

Path forward

Madia tells managers that feedback will be a key component in forming the 'Laboratory Agenda'

About 500 Laboratory managers made a trip to town on June 13 for ORNL Director Bill Madia's first "senior staff" meeting of managers. Because of the size of the crowd, the meeting was held in the Oak Ridge High School auditorium.

The leadership team, however, is aiming for an even larger audience. Madia plans to conduct these managers' meetings several times a year. They are one step in a process to keep ORNL staff members apprised of the leadership team's vision for the Lab, which they acknowledge is still developing. Managers were tasked to return to their groups and fill them in on what was discussed at the meeting and to give the leadership team direct feedback on resulting comments and ideas.

The leadership team will use that feedback as it evolves what Madia termed the "Laboratory Agenda." Referring to the Lab's "path forward," Madia touched on a number of subjects during the briefing.

For instance, Madia told the group that ORNL's recovery from a projected \$9 million budget shortfall was "slightly ahead of the plan." Initiatives that were adopted in May have already saved \$3.5 million of the total. Madia said that if the Lab continues at that pace, the shortfall would be made up by October, the end of the fiscal year.

To avoid future surprises, Chief Financial Officer Greg Turner is "putting in place better management controls" of the Lab's business

system. "We need a lot of simplification in this area, and that's our intent," Madia said.

The Spallation Neutron Source has a strong leadership team in place, he said. The project has hired 150 people in the past year and has received the blessing of some of its most vocal critics. Favorable reviews and the addition of the Jefferson Lab to contribute to a superconducting linear accelerator were other bright points. Challenges the SNS must overcome include the House Appropriations Committee's \$100 million markup for the project, well shy of the President's \$287 million request.

ORNL now has a preliminary design for its facilities revitalization initiative, which is based on traditional DOE line-item funding, \$26 million in state funding for four new facilities and—the most innovative facet—private-sector development funding. Madia and the leadership team have acknowledged all along that federal funding to support, in total, a building program of the scope planned for ORNL is unlikely.

"Other people's money is necessary," Madia said. The director expressed pleasure with the support the Lab has received from DOE, "especially ORO," for third-party

Curtis Boles



Thomas Thundat received one of this year's 19 Discover Awards. ORNL also added three R&D 100s to its lab-leading total.

Mine detecting technology wins Discover Award

And Lab wins 3 R&D 100s

The concept takes the microcantilever sensor technology developed at ORNL and uses it to save lives. This year, in the humanitarian category, the Life Sciences Division's Thomas Thundat has received a Discover Magazine Award for Technological

Innovation. Thundat joins elite company as a winner. He is one of just 19 Discover Award winners sifted from thousands of nominations.

With members of his team that include colleagues Moonis Ally of Energy Division, Zhiyu Hu of the Life Sciences Division and Panos Datskos of the Engineering Technology Division, Thundat has been pursuing the development of a small, inexpensive detector that can detect land mines in the field, or possibly even a hand-held device that

(See STAFF, page 6)

(See DISCOVER, page 2)



Steve Lindberg in the field at Canada's Experimental Lakes Area.

Study probes airborne mercury's effects

The project's name reminds one of a heavy-metal rock band, and indeed a heavy metal is involved. The Environmental Sciences Division's Steve Lindberg is currently participating in a project called METAALICUS, which is trying to answer some questions about how mercury may affect the environment.

METAALICUS is a multi-million-dollar mercury manipulation study being planned for the Experimental Lakes Area in Northwest Ontario. The "Mercury Experiment to Assess Atmospheric Loading in Canada and the U.S."—an international collaboration between the United States and Canada partly supported by DOE—is designed to answer a central question: Are atmospheric emissions of mercury largely responsible for the methylmercury contamination of fish in lakes located far from industrial sources of mercury?

The Experimental Lakes Area has hundreds of

remote lakes that can be safely used for environmental experiments; in fact, it was the site of pioneering lake acidification studies in the 1980s.

"We will use aircraft and manual sprayers to spray a different stable mercury isotope on a forest, a nearby lake, and a nearby wetland," Corporate Fellow Lindberg says. "Using inductively coupled plasma mass spectrometry, a University of Toronto lab will analyze the degree to which mercury in the fish comes from the air, the lake and runoff from the forest and wetland."

Although mercury is well recognized as a neurotoxin that is particularly harmful to prenatal life and infants, much has yet to be determined about how the element behaves in and affects the environment. Researchers are not at all certain that a reduction in atmospheric mercury emissions will reduce mercury concentrations in fish.

(See MERCURY, page 5)

Discover

Continued from page 1

could scan people and luggage for explosives.

The technology is based on miniature micro-machined silicon cantilevers one-tenth the width of a human hair. The device, which would have parts-per-trillion sensitivity, works by absorbing TNT molecules given off by explosives. As the semiconductor material absorbs the TNT and is heated with power from a simple battery, the TNT molecules combust very rapidly, which is detected by an optical beam.

War-torn countries are often dotted with land mines left over from conflicts. The mines remain a threat years after hostilities have ceased and account for thousands of deaths and injuries, often of children. Mines also make traveling and agriculture hazardous in

It takes \$3 to make a land mine and about \$1,000 to find and remove it.

these countries. They are devastatingly simple to make and distribute and enormously expensive—not to mention

dangerous—to find and remove.

Thundat looked into using the micro-cantilever technology to detect mines because land-mine detectors used today are cumbersome and costly. He says it takes \$3 to make a land mine and about \$1,000 to find and remove it, putting those removing them at a distinct disadvantage.

He hopes his invention will make detectors small and economical. If funding materializes, he's shooting for a prototype in the next two years that can be used outside the laboratory.

Life and limb literally hang in the balance, making the award's humanitarian status obvious.

"The *Discover* Award is a measure of the

science and technology leadership of the Department of Energy's national laboratories," says Energy Secretary Bill Richardson. "Oak Ridge National Laboratory is paving the way in developing new land-mine detection technology that will not only improve security throughout the world, but will save lives."

ORNL adds trio of R&D 100s to record

Researchers and engineers at ORNL have won three R&D 100 Awards, pushing their national lab-leading total to 107 since the awards began in 1963.

The awards are presented annually by *R&D Magazine* in recognition of the year's most significant technological innovations. ORNL's 107 R&D 100 awards place it first among DOE laboratories and second only to General Electric.

The **Differentially Deposited X-ray Microfocusing Mirrors**, developed and submitted jointly by Gene Ice of the Metals and Ceramics Division and Beamline Technology Corp. of Tuscon, Ariz., give scientists a powerful new tool for studying interconnects and other materials made up of small disoriented crystal blocks called grains. The new X-ray crystal microscope provides an exciting capability that didn't exist before. Ice says it allows researchers to see the three-dimensional crystal structure of most materials for the first time.

ORNL's **High-Thermal-Conductivity Graphite Foam**, developed by M&C's James Klett and Tim Burchell and Ashok Choudhury of Tech Transfer, is a joint winner with Poco Graphite of Decatur, Texas.

The carbon foam has a thermal conductivity equivalent to aluminum at one-fifth its weight. Because of its superior heat transfer characteristics, the material could allow auto designers

Thundat is the only repeat finalist since the award was first given in 1990. He was a finalist in 1998 in the sight category for his micromechanical infrared imager.

He and this year's 18 other finalists were formally acknowledged at a gala ceremony at Walt Disney World in Florida.—*Reported by Fred Strohl and Ron Walli*

to place the radiator somewhere other than at the car's front end. The foam could also displace heavy cooling fans, metallic fins and heat sinks in electronics. Graphite foam, which is nearly 100 percent graphite, features an open cell structure that improves heat transfer to a working fluid, like the coolant in a radiator. Unlike other carbon foam products, which act as insulators, the ORNL-developed material conducts—or removes—heat.

The **Block II Chemical Biological Mass Spectrometer** is a joint ORNL winner with Orbital Sciences Corp. of Pomona, Calif.; MSP Corp. of Minneapolis; Colorado School of Mines in Golden, Colo.; and the U.S. Army Soldier and Biological Chemical Command, Aberdeen Proving Ground, Md.

This is the first integrated instrument capable of detecting and identifying both chemical and biological warfare agents in the field. It combines the detection speed, sensitivity and specificity necessary for environmental detection of highly diverse classes of materials.

It was developed by Wayne Griest, William Andrews Jr., Don Bible, Eric Breeding, Michael Burnett, Kim Castleberry, Dwight Clayton, Richard Crutcher, Kevin Hart, Mike Hileman, Ralph Ilgner, Bruce Jatko, Roger Jenkins, Stephen Lammert, David McMillan, Randy McPherson, Roosevelt Merriweather, Richard Reid, Irene Robbins, David Smith, Robert Smith, Carl Sohns, Ann Stewart, Cynthia Terry, Cyril Thompson, Arpad Vass, Robert Whitaker, Marcus Wise, Dennis Wolf, Wes Wysor and Judy Zager of ORNL.—*Ron Walli*



Ice



Klett



Roosevelt Merriweather and Rob Smith of the Block II team



Curtis Boles

Jeff Christian, director of the Buildings Technology Center, fervently espouses the cause of energy efficiency. He was in his element on June 21 (see page 4).

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Lab Notes

Baker recalls: 'Take my word for it'

The title of former Senator Howard Baker's Weinberg lecture On June 13 was "At the Nexus of Science and Public Policy." What he really talked about was his relationship with ORNL and science issues during a career that has earned him renown as a senior statesman.

Baker said that over the years he has received so much guidance and criticism from the lecturer's namesake, ORNL Director Emeritus Alvin Weinberg, that he wouldn't be surprised if Weinberg handed him a grade on his talk.

Weinberg indeed was in the audience.

Baker recalled getting a call from Eugene Wigner, ORNL's first research director. He knew Wigner was one of the scientists who persuaded Albert Einstein to convince President Roosevelt to build the atom bomb. "My god, what now?" he recalled thinking.

What Wigner wanted to talk about was the disparity in civil defense preparedness that existed between the United States and the Soviet Union. Baker said Nobel laureate Wigner arrived at the senator's Huntsville, Tenn., home perched on the sissy bar of the late ORNL researcher Conrad Chester's motorcycle.

Baker once asked Wigner what Einstein was really like. Wigner replied, "He was a great idea man but a terrible mathematician."

Baker also recalled that the fledgling Human Genome Project came within a "hair's breadth" of being discontinued. "President Reagan couldn't figure out why it was important," Baker recalled

"Just take my word for it," he assured the

Oak Ridge National Laboratory

President.

The former Senate majority leader and White House chief of staff says the success of Silicon Valley underscores the role science plays in the creation of wealth. "If economic growth depends on information, we must be on the threshold of a new era—if we don't drown in all the information."

Baker's day in Oak Ridge wasn't purely a pleasure trip. He was accompanied by veteran political advisor Lloyd Cutler for meetings on nuclear nonproliferation in preparation for a trip to Russia, and later that day he was named to a special task force to investigate the ongoing security misfortunes at Los Alamos National Laboratory.

Supercomputing: 'Push harder'

ORNL's two new supercomputers, one made by IBM and the other by Compaq, were dedicated June 21 by Under Secretary of Energy Ernest Moniz, who recalled that he has seen a lot of good things happen in Wigner Auditorium, including the dedication of the

Lab's first supercomputer, the Intel Paragon, five years ago.

With the recent expansion of the IBM RS/6000 SP and the recently acquired Compaq AlphaServer SC (*Reporter*, May 2000), ORNL now has 1.5 teraflops computing speed, making it the most powerful unclassified computing facility in the nation.

The two new computers have more than 10 times the computing power than the once and briefly state-of-the-art Paragon offered.

Moniz said that ORNL's new computers represent "a genuine tool of discovery, not just the extension of a few more cycles on a machine." As computational modeling problems evolve, scientists, he said, must "push harder—even harder—on new computational tools."

The ceremony also included the announcement of an IBM postdoc fellowship in terascale computing. ORNL is back on the supercomputing map.

Tick-tock

Self-appointed curator of ORNL antiquery Bill Alexander surfaced another relic from the Manhattan Project years recently. It's a 1940s-

era wall clock that has a tell-tale "Clinton Laboratory" nameplate, meaning, as Alexander says, "it's seen a lot of history happen."

When he plugged it in it wouldn't run, so he took it to the Plant and Equipment Division's electric motor shop. P&E's Tommy Ray performed a little resuscitative magic on it. According to Alexander, it now keeps perfect time.

P&E's motor shop keeps a multitude of electric motors from all around ORNL going. Many of these are motors that can't be purchased any more, and their ongoing refurbishment saves the Lab a lot of money and a lot of headaches.

The clock, or one like it that was restored and mounted on a plaque a couple of years ago, may end up providing the time of day for patrons of the new Visitors Center.

Bill Manly gets his Ph.D.

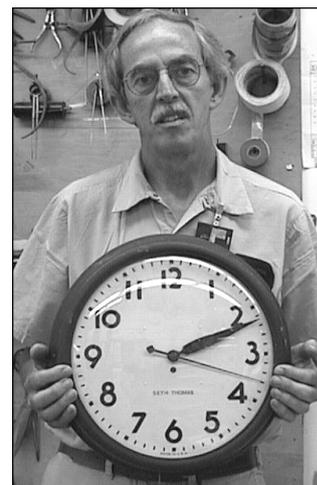
Bill Manly, former ORNL metallurgist, National Medal of Technology winner and industry leader, got his doctorate recently. More specifically, it was an honorary doctorate from the University of Notre Dame.

"The whole family went," Bill says. He earned bachelor's and master's degrees from the school at South Bend, Ind., in the 1940s, including a free year for being in the service during the war.

He went on to work at the Lab on such storied projects as the nuclear airplane, then left the company for private industries, including Union Carbide and Cabot Corp. He received the technology medal in 1993.

ORNL Reporter featured Bill in the November 1999 issue, in which he recounted his schooling, ORNL experiences and career at the "forefront of technology transfer and cross-fertilization in American industries." Bill now has a nice office in Building 4500-South in which he consults on tech transfer matters. As with senior statesmen, senior industry legends never really get to retire.

Manly was among a group of 10 distinguished individuals honored by Notre Dame, including United Nations Secretary General Kofi Annan and former Nicaragua President Violeta de Barrios Chamorro.



P&E's Tommy Ray and the vintage clock he reworked.



Director Emeritus Alvin Weinberg (center) confers with former Sen. Howard Baker (left) and Lab Director Bill Madia.

Reported by Bill Cabage

Star performer

ORNL's own Building 3147 joins elite with EPA-DOE 'Energy Star' rating

The Energy Division unveiled its Energy Star rating on June 21 for Building 3147, one of a few office buildings that meets energy efficiency standards for the ratings established by DOE and the Environmental Protection Agency. It's one of only two star-rated buildings in the state.

Building 3147 houses most of the offices of the Buildings Technology Center, an ORNL user facility.

At the ceremony, Christian compared the building, and its location, to the "best softball field I ever saw. It was built on the site of a reclaimed strip mine."

He continued, "This Energy Division Building is built on a reclaimed nuclear research site. It shows the direction the nation can take with reclaiming and efficiently managing its resources. It's also the best I've ever seen when one takes into account the impressive list of contributions the occupants have made toward achieving this country's building energy efficiency goals."

Indeed, Christian cited technologies from the BTC that have charted impressive energy efficiency gains, including

- water heaters that cut energy use by more than half;
- clothes washers that cut energy use by 60 percent;

- the gas-fired GAX heat pump that reduces energy use by 40 percent;
- the "fridge of the future," which is 60 percent more efficient than fridges of the present;
- dryable roof systems that reduce all waste thrown away in the United States by 1.6 percent; and
- the National Energy Audit software, used by 33 states, which has saved \$95 million in energy costs per year. "The NEAT software means that with this one product alone the entire budget of the Buildings Technology Center is paid back in the first three months of each fiscal year," says Christian. "Where else can you find three-month payback investments?"

Christian says the Energy Star shows that ORNL not only performs outstanding energy efficiency research, it also "walks the talk."

An energy management system was installed during construction of the building in 1985. The original lighting was converted in 1994 to high-efficiency lighting and occu-

pancy sensors, reducing energy use of the building by 20 percent.

With those improvements, many of which were overseen by Energy Division's Terry Sharp, who helped establish many of the benchmarking criteria for the Energy Star award, Building 3147 is one of the top 10 percent in the nation in energy efficiency.

Only 200 commercial buildings in the country have the rating and only about 40 government buildings have it.

The other Energy Star-rated commercial building in the state is the Tennessee Valley Authority's Chattanooga office complex.

Christian also said the Energy Star rating meant that a facility is a "healthy and productive" work environment as well as an energy efficient one.

"This is first-class energy efficient space, and all a part of one of the Lab's top user facilities," he said. "Indeed, DOE has built the user facility, and the users have come."

Find out more about the Energy Star rating at www.epa.gov/buildings/label/.—B. C. 



BTC to monitor energy efficient Habitat for Humanity homes

Two new homes in Lenoir City—built using innovative and energy efficient building technologies—were dedicated on June 21 as part of a Habitat for Humanity project.

ORNL's Buildings Technology Center will monitor how well those new technologies perform during the next year.

The Habitat for Humanity homes, located in the Harmony Heights subdivision, contain an insulating concrete form wall system that features light, insulating polystyrene foam blocks stacked inside the walls and filled with concrete. The expanded blocks provide wall insulation.

These homes will help scientists and engineers determine the wall system's building thermal mass, air-tightness and ground coupling on the whole building's energy performance.

Jeff Christian, director of ORNL's Buildings Technology Center, says the effort, a partnership between DOE, Habitat for Humanity of Loudon County and the Insulating Concrete Forms Association, serves two purposes.

"The first is to help answer important energy performance questions on innovative buildings technologies," Christian says. "The second is to provide energy efficient Habitat

for Humanity housing to eligible homeowners."

The partnership grew out of a four-year energy efficiency study at the Buildings Technology Center in which more than 100 types of walls were tested and analyzed. A crew that included Habitat volunteers and some current and retired ORNL employees began construction on the two homes in January. The homes will be monitored for one year for their energy efficiency.

The first wall system studied at ORNL was an insulating concrete form system in 1997.

ORNL researchers are working on an additional 10 homes, each with different wall construction, which they hope will be constructed in the same development in the future.

Christian says the homes will serve as a model for measuring the insulation performance of wall systems.—Fred Strohl 



This Habitat for Humanity home and another like it will be monitored for the energy efficiency of their wall systems, which use insulating polystyrene foam. The homes are in Lenoir City's Harmony Heights subdivision.

Mercury

Continued from page 1

For that reason METAALICUS's findings are important because regulations to control mercury emissions by industries will cost billions of dollars annually if implemented, even though their effectiveness is as yet unknown.

The findings are important to the United States' and Canada's fisheries as well. Most states have advisories against fish consumption because of high mercury concentrations, and in Canada unacceptable mercury concentrations exist throughout the country, including remote and otherwise pristine lakes in the Northwest Territories.

Very small amounts of three different stable isotopes of inorganic mercury will be added to the ecosystem under study. The isotope will enable the researchers to distinguish between what's been added and background mercury that has accumulated over time. Production of methylmercury, which is the most toxic form of mercury in the environment, will be studied in lake sediments.

One possible source of the mercury isotopes for the study is the stockpile of stable mercury at ORNL, and preliminary tests that began last year are being done with ORNL isotopes.

The results of the study will be reported at the October 2001 International Conference on Mercury, which will be co-chaired by

Lindberg. It will be held in Minamata City, Japan.

Minamata City is itself the site of a well-known mercury disaster that elicited considerable concern in the 1970s over mercury-contaminated waterways. From 1953 through 1965, an acetaldehyde factory discharged methylmercury and inorganic mercury into Minamata Bay.

The pollution killed 52 people. More than 1,200 became ill from eating bay fish contaminated with methylmercury. The disaster helped motivate the passage of the Clean Water Act of 1970.

"Since that time, most major sources of direct mercury discharges to waterways have been curtailed," says Lindberg. "However, mercury continues to accumulate in remote lakes as a result of long-range atmospheric transport and deposition, and it is critical to understand the behavior of this mercury."

Participating in the study with ORNL are representatives from Canadian agencies, several universities in Canada and the United States, Maryland's Academy of Natural Sciences, the U.S. Geological Survey and Tetra Tech, Inc. Funders include DOE, the Environmental Protection Agency, the USGS, the Wisconsin Department of Natural Resources, the Electric Power Research Institute, and Canada's Department of Fisheries and Oceans and National Sciences Engineering and Research Council. —*Reported by Carolyn Krause ornl*

I&E 'satisfactory'; there's work to do

ORNL received an overall "satisfactory" rating from last month's two-week Safeguards and Security Inspection and Evaluation (I&E). Security Manager Bill Rich reports the rating was applied to protection program management, physical security systems, information security, classified cyber security, the personnel security assurance program and the protective force.

ORNL's I&E occurred during a period of focused national attention on the Department's security measures. The I&E team did cite concerns, mainly involving the Laboratory's unclassified cyber security and its foreign national visits and assignments programs.

"These concerns will lead to some changes in the way we do business in these areas," Rich says. "For one, the I&E team took issue with the breadth of our cyber security risk assessment process and access afforded to unclassified sensitive information through our computing systems.

"Also, the team focused heavily on the protective measures in place to assure that our foreign visitors and guest assignees do not have unimpeded access to unclassified sensitive information while visiting or assigned to ORNL without the requisite 'need to know' this information.

"As a result, we anticipate further modifications of our foreign national security plans."

In a message to managers, ORNL Deputy Director for Operations Jeff Smith thanked Lab staff members for their support for security efforts and echoed Rich's message that there is work to do.

"The completion of the Safeguards and Security I&E does not mark the end of our efforts in the safeguard and security area," Smith said. "The DOE Safeguards and Security I&E team has left a number of recommendations designed to correct gaps we have identified in our current program. Over the coming months, your support will be needed to bring about these improvements."—*B.C. ornl*

Service Anniversaries

July 2000

40+ years: Sydney J. Ball, Instrumentation and Controls; Albert E. Williams, Spallation Neutron Source

40 years: John W. McKeever, Engineering Technology

30 years: Steve Childs and Robert W. Reed Jr., Metals and Ceramics; James M. Finger, Environmental Protection and Waste Services; Gerald L. Martin, Laboratory Protection; Mary L. Tharp, Computational Physics and Engineering; Jackie C. Whaley, Research Reactors

25 years: Steve L. Allman and Elizabeth T. Owens, Life Sciences; Alvin E. Baird, Gary L. Cooper, William D. Garrett, Donald R. Jenkins and John P. Webb, Plant and Equipment; John E. Capshaw, Logistical Services; Stephen G. Cortelyou, Computing, Information and Networking; Thomas V. Dinsmore and Jimmie D. Hewitt, Chemical Technology; Martin L. Grossbeck and Joseph L. Wright, Metals and Ceramics; Robert D. Kennedy, Office of Safety and Health Protection; Bradley S. Weil, Robotics and Process Systems

20 years: Jamie M. Crigger, Computing, Information, and Networking; Gerald L. Dean, Audit and Management Services; Keith S. Joy, Quality Services; Leslie B. Ryon, Environmental Protection and Waste Services; Robert B. Shelton, Energy; Stephen H. Stow, Independent Oversight; Jackie L. Yarber, Chemical Technology

(If you had a service anniversary but your name hasn't appeared on this list, let us know by calling 576-0470.)

United Way campaign starts this month

Members of ORNL's 2000 United Way Campaign cabinet are wrapping up plans for this year's drive, which gets under way this month. The annual breakfast for leadership givers is set for July 14 in the ORNL Cafeteria. Featured speaker will be Dee Haslam, CEO of Bagwell Entertainment, who serves as 2000 campaign chairman for United Way of Greater Knoxville.

Information on this year's general campaign kickoff program and on other upcoming United Way activities will appear in *ORNL Today*.

Lou Dunlap is the 2000 United Way Campaign chairman; Harvey Gray serves as

co-chairman. Danny Cantrell and Ray Hubbs are the associate chairpersons for the Atomic Trades and Labor Council and the International Guards Union of America respectively.

If you have served United Way as an agency volunteer, or if you know of a co-worker or Lab retiree who is involved in UW volunteer activities, contact Cindy Ross Lundy (574-1642, lundycr) in Communications and Community Outreach so that your story may be shared during the campaign. Stories about how United Way services may have touched your life are also being sought. Employees may ask to remain anonymous.

Staff

Continued from page 1

financing for new Lab facilities. He added that buildings in the 6000 and 4500 areas are also slated for refurbishment.

Madia's vision for the Lab, in addition to new facilities, includes more competitive cost structure and salaries. A "rather serious cost reduction program" is planned for later this year. "We want to take ORNL from its current place among the most expensive labs to a more competitive position among the lowest third," he said. At the same time, researcher salaries are on average 10 to 15 percent below the market. Madia said measures were being taken to close the gap.

Many of the aforementioned topics play directly into the development and implementation of the Laboratory Agenda, which will, Madia said, serve as a blueprint for ORNL's future.

ORNL's path forward, Madia said, is organized around "simultaneous excellence" in science and technology, operations and ES&H and community service. These objectives, he said, include strategic objectives, critical outcomes, Lab-level initiatives and tactical actions.

Progress with the SNS and the facilities upgrade initiative were cited as key examples of the path forward through the Laboratory Agenda. They are elements, Madia said, that are strategically important to ORNL's future, require teamwork to accomplish and figure highly in DOE's evaluation of both ORNL's and the leadership team's performance.

Science and technology goals include the SNS, establishment of a center of excellence in complex biological systems, establishment of a high-performance computing lab, leadership in carbon management and clean energy and sustained leadership in materials science.

Operations and ES&H goals include the new campus and to "be known for delivering maximum R&D per dollar spent." Progress will be measured by a number called the "composite multiplier rate." That's the metric in which ORNL currently tops a list that includes eight other national labs. The Lab's goal is to get the number, currently at 1.95, closer to the lowest third of lab rates, which bottom out at 1.56.

In the community service arena, ORNL, as a "good corporate citizen," intends to strengthen science and math education and to be a major player in the region's economic development. About half of the \$1.25 million in corporate giving set aside annually by UT-Battelle will go to economic development initiatives and another third of that sum will go to education, primarily science and math.

UT-Battelle will also have to arrive at a long-term strategy for ensuring the viability of the American Museum of Science and Energy, which is currently under ORNL's

purview but not funded by the Department.

Madia repeatedly returned to the "path forward" theme during a question and answer session after his prepared remarks. When queried about SNS use of ORNL services, Madia and Deputy Director for Operations Jeff Smith reminded the audience that SNS, although not mandated to use ORNL services, buys "a plethora" of Lab services. "But they want as much independence as they can have to get the job done," said Madia.

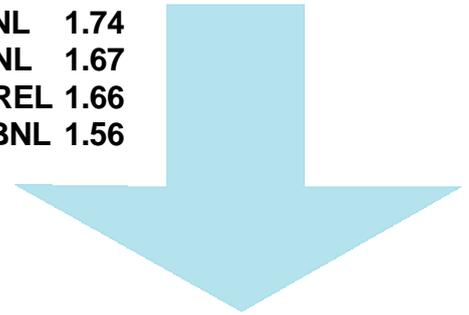
Added Smith: "It's an interesting dynamic. If the Lab can provide a high-value service, so be it. The up side for us is what's a good deal for Dave (SNS Executive Director David Moncton) is a good deal for us."

When asked about the possibility of staff cuts in ORNL's future, Madia could not rule them out.

"We decided not to fix our overhead shortfall with staff cuts, but it could happen," he said. "Nobody's off limits. You tell us where the high-value activity is and where the low-value activity is."

ORNL 1.95
PPPL 1.92
LLNL 1.83
PNNL 1.80
BNL 1.75
SNL 1.74
ANL 1.67
NREL 1.66
LBNL 1.56

The cost-reduction goal is to get the Lab's composite multiplier rate, which tops this list of nine labs, into the bottom third.



However, he also remarked that, in addition to an aging facility, ORNL also has an aging staff, and the inflow of new talent is "at a trickle." ORNL's agenda, he said, is to build the Lab and maximize research dollars.

"Remember," he reminded the group, "the main issue is that our costs are too high."—B.C. [ORNL](#)



Pacific Northwest's Environmental Molecular Sciences Laboratory

Pacific Northwest: 'New' is a relative term

The most-cited example of outside financing for new Lab facilities is Pacific Northwest National Laboratory, the Battelle-operated multiprogram lab in Richland, Wash. *ORNL Reporter* recently visited PNNL for a meeting of public affairs staff from most of the labs.

The first impression one gets of PNNL is that of an oasis. Richland gets only eight inches of rain a year. Yet stately sycamores and maples line the boundaries of the lab; the grass is perfect. And sprinkler heads are as common there as dandelions are in East Tennessee.

The main administration building—the Research Operations Building—is a striking complex of buildings with a plaza and a pool festooned with fountains. It makes the impression that this must be the type of spanking new facility we're aiming for. Everything, in fact, looks nice and new. Offices are well-lit and clean.

But the Environmental Molecular Sciences Laboratory is PNNL's showpiece. As PNNL's new user facility, it has a spacious lobby and sitting area, a well-

furnished conference room and laboratory space galore. EMSL Deputy Director Doug Ray comments that he visited ORNL's High Temperature Materials Laboratory recently and it reminded him of the EMSL. Sure enough, they are similar, although EMSL's architecture is more traditional and it seems much larger—and newer by more than a decade. It opened in 1997.

The Hanford site in itself is vast, with its nine reactor sites spaced out along miles of desert beside the Columbia River. In the outback you'll find the cleanup sites—the most massive in the DOE system—and older facilities that better reflect the site's wartime origins.

But things don't have to look like World War II forever, and PNNL reflects Bill Madia's contention that a place that does first-rate science ought to look the part.

That nice, new Research Operations Building, for instance. Or so I thought, until our host pointed at it and, rather dismissively, said, "This is the *first* building Battelle built at Pacific Northwest, in 1965."—B.C.

Officials, rowers greet UT-Battelle tower gift merrily, merrily, merrily

Oak Ridge's presence in the sport of rowing got a boost last month through a UT-Battelle gift toward a finish-line tower for the Oak Ridge Rowing Association. UT-Battelle's gift of \$30,000 toward the tower, to be located on Melton Hill Lake, will be matched by the city of Oak Ridge.

Oak Ridge Mayor Jerry Kuhaida said the UT-Battelle gift was the kind envisioned when the city allocated \$140,000 to the seed money project to upgrade the rowing facilities. "We are thrilled that UT-Battelle has joined us in the goal of enhancing Oak Ridge's reputation as a great rowing facility," Kuhaida said.

Melton Hill Lake is nationally admired by rowers for its flat water and bucolic surroundings and has hosted a number of regattas over the years.

"Each regatta attracts 500 to 2000 rowers to Oak Ridge. The new tower is certain to help us attract more rowing events and more revenues for the city," Kuhaida says.

The new tower also will be an asset for the University of Tennessee Lady Vols rowing team, which uses the Oak Ridge facility for

dual meets and tournament regattas.

Joan Cronan, UT director of Women's Athletics, said the new tower will be "a great boost" to the UT rowing team. "Improving the

Oak Ridge facilities will attract outstanding athletes as well as national regatta competitions to East Tennessee, she said."

The gift is part of UT-Battelle's new program of "legacy investments" for the Oak Ridge region. Bill Madia, CEO of UT-Battelle and ORNL director, says the gift "represents a lasting investment in Oak Ridge's future."

"By helping make Oak Ridge one of the nation's premier rowing facilities, we can help generate tax revenues for the city and at the same time support the University of Tennessee rowing team. The gift represents UT-Battelle's belief that we are a partner in the

community's growth," Madia said. "Legacy investments" are intended to have tangible and lasting benefits to the community. The gift for the rowing tower followed a \$90,000 gift in June from UT-Battelle to the UT Academy for Math and Science. [ornl](http://ornl.gov)



A designer's conception of the finish-line facility on Melton Hill Lake.

Special Accident Plan revised, premiums on summer break

Benefit plans has announced a medical plan premium holiday for the summer and changes in the Special Accident Plan. The premium holiday runs until September 24.

A review of medical reserve accounts indicated that the reserves should be reduced, says Benefits Manager Jill Freeman. CIGNA medical premiums are being suspended for a three-month period.

Earlier, it was announced that group life and dental plan premiums would be suspended starting June 4 as a result of compensation received from Metlife.

According to Freeman, for individuals paid on a weekly basis, the medical premium suspension will start with the payroll period ending July 2. Both suspensions continue through the payroll period ending September 24. Normal premium deductions will resume with the payroll period ending October 1. For individuals paid on a monthly basis, medical premiums will be suspended for the period July through September 2000. This premium suspension is independent of any change in premium rates that may be required for calendar year 2001.

Special Accident Plan changes are effective July 1:

- Premiums will decrease. Currently, the cost of a single contract is \$ 0.40 per \$10,000 and a family contract is \$ 0.60 per \$10,000. As of July 1, a single contract will be \$0.30 per \$10,000 and a family contract will be \$0.58 per \$10,000.
- If you elect family coverage, the benefit payable to dependents will increase. The benefit amount for family members is a percentage of your elected amount of coverage and is based upon the composition of your family at the time of loss.

If you would like to enroll in the Special Accident Plan or change your previously elected amount of coverage, call the OneCall Service Center to request a form. Special Accident elections or changes may be made at any time and will be effective the first day of the following month.

Questions may be directed to the OneCall Benefits Services Center, locally at (865) 574-1500 or 1-877-TO-1-CALL (1-877-861-2255) for those out of area. [ornl](http://ornl.gov)

Retirements

To arrange for a portrait, call Deborah Barnes, 576-0470

Ed Krieg, director of ORNL's Engineering Division, has retired with 43 years of service at the Lab. He lives in Oak Ridge. He says of the countless projects he's been involved with, "it is the people involved that I think of and treasure."



Krieg

Martha M. Dawson has retired from the Chemical Technology Division with 28 years of service. Most recently Martha worked in Transportation Technologies. She resides in Knoxville.



Dawson

Call out for AMSE Awards

The deadline for nominations for the Fourth Annual American Museum of Science and Energy Foundation Tribute to Tennessee Technology is August 7. Nominations are in three categories: technological achievement, humanitarian achievement and lifetime achievement. Application forms are available from David Beall (574-1051, bealldg@ornl.gov) and Phil King (574-9618, kingpwiii@ornl.gov). The awards ceremony is set for September 28 at the AMSE.

Awards Night nominations due July 19

UT-Battelle has organized its first Awards Night program, which will include ORNL and Spallation Neutron Source project staff members alike. The call for nominations was issued in mid-June. Nominations are due soon, on July 19.

The nomination form and criteria are accessible on the Honors and Awards page at www-internal.ornl.gov/awards/ORNL/ORNL_HA.html.

UT-Battelle is planning the 2000 Awards Night celebration for Thursday evening, November 9, at the Hyatt Regency Hotel in Knoxville. Refer questions to Phil King (kingpwiii@ornl.gov, or 574-9618).

First collisions at RHIC good news for ORNL's PHENIX collaborators

ORNL researchers were among scientists related at the first collisions for the Relativistic Heavy Ion Collider at Brookhaven National Laboratory, which occurred on June 12. RHIC's first collisions were recorded by a succession of detectors.

The 2.4-mile-circumference, dual-ring collider has four detectors—BRAHMS, PHENIX, PHOBOS, and STAR—each built by an international team of researchers to witness and study collisions between gold nuclei traveling close to the speed of light.

"It is, of course, a great achievement—something that we have been looking forward to and working very hard to achieve for a long time," says Corporate Fellow Frank Plasil of the Physics Division. "After collisions were detected at two other intersection regions, the RHIC people steered the opposing beams of gold nuclei in a way as to also produce collisions in the PHENIX intersection region, where our experiment had no problem in detecting them."

ORNL's involvement has been with the PHENIX detector. The detector has benefited from ORNL expertise in detectors and signal processing from the Physics, Instrumentation and Controls and Engineering Physics and Mathematics divisions plus collaborating researchers at the University of Tennessee.

The collisions now under way at RHIC are expected to re-create conditions that could only have existed a microsecond after the Big Bang, or possibly in the extremely dense centers of neutron stars.

In those very hot and very dense conditions, protons and neutrons melt into quarks and gluons. Researchers are interested in these

states of matter believed to exist shortly after the Big Bang, and how things cooled and condensed to form the universe.

PHENIX offers researchers a real-time record of these collision events, which is important because quarks are in an unnatural state and exist only briefly before recombining into protons and neutrons. Other experiments provide measurements of only the aftermath of the collisions. PHENIX team members say the difference is as marked as seeing a videotape of an earthquake as it is occurring as opposed to seeing only photos of the resulting rubble in the street.

RHIC's accelerators began operations leading up to the first collisions almost exactly one year ago. The ORNL and UT PHENIX team joins more than 450 members from 45 institutions in 10 countries.

"We are all very excited and full of anticipation to proceed to make physics measurements with the newly available beams," says Plasil.—*B.C. ornl*

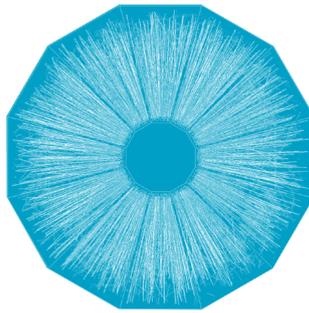


Image of an end view of particle tracks streaming from a heavy-ion collision, as recorded by the STAR detector at RHIC.

ORNL people

Katie Vandergriff, who has been a mechanical development engineer in the Robotics and Process Systems Division for 14 years, is taking entrepreneurial leave to become president and partner of Machine Kinetics Engineering Services Company. The company specializes in providing "world-class machine design and mechanical engineering services."



Vandergriff

A team led by the Metals and Ceramics Division's **Malcolm Stocks** has been nominated for the 2000 Computerworld Smithsonian Award in honor of their achievement of TeraFLOP performance with a materials code in November of 1998 (for which they won the Gordon Bell award). As a laureate, the project will be described in the Smithsonian's National Museum of American History's Permanent Research Collection and in the book *Faces of Innovation*.

The National Urban League has honored **David Milan**, Management Systems Integration manager for the Lab, for his work in its Black Executive Exchange program. His Five-Year Milestone Award recognizes his efforts on behalf of the educational advancement of college students who have participated in the exchange program.

The Life Sciences Division's **Tuan Vo-Dinh** has been elected a fellow of the International Society for Optical Engineering for his outstanding contributions in the field of optics.

ornl reporter

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