

## Peak Soldier Performance

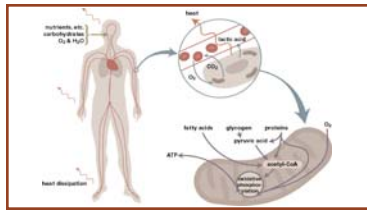
Today's military men and women are required to perform a wide array of tasks, many of which require extensive endurance and physical prowess. DARPA's Peak Soldier Performance (PSP) program was designed with the vision of enhancing warfighters' physiological abilities and providing them the stamina, strength, and endurance needed to complete grueling extended military operations. The mission of the warfighter is limited by his/her ability to sustain physical and cognitive performance over extended periods of time and in extreme environments. At present, the warfighter does not possess the physiological and psychological capabilities to keep up with the advances in technology.

The major goals of PSP are:

- To enhance the warfighters' energy levels
- To provide the warfighter with superior baseline strength and endurance
- To prevent weakening of the immune system
- To control the body's core temperature to improve training capacity and environmental adaptability.

Due to limited space, warfighters often find it difficult to carry the necessary food and water for a mission. As a result, warfighters often sacrifice food for water and ammunition. This program will attempt to provide the nutrients the soldiers need by optimizing nutritional preloading before deployment, thereby reducing food intake

required during the mission. During deployment warfighters operate under extreme conditions that suppress their immune systems. Nutritional modifications will be developed by the program's research to help to maintain the warfighters' immunity under extreme stress. Another major issue during extended performance is body temperature. Core body temperature is a critical factor leading to



exhaustion (mentally and physically) while performing strenuous exercise. Development of a noninvasive cooling device meant to be placed in the warfighters' uniform is currently underway. This device will regulate the body's core temperature, causing an increase in strength and endurance. The technology developed from PSP will enable warfighters to sustain their nutrition and increase their energy and immunological functioning --physiologically and psychologically preparing the warfighter for lengthy, stressful operations like never before. The soldier that deploys at peak operates at peak!

For further information about the Peak Soldier Performance program please contact Clay Holloway, (703) 797-2272, [cholloway@sainc.com](mailto:cholloway@sainc.com), or Kerrie Gruber (703) 797-2284, [kgruber@sainc.com](mailto:kgruber@sainc.com).

## Technology and Privacy Advisory Committee

The Technology and Privacy Advisory Committee (TAPAC) was established in March of 2003 according to the Federal Advisory Committee Act to advise the Secretary of Defense on the legal and policy considerations of the application of pattern query/data correlation technology to counterterrorism and counter-intelligence missions, as well as other DoD activities related to the war on terrorism. The Committee will present a report to the Secretary of Defense addressing the following questions:

- What safeguards should be developed to ensure that these or similar technologies developed within the DoD are applied according to U.S. law and American values related to privacy?
- Should the Terrorism Information

Awareness (TIA) Program's goals, of developing technologies that may help identify terrorists before they act, be pursued?

- How should the government ensure that the application of these technologies to global databases is respectful of international and foreign domestic law and policy?
- Which public policy goals are implicated by TIA and what steps should be taken to ensure that TIA does not frustrate those goals?

SA is providing analytical and administrative support to the Executive Director of TAPAC. For more information about the proceedings of TAPAC, please visit [www.sainc.com/tapac](http://www.sainc.com/tapac).

## SA Awarded NSB Support Contract

In September 2003, Strategic Analysis was awarded a contract with The National Science Foundation (NSF) to provide Scientific and Engineering Policy Support Services to the National Science Board (NSB). The award is a General Services Administration contract with a two-year base period and three one-year option periods. Tasks will include bibliographic studies, and science and engineering analyses - including multidisciplinary research and education, human resources analyses in S&E research, and education from pre-college to professional level, analysis of policy areas, and workshop support.

The NSB was formed in 1950 to act as the national science policy advisor to the President and the Congress and to serve as the governing board for the NSF. The NSF has the mission of promoting the progress of science; advancing the national health, prosperity and welfare; and securing the national defense. To undertake this mission, the NSF engages in activities such as initiating and supporting scientific and engineering research and programs to strengthen scientific and engineering research potential; supporting education programs at all levels, including graduate fellowships; appraising the impact of research upon industrial development and general welfare; fostering the interchange, both domestic and international, of scientific information among scientists and engineers; and evaluating the status and needs of the various fields of science and engineering. To this end, the NSB establishes specific task forces to study topics pertinent to the mission areas of the NSF.

For more information about the NSB, refer to their website at [www.nsf.gov/nsb/](http://www.nsf.gov/nsb/).



# DARPA IPTO Network Modeling and Simulation Integrated Experiments

The DARPA IPTO Network Modeling and Simulation (NMS) program will conduct the third iteration of its integrated demonstrations in January 2004 at the NMS Principal Investigator's meeting. Performers in the NMS program are creating tools to model and simulate wireline and wireless communications to support on-line analysis and prediction of communications capabilities. The modeling and simulation (M&S) tools are also used to optimize network performance through dynamic selection and implementation of network protocols and parameters.

For the January meeting, NMS researchers are developing four scenarios that employ M&S tools to optimize performance in applications suitable for military clients. The first scenario, titled MANET C2, will simulate wireless and wireline mobile ad hoc networks, or MANETs, that would be used by commanders in urban situations. The second scenario, depicting a hostage rescue situation, will simulate the information flows to and from sensor systems deployed from the air by UAVs, on the ground in unmanned ground sensor systems, and on personnel wearing tags. The third scenario imagines the use of the internet as a battlefield. Enemy forces employ cyber weapons to disrupt or destroy services and communications vital to the national infrastructure (e.g. air traffic control or the telephone network), and friendly forces fight the intru-

sions using internet capabilities. The final scenario will simulate the use of the Global Information Grid (GIG) to provide communications capabilities between forward-deployed units and their commanders in rear areas. In each scenario, NMS performers will model the impact on communications that results from enemy and friendly activities, and offer commanders alternative communications solutions to optimize resources. Fifteen research projects will participate in the demonstrations, with several projects participating in more than one vignette.

The January 2004 integrated demonstrations will be preliminary trials for NMS participation in live experiments sponsored by the Joint Forces Command (JFCOM) later in the spring. JFCOM's Urban Resolve wargames are human in the loop (HITL) experiments designed to develop and test concepts useful for urban warfare in the 2015 time frame. JFCOM and NMS have come together to ensure that communications simulated in the Urban Resolve wargames are as realistic as possible, thereby making the outcomes of the experiments credible. NMS researchers plan interactions with JFCOM beyond this spring as the spiral development process for additional wargames and more complex experiments continues.

*For further information about DARPA IPTO NMS, please contact David Shepherd, 703-276-2216 or shephd@sainc.com.*

## Defense Science Board Studies

The Studies and Analysis Team at SA is currently supporting several Defense Science Board Task Forces. The DSB, composed of civilians, advises the Secretary of Defense, the Deputy Secretary of Defense, the Under Secretary of Defense for Acquisition, Technology and Logistics, and the Chairman of the Joint Chiefs of Staff on scientific, technical, manufacturing, acquisition process, and other matters of interest to the Department of Defense.

*Current Task Forces being supported by Strategic Analysis, Inc.:*

### ■ DARPA Technology Programs Review

Task force is conducting a one time evaluation of DARPA's current technology portfolio to confirm that DARPA has advanced research projects based on sound, proven scientific and technological foundations, practices and methods, and are of high value to DoD's operational missions.

### ■ DSB Study on Corrosion Control

A Task Force is examining the threat of corrosion on DoD systems and combat readiness. This Task Force will: review duplication of efforts and apply current and future technologies from one area to another; review the current state of operator

and maintenance personnel training, maintenance processes and identify unique environments that are important to national security.

*Recent and forthcoming reports:*

- **2003 Summer Study on DoD's Roles and Missions in Homeland Security** examines the DoD's involvement in homeland defense and in support of civil authorities.
- **Joint Experimentation** examined joint experimentation programs and recommended ways to enhance its contributions to transformation.
- **Red Teaming** reviewed the role and status of red teaming in the DoD and recommended ways to make it a more effective tool for the Department.
- **UAV/UCAV** conducted a comprehensive review of the DoD's plans for development and fielding of UAV/UCAV systems.
- **Seabasing** assessed how seabasing of expeditionary forces can best serve the nation's defense needs through the first half of the 21st century.

*For more information about the DSB Studies, please contact Stacie Smith at (703) 527-5410 or smiths@sainc.com.*



## Workshop on Military and Commercial Applications for Low-Cost Cryocoolers

Strategic Analysis, in cooperation with DARPA, NVESD, and M. Nisenoff Associates sponsored the 4th industry assessment workshop discussing military and commercial applications for low-cost cryocoolers - MCALC-IV. The proceedings for MCALC-IV will be available shortly for \$200 (\$100 for government employees). Please check [www.sainc.com/MCALC4](http://www.sainc.com/MCALC4) for further information, or contact Daryl Treger at [treger@sainc.com](mailto:treger@sainc.com)



## New Faces at SA

**Joe Maniaci:** Joe Maniaci joins Strategic Analysis after a 19 year career in the microelectronics industry. His most recent assignment was with Micron Technology in Manassas, Virginia, where he managed the Metrology Sector of the 300mm semiconductor wafer manufacturing line. He has significant engineering experience with various thin films processes such as diffusion, oxidation, wets, ion implant, and chemical vapor deposition. Joe will be providing technical and programmatic support to a microelectronics-based sensor research and development program. Joe has a B.S Degree in Chemistry, an M.S. Degree in Materials Science and Engineering from the State University of New York at Stony Brook, and an MBA from Hofstra University.

**Dr. William Becker:** Bill Becker joins Strategic Analysis as a Research Scientist providing technical support on the Virtual Environments and Technologies (VIRTE) Program at the Naval Research Laboratory. Bill previously held a research faculty position at the Uniformed Services University of the Health Sciences (USUHS), Department of Military and Emergency Medicine, where he taught physiology, exercise physiology, and environmental physiology to military medical and civilian graduate students. In his previous position, he was also responsible for establishing the new graduate program in Applied Human Biology. Bill received his PhD in Applied Physiology from the University of Pennsylvania.