



T² I N S I D E



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T² F A C T

In 1971, Ford built a fleet of cars equipped with an experimental air bag. General Motors tested air bags on 1973 Chevrolets that were only sold for government use. The 1973 Oldsmobile Toronado was the first car with a passenger air bag intended for sale to the public. General Motors later offered the general public an option of driver side air bags in full-sized Oldsmobiles and Buicks in 1975 and 1976, respectively.

- Mary Bellis, About.com



T² E V E N T S

World's Best Technology Showcase 2006
Arlington, Texas
March 27-29, 2006

NJTC Venture Conference
Somerset, N.J.
March 29, 2006

SAE 2006
Detroit, Mich.
April 3-7, 2006

BIO 2006
Chicago, Ill.
April 9-12, 2006

FLC National Meeting
Minneapolis, Minn.
May 1-4, 2006

ISPE Washington
Conferences
Arlington, Va.
June 5-8, 2006

BioParks 2006
Building BioTech Communities
Chicago, Ill.
April 7-8, 2006

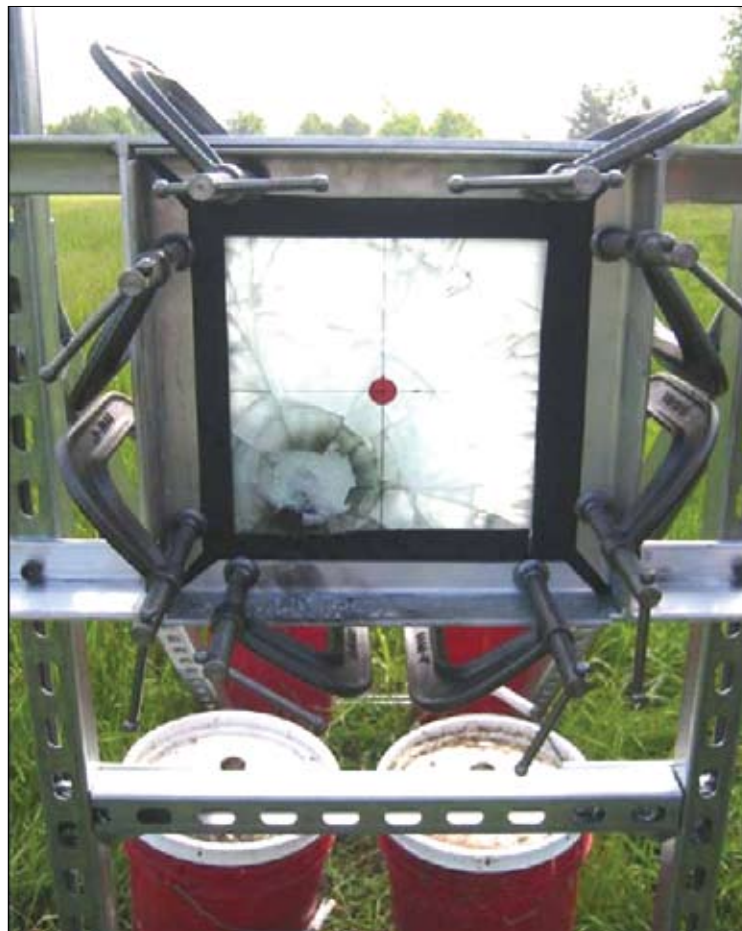
AFRL TESTS TRANSPARENT ARMOR

With the goal being to protect military members facing the threat of armor piercing weapons on the battlefield, engineers at the Air Force Research Laboratory (AFRL) are testing a new type of transparent armor that is stronger and lighter than traditional materials.

The AFRL's Materials and Manufacturing Directorate, in conjunction with the Army Research Laboratory at Aberdeen Proving Ground, Md., and University of Dayton Research Institute, Ohio, is testing aluminum oxynitride (ALON™) as a replacement for the traditional multi-layered glass transparencies currently used in ground and air armored vehicles.

ALON™ is a ceramic that has high compressive strength and durability and, when polished, is the premier transparent armor for use in armored vehicles, according to 1st Lt. Joseph La Monica, Transparent Armor Sub-Direction lead for the Directorate's Electronic and Optical Materials Branch. "The substance itself is light years ahead of glass," said the lieutenant, and offers "higher performance and lighter weight."

Traditional transparent armor is created by bonding thick layers of glass together. ALON™ Transparent Armor is created by combining the transparent



The AFRL is testing aluminum oxynitride (ALON™) as a replacement for the traditional multi-layered glass transparencies used in existing ground and air armored vehicles.

ALON™ piece as a strike plate, a middle section of glass and a polymer backing, each visibly thinner than the traditional layers.

ALON™ is virtually scratch-resistant, offers substantial

impact resistance, and provides better durability and protection against armor-piercing threats, at roughly half the weight and half the thickness of traditional glass

See AFRL's Armor, page 4

ORNL DEVELOPS PROGNOSTIC TECH FOR EPILEPSY

Epilepsy afflicts nearly three million people in the U.S.

Extreme epileptic events require immediate medical intervention to avoid concomitant injury or sudden unexplained death, which is characterized by fatal cardiac arrhythmia and/or breathing cessation.

Two-thirds of patients have events that are controllable by anti-seizure drugs, but the medications frequently have debilitating side effects (e.g., sleepiness, fuzzy thinking, and disorientation). Another 7-8% can be cured by epilepsy surgery, which may result in cognitive impairments. No available therapy is effective for the remaining 25% of patients.

A solution to this problem is under development at Oak Ridge National Laboratory (ORNL).

The solution, SeizAlert, is a low-cost, compact, wearable device that alerts the wearer and medical personnel of an impending epileptic seizure.

SeizAlert is covered by six U.S. patents and two pending. The technology presently uses brain-wave data from four scalp electrodes at

See ORNL's SeizAlert, page 4

DC ON T²

by Gary Jones
FLC Washington, DC Representative

Greetings from DC. The past few weeks have been very active in D.C., with Congress back in session and a renewed focus on several issues of particular importance to the FLC community.

The most salient item of interest is, of course, the February 6 release of the FY 2007 budget.

The R&D component of the budget contains a number of provisions that may variously affect many of our constituents. While space constraints prohibit a detailed look at all the underlying characteristics of the proposed budget, I want to highlight its main points and indicate where more details can be found.

The FY 2007 budget includes a proposed \$137 billion for R&D out of the \$2.8 trillion total. This represents an approximate \$2.6 billion increase (1.9 percent) over FY 2006 which, according to the American Association for the Advancement of Science (AAAS), is "just short of the 2.2 percent increase needed to keep pace with expected inflation."

Within this total for R&D, basic research is up \$343 million (1.2 percent) from 2006, applied research down \$2.3 billion (-7.8 percent) and development

See DC on T², page 5

AGRICULTURAL LAB FIGHTS WEIGHT GAIN IN A DIFFERENT WAY

by Marcia Wood, Agricultural Research Service

Healthy at every size?

What a concept! The "Every Size" strategy, a health-centered rather than weight-centered program, may help chronic dieters reshape their thinking, shed unhealthy habits, adopt new patterns of eating, become more physically active, and increase their self-esteem. That's according to Nancy L. Keim, a chemist with the Agricultural Research Service (ARS).

"Chronic dieters are those who either have failed at a sequence of diets or, after successfully losing weight, gain back the pounds and start the dieting cycle all over again," explained ARS physiologist Marta D. Van Loan. "For obese folks who can't find a healthful weight-loss regimen that gives them lasting results, this alternative to conventional dieting may offer greater and more sustainable improvements to several key indicators of their health."

Keim and Van Loan are with the ARS West-



Agricultural Research Service chemist Erik Gertz and physiologist Marta Van Loan examine a tray of serum samples to be analyzed for indicators of obese volunteers' bone health.

ern Human Nutrition Research Center at Davis, Calif. The two scientists collaborated with Judith L. Stern and Linda Bacon of the University of California, Davis, in a study of the "Health at Every Size" approach.

Van Loan says the novel experiment rates as "one of the most rigorous comparisons of conventional dieting versus the Every Size lifestyle." The results?

See ARS Fights Weight Gain, page 4

FED LABS FLASH | TECHNOLOGY TRANSFER NOTES

AFRL AND UF-REEF SIGN PARTNERSHIP

by Rex Swenson, Air Force Research Laboratory



Dr. John Rogacki (left), Director of the University of Florida Research and Engineering Education Facility, and Dr. John Pletcher, Associate Director for Weapons at the Air Force Research Laboratory Munitions Directorate, sign an Educational Partnership Agreement.

Henry Ford once said, "Coming together is a beginning...working together is success." Two local organizations specializing in education and technology came together recently with the hope of a successful collaboration for the future.

The Air Force Research Laboratory Munitions Directorate (AFRL/MN) and the University of Florida Research and Engineering Education Facility (UF-REEF) joined forces with the signing of an Educational Partnership Agreement (EPA).

According to MN's Associate Director, Dr. John Pletcher, "The objective of this agreement is to enhance our joint research capability by providing personnel from our Flight Vehicles Integration Branch with dedicated workspace at the REEF.

Capt. Chris Miser of MN's Flight Vehicles Integration Branch, who was instrumental in working the EPA for the Air Force, explained further, "These Education Partnership Agreements are designed to allow the director of the research laboratory to enter into a partnership with an educational institution to encourage and enhance study in scientific disciplines at all levels of education. More specifically, this EPA

is the foundation for a cooperative in-house research program focused on basic and applied research for micro air vehicles."

Dr. John Rogacki, Director of UF-REEF said, "The benefits this partnership brings to our students and the State of Florida include exciting things like joint development of state-of-the-art defense efforts such as micro air vehicle technologies."

Some other added benefits are increased awareness of UF-REEF facilities and educational programs among Air Force personnel, and promoting the education of future scientists and engineers.

NASA LOOKING FOR PARTNER FOR TECH INVESTMENT FUND

NASA is following the CIA into the venture capital business.

The space agency's contracting office in Greenbelt last week sought initial proposals from investment firms interested in being its partner in an equity fund that will invest in early-stage technology companies.

The space agency said it is adopting the model of In-Q-Tel, the CIA's fund to invest in innovative technology, which gets about \$37 million a year from the intelligence agency.

NASA Administrator Michael Griffin is former president and chief operating officer of In-Q-Tel.

NASA said its fund will have \$11 million for investment and operations this fiscal year and that is expected to increase to \$20 million a year.

One of the fund's goals, the agency said in its announcement, is "to attract and motivate private sector innovators and investors who have not typically conducted business with NASA, including tapping more efficiently into the pool of small, leading-edge organizations which are

responsible for much of the innovative hi-tech thinking and research in the U.S."

NASA's working title for the new fund: Red Planet Capital.

More info: www.nasa.gov

U.S. PATENT OFFICE ISSUES 7-MILLIONTH PATENT

by Neil Macdonald, Federal Technology Watch

The U.S. Patent & Trademark Office (PTO) issued its seven-millionth patent on Feb. 14 to DuPont for novel polysaccharide fibers that have cotton-like properties, are biodegradable, and are useful for textile applications.

The inventor is DuPont senior researcher John P. O'Brien; the patent is for the fibers and a process for their manufacture.

U.S. Patent No. 1 was issued in 1836. Earlier patents were not numbered, although the first U.S. patent was issued in 1790. About 10,000 patents were issued between 1790 and 1836.

It took 75 years to get from patent No. 1 to the one millionth patent. It has taken less than one-tenth of that time to go from six million to seven million patents.

Milestone patents:

- Patent No. 1 million was issued Aug. 8, 1911 for a tubeless vehicle tire.
- Patent No. 2 million was issued April 30, 1935 for a vehicle wheel to increase the safety and longevity of pneumatic tires.
- Patent No. 3 million was issued Sept. 12, 1961 to a GE inventor for an automated system that translated letters, numbers and symbols to data processing code.
- Patent No. 4 million was issued Dec. 28, 1976 for a process for recycling asphalt aggregate compositions.
- Patent No. 5 million was issued March 19, 1991 to a Univ. of Florida inventor for a more efficient way to produce fuel ethanol.
- Patent No. 6 million was issued Dec. 7, 1999 to 3Com Corp.'s Palm Computing for its HotSync technology.

SAVANNAH RIVER LABORATORY SAVES MONEY ON SAMPLING SOIL, WATER

by John Olschon, Savannah River National Laboratory

Developed by researchers at Savannah River National Laboratory (SRNL), the StrataSampler™ is an environmental characterization and remediation tool that collects soil gas and water samples quickly and inexpensively.

The device makes it possible to simultaneously collect discrete samples from multiple depths within a single monitoring well. This lowers drilling costs, shortens drilling time, and minimizes the volume of contaminated soil brought to the surface during drilling. Contaminated soil must be treated as hazardous waste and disposed of carefully.

Reducing hazardous waste handling also minimizes personnel exposure to contaminated material during drilling and treatment.

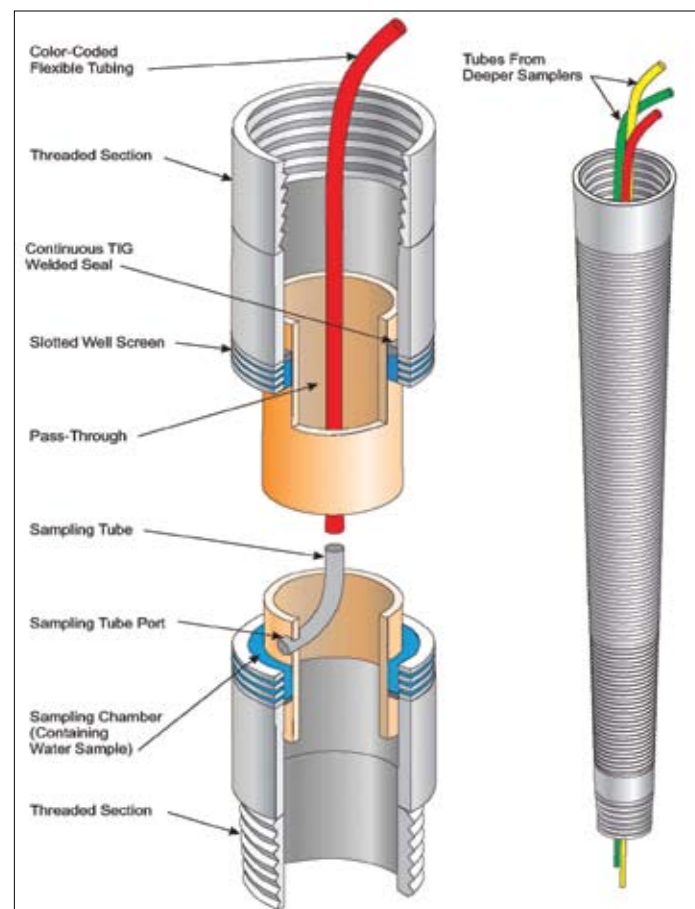
The first application of the technology outside the perimeter of the Savannah River site was at an Aiken County landfill in Barnwell, S.C., where the StrataSampler made it possible to achieve the desired level of monitoring with only 10 wells instead of the 50 wells originally planned. Using the StrataSamplers reduced the drilling time, waste, and cost by approximately 65 percent.

Another 20 units were purchased for use at a Manistique, Mich., landfill where there was concern about the migration of dissolved and residual organic compounds.

Sixteen StrataSamplers were successfully installed with no additional training on the part of the installation crew.

Twelve StrataSamplers were installed in the southern Ural Mountains of Russia at a site contaminated with nuclear material, including cesium, strontium, and tritium.

The purpose was to monitor the migration of radioactive material in groundwater. Results from



Twelve StrataSamplers were installed in the southern Ural Mountains of Russia at a site that has been contaminated with nuclear material, including cesium, strontium, and tritium.

this installation demonstrated the effective role the StrataSampler can play in radioactive as well as chemical remediation efforts.

BESST, Inc., plans to reintroduce the StrataSampler under a different name with newly integrated components that make the system more efficient, allow more sampling ports, and permit deeper installations.

FLC NEWSLINK

FLC NewsLink is published 11 times a year by the Federal Laboratory Consortium for Technology Transfer and the FLC Communications Committee.

FLC Communications Chair: Al Jordan
Layout & Design: Tom Grayson
Copy Editor: Denise Bickmore

Subscriptions: tgrayson@utrs.com
Article submissions: tgrayson@utrs.com

The FLC NewsLink editorial calendar can be viewed at www.federallabs.org/newslink

Opinions or views expressed in FLC NewsLink are those of the contributors and do not necessarily reflect those of the FLC, its officers, or its representatives.

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TECH WATCH | LABORATORY TECHS READY FOR TRANSFER

INL USES MUSSELS' MUSCLE FOR ADHESIVE SYSTEMS

Researchers at Idaho National Laboratory (INL) are defining natural adhesive systems at the molecular scale and exploring ways to recombine proteins to improve adhesives.

Such adhesives may more strongly bond to a wide range of materials and do so in an environmentally friendly and safe manner.

Marine mussels, like *Mytilus edulis*, attach to a variety of surfaces in an aqueous environment using a natural adhesive that is incredibly strong and durable.

The properties of this adhesive exceed those of conventional adhesive glues in both strength and environmental acceptability. Research shows that one of the proteins in the adhesive, *Mytilus edulis* foot protein 1 (Mefp-1), bonds to glass, plastic, wood, concrete, and Teflon.

Mimicking this bonding capability would yield important, innovative adhesives for such different applications as building and construction, dentistry, surgery, orthopedics, ophthalmology, electronics, plastics, and wood composites.

More info: John Snyder, 208-526-9812



Technology Assessment of the U.S. Assistive Technology Industry

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LOS ALAMOS TECH PROVIDES SECURITY AT THE SOURCE

by John Deal, LANL

According to a December 19, 2005 article in *eWeek* magazine, the inadvertent release of proprietary corporate information and sensitive government data via electronic files ranks as one of the most significant threats to the information technology industry.

The New York Times, Multi-National Force-Iraq officials, *The Washington Post*, and the U.S. Department of Justice recently inadvertently released sensitive information contained in electronic documents thought to have been cleaned and redacted of sensitive information.

Electronic files, including word processing, spreadsheet, PDF, computer code and scripting files—virtually all binary files that store information for later retrieval and/or use—contain hidden information.



This hidden information is rarely apparent to users who are unaware of the electronic files they release outside their organization contain all manner of data about the file (creation date, author, software version), as well as inserted comments, content changes, internal notes, deleted text, hidden image files, executable malware, and embedded objects.

Los Alamos National Laboratory (LANL) has developed two software programs specifically designed to eliminate these threats. File Scrub and File Scrub Trusted Copy, developed and tested at LANL, are now in use by thousands of government staff who are required by federal law to eliminate the threat caused by the inadvertent and delib-

erate release of classified and sensitive information. The software was originally developed in 1997.

Features

- Detects hidden streams, embedded objects, and intelligent agent code
- Removes selected extraneous data, macros, and embedded object references
- Finds ASCII and Unicode words/phrases
- Generates robust review and trusted copy/transfer

Benefits

- Eliminates passing of proprietary information outside organizations
- Provides complete review for sensitive words and concepts
- Ensures that released documents adhere to organizational security protocols

Development Stage

The software, which is copyright protected, is based on Multi-Platform Trusted Copy, version 6.0; has been tested; and is in use by U.S. government agencies.

More info: Sandra Clow, clow@lanl.gov.

DIAGNOSING BLINDING EYE DISEASE

Oak Ridge National Laboratory has invented a technology for the rapid, computer-assisted diagnosis of blinding eye disease.

Advances in the imaging of ocular anatomy and pathology now provide digital data to diagnose and quantify specific diseases such as diabetic retinopathy (DR).

Visual disability and blindness have a profound socioeconomic impact on the diabetic population, and DR is the leading cause of new blindness in working-age adults in the industrialized world.

This invention provides a method that measures image content from diagnosed patient data in a large patient

archive to make a statistical diagnosis of the degree of disease state that may exist in a previously undiagnosed patient and the characterization of the disease type.

These methods apply to a broad range of human retinal pathologies so long as they impact the pigmentation of the retina or the morphology of major retinal structures such as the optic disc, macula/fovea regions, and the vascular arcades.

The technology provides:

- A method for rapidly analyzing retinal imagery to provide a reliable diagnosis in a fraction of the time required by the reading center model in use today.

• An ability to provide an inexpensive retina analysis and diagnosis method and system for use in rural areas in the U.S. and in third-world countries where medical ophthalmology expertise is limited.

• A method for making productive use of the historical record of digital fundus imagery that is being collected by the medical community today.

• A means to provide the U.S. military with the capability to perform retinal scans on large numbers of military personnel in the service.

The technology is available for licensing.

More info: Mark E Reeves, 865-576-2577, reevesme@ornl.gov

FROM INNOVATION TO ENTERPRISE



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More info

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AFRL's Armor, from page 1

transparent armor. In a demonstration at Fort Drum's Team Patriot East in June 2004, ALON™ test pieces held up to both a .30-caliber Russian M-44 sniper rifle and a .50-caliber Browning sniper rifle with armor piercing bullets. While the bullets pierced the glass samples, the ALON™ withstood the impact, resulting in no penetration.

In extensive testing, ALON™ has performed well against multiple hits of .30-caliber armor-piercing threats, typical of anti-aircraft fire, and Lieutenant La Monica said tests focusing on multiple hits from .50-caliber threats and improvised explosive devices are in the works.

The lieutenant is optimistic about the results because the physical properties and design of the material are intended to stop higher level threats. "The higher the threat, the more savings you're going to get because with glass, to get the protection against higher threats, you have to keep building layers upon layers of glass;

but with ALON™, the material only needs to be increased a few millimeters."

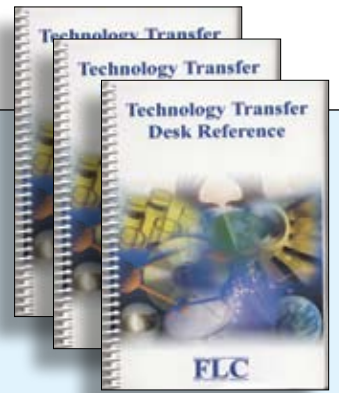
This ability to add the needed protection with only a small amount of material is very advantageous, according to Ron Hoffman, an investigator at University of Dayton Research Institute. "When looking at higher level threats, you want the protection, not the weight," said Hoffman. "Achieving protection at lighter weights will allow the armor to be more easily integrated into vehicles."

For example, Hoffman explained that in order to get the protection against higher level threats with traditional glass, the glass is layered and the weight increases; this weight increase eventually causes problems for vehicles which, in time, will have to be reconfigured to carry the added weight. "For the more advanced threats that are out there, the increased weight of the armor is getting huge. We eventually have to ask ourselves how much can the vehicles take?" said Hoffman.

Hoffman also pointed out the benefit of durability with ALON™. "Eventually, with a conventional glass surface, degradation takes place and results in a loss of transparency. Things such as sand have little or no impact on ALON™, and it probably has a life expectancy many times that of glass."

This scratch-resistant quality will greatly increase the transparency of the armor, giving military members more visual awareness on the battlefield. "It all comes down to survivability and being able to see what's out there and to make decisions while having the added protection," said Hoffman.

While the Army is looking at using ALON™ Transparent Armor as windows in ground vehicles, such as Humvees, Lieutenant La Monica said the Air Force is exploring its use for "in-flight protective transparencies for slow-flying aircraft, which are any of the C-130s, the C-17, the A-10, and helicopters."

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ARS Fights Weight Gain, page 1

Remarkable improvements for the obese, chronic dieters assigned to the Every Size cohort, one of two teams in the study.

The Two Teams Square Off

Seventy-eight obese women, ages 30 to 45, participated on either the health-centered Every Size team or the weight-centered traditional diet team. The teams met for specialized, 90-minute educational sessions every week for the first six months of the year-long study, then met for six once-a-month sessions.

Both groups were instructed in nutrition basics. Women on the conventional diet track were schooled in topics that are typically covered in many popular weight-loss programs, such as how to monitor their weight, control their eating, and exercise briskly.

Meanwhile, their Every Size colleagues learned how to build their self-esteem; recognize and follow the body's natural, internal cues to hunger and satiety (a feeling of fullness); make healthy choices at mealtimes and in between; and enjoy some form of physical activity—an approach that's different from exercising mainly to lose weight.

Two Years Later: The Results

A total of 38 women, 19 from each team, participated in a panel of followup exams—lab tests and questionnaires—two years after the study's start.

Every Size volunteers had kept their weight stable, neither gaining nor losing a significant number of pounds. In contrast, the dieters had lost weight by the sixth month, but regained it by the two-year checkpoint. Their beginning weights and their weights two years later weren't significantly different.

The Every Size women held onto the progress they had made in several health risk factors such as cholesterol levels and systolic blood pressure—the amount of pressure in blood vessels when the heart pumps blood through them.

At the start and end of the study, total cholesterol and systolic blood pressure were in the normal range for all the women.

Within this range, however, the Every Size women lowered their total cholesterol and their systolic blood pressure, and maintained those reductions for the entire course of the study.

In contrast, the dieters didn't lower their total cholesterol at any point in the study. And they weren't able to maintain the healthful decrease in systolic blood pressure that they'd achieved just after the six-month reducing-diet phase.

**Think
"Physical Activity"**

What about physical activity?

At the two-year point, Every Size team members had nearly quadrupled the amount of time they spent in moderate, hard, or very hard physical activity, compared to what they had reported at the study's outset.

The dieters didn't fare as well. At the one-year point, they were exercising more than at the start, but they didn't sustain their improved level to the two-year checkpoint.

Although all the dieters made a lasting improvement in at least one of the food-related habits called "eating behaviors," the Every Size volunteers improved in more of the categories.

For example, both groups did a better job of regaining control of their eating after they'd broken some eating-related rule that they had imposed on themselves. But the Every Size women made more progress—and sustained it—in other facets of eating behavior.

The Every Size team members, for instance, had apparently come to terms with issues such as bulimia (binge eating followed by purging), a "drive for thinness," and dissatisfaction with their body size.

Dieters made initial improvements in handling bulimia, dealing with body size, and learning to follow the body's natural signals of hunger and fullness, but they didn't maintain the progress they'd achieved in these areas.

The researchers also monitored depression, a common problem among large-sized women whose low self-esteem may be related to their body image.

Both groups made significant strides in lessening depression, but only the



Volunteers in the Every Size approach were asked to find an enjoyable, appropriate form of physical activity, such as walking. The focus was on improving health, not losing weight.

Every Size women were able to preserve a more optimistic outlook.

At the two-year point, volunteers answered questions about how helpful the program was to them. When asked whether they'd continued to implement some of the tools they'd learned, 89 percent of the Every Size women answered "regularly" or "often." Only 11 percent of the dieters did so.

Focusing on health and changing behavior, instead of on weight loss, apparently acted as "keys to the successes of the Every Size team," Van Loan pointed out.

The scientists discuss these and other conclusions in an article in a 2005 issue of the *Journal of the American Dietetic Association*.

The National Institutes of Health and National Science Foundation provided some funding for the study.

For many people, weight-loss diets "simply don't work," said Van Loan. The Health at Every Size strategy "may break the cycle of unsuccessful dieting" and open the door to happier, healthier lives.

More info: www.nps.ars.usda.gov

ORNL's SeizAlert, page 1

the front of the scalp, removes eye-blink artifacts that would otherwise confound the analysis, converts the artifact-filtered data into a statistical distribution function (DF), and compares the DF for the baseline period with subsequent DFs.

Several hours' forewarning of an impending event is provided by multiple, successive occurrences of the dissimilarity measures above a threshold. The resultant total true rate is above 90%, with a false positive rate that is more than an order of magnitude below the clinically acceptable value.

The same technology has shown forewarning of ventricular fibrillations and fainting from surface heart waves (electrocardiogram, ECG), detection of sepsis onset from ECG, and breathing difficulty from surface chest sounds. Companion work shows forewarning of machine failures from motor power and triaxial acceleration.

This approach also provides an indication of machine failure onset. The consistent successes for such diverse applications give strong credibility to the robustness of the novel statistical method.

The overall benefits of SeizAlert epilepsy forewarning allow preventive action, reduction in morbidity and mortality, and improvement in patients' quality of life.

SeizAlert offers a new treatment paradigm of constant monitoring rather than continuous medication. Reliable, long-lead-time forewarning allows the patient to stop hazardous activity, lie down in a quiet place, undergo the seizure, and then return to normal activity.

Other timely preventive steps may include taking medication, requesting emergency responders, and/or contacting the physician.

Hercules Development Corporation, LLC (HDC) presently has an exclusive license for two fields of use (epilepsy forewarning and forewarning of cardiac events).

HDC also initiated a validation trial on epilepsy forewarning with ORNL and the Cleveland Clinic Foundation in 2005.

Additional partners in other fields of use are encouraged to contact the principal investigator.

More info: Dr. Lee Hively, 865-574-7188, hivelylm@ornl.gov

LOOKING FOR FEDERAL INNOVATION?



Take part in the Federal Labs Tech Fair, Wednesday, May 3, 2006, in Minneapolis, Minn.

This exhibit program, part of the FLC's weeklong national meeting, which will be held May 1-4, 2006,

provides venture capitalists, industry executives, federal agency representatives, laboratory directors, technology transfer professionals, scientists, and engineers with an excellent opportunity to view technologies developed by federal laboratories.

FLC member laboratories produce and transfer research and technology that enhance our everyday lives and further scientific frontiers. More than 700 laboratories and research centers representing all federal departments

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- Biotechnology
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NSB TO CONDUCT REVIEW OF SCIENTIFIC OPENNESS

by Neil Macdonald, *Federal Technology Watch*

Responding to a request from Senator John McCain (R-AZ), the National Science Board (NSB) plans to review organic legislation, executive orders, and public policies for eight federal agencies for "any directions related to the issue of science openness, ensuring the credibility of research results, and isolating research results from suppression or distortion of data."

NSB Chair Warren Washington set out the plans in a Feb. 17 letter to Sen. McCain. At its Feb. 10 meeting, the board agreed to undertake a number of actions to "develop a response" to the

Senator's Feb. 8 request and provide recommendations.

The eight agencies are NASA, NOAA, Fish & Wildlife Service, Environmental Protection Agency, U.S. Geological Survey, and the departments of Agriculture, Energy, and Health & Human Services.

NSB Chair Washington will discuss with the chief scientists of each agency their "policies and procedures for preventing suppression or distortion of data and ensuring scientific openness and credibility of research results to the public."

Based on the reviews and discussions, the NSB will develop specific conclusions and recommendations for Sen. McCain on "possible new legislation, executive orders, or agency policies." An initial draft will be discussed by NSB members at their March board meeting, and the final version will be prepared for board approval at the NSB's May 9-10 meeting.

In his letter to NSB Chair Washington, Sen. McCain asked that the review be completed by May 8, 2006.

The senator noted a recent incident in which a NASA staffer attempted to prevent a senior scientist from releasing research findings and interpretations on climate change, and complaints by other scientists who claim suppression or distortion of their research findings by federal officials.

"There is universal agreement that public policy should be based upon sound science," Sen. McCain said. "The importance of credible science informing public policy is
See NSB Reviews Openness, page 6

DC on T², from page 1

is up \$4.6 billion (6.2 percent). Defense and non-defense will increase by \$1.6 billion (2.1 percent) and \$1.0 billion (1.7 percent), respectively. These figures are based on an initial analysis compiled by AAAS.

While the overall mark is a slight increase, unique agency implications reflect underlying research themes and priorities expressed by the Administration. In FY 2007, the general R&D budget priorities include the continued focus on weapons and space vehicle development (which combined account for the entire proposed increase and more) and two initiatives to enhance federal funding in physical sciences and energy R&D.

The President's "American Competitiveness Initiative" (ACI), in response to the growing concerns over U.S. technological competitiveness, "seeks to double investment in key federal science agencies (NSF, DOE Office of Science, NIST core) that support basic research in the physical sciences and engineering - a \$910 million (9.3 percent) increase in 2007 and \$50 billion more over 10 years." The proposed "Advanced Energy Initiative" includes increased support for DOE's energy portfolio. Increases in these areas are offset by decreased budgets in others.

Accordingly, the preliminary figures suggest an increase in the R&D budgets for NSF (8.3 percent), NASA (7.5 percent), DOD/weapons (7.0 percent), DOE (6.9 percent), and DOC/NIST (6.4 percent). Agencies whose R&D budgets will decrease include DHS (-5.6 percent), DOI (-5.8 percent), DOC/NOAA (-6.3 percent), EPA (-7.2 percent), USDA (-16.5 percent), DOD/'S&T' (research, medical research and technology development) (-18.6 percent), and DOT (-20.9 percent). The R&D budgets at NIH and VA would remain relatively flat. Although total figures tell a part of the story, as with any proposed bud-

get one must go below the surface to fully understand the potential agency implications. Each agency's proposed budget reflects myriad program changes that add up to the top-level figure; some programs increase, some remain level, others decrease, and some are eliminated entirely.

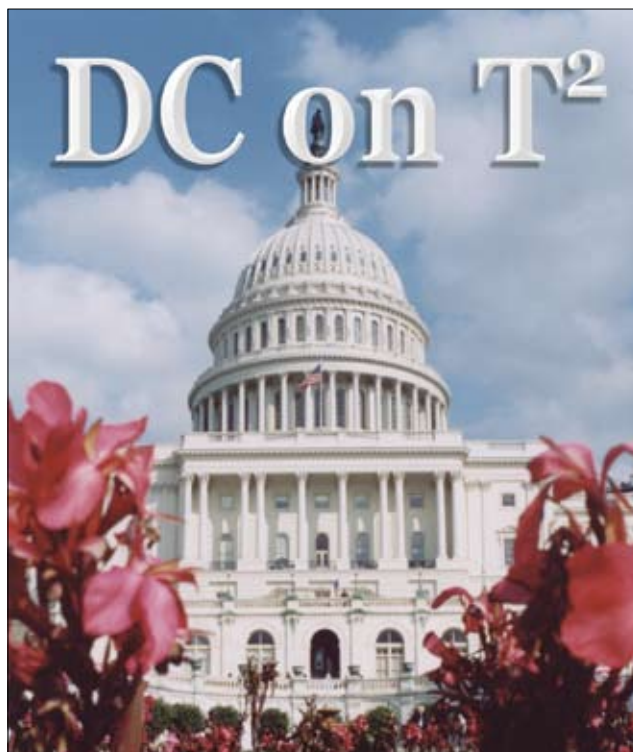
For example, the effect of the increase at NIST and the decrease at NOAA, both components of the Department of Commerce, is a relatively flat overall DOC R&D budget. Even within NIST, while its intramural research alone would increase by 18 percent and construction funding for research facilities increase by 42 percent, these are offset by the proposed (once again) elimination of the Advanced Technology Program and steep decrease in the Manufacturing Extension Program.

Further, for multi-agency R&D efforts, changes may not intuitively reflect a commitment to agency missions. For example, while the DHS R&D portfolio has declined from a year ago, there is still a considerable multi-agency R&D portfolio for homeland security concerns that remains outside of DHS (e.g., biodefense research at NIH). Reading the decrease in DHS funding without that knowledge would obscure the commitment to R&D supporting the DHS mission.

As noted, a complete breakdown of the proposed R&D budget is not possible in this space. The AAAS provides

a very thorough analysis on an agency-by-agency basis of the R&D budgeting process. See <www.aaas.org/spp/rd/new.htm> for more details.

It's important to note that the FY 2007 budget is less than one week old officially (at the time of writing



this column) and each agency and its responsible congressional committees already working to determine the impact of these "preliminary" budget figures. Congressional hearings are underway, and there is a long time between "release and appropriations."

On a related note, the budget is just the latest indicator from the Administration and Congress that the issue of U.S. competitiveness continues to gain traction. On January 25, Senators Domenici (R-NM), Bingaman (D-NM), Alexander (R-TN), and Mikulski (D-MD) of the Senate

Committee on Energy and Natural Resources, introduced the latest in a line of innovation-related legislation.

Their package of three bills, entitled Protecting America's Competitive Edge (PACE), is "aimed at helping America maintain its leading edge in science and technology." These bills effectively implement 20 recommendations contained in the National Academies' report issued last fall (see this column in the October/November and January issues of *FLC NewsLink*).

Within a week of its introduction, the PACE legislation had 60 co-sponsors—30 Democrats and 30 Republicans—including Majority Leader Bill Frist and Minority Leader Harry Reid. The PACE legislation and related materials can be found at <<http://energy.senate.gov>>.

The PACE legislation (S.2197, S.2198, S.2199) now joins two other Senate bills (S.2109, S.2196) and a three-part legislative package introduced in the House in late 2005 (H.R.4434, H.R.4435, H.R.4596) focused on supporting U.S. technological competitiveness in various ways.

Certainly, some of these are overlapping and it is not yet clear how this will play out in the final analysis. But with this proliferation of innovation packages, combined with the emphasis in the FY 2007 budget as reflected in the American Competitiveness Initiative, the signal is clear—there continues to be a growing interest among policy makers in this area.

The FLC's DC office will continue to monitor the budget process and its potential impacts, as well as related legislation, and provide periodic updates as appropriate. Stay tuned.

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critical not only to addressing climate change, but also to the future ability of the nation to effectively resolve problems."

The scientific openness issue also surfaced in a Feb. 15 House Science Committee hearing chaired by Rep. Sherwood Boehlert (R-NY), and two incidents were cited that , involved work by researchers at Oregon State University and California Institute of Technology.

A witness in the hearing, White House Office of S&T Policy Director John Marburger said he was knew of one of the incidents and would investigate the other.

Chairman Boehlert declined a request by House Democrats for a com-

mittee hearing on the subject, but intimated that one might be held after he learned of the outcome of Marburger's investigation.

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March 2006

The Only Government-wide Forum for Technology Transfer
 Published by the Federal Laboratory Consortium for Technology Transfer
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