to perform this function.

• **Superior Decontaminating Solution Program:**

Investigation and Validation of Organic Chemical Matrix Strategies for Fixed Site/ Large Area Decontamination to develop a non-aqueous monoethanol amine

(MEA) decontaminating solution as a replacement for DS2.

Enzyme and Catalyst Based Decontamination to develop an enzyme-based, catalytic decontaminant that is non-toxic, non-corrosive and environmentally safe.

Enzymatic Decontamination of Chemical Warfare Agents to evolve and enhance the catalytic properties of the bacterial enzyme phosphotriesterase towards the decontamination, destruction and detection of G- and V-type nerve agents and their analogs. This project complements the previously described effort.

Surfactant-Based Decontamination Solution to develop a chemical and biological agent

decontaminating solution using surfactant or microemulsion technology and peracid chemistry. Development of Decon Green: to develop a non-corrosive, non-toxic, environmentally-friendly, peroxy-carbonate-based decontaminating solution with a wide variety of decontamination/site-restoration applications.

• **Next Generation Decontamination Kit:**

Destructive Adsorption: A New Approach to Reactive Sorbent for Immediate Decontamination to prepare a reactive sorbent for immediate decontamination. This requires an initial preparation of inorganic substrates impregnated with oxides of transition state metals and a subsequent characterization of their reactivity to chemical warfare agents and simulants. This project may have application in the JSSED – Block II/III program mentioned earlier.

Solid State NMR to develop methodologies to investigate advances in materials science/technology that utilize high surface area reactive materials.

• **Decontamination Studies and Program Issues:** This is a “technology watch” category in FY00 for monitoring the maturation of technologies presently lower than the level required to reach desired transition milestones. As appropriate advancement occurs, insertion to the CB Defense Program could take place.

Biological Agent Decontamination Evaluation to

examine the status of biological agent decontamination; identify data gaps and potential areas for the use of specialized technology.

Chemical Agent Reactivity with Concrete, Asphalt and Soil to collect sufficient data for persistence models to predict agent hazard with a high degree of accuracy that supports international efforts.

Fate of Chemical Agents on Surfaces to quantify the fate of agent-contaminated surfaces by using an experimental approach to study the off-gassed and surface adsorbed/reaction components.

Decontamination Area Integration to conduct a variety of tasks including an update of the decontamination area Front-End Analysis and Master Plan. Integration includes funding and participation in a NATO working group to define decontamination requirements for Allied Nations.

Other Federal CB Decontamination Programs.

There are promising avenues in the field of decontamination presently being explored under the aegis of federal organizations such as DOE, DARPA, ARO, and TSWG. At the DOE laboratories, a decontaminating foam, an oxone gel, and an Atmospheric Pressure Plasma Jet are being evaluated to determine their effectiveness in decontamination. In addition, GD5, a non-aqueous decontaminant, is part of the Foreign Comparative Tests being conducted by the U.S. Air Force for employment in the decontamination of sensitive

electronic items and aircraft interiors. All these projects will be watched for maturity, and close monitoring will allow timely insertion into decontamination acquisition programs.

Conclusion. The multi-fold responsibilities of the Joint Science and Technology Panel for Chemical and Biological Defense are strongly directed to the goal of achieving innovative and effective decontamination techniques for the future. Four transition milestones will occur over the next 5 years. The transfer of technologies to engineering development will provide new capabilities where none existed before. Continual awareness of varied on-going projects will lead to effective collaboration, the judicious use of resources and concurrent investigation of promising technologies. In addition to ongoing reviews, there will be scheduled updates of the Front-End Analysis and Master Plan, thus ensuring appropriateness of research efforts.

FY00 promises to be a dynamic, challenging and fast-paced year. Decontamination efforts will continue to provide further insight into the complex business of decontamination and will identify solutions to these challenges.

For additional information, please contact Dr. John Weimaster, Commercial (410) 436-4148, DSN 584-4148 or email john.weimaster@sbccom.apgea.army.mil

STEPO STEPS UP PROTECTION

Curt Biberdorf

A new protective suit offering the highest level of safety against counterterrorism and emergency response operations involving unexploded chemical and biological weapons, and toxic industrial chemicals began fielding by the Army in December and will

Army Soldier and Biological Chemical Command, is rated “Level A” by the Occupational Safety and Health Administration and Environmental Protection Agency, and provides the best possible level of skin, respiratory, and eye protection available.

rocket fuels; petroleum, oils, and lubricants; and industrial chemicals. STEPO replaces the M3 Toxicological Agents Protective (TAP) ensemble in highly-toxic areas.

“The TAP is old technology, a rubber-coated fabric designed for routine cleanup, such as a leaking munition,” Whipple said. “It wasn’t up to OSHA standards. There was a possibility that you could draw vapors into the suit. Even though it was sealed at the cuffs and feet, it wasn’t completely self-contained.”

“STEPO is designed specifically where it’s highly toxic, where it’s oxygen-deficient, or where there is immediate danger to life and health,” said Matt Whipple, project engineer for the STEPO.

STEPO is a modular design composed of a chemical protective suit, two separate breathing systems, a personal ice cooling system, and a communication system.

The STEPO suit is a totally encapsulating one-piece garment with integral boots, airtight slide closure, and glove assembly. The fabric is made of five alternating layers of Nomex and Teflon, and has a middle layer that indicates wear. It’s capable of being decontaminated for reuse after five vapor exposures, and decontaminated and disposed of after liquid contamination.

A total of 2,639 STEPOs is scheduled to be delivered to Army Explosive Ordnance Disposal units, technical escort units, chemical activities/depots, two chemical schools at Redstone Arsenal, AL, and the U.S. Army Chemical School Chemical Defense Training Facility at Fort Leonard Wood, MO, according to Frank Cole, integrated logistics support manager and contracting officer’s representative for STEPO.

The outfit will be worn for protection while handling chemical and biological agents; missile and



continue through 2002.

The Self-contained Toxic Environment Protective Outfit (STEPO), developed by the U.S.

The suit dissipates static, is flame-resistant and self-extinguishing, and absorbs lower solar energy because of its light color. Two-layered gloves are made of neoprene and butyl rubber, and users also wear a glove liner based on the mission and chemical threat. A visor in the head cover provides an expansive view and has an antifog layer laminated on the inside to prevent fog from forming and obstructing the wearer's view.

Isolated inside a sealed-up suit, wearers need a way to breathe. STEPO can be used with two breathing apparatuses, depending on the mission, each weighing about 35 pounds and worn under the suit.

The rebreather is a closed circuit breathing system. It circulates exhaled air through a scrubber that absorbs carbon dioxide. Out-flowing air then is mixed with an oxygen stream supplied from a compressed oxygen bottle and is reintroduced into the respirator face-piece for inhalation. The oxygen bottle and rebreather can provide up to a 4-hour air supply. Explosive Ordnance Disposal units use the rebreather configuration.

“This is a big step up in protection for (Explosive Ordnance Disposal) soldiers,” Whipple said. “They were using filtered air instead of a self-contained breathing system.”

The self-contained breathing apparatus consists of a 1-hour air cylinder for stand-alone operation or a 30-minute air cylinder for tether operation. The self-contained system is used by chemical activities or depots and technical escort units.

This apparatus is used when a 1-hour air supply is sufficient. In the tether mode, if the air is disrupted, the 30-minute cylinder automatically switches on. Army and Air Force firefighters use the self-contained system.

Providing a supply of air to breathe is essential, but perhaps just as important is dealing with the heat.

A personal ice cooling system comes with each suit. The system consists of a pump unit, plastic bottle, connective hose and tubing, suit pass-through and shirt, with a network of tubing. Cold water is circulated through the shirt tubing and acts as a coolant for about 30 minutes, depending on outside air temperature and individual tolerance levels.

“In the TAP it was just an ice vest. This is a circulatory system,” Whipple said. “The new cooling system is what the users really appreciate. In all the tests, they really liked it.”

The fourth STEPO component is the communication system. The system allows users to talk with each other and with the command center. A different system is used with each breathing apparatus.

“Most depots have chemical monitors, so they know what they're getting into,” Whipple said. “They want to dress according to the threat.”

Assuming the threat is at its most extreme, units will be ready.

For additional information, please contact the Public Affairs Office at Natick, Commercial (508) 233-4300 or DSN 256-4300.

GENERATOR, SMOKE, MECHANICAL: MECHANIZED SMOKE OBSCURANT SYSTEM, M58 (WOLF) FINAL YEAR PRODUCTION

THE LAST "HURRAH!"

The U.S. Army Anniston Army Depot (ANAD) completes its final year of producing the M58 Wolf for the Product Manger for Obscuration and Decontamination Systems (PM O/DS) in September 2000.

remaining seven M58s will be fielded to the U.S. Army Pre-positioned Stocks Three (APS-3) in July 2001.

To produce the M58 system, ANAD begins with an M113A2 Armored Personnel Carrier. ANAD dismantles the M113A2 and rebuilds it into the Wolf by reconditioning the chassis and adding M113A3

upgrades provided by the Tank-Automotive and Armaments Command (TACOM). During the process, the chassis is further modified to accept the smoke components, which include a multi-spectral smoke generator system (SGS), an AN/VAS-5 driver's vision enhancer (DVE), and an M8A3 gas particulate filter unit (GPFU) provided by SBCCOM.



M58 Wolf De-processing Operations at Fort Hood, TX, April 1999

During this final year, ANAD produced the final 28 out of a total buy of 140 M58 Wolf systems. Twenty-one of the systems were fielded to the 360th Chemical Company, 90th Reserve Support Component (RSC), Fort Chaffee, AR. The



Mobile Smoke Operations at Fort Hood, TX, April 1999

The M58 Wolf protects the armored maneuver and other supported units against threat visual through far infrared reconnaissance, intelligence, surveillance, and target acquisition (RISTA) systems. It does this by generating fog oil and graphite “smoke” screens from its SGS. The DVE allows the driver to maneuver the Wolf within its own visual smoke cloud. The commander also has a remote display allowing him to see what the driver sees.

The GPFU provides filtered air allowing the crew to operate in nuclear, biological, and chemical (NBC) contaminated environments. The system includes an M2 .50 cal machine gun, M259 grenade launchers with firing/arming mechanism, and the single channel ground and airborne radio (SINCGARS).

The M58 uses a dedicated chassis consisting of the modified M113A3 carrier, in order to enhance mobility and maneuverability.

With completion of this production and subsequent fielding to the 360th Chemical Company, the Army Reserves can also claim the same benefits from the use of smoke and obscurants as the active army, benefits translated into the PM ODS’s slogan: “Own the day and the night”. Kudos and a big Hooah! go to all team members that participated in this effort. Members of the team include the Product Manager for M113, TACOM, the Project Manager for Forward Looking Infrared (PM FLIR), the Defense Logistics Activity (DLA)/Defense Distribution Center, the U.S. Army Chemical School, General Dynamics Robotics Systems (GDRS), and Raytheon System Company (RSC).

For additional information, please contact LTC Billy H. Welch, PM-Obscuration and Decontamination Systems, Commercial (410) 436-2804, DSN 584-2804 or email to billy.welch@sbccom.apgea.army.mil

FIELDINGS

 <p><i>M56 Smoke Generator</i></p>	<p>21st Cml Co., ABN Div, Ft. Bragg, NC 101st Cml Co., 18th ABN CORPS, Ft. Bragg, NC (Graphite fieldings)</p> <p>POC: Randal H. Loiland AMSSB-PM-RSM-M, DSN 584-2806</p>	<p>Oct 00 Oct 00</p>
 <p><i>M58 Smoke Generator</i></p>	<p>360th Cml Co., Ft. Chaffee, AK</p> <p>POC: Peter F. Annunziato AMSSB-PM-RSM, DSN 584-2362</p>	<p>Sep 00</p>
 <p><i>Light Vehicle Obscuration Smoke System (LVOSS)</i></p>	<p>164th MP Co., Ft. Richardson, AK 101st and 194th MP Cos. Ft. Campbell, KY 545th, 64th, 401st, and 411th MP Cos., Ft. Hood, TX</p> <p>POC: Henry St.Pierre AMSSB-PM-RSM-R, DSN 584-5527</p>	<p>Sep 00 Oct 00 Oct - Nov 00</p>
 <p><i>Driver's Vehicle Enhancement</i></p>	<p>Chemical School, Ft. Leonard Wood, MO</p> <p>POC: Randal H. Loiland AMSSB-PM-RSM-M, DSN 584-2806</p>	<p>Nov 00</p>
 <p><i>Improved Chemical Agent Monitor</i></p>	<p>Ft. Lewis, WA</p> <p>POC: CPT Scott Morris AMSSB-PM-RNN-T, DSN 584-6551</p>	<p>Oct 00</p>

 <p><i>MICAD</i></p>	<p>4th ID, Ft. Hood, TX</p> <p>POC: CPT Scott Morris AMSSB-PM-RNN-T, DSN 584-6551</p>	<p>Nov 00</p>
 <p><i>M93A1 FOX</i></p>	<p>4th Cml Co., 2nd ID, Camp Casey, Korea</p> <p>POC: CPT Scott Morris AMSSB-PM-RNN-T, DSN 584-6551</p>	<p>Oct 00</p>
 <p><i>M45 Aircrew CB Protective Mask</i></p>	<p>25th ID, Hawaii Army National Guard A1 & Ms Army National Guard, Honduras 10th Mountain Div, Ft. Drum, NY</p> <p>POC: CPT Scott Morris AMSSB-PM-RNN-M, DSN 584-6551</p>	<p>Sep 00 Oct 00 Nov 00</p>
 <p><i>AN/UDR-12 Pocket Radiac</i></p>	<p>8th Army, Japan</p> <p>POC: CPT Scott Morris AMSSB-PM-RNN-M, DSN 584-6551</p>	<p>Sep 00</p>
 <p><i>M22 Automatic Chemical Agent Alarm</i></p>	<p>Ft. Bragg, NC 101st, Ft. Campbell, KY Ft. Benning, GA</p> <p>POC: CPT Scott Morris AMSSB-PM-RNN-A, DSN 584-6551</p>	<p>Sep 00 Sep - Oct 00 Nov 00</p>

END ITEM UPDATES

NBC DEFENSE EQUIPMENT

Sampler Kit, Air: Chemical Agent Alarm, XM279 – In preparation for Milestone Review and Type Classification, a Safety and Health Data Sheet was prepared for the XM279. The XM279 is a probe used with the ACADA chemical agent detector to collect and bring liquid samples to the ACADA inlet port and vaporize them for detection. Safety and health hazards associated with the probe, such as battery violent venting and heat contact hazards, have been mitigated to acceptable levels. From a safety and health position, the XM279 is ready for Type Classification.

Reconnaissance, Detection, and Identification –

An updated Safety Assessment Report, which includes the addition of a Canadian sensor with three U.S.-developed passive LWIR sensors, was developed and provided to Research Directorate personnel. These sensors will be tested at Lawrence Livermore National Laboratories (LLNL) Nevada Test Site. The test site will disseminate chemical simulant clouds from their down-range smokestacks and the detectors will attempt to detect them. Hazards associated with the use of the detectors included such things as care in the handling of electrical lines, care in the handling of liquid nitrogen used for cooling, and care in the handling of some of the heavier equipment, particularly the tripod stands the detectors are mounted on. No unique additional hazards are introduced with the addition of the Canadian sensor. The updated SAR is being forwarded to LLNL project personnel for inclusion into their site safety documentation.

Biological Integrated Detection Suite (BIDS) – A formal Ribbon Cutting Dedication was held for the P3I BIDS Mock-up Trainers (MUTs) at Fort Leonard Wood in June. The P3I MUTs were developed and installed by SBCCOM for use in P3I BIDS operator training this spring.

Real Time Analytical Platform (RTAP) – In June, SAIC provided the Logistics Office a proposal for correcting the RTAP solenoid overheating problem. The proposal was based on a statement of work previously developed by the Logistics Office. The Logistics Office performed a technical evaluation of the proposal and determined it to be fair and reasonable. Accordingly, the proposal was forwarded to SBCCOM contract to be included into the current RTAP SUP contract as a contract modification. The modification directs the contractor to replace the present RTAP solenoid (70 amp rating) with a heavy-duty solenoid rated at 100 amps or greater and apply a suitable coating to terminals to deter corrosion. The contractor shall replace the solenoid on RTAPs unless they have been previously replaced by solenoids of equivalent rating and quality.

XM32 MICAD – In July, BG Mangual approved the Type Classification Standard of the XM32. This decision authorizes the PM NBC Defense to award the production contract option to build the MICAD systems needed to support the First Digitized Division, Fort Hood, TX.

Individual Protection –

M48 Chemical Biological Apache Aviator Mask – We obtained a formal approval for our Supply Management Army -Operating and Support Cost Reduction (SMA-OSCR) Program. The SMA-OSCR proposes refining a technique to replace eye lenses in M43 and M48 protective masks. Currently, any M43/M48 mask with eye lens damage is coded as unserviceable. Following successful development and testing, the eye lens removal technique will be used to repair scratched eye lenses in support of M43 mask sustainment initiatives. The procedure will also be used to rebuild general aviator (M49 and M43A1 Type II) masks into Apache peculiar (M48) masks. The \$339K (\$117K in FY00 and \$222K in FY01) proposal is expected to save the Army \$4.09M by FY02.

Joint Service Aircrew Mask (JSAM) –

- Mr. Corey Grove, Respiratory Protection Technology Team, has been serving as technical advisor in the JSAM source selection, and provided a published report on technology base findings and design guidelines.

Additional design recommendations are being provided to encourage further development of the fixed wing version of JSAM with the intent of pushing the state-of-the-art over what has been proposed through industry. JSAM concepts for both the under-the-helmet and in-flight donning have been completed and forwarded to support USAF source selection activities. These concepts show several improvements over what has been proposed through industry. The prototypes will be used to support start-of-work activities and should help push the state-of-the-art for JSAM.

- The JSAM PDRR contracts were awarded in July to Gentex Corporation, Rancho Cucamonga, CA, and Science Applications International Corporation (SAIC), Abingdon, MD. These contracts will provide for program definition and risk reduction on the JSAM. The JSAM will provide chemical/biological protection and function as an aircrew member's oxygen mask. It will also provide acceleration protection in selected aircraft. The contractors will develop representative samples of hardware required to meet program requirements.

Collective Protection –

M18 Gas Filter – Shelf-life testing was completed by the SBCCOM IMMC Protection Materiel Team on M18 Gas Filters at the Edgewood lab. The test results were positive and released \$170,478 worth of assets previously suspended and made them available for issue. Affected stock was 91 at Red River and 647 at San Joaquin. The M18 Gas Filter is used to provide purified air to individual vehicle crew members. The main application for this filter is the M1 tank.

M13A1 Gas Particulate Filter – Shelf-life testing on a sample of M13A1 GPFUs was completed at Edgewood. The test was successful and 41 GPFUs will be returned to Condition-Code A. This is significant because the Army is planning to use this GPFU to protect troops in the new medium-weight Interim Armored Vehicle (IAV). The projections for FY00 are that eight vehicles will be

produced, with three GPFUs needed per vehicle. Now that the test has been passed and GPFUs returned to Condition Code A, SBCCOM will be able to meet the Army's immediate need of 24 GPFUs for this IAV program.

M48A1 Gas-particulate Filter – A kickoff meeting was held at Pine Bluff Arsenal in June for the purpose of establishing a pilot production line for the M48A1 Gas Particulate Filter. Representatives from PBA, SBCCOM Edgewood, and the Collective Protection Team at SBCCOM RI agreed to further pursue this endeavor with the formation of an M48A1 Filter Production team to meet on a regular basis. The purpose of this project is to perform an analysis of the M48 Filter manufacturing parameters and processes to improve and minimize production problems, and also provide technical support to small businesses in their pursuit of producing this filter. The line will not replace private enterprise in the production of the filter, but will rather augment and support M48 Filter production.

M20 Simplified Collective Protection Equipment (SCPE) –

- Over-pressure testing was successfully completed on the Room Liner to upgrade the M20 SCPE systems at Blue Grass Army Depot to issuable stock. All testing of Room Liners passed requirements. Visual inspections of the M20 SCPE systems were completed and passed requirements in May 00. With the passing of the Room Liner, 364 M20 SCPE systems are now available to support existing backorders and other fielding requirements. This initiative by SBCCOM (RI) Collective Protection Team has resulted in a cost avoidance of \$8.4 Million (only hardware cost for new procurement).

- In July, Letter Contract was awarded for 16 M20A1 SCPE to Production Products, Inc., totaling \$299K. These 16 units will be a payback to Army stock that was initially borrowed by NAVSEA with DA's approval. A remainder of 24 each will need to be procured to complete the loan. Budget cycle to procure the remaining quantities is in process through the Joint Service Management Group (JSMG).

M28 Collective Protective Equipment (CPE) –

- The contractor for M28 CPE delivered the Army's 12th and final Hospital Unit Base (HUB) to Ogden Depot, UT. This completes the Intellitec contract. Total Army contract dollars to be expended is \$15M. The HUB is an integral part of the Chemically Protected Deployable Medical System (CP DEPMEDS). The estimated value of one HUB is over \$700K.

- In July, SBCCOM and the TACOM-RI contracting office awarded the basic long-term requirements contract for 17 components of the M28 CPE system. The components include liners, filters, maintenance kits, motor blowers and support kits. The contract is for a term of 5 years (3 ordering periods followed by 2 option periods). Award was made to Production Products, Manufacturing and Sales, a small disadvantaged business in St. Louis, MO. On the same day the first delivery order was awarded for a quantity of 16 each M20A1 SCPE for a total of \$299,184.00. First Article is scheduled for 2 Jan 01 with delivery of production quantity scheduled for 2 Jun 01.

Joint Transportable Collective Protection System (JTCOPS) – In August, SBCCOM (NSC) met with Air Force requirements representatives at Brooks AFB to discuss the requirement for JTCOPS. The purpose of the meeting was to re-validate the JTCOPS requirement, as directed by the Joint Service Materiel Group. The Air Force representatives strongly confirmed that the requirement is still valid. SBCCOM (NSC) will now

arrange to brief the Joint Service Integration Group Action Officers to re-validate the requirement with the other services.

Advanced Filtration Concepts – Dr. Tevault and Mr. Don Shoff met with General Dynamics Land Systems (Sterling Heights, MI) personnel to discuss advanced filtration concepts emerging from GDLS. Their idea is to integrate a detection system with the NBC filter that would shut down the system under attack conditions to preserve filter life. This approach is suitable for future ground vehicles which can be more tightly sealed than current vehicles; e.g., FCS vs. Abrams. A number of supporting technologies is required, including H₂O and CO₂ removal and O₂ generation in case of prolonged exposure. Several of the technologies under consideration are closely related to ones currently under evaluation in the DOD CB Tech Base program ongoing at ECBC and efforts to identify and address related objectives by lab work, modeling, and other approaches is proceeding.

Testing Adsorbent Against Ethylene Oxide – The CB Filtration team has recently discovered and performed initial testing on an adsorbent that has excellent protection potential against ethylene oxide, which is one of the outstanding objectives on the toxic industrial chemicals list. The new adsorbent has provided 1-2 orders of magnitude improvement in protection time as compared to ASZM-TEDA carbon. This work is being done in support of a number of requirements, including the Joint Service General Purpose Mask, Department of Energy, and Future Combat Systems.

OBSCURATION AND DECONTAMINATION SYSTEMS

A Smoke-on-Boats Demonstration will be conducted at Fort Knox in August. The Naval Surface Warfare Center will be conducting the demonstration using the M82 Simulant Screening Grenades fired from the M257 grenade dischargers mounted on the rear of a Coastal Assault Craft. A total of 176 M82 grenades are being shipped in support of this demo. Mounting and wiring hardware designed and fabricated in-house will be used to mount the M257 dischargers. The mounting hardware can be installed without tools and requires no modification of the boat.

Wolf Smoke Generator System, M58 – The graphic training aids for the M58 and M56 systems were delivered in July. These flip cards are a review of the warnings, start-up, shut-down, and helpful hints for the smoke system that can be attached to the control panel. These training aids will be forwarded to all of the previously fielded M58 and M56 units and provided at all future fieldings.

Smoke Generating System, M56 –

- The M56 was the showstopper at Eurosatory 2000. It was visited by official delegations from Egypt, Greece, Qatar, and Israel as well as the Secretary of the U.S. Army, the Honorable Louis Caldera. Additionally, numerous unofficial delegations from Finland, Norway, Germany, South Korea, Russia, Sweden, France, Slovenia, Czech Republic, and Hungary viewed and asked questions about the system.

- General Dynamics Robotics Systems (GDRS) and the AMC Acquisition Center signed the contract modification for the Foreign Military Sales order of the M56 Smoke Generating System to the Taiwanese Army. Deliveries from GDRS are scheduled to begin in March 2001 and end November 2001.

- Requests have been received from the field that users would like a more precise way of knowing the M56 system's operational fuel capacity. The current design uses a light on the control panel that illuminates when the system is low on fuel, but does not offer any gauged capability. We contacted Kelch Corporation, who makes simple but accurate float-type fuel gauges. They have indicated a willingness to work with us on this issue and are currently producing two fixed gauge systems for our evaluation for use on our fuel and visual obscuration tanks. The cost of the units is estimated to be about \$7.00 each.

Light Vehicle Obscuration Smoke System (LVOSS) – An Engineering Change Proposal (ECP) was prepared which adds a fuse to the LVOSS wiring harness assembly. During fieldings, personnel installing LVOSS onto HMMWVs suggested the fuse to prevent a live wire if the wire from the vehicle battery to the arming/firing unit is cut. Fuses are now being installed during fieldings. The ECP will incorporate the fuse into future production.

M6 Discharger –

- Two ECPs incorporating a total of five revisions were completed and sent to Procurement for incorporation into the M6 Discharger production contract. The changes to the technical data package will be incorporated by a no cost modification of the existing contract, since they were the result of a pre-production

evaluation effort that was priced separately in the contract. The changes consist of dimensional changes to the aluminum casting to enhance production and inspection, and a change of discharger cover material from a polypropylene duck cloth specified by an Edgewood purchase description to a material that is widely available commercially. This commercial material is also currently specified for use by the M7 discharger.

- We received a request for a supportability statement and conditional New Material Research of the M6 Discharger to support limited fielding of the Wolverine Heavy Assault Bridge.

Millimeter Wave (MMW) – The MMW MS I/II documentation package was approved by the SBCCOM Deputy for Acquisition and Readiness for Milestone Decision Authority in July. The contract for a MMW FY00-04 Engineering and Manufacturing Development phase is on schedule to be awarded in August 2000.

M37 Mid-Sized Riot Control Agent Disperser – Edgewood and PM-SEQ are supporting the Non Lethal Program Office (NLPO) at Picatinny to provide M37 Disperser for the Non-Lethal Capability Sets (NLCS). The NLPO will require additional quantities (435 total) to meet its future commitments from FY01 to FY05. Defense Technology Corporation, Casper, WY, produces the M37 through a production option of an existing Soldier Enhancement Program R&D contract. Materiel Release was approved in April 2000, with initial fielding expected to be completed on or before February 2001.

Decontamination –

M295 Decontamination Kits –

- Pine Bluff Arsenal (PBA) completed additional first article testing of the M295 Kits and began production. This production, though starting slowly, will alleviate backorders and eventually build up a healthy war reserve of this critical item. PBA has also successfully set up their own lab facility to perform critical and hazardous reactivity tests on M295 sorbent powder. Additionally, PBA is negotiating face-to-face with their contractor to bring the production line up to the required 800 boxes of M295 decon mitts per month.

- In July, a delivery order was signed with Truetech, Inc., for delivery of 7,214 boxes of M295 Decontamination kits. Total value of the order was \$2,054,258.64. SBCCOM and the TACOM-RI contracting office accomplished this action to maintain the stock availability of these urgently needed kits.

DOD NBC SHELF LIFE/SURVEILLANCE MEETING

Representatives from PM-Soldier Equipment, Natick Soldier Center, and ECBC attended an NBC Shelf Life meeting and an NBC Surveillance meeting in August. Additional U.S. Army, U.S. Marine Corps, U.S. Navy, Defense Logistics Agency, and contractor representatives from various organizations also attended. Intent was to

identify processes to ensure that determination of item shelf life, identification of surveillance procedures, and distribution of information on serviceability of all NBC clothing and equipment becomes standardized within DOD.

SPIRAL-3 PHASE, JOINT EXPEDITIONARY FORCE EXPERIMENT (JEFX) 2000

SBCCOM's very successful support to the Spiral-3 phase of the JEFX 2000 contributed to the advancement to the actual JEFX 2000 experiment in September. The USAF Force Protection Battlelab is integrating the sensor and data input from SBCCOM's Chemical Biological Aerosol Warning System into their higher level Command and Control architecture. This adds vital CB information to digital maps and powerfully heightened situational awareness capability.

INDUSTRIAL BASE PLANNING SUPPORT TO AMC LOGPLAN 5027-98

The Industrial Base Planning Team is participating in a Logistics Sustainment Assessment exercise to support the AMC LOGPLAN 5027-98. The exercise includes a newly developed Weapon System Analysis worksheet that will assist MSC system managers in determining their Class IX wartime stockage fills by weapon system for each phase of the conflict. SBCCOM's Fox Vehicle was chosen as a Major Weapon System to support the plan. Our team is partnering with PM-NBC Defense Systems and the Chemical Activity at Rock Island to provide supply, maintenance, industrial base, War Reserves, and other related input for the analysis.

SAFETY OF USE MESSAGE (SOUM) SBCCOM 00-01 OPERATIONAL D-RING

The SBCCOM IMMC (N) Aerial Delivery Team released SOUM-SBCCOM 00-01 on July 20th as a follow up to the Ground Precautionary Message (GPM) SBCCOM 00-03. The SOUM provides instructions to Jumpmasters to brief Airborne Commanders and Air Crews on the newly defined weight limitations, altitudes and aircraft speeds. Yuma Proving Ground is currently conducting a third iteration of testing to quantify the differences in opening shocks between mannequins and humans. Results will be used to determine appropriate solutions.

SAFETY ALERT MESSAGE

SOUM 97-017 (DTG 231326Z Dec 97) deadlines all BA-5590/U batteries manufactured by SAFT America under contracts DAAB07-88-C045 and DAAB07-90-C-C020 (both preconditioned and non-preconditioned). There may be some confusion in the field because earlier GPMs allowed continue use of the batteries to 70% of original capacity. Below is a complete listing of the deadlined batteries:

(1) BA-5800/U, BATTERY, NON-RECHARGEABLE, LITHIUM SULFUR DIOXIDE, NSN 6665-99-760-9742, MANUFACTURED BY BALLARD, UNDER CONTRACT DAAB07-90-C-C024.

(2) BA-5800/U, BATTERY, NON-RECHARGEABLE, LITHIUM SULFUR DIOXIDE, NSN 6665-99-760-9742, MANUFACTURED BY CROMPTON ETERNACELL LTD, UNDER CONTRACT DAAB07-91-C-R014.

(3) BA-5590/U, BATTERY, NON-RECHARGEABLE, LITHIUM SULFUR DIOXIDE, NSN 6135-01-036-3495, MANUFACTURED BY SAFT AMERICA, INC., UNDER CONTRACT DAAB07-88-C-C045.

(4) BA-5590/U, BATTERY, NON-RECHARGEABLE, LITHIUM SULFUR DIOXIDE, NSN 6135-01-036-3495, MANUFACTURED BY SAFT AMERICA, INC., UNDER CONTRACT DAAB07-90-C-C020.

(5) BA-5590/U, BATTERY, NON-RECHARGEABLE, LITHIUM SULFUR DIOXIDE, NSN 6135-01-435-3097, MANUFACTURED BY SAFT AMERICA, INC., UNDER CONTRACT DAAB07-90-C-C020 AND PRECONDITIONED.

A WARNING associate with the SOUM states: Never activate the complete discharge device (CDD) of Ballard BA-5800/U batteries manufactured under contact number DAASB07-90-C-C024. Activation of the CCD could result in severe personnel injury. Thank you for your help in getting these dangerous batteries out of the inventory. For more information, please contact Mr. Phil Klimek, CECOM Directorate for Safety, DSN 992-9723, or email at Philip.Klimek@mail.monmouth.army.mil

HELP LINES/TOLL-FREE NUMBERS

	<i>Telephone No.</i>	<i>fax no.</i>
Chemical Maintenance	Germany 0130810280 Korea 0078-14-800-0335 CONUS 1-800-831-4408	1-410-436-3912 (TOLL CALL)
Smoke/Obscurants	1-888-246-1013	1-410-436-2702 (TOLL CALL)
CB Helpline (NONEMERGENCY TECHNICAL ASSISTANCE)	1-800-368-6498	1-410-436-0715 (TOLL CALL)
Environmental Quality	1-410-436-6588 (TOLL CALL)	1-410-436-8484 (TOLL CALL)
Operational Forces Interface Group (OFIG)	1-508-233-5341 (TOLL CALL) DSN 256-5341	

BRIEFS

SUPPORT TO PACIFIC AIR FORCES

COMMAND. Several of our scientists recently completed collective protection certification testing of facilities in support of Pacific Air Forces Command. During previous trips, we evaluated the vulnerability of installations against attacks from Weapons of Mass Destruction and recommended protective equipment modifications that would provide better protection of facilities.

INTERAGENCY AGREEMENT WITH EPA. We recently entered into a formal agreement with the EPA entitled, "Development of Chemical/Biological Response and Assessment, Information and Technology Exchange." Under this agreement, the EPA will fund us for support in developing operational, assessment, and health and safety protocols for EPA response to incidents involving CB agents or other highly-toxic compounds.

JEFFERSON PROVNG GROUND (JPG). The Army's use of this 55,000-acre property ended in 1995 as a result of BRAC. Under a recent agreement, the U.S. Fish and Wildlife Service opened the Big Oaks National Wildlife Refuge. Limited public access will be allowed for hunting, fishing, and escorted tours. The Air Force will continue its flight training operations at the site. The remainder of the JPG property, known as the cantonment area, will be transferred for reuse by various private and public entities, following the completion of environmental restoration.

METHODS OF DEMILITARIZATION OF

CHEMICAL AGENT HL. Some of our chemists recently started a project to study the methods of demilitarization of the chemical agent HL. The project includes developing the required chemistry for neutralizing the chemical agent as well as extensive chemical analytical work to understand the compounds produced in the neutralization process. There is also a need for an analytical method to determine the extent to which the HL has been destroyed. This project involves complex and interesting chemistry because HL is a mix of the two blister agents, Lewisite and Mustard. The

chemistries of these two agents are significantly different, but they must be destroyed in a "single pot." Although the U.S. never had HL as part of its normal stockpile, there is probably some of this agent in experimental munitions, and the Demilitarization Program must be prepared for this contingency.

INSPECTION OF TWO DECLARED COMMERCIAL SCHEDULE ONE FACILITIES.

An inspection team from the Organization for the Prohibition of Chemical Weapons (OPCW) arrived in the United States in June to conduct a sequential Chemical Weapons Convention inspection of two declared commercial Schedule One facilities. This is the first time U.S. industry has been inspected by OPCW for Schedule One chemicals. SBCCOM's Center for Treaty Implementation and Compliance supported this inspection.

GRAND CHALLENGE AWARD. The DOD High Performance Computing Modernization Office announced that the proposal, "Interactions of Chemical Warfare Agents with Acetylcholinesterase," was one of 22 new projects selected for the FY01 DOD High Performance Computing Challenge program. This proposal was prepared by Bill White (Edgewood CB Center), Maggie Hurley (Army Research Laboratory), Gerry Lushington (Wright-Patterson Air Force Base), and J.B. Wright (Battelle). The award, which consists of 250K hours of supercomputer time and priority to allow extensive parallel processing, will permit rigorous quantum calculations on the molecular interactions of chemical warfare agents with acetylcholinesterase and the reaction mechanisms leading to inhibition of the enzyme and restoration of enzyme activity. This proposal was one of four awarded to an Army element. Another was awarded to Keith Stein and others at Natick on "Airdrop System Modeling for the 21st Century Airborne Warrior."

PARTNERING

COOPERATIVE R&D WITH INDUSTRY AND ACADEMIA

Recent significant achievements and actions in our continuing commitment to *technology transfer* follow:

Cooperative R&D Agreement (CRADA)

In June, a CRADA with Geo-Centers, Inc., was signed to conduct collaborative R&D in the areas of surface spectroscopy and electron microscopy, biotechnology process development, nuclear magnetic resonance, and biological and life sciences research, with the aim of developing technology capabilities and related services for the commercial sector and other non-traditional users of ECBC capabilities.

Testing Services Agreement (TSA)

TSAs have been signed with Southwest Research Institute (SwRI), Geomet Technologies, Inc., Midwest Research Institute (MwRI), O.I. Analytical, and QuickSilver Analytics, Inc. A TSA was also signed with ITT Research Institute, the last of nine Contractor-Owned, Contractor-Operated (COCO) chemical agent testing laboratories. Under these agreements, ECBC will provide the government

certification required by the contractor to maintain their chemical agent testing laboratories.

Under a TSA with Gillette Medical Evaluation Laboratories (GMEL), ECBC will participate in an inter-laboratory validation study of the human corneal epithelial cells-transfected (HCE-T) transepithelial permeability (TEP) assay, a new in-vitro test method which could be used as an alternative to the Draize rabbit eye irritation test for the prediction of the human eye irritation potential of water-soluble surfactants and surfactant-containing formulations.

A second TSA with Lockheed Martin Librascope is to perform additional environmental testing on two Multi-Purpose Integrated Chemical Agent Alarm (MICAD) systems. Testing is required to support Lockheed Martin Librascope's contract on the MICAD.

A TSA has also been signed with Graseby Dynamics for the PM NBC Defense Systems to continue to perform testing on the M22 ACADA.

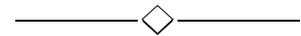
A TSA with the University of Massachusetts Medical Center (UMASS) will analyze air monitoring samples for sulfur

mustard (HD) so that UMASS can comply with the Army's safety requirements for use of this agent. (UMASS attempted to locate a private-sector laboratory that could analyze HD air samples but was unable to find one. ECBC was recommended by the Army safety officer approving research protocols.)

Under a TSA between ECBC and ITT Industries, ECBC will use its unique laboratory capabilities to measure the rheological visco-elastic properties of various thickened chemicals provided by ITT, who will pay ECBC for these services.

As of August 14th, the Technology Transfer program at ECBC has generated \$738,000.00 during FY00. The program continues to improve each year, bringing much-needed income and leveraged R&D services to SBCCOM.

POC: Office of Research and Technology Applications, DSN 584-4438, commercial (410) 436-4438, email address is techt@sbccom.apgea.army.mil



TECHNICAL INDUSTRIAL LIAISON

CB Defense Advance Planning Brief to Industry

SBCCOM will host the *DOD Chemical Biological Advanced Planning Briefing for Industry*, September 19-20, at the Edgewood Area of Aberdeen Proving Ground, MD. Dr. Jay Davis, Director of the Defense Threat Reduction Agency is scheduled to deliver the keynote address and Dr. Anna Johnson-Winegar, Deputy Assistant to the Secretary of Defense for CB Defense, will present the DOD counterproliferation/chemical biological defense overview. Our Independent R&D Conference will immediately follow the APBI on Chemical-Biological Science and Technology on September 21st.

Small Business Innovation Research (SBIR)

Periodically, this office reviews the results of recently completed Phase II SBIR Contracts for successful SBIR stories. Both the CORs and the SBIR contractors are contacted for information regarding the benefits accrued from these SBIR contracts in terms of military and commercial applications. This latest exercise was prompted by a request for examples of SBIR technologies transitioned to commercial products that may have application to first responders' needs. Information was provided on two commercial products: the Bio Capture Air Sampler which is being marketed by MesoSystems Technologies; and the Environ-

mental Vapor Monitor being marketed by FemtoScan Corp.

The following Phase I SBIR contracts were recently awarded:

- (1) Quantum Magnetics – Detection of BW Agents Using Quadrupole Resonance
- (2) EIC Laboratories – An Advanced SERS Water Monitor for CB Analytes
- (3) Triton Systems – Hand-Held RCC Chemical Agent Water Monitor
- (4) MesoSystems Technologies – Development of a Miniaturized Biological Detector
- (5) OptiMetrics – Chemical Immobilizing Agents for Non-Lethal Applications

A Phase II contract (“Nanode Array Sensor Microchips”) was awarded to CombiMatrix Corporation. CombiMatrix will develop a prototype detection system based on the use of an array of nano-scale electrodes coupled to an immunoassay and deposited on a microchip. The benefits of the proposed system over current detection technologies include a significant reduction in instrumentation costs and improved portability.

The four new Phase II SBIR proposals selected by the Department of the Army for contract award are:

- (1) Microgen Systems – “Nanosensor - A Fully Automated

Microfabrication-Based Biodetector”

(2) TPL, Inc. – “Laser-Coupled, Multi-Site, Microfabrication-Based Biosensor Platform”

(3) Tera Biotechnology – “Automated Parallel Processing of Phage Libraries”

(4) Foster Miller – “Low Cost Rugged Upward Looking IR Ground Sensor for Stand-off Chemical Detection”

The 01.1 DOD SBIR solicitation opens in October. The following Army topics will appear in the CBD section of that solicitation:

CBD01-100, Lightweight Microarray Field Unit for Rapid Physiological Analysis of Army Personnel

CBD01-101, Mass Customization Biomanufacturing Process

CBD01-102, Optimized OPO Converter for Solid State Standoff CB Sensors

CBD01-103, Adhesively Bonded Electrospun Membranes for Protective Clothing

CBD01-104, Colorimetric End-of-Service Life Indicator for Mask Filters

CBD01-105, Systems for Improved Manufacturing and Testing of Human Compatible Serum Butyrylcholinesterase

CBD01-106, Super-Efficient, Low Toxicity, Dendrimer-Quaternary Ammonium Compound Biocides

CBD01-107, PCR-less DNA Detection

Broad Agency Announcement

A BAA contract was recently awarded to the University of California-Berkeley to identify, analyze, and sequence specific chromosomal and plasmid genetic signatures of the Bacillus anthracis group.

We recently updated the Edgewood BAA, which is available on SBCCOM's worldwide web site, to BAA 2001. Paragraphs addressing Collective Protection and Respiratory Protection were added. The BAA provides a mechanism for industry to present new technologies and concepts to the Edgewood technical staff.

For additional information on the Technical Industrial Liaison Office at Edgewood, please contact Mr. Ronald P. Hinkle, AMSSB-RAS-C, Commercial (410) 436-2031 or DSN 584-2031

INTERNATIONAL COOPERATIVE R&D

The Technical Cooperation Program (TTCP)

<http://www.ttcp.osd.mil>

TTCP Chemical, Biological, and Radiological Defense Group (CBR)

In June, Dr. J. Savage (U.S. National Representative) and Mrs. S. Luckan (U.S. Technical Advisor) attended the annual meeting of the CBR Group in the UK. The National Representatives from the U.S., UK, CA, and AS reviewed the current and proposed programs of each of the Technical Panels and Action Groups, and recommended modifications to the programs where appropriate. Following the meeting, the visitors toured the new "British Protective Level - 4" facility at Porton, reported to be the largest of its kind in Europe. The facility is in the final construction phase and will soon begin the certification process.

US/UK/CA/MOU

The most recent meeting of the US/UK/CA MOU Program Officers and Requirements Officers (PO/RO) was held in Suffield, CA, in September. The U.S. delegation was headed by Mr. Zarzycki, U.S. Program Officer. The agenda included briefings on the ongoing International Task Forces (ITFs) on Medical Countermeasures to ITF-28 Materials; Detection of Hazardous Materials, Realistic CB Scenarios for Operations Other Than War, Digitization of CBR Warning and Reporting, as well as Working Groups and Points of Contact Groups on Tripartite Threat Agent Assessment; Biodetection; Tripartite Doctrine; Medical Countermeasures Coordinating Team; Vaccine Acquisition; Test and Evaluation; Antibody Development; Smoke and Obscurants; and JCAD/MCAD.

U.S-France CB Defense Oversight Group (CBDOG)

A draft Statement of Intent (SOI) between the U.S. and France to establish the DOD Senior-level CBDOG was prepared. The draft SOI was coordinated within DOD by ODS Policy, before being sent to France for consideration. This is a follow-on to the initial proposal sent by France earlier this year to establish a senior-level oversight group for biological defense issues, in order to enhance BW defense collaboration between our countries. Once the SOI is finalized by the United States and France, a bilateral Memorandum of Understanding (MOU) will be developed.

Meeting of POC Group On Threat Agent Assessments

The POC Group on Threat Agent Assessments is a tri-national (United States, Canada, and Great Britain) working group chartered by the CBR MOU. A special meeting was held at Edgewood by members of the POC Group to discuss research performed during the last year by the three countries on chemistry, physical and chemical properties, and toxicology of chemical warfare agents. Following the 2-day workshop, the R&D representatives prepared extensive proceedings, which consist of summaries of the oral presentations, discussions of scientific issues, plans for future work, and programmatic recommendations.

Quadripartite Working Group on Nuclear, Biological, and Chemical Defense

QSTAG 1332

A second draft of QSTAG 1332, Command Guidance for Risk Analysis of Biological Detection Data, has been developed by the UK. The aim of the QSTAG is to identify key factors that will guide ABCA Land Component Commanders in arriving at biological attack warning decisions based on alarms arising from assigned or supporting detection systems, to include data passed to them by flanking formations. The QSTAG was reviewed by the CMLS, the PD Bio, and the PM, NBC Defense Systems. All three organizations concurred with the

document. U.S. concurrence was provided to the UK in May.

QSTAG 1333

A final draft of Edition 1 of QSTAG 1333, Common Procedures for the Prediction of Radioactive Rainout and Washout Resulting from Nuclear Detonation, prepared by the UK, has been received for ratification action. The aim of the QSTAG is for ABCA Armies to accept common procedures for the prediction of rainout and washout following nuclear detonation. The QSTAG was forwarded to TRADOC, AF, MC, CMLS, and USANCA for review and completion of the ratification-implementation data sheet.

Bilateral Agreements

A request for authorization to develop a project agreement (PA) with Sweden has been approved by the Department of the Army. The PA will establish a collaborative effort between SBCCOM/ECBC and Sweden/FOA-NBC in the area of environmental fate, effects, and toxicology. SBCCOM has the authority to negotiate with the Swedish, and to develop the final version of the PA. It is expected that this PA will be signed by early January 01.

Data Exchange Annex (DEA) Annual Reports

The Technical Project Officers (TPOs) for the 27 DEAs under SBCCOM/ECBC ownership have

been requested to complete Annual Reports for their respective DEAs. The Annual Reports will be entered into the International Agreements Tracking System (IATS), which will permit a more timely and accurate assessment of the overall quid pro quo of the entire DEA Program. In addition to the information required for the Annual Reports, we requested that each TPO list the U.S. information/goals for the next 5 years; i.e., what types of information is planned for exchange and the timeframe in which it is expected to be exchanged.

Visits

In June:

COL Vladimir Radovnický led a delegation of four personnel from the Czech Military Medical Academy on a visit to SBCCOM/ECBC in June. The group has been examining the current Czech policy toward medical aspects of CB defense, with particular interest in how biological detection is implemented and employed. The group received briefings from PM NBCD, PD-Bio, PM JBPDS, and the Domestic Preparedness Program. This visit occurred under the USAEUCOM Mil-to-Mil Program. In addition to the visit to SBCCOM, the delegation also visited MRIID and CHPPM in order to receive a complete picture on CB defense issues.

MG Chang, Assistant Chief of Staff for Chemical Operations and Commandant of the Chemical School, Taiwan, visited SBCCOM

to discuss the proposed delivery schedule for the M56 Smoke Generator. The Foreign Military Sale is being finalized. Taiwan is interested in purchasing technical support and operator/maintenance training in conjunction with the purchase of the equipment.

Chandra Sumit, India, visited SBCCOM/ECBC to attend the Scientific Conference on Obscuration and Aerosol Research.

In July:

CAPT Bozkurt, Chief of National Joint Operations Branch, Turkish General Staff, and COL Anis, Chief of Instruction at the NBC School, Turkish Land Forces Command, plus two, visited SBCCOM/ECBC to receive an overview of our NBC Defense materiel. The visitors had spent 2 days at the Chemical School before coming to SBCCOM. Turkey has recently been accepted as a member of the NATO Long Term Scientific Study (LTSS) on the Defensive Aspects of Chemical and Biological Warfare. COL Okay from the Turkish NBC School has been designated as the Turkish member of the NATO LTSS. Originally, COL Okay had arranged the group visit to SBCCOM to include himself and MG Erdagi, Director of Planning and Operations, Turkish General Staff. Because of the scheduling of the NATO LTSS, neither COL Okay nor MG Erdagi was able to visit; however, we anticipate that they will try to reschedule a visit later in the year.

Mr. Peter Biggins, United Kingdom, visited SBCCOM/ECBC to attend the U.S. DOE Program Review. This visit took place under the auspices of the U.S./UK/CA MOU on CB Defensive Materiel.

Mr. Gerhard Bernhardt, Germany, visited SBCCOM/ECBC to participate in the International Working Group Meeting, "Armored Transport Vehicle Fuchs." This visit took place under the auspices of the MOA on Logistic Support for the NBC Reconnaissance System.

Dr. Peter Biggins and Ms. Virginia Foote from Porton Down visited SBCCOM/ECBC to discuss the plans for PM-JBPDS to bring a prototype JBPDS to the UK for testing in October. The British currently have a program, still in its infancy, to develop an unattended biological detection system, not unlike what is currently under development with the JBPDS.

The PM concurred with the current plan, to take a man portable version to the UK in October to participate in testing. The test plan, including proposed releases, was discussed. The British have expressed interest

in the JBPDS, especially the BAWs component, and a successful test at Porton may result in the British "buying into" the JBPDS.

Upcoming Visits:

GP CAPT Laurence Barnes and six others, UK, will visit SBCCOM/ECBC, Fort Detrick, MD, and the Joint Program Office for Bio Detection, Falls Church, VA, on an intermittent basis from 14 Jul 00 through 31 Jul 01, to discuss International collaborative efforts under the MOU on CB Defensive Materiel.

POCs: Dr. George R. Famini, (SBCCOM RDA), Commercial (410) 436-2552/5376, DSN 584-2552/5376, email george.famini@apega.army.mil; Susan Luckan (ECBC), Commercial (410) 436-5252, DSN 584-5252, email susan.luckan@apega.army.mil; and Tom Tassinari (NSC), Commercial (508) 233-4218.

BRING YOUR CHILD TO WORK DAY

On June 27th, SBCCOM's Federal Women's Program sponsored "Bring Your Child to Work Day." The theme for this year's event was focused on the "**Lifestyle of the Soldier at SBCCOM.**"



Our next stop was the barracks. En route, the children were very impressed by a company-sized troop formation marching to their duty station while calling cadences.



The day began at the Mess Hall, where parents and children joined soldiers for breakfast. Although surprised, the soldiers really seemed to enjoy the presence of the youngsters.

At the barracks, we received a tour of the soldiers' living quarters as well as information on the military standards of conduct within the quarters, restrictions, and awards. We were also shown a video detailing the opportunities for men and women in today's Army. The children were very receptive to the tour and video, and quite inquisitive, asking interesting questions.

SFC Joseph Presley, Bravo Company, 143rd Ordnance Battalion, tested the children's cadence skills as he marched them to Downer Hall.

Our closing event was a tour of the Wheel, Track and Recovery Department, Downer Hall, which houses the wheel and track vehicles in the Army inventory (Training Facility for Domestic/Foreign Advanced Individual Training students in MOS-63 career management field). The children satisfied their curiosity as they explored and learned the history of the M1 Abrams Tank, Bradley Fighting Vehicle, M113 Personnel Carrier, M88A1/A2 Recovery Vehicles, Heavy Equipment Transporters, and many other vehicles. The event was well received by the parents and troops, but especially the children who left with enthusiasm and looking forward to next year's event.



Thanks to the contributions of SFC Joseph Presley and CPT Sandra Robinson (Bravo Company, 143rd Ordnance Battalion), CW2 Tommy Benbow, Logistics Directorate, APG, and Mr. Dick Hoy, Director of Wheel, Track and Recovery Department, some of these children could very well be tomorrow's soldiers. Mr. Conrad Johnson, Corporate Information Office, provided excellent photographic coverage of this event.

For additional information, please contact Ms. Mary Ann Ricketts, Member of the Federal Women's Program, Chairperson for "Bring Your Child to Work Day," Commercial (410) 436-5726 or DSN 584-5726

U.S. ARMY CHEMICAL CORPS COMMANDANT'S COIN OF EXCELLENCE

At a recent ribbon cutting dedication at Fort Leonard Wood, MO, Mr. Bruce Jezek (Program Director for Biological Detection Systems), Ms. Elaine Neary, and Mr. Michael J. Smith (ITT) were presented with the U.S.

Army Chemical Corps Commandant's Coin of Excellence for their effort in making the P3I Biological Integrated Detection System (BIDS) Mock-up trainer a reality. It was developed and installed by SBCCOM this spring.



HAZARDOUS TECHNICAL INFORMATION SERVICES

At the Worldwide Chemical Conference in June, Mr. Tom McCarley and Mr. Fred Tramontin from the Defense Logistics Agency visited the SBCCOM Corporate Exhibit. Both were impressed with the amount of information on the exhibit and on the compact disc that we had as a handout. The CD contains information on SBCCOM, its services, facilities, and products.

They suggested that we have an article included in their **Hazardous Technical Information Services (HTIS) newsletter** that would publicize the availability of this disc and provide an email address where copies could be requested.

HTIS is a service of the Defense Logistics Agency located at the Defense Supply Center Richmond in Richmond, VS. Their goal is to assist the DOD community with a *Helpline Answer Service* as well as

with a Technical Bulletin concerning the compliant management of hazardous materials and wastes.

Commercial phone: 804-279-5168
DSN 695-5168
Toll-free 800-848-HTIS
Fax 804-279-4194 or DSN 695-4194

Website: <http://www.dscr.dla.mil/htis/htis.htm>

Mailing address:
Defense Supply Center Richmond
DSCR-VBC/HTIS
8000 Jefferson Davis Highway
Richmond, VA 23297-5609

POC: Ms. Brenda C. Eckstein, Commercial (410)
436-2879, DSN 584-2879, or email
brenda.eckstein@sbccom.apgea.army.mil

In May, Ms. Nancy Waltman and Mr. Dean Hansen, SBCCOM, attended the **NIPHLE (National Institute of Packaging Handling and Logistics Engineers) Symposium** held in Aberdeen, MD. This year's Symposium was held in conjunction with the 50th anniversary celebration of the School of Military Packaging Technology, and included tours of SMPT and the Aberdeen Test Center. The symposium generated much discussion regarding the adequacy of commercial packaging methods used in the military environment, a topic that continues to be researched. In addition to a variety of speakers and topics, the symposium included award presentations for the "Best of Show" in the Annual Design Competition (to Carl Morrison of Picatinny Arsenal); and various recognition awards including inductees into the SMPT Military Packaging Hall of Fame. The NIPHLE officers for the next 2 years were introduced: President, Dr. Diana Twede, of Michigan State University; Vice President, Mr. Drew Kisela; Secretary, Nancy Waltman (SBCCOM); and Comptroller, Mr. Tom Hinkley, (TACOM).

The Fall Symposium will be held in September in Tucson, AZ. The Spring meeting will be held in February-March, 2001, as NIPHLE teams up with International Safe Transit Association (ISTA) and IoPP (Institute of Packaging Professionals) for a joint educational forum related to transportation/logistical packaging.

For more information please contact Mr. Jim Russell, Executive Director at 301-459-9105 or see their web page at <http://www.niphle.com>.

In June:

Dr. DeFrank participated in the **Scavengers and Biotechnology Workshop**, where the use of stoichiometric and catalytic enzymes for prophylaxis and therapy was discussed.

Drs. Tu-chen Cheng and DeFrank were co-authors, with investigators from Texas A&M University College of Medicine and University of San Francisco, of a poster dealing with enhanced in vivo protection against OP compounds by enzymes encapsulated within liposomes. Very encouraging discussions were also held with COL Romano, the incoming Commander, MRICD, about possible support for an "International Workshop on Applications of Enzymes in Chemical and Biological Defense," which is being planned for May 2001.

Nine ECBC presentations (out of a total agenda of 29) were delivered at the **2000 Measurements and Signature Intelligence CW Nonproliferation Science & Technology Symposium** held at the U.S. Navy Fleet Combat Training Center Pacific. Dr. Smardzewski, ECBC, also chaired the half-day session on *Standoff Chemical Detection*. Sponsors included a number of high level DOD and Intelligence agencies (DTRA, CIA, DIA, DOE, DARPA). It is the premier CW intelligence symposium for spotlighting prototype CW detection and collection systems and highlighting current and future R&D efforts whose goal is to provide technical and tactical

intelligence related to chemical warfare nonproliferation. The keynote speaker was Lisa E. Gordon-Hagerty, Director WMD preparedness, Transnational Threats, National Security Council.

Mr. Zarzycki and Mr. Bickford gave presentations at the AUSA-sponsored **Science and Technology Symposium and Exhibition, Future Combat Systems**. Mr. Zarzycki's presentation focused on the very large amount of Joint Service Tech Base work on-going in NBC Defense that the FCS program can leverage. Mr. Bickford's presentation covered the Army funded program on future smokes and obscurants and their application to the FCS.

Representatives of the SBCCOM Pollution Prevention in Acquisition Program attended the **International Base Working Group (IBBSWG)** in Koblenz, Germany. The IBBSWG is a multi-national working group convened annually to discuss issues and share developments concerning military base camps. Approximately 65 personnel representing 10 nations and NATO attended the 3-day meeting. The SBCCOM P2 in Acquisition Program support personnel participated in the meeting to gain a better understanding of allied efforts pertaining to the management, treatment, and control of waste streams generated by base camps. A detailed presentation on Zero Footprint Camp (ZFC), a joint Natick Soldier Center/ECBC initiative, was provided by the representatives. ZFC embodies a

new approach to field waste management, reducing the logistic footprint of the camp. Copies of the ZFC CD-ROM were provided to all nations.

About 100 researchers from military, government, commercial, and academic institutions attended the annual **Scientific Conference on Obscuration and Aerosol Research**, sponsored by ECBC's Aerosol Sciences Team. Forty platform and poster presentations covered a variety of aerosol related topics. Following the trend of recent years, emphasis was centered on bioaerosols and BW agent simulants. This year's conference workshop, on the Sampling and Collection of Aerosols theme, included presentations by researchers from Porton Down describing British efforts paralleling our BIDS and JPBDS collector developments.

In July:

Dr. Sandra Thomson and Dr. Sharon Reutter attended the second meeting of the **NATO Long Term Scientific Study (LTSS) on the Defensive Aspects of Chemical and Biological Warfare** held at the Military Institute of Chemistry and Radiometry in Poland. The last update on the LTSS on Defensive Aspects of CB Warfare took place in 1988. The current effort is an update of that report for the purpose of identifying technologies and methods to support CB defense in the next century based on the threat forecast for the next 10-15 years. The LTSS has been organized in seven main clusters,

one of which is cluster 2 entitled, *Exposure Levels to Chemical and Biological Agents*, chaired by Dr. Thomson. At the meeting in Poland, each cluster chair presented the outline and status of their respective topics. Dr. Sharon Reutter described the content of the draft document for CWA military exposure levels for cluster 2. The completion of the overall LTSS report is scheduled for July 2001, with the next review meeting in Canada. The goals and milestones are on an ambitious timetable requiring cooperation from multi-U.S. agencies and international NATO partners.

Natick Soldier Center, by invitation, briefed the **Medical Panel of the Defense Science Board Task Force against Biological Weapons** on our Combat Feeding Program initiatives for rapid detection system development and strategies for identification of biologicals, such as food pathogenic bacteria, for military subsistence. The panel was interested in obtaining information to learn what different agencies are doing for their final assessment of biological defense capabilities.

In August:

SBCCOM was represented by Rick Sabin, Pine Bluff Chem Activity, Michael Orn, Newport Chem Activity; Matt Wiherle, APG Garrison; and Joyce Kuykendall, SBCCOM Radiation Safety Officer; at the **Radiation Safety Office Conference**. This conference was a forum for AMC Radioactive Commodity

Commands to present current information to the RSOs that are supporting our Nuclear Regulatory Commission (NRC) licenses at installations worldwide. A presentation to introduce SBCCOM to the RSOs as a future NRC commodity license holder was made. The plan for transition of the NRC license and its management responsibility from TACOM-RI to SBCCOM was outlined, with an emphasis on the continuation of customer service and communication to ensure programs are conducted in compliance with the regulatory requirements.

The IRP Team was represented at the **second meeting of the Department of Health and Human Services (DHHS)/Threat Support Working Group (TSWG) Mass Decontamination Protocol Meeting**. This meeting was attended by representatives from the sponsoring organizations, the EPA, the local fire community, and the United Kingdom and Canada. The purpose of the working group is to prepare protocols for decontamination of victims exposed to chemical and biological threat agents. Three chemical decontamination scenarios and one biological decontamination scenario were approved and time lines for a decontamination response were developed.

Upcoming Symposium

In October:

The **Zero Footprint Camp (ZFC)** program was accepted for display

at the Association of the United States Army (AUSA) Army Materiel Command Corporate Exhibit for the Fall AUSA Annual Meeting. The theme of this year's meeting is, *Transforming the Army for the 21st Century*. ZFC is sharply focused on the Army Vision to provide supporting technologies that reduce the Army's logistics footprint and replenishment demand, and enable the Army combat systems and other elements of the objective force to be lighter, faster, and more deployable.

The NASA-sponsored Technology Transfer Conference and Exposition (TECH 2010) to be held in Seattle, is the Nation's premier venue where more than 5,000 decision-makers seek new products, business ideas, engineering solutions, and manufacturing process improvements. SBCCOM's RDA Enterprise is partnering with the APG Business Development Office to showcase and market our most promising technologies, products, and services available for partnering with industry and academia.

In November:

Harry Salem, PhD, and Eugene Olajos, PhD (E CB Center) and William Stokes, DVM (National Institute of Environmental Health Sciences) will co-chair an upcoming conference, entitled **Alternative Toxicological Methods for the New Millennium: Science and Application**

Upcoming Conferences

<i>Date and Place</i>	<i>Title</i>	<i>POC</i>
<p style="text-align: center;"><i>16-18 October 2000 Washington, DC</i></p>	<p style="text-align: center;"><i>Fall AUSA</i></p>	<p style="text-align: center;"><i>Ms. Joann Brucksch (410) 436-5383 Edgewood Area email: jjbrucks@apgea.army.mil</i></p>
<p style="text-align: center;"><i>23-27 October 2000 Williamsburg, VA</i></p>	<p style="text-align: center;"><i>First Joint Conference on Point Detection for Chemical and Biological Defense</i></p>	<p style="text-align: center;"><i>For registration information, please visit web site: http://www.1jcpd.com POC at Edgewood: Mr. Kirkman R. Phelps (410) 436-2675</i></p>
<p style="text-align: center;"><i>31 October-2 November 2000 Seattle, WA</i></p>	<p style="text-align: center;"><i>NASA-Sponsored Technology 2010</i></p>	<p style="text-align: center;"><i>Ms. Joann Brucksch (410) 436-5383 Edgewood Area email: jjbrucks@apgea.army.mil</i></p>
<p style="text-align: center;"><i>28 November-1 December 2000 Bethesda, MD</i></p>	<p style="text-align: center;"><i>Alternative Toxicological Methods for the New Millennium: Science and Application</i></p>	<p style="text-align: center;"><i>For registration information, please contact: Ms. Deborah Bilotto Abingdon, MD (410) 612-8247 fax (410) 612-9968 email: bilotto_deborah@bah.com</i></p> <p style="text-align: center;"><i>If you would like to submit a talk or poster, please contact: Dr. Max Klein Natick, MA (508) 655-7596 fax (508) 655-7827 email: klein_max@bah.com</i></p>
<p style="text-align: center;"><i>12-13 December 2000 Baltimore, MD</i></p>	<p style="text-align: center;"><i>Army Science Conference</i></p>	<p style="text-align: center;"><i>Ms. Brenda Eckstein (410) 436-2879 Edgewood Area email: bceckste@apgea.army.mil</i></p>

PUBLICATIONS

BOOKS, JOURNALS, AND MAGAZINE ARTICLES

“Rapid Methods for Analysis of Biological Materials in the Environment” was recently co-edited by Dr. Peter J. Stopa (ECBC) and COL Michael Bartoszcze of the Military Institute of Hygiene and Epidemiology (MIHE), Pulawy, Poland. This is a compendium of contributed papers from the NATO Advanced Research Workshop that was held in May 1997. ECBC and the MIHE co-sponsored the workshop.

ECBC was requested by Dr. Rostker, Under Secretary of the Army, to review and critique a document entitled, “A Review of the Scientific Literature as it Pertains to Gulf War Illnesses, Volume VI: Chemical and Biological Warfare.” A team of ECBC’s Research and Technology Directorate scientists, with Chemical Warfare Agent and Biological Warfare Agent expertise, was established to conduct this review. The objectives were to critically and constructively confirm or modify doses and effects, and to assure that the narrative is reflective of the data.

Dr. Peter J. Stopa, in conjunction with COL Michael Bartoszcze, MIHE, Pulawy, Poland, recently co-edited a book. This book entitled, “Rapid Methods for Analysis of Biological Materials in the Environment,” is a compendium of contributed papers from the NATO Advanced Research Workshop that was held in May 1997. ECBC and MIHE co-sponsored the workshop. The first chapters of the book deal with the nature of the biological threat, the Biological Weapons Convention, and considerations of biology in space exploration. The biology of the environment and emerging technologies in the field of biosensors, flow cytometry, mass spectrometry, and nucleic acid probe technologies are discussed next. The last two chapters deal with the applications of these technologies to current problems, such as monitoring considerations of the Biological Weapons Convention and the monitoring of the release of pesticides into the environment.

TECHNICAL REPORTS

Published technical reports, when available, should be requested from the Administrator, Defense Technical Information Center, ATTN: DTIC-FDRB, 8725 John J. Kingman Road, Ste 0944, FT Belvoir, VA 22060-6218.

<i>Report No.</i>	<i>Title</i>	<i>Author(s)</i>
ECBC-CR-028	UV Detection of Biological Species, August 2000, UNCLASSIFIED - limited.	P.J. Harris, Jr. P.J. Brannon C.H. Ching T. Downey T. Grasser P. Gray T. Henson A. Lang W. Nelson, et. al.
ECBC-CR-032	Development of Lightweight Micromachined Aerosol Sampler, July 2000, UNCLASSIFIED - public release.	J. Birmingham
ECBC-CR-033	Alternative Biosensor Technology, August 2000, UNCLASSIFIED - limited.	M. Robinson D. Bush
ECBC-CR-034	M56 MMW Module 1998 Field Demonstration Test, August 2000, UNCLASSIFIED - limited.	B. Perry J.M. Baden
ECBC-CR-035	Smoke System Performance Model and Cloud Density Visualization Utility, Version 2.2., August 2000, UNCLASSIFIED - limited	D.J. Johnston W.G. Rouse
ECBC-TN-002	Corrective Action Testing for LVOSS M90 Grenade, August 2000, UNCLASSIFIED - public release.	M.V. Olgac D.E. Brown C.K. Wolf
ECBC-TR-003	Manipulation of the Physical and Optical Properties of Biological Aerosols, August 2000, UNCLASSIFIED - limited.	G.O. Rubel
ECBC-TR-011	Toxicological Evaluation of VX Decontamination Wastestreams According to Department of Transportation (DOT) Test Procedures, February 1999, UNCLASSIFIED - public release.	J.H. Manthei R.A. Way B.I. Gaviola D.C. Burnett D.M. Bona H.D. Durst S.A. Thomson
ECBC-TR-012	Biological Aerosol Trigger (BAT) Design, August 1999, UNCLASSIFIED - public release.	M.S. DeSha

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ECBC-TR-065	Use of Positive Pressure Ventilation (PPV) Fans to Reduce the Hazards of Entering Chemically Contaminated Buildings, July 2000, UNCLASSIFIED - public release.	V.J. Arca
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ECBC-TR-078	Preliminary Data From the Decontamination of HD Absorbed on Vermiculite in a Stainless Steel Reactor, May 2000, UNCLASSIFIED - limited.	P.W. Bartram B.K. MacIver G.W. Wagner S.G. Pleva D.K. Rohrbaugh
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ECBC-TR-110

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