

The science and technology agenda

ALDs assess their directorates' S&T opportunities, challenges, strategies

Back in mid-March ORNL's Leadership Team gathered for a two-day retreat to discuss strategies for achieving the goals set in the Laboratory Agenda, and to make any necessary revisions to the agenda. The Lab Agenda, which identifies basic objectives in science and technology; operations and environment, safety and health; and community service, has been coming together for the past year.

At a national laboratory all things revolve around the science and technology mission. ORNL Director Bill Madia believes a universal understanding of the agenda's goals by Lab staff members of both the research and support communities, and staff ownership of the agenda, are crucial to the Lab's attaining those goals.

"In terms of feedback from staff, I get a lot of positive vibes on having an agenda that's transparent, where people can see where we're going and can align with it," says Bill.

Events, such as the recent change in the Washington administration and a new urgency with energy supply issues, mean the Laboratory Agenda will be an evolving process, seasoned with opportunities. Input from the staff remains a crucial part of the agenda process.

ORNL Reporter recently visited Deputy Director for Science and Technology Lee Riedinger and the five science and technology associate Lab directors—Frank Harris, Gil Gilliland, Jim Roberto, Thom Mason and Frank Akers—for their perspectives on directions and issues facing their respective groups as they fix their S&T strategies toward the next five years.—B.C.

Lee Riedinger—Best of both worlds

ORNL's deputy director for science and technology is a firm believer in partnerships. As a faculty member at the University of Tennessee, Lee Riedinger helped establish ORNL's first joint institute, tied to what was then the Holifield Heavy Ion Research Facility. Now that joint institute will serve as the model for several joint institutes that will rise in the Lab's new facilities campaign.

In addition to UT, ORNL currently partners with six leading universities—Virginia, Virginia Tech, North Carolina State, Florida State, Duke and Georgia Tech along with Oak Ridge Associated Universities. Lee says the combined strengths of these leading schools will give the Lab inroads into recruiting new talent, and he expects in time to expand partnerships to a number of other leading schools.

"Partnerships are important because they help us achieve the S&T agenda. That's why we are doing them," says Lee. "They help us in a number of ways. One is with joint hires: UT and ORNL have

(See BEST, page 4)



ORNL wants to attract "bright young minds" to come here, do work and possibly stay.

Lazy river, flabby forest

We think of floods and fires in terms of disasters, but do river systems and woodlands need 'eco-exercise' to stay in shape?

Does your ecosystem need a personal trainer? As we carefully, and with the best of intentions, manage waterways and forests, are we raising a bunch of ecological couch potatoes?

Mark Bevelhimer's research has caused him to wonder if that might be the case in some instances.

Muses the Environmental Sciences Division researcher: "Although I am leery to stretch the human health-ecosystem health analogy too far, it struck me recently that, while we recognize that the health and fitness of both humans and ecosystems rely on a balanced diet—such as an appropriate balance of essential nutrients—and a reduction of external stressors, we rarely consider the importance of regular exercise when it comes to ecosystems."

Although it's just at the idea stage, Mark's hypothesis is that a healthy ecosystem is one that gets a workout every now and then.

"Like people who lift weights or jog regularly, ecosystems that are occasionally exposed to a moderate amount of stress or 'exercise' should be more resistant and resilient to more extreme stres-

sors, such as flood, drought, invasive species and disease, he says. Conversely, those systems that are tightly managed to minimize stress and reduce natural variation in conditions may be less fit than they appear."

Forest managers have learned the hard way that a strict policy of fire suppression can lead to an accumulation of very combustible dead wood, so that if a fire or blight does get started, it can be catastrophic. The Yellowstone fires of 1988 are an example.

Mark's forte is in aquatic systems, however. In the case of a river where flow is often moderated by dams, a good workout might mean a flood every so often to flush things out. He has participated in the environmental impact assessments of hydropower dams for the Federal Energy Regulatory Commission. The EIAs helped the agency weigh different ways to operate the facilities and reduce impacts.

One of these assessments, on the Madison River Hydroelectric Project in Montana, included potential

(See LAZY, page 2)

impacts on one of the most famous trout streams in the country.

“The Madison River is a blue-ribbon trout stream—tightly managed with a continuous flow of water and seemingly ideal for trout,” Mark says. “A few years ago the trout population was nearly decimated by disease. I believe that one reason for the magnitude of the impact of the disease outbreak was that river conditions were so ideal that the fish were rarely challenged or ‘exercised.’ The fish were fat and happy until challenged with something they had little tolerance for.”

Dams control the flow of water so that many river systems are not allowed to flood. But there are many advantages to flooding: It redistributes gravel, which some fish depend on for spawning, for instance. It also helps distribute plant seeds to the floodplain, thus promoting plant diversity. A lack of flooding can inhibit those species that rely on floods to create the conditions they need to flourish.

“Mitigation practices might include controlled flooding,” he says. “Just such an experiment was performed on the Colorado River in 1996, when massive amounts of water were released from Glen Canyon Dam in hopes of revitalizing the downstream ecosystem.

“Similarly, controlled burnings, which gained a bad public reputation from last year’s New Mexico fires, are meant to keep a woodland free of combustible material and to encourage plant diversity.”

There’s also a climate-change angle to Mark’s idea. Environmental researchers are trying to anticipate how ecosystems will respond to higher temperatures and changes in precipitation later in the century—if they occur—including secondary effects such as an increased incidence of fires, floods and droughts that might occur with climate change. Eco-exercise practices might provide important clues.

“Increased biodiversity and genetic diversity can make an ecosystem more resilient, allowing it to bounce back more quickly after fires and floods,” Mark says. “It’s important that ecosystem management practices be aimed at improving diversity. A fit, more diverse ecosystem will respond and recover better. An ecosystem with greater genetic diversity, where species are more flexible in response to changing conditions, could respond to a warming climate in a more positive way.”

Controlled floods, managed burns and other

artificial mishaps could pay off in the long run for indolent ecosystems.

“As resource managers, in addition to trying to minimize the occurrence and effects of unnatural stressors, perhaps we can develop ‘exercise’ programs that make ecosystems more fit and less susceptible to harm in the first place,” Mark says.

“One big question is how much exercise is necessary. Is an occasional brisk walk enough or will it take the equivalent of an NFL training camp?”—*B.C. ornl*

SNS takes first directorate diversity award

The Life Sciences and the Computing, Information and Networking divisions were named EEO/-Diversity outstanding research and support divisions, respectively, for FY 2000. The ninth annual awards and recognition breakfast was held May 3.

Asian Pacific American Heritage Month was named outstanding cultural diversity event. The Computer Science and Mathematics Division’s Thomas Zacharia was named outstanding division director.

Pat Trentham of the Chemical and Analytical Sciences Division received the Sustained Work Force Diversity Contribution award; CIND’s Nancy Wright was named outstanding division representative.

The Spallation Neutron Source received the award in a new category, outstanding directorate, recognizing the evaluation of progress toward adding women and minorities to the construction phase of SNS operations.

Deputy Director for Science and Technology Lee Riedinger remarked, “A commitment to diversity in recruiting helps us achieve our research goals as a Laboratory because it allows us to recruit talent from a broader base of skills and talents.” —*Deborah Barnes*

Work environment surveys go out this month

The follow-up to the Quality of Work Life Survey is around the corner. Ombudsman Steve Stow says the new survey, will probably be rolled out on May 21.

“This survey is titled Quality of the Work Environment,” Steve says. “It offers staff an opportunity to express their perceptions of what the

work environment is at the Lab, all the way from adequacy of communications, to benefits, to the leadership at ORNL.”

Opinions expressed in the survey will be strictly confidential and anonymous and will be compiled by an independent company, International Survey Research, of Chicago. The Web-based survey will be administered on ISR’s own Web server.

Staff members will have two weeks to turn in their responses. Employees without access to computers will receive a hard copy of the survey.

“The Leadership Team wants to assess progress over the past year and see where emphasis needs to be placed in the future,” Steve says. “The surveys will come with a cover letter from Lab Director Bill Madia.”

The survey consists of approximately 100 statements, most seeking responses on a scale from 1 (agree) to 5 (disagree). It should take most respondents around 20 to 30 minutes to complete.

Responses will be available from ISR “almost immediately” after the survey is completed, Steve says. “ISR has conducted similar surveys at other DOE labs as well as nationwide, so we’ll be able to compare these results with some of our sister labs.”

The Quality of Work Life survey enjoyed a 65-percent response rate from Lab staff, and the Leadership Team has responded by addressing several high-priority initiatives, Steve says. “Let’s see if we can equal or better that.”—*B.C. ornl*



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ORNL held its annual evacuation drill on May 2. The drills are always a good excuse to get outside for a few minutes. Enjoying the spring air are, from left, Cathy Gaudreau, Diane Sams and Linda White of the Life Sciences Division. CIND graphic artist Vic Pardue is in the background.

Curtis Boles

Lab Notes

Parking, access: Big changes a'comin'

Articles have already appeared in *ORNL Reporter* on parking (February 2001) and building access (March 2001), and you're going to hear more about them. Both represent profound changes at the Laboratory that are just around the corner.

According to plans, sometime late this summer a major portion of the east parking lot, where more than a thousand employees park their cars every morning, is going to be cordoned off to make way for construction of three new privately funded research buildings on that site. Construction of other buildings will close off other portions of the east lot in the ongoing months.

A parking steering committee led by Facilities and Operations' Faye Brewer has been studying ways to pick up the slack over the past few months—

including expanding current lots, putting in new ones and establishing smaller, "incidental" lots in places where space is available. There will also be a renewed emphasis on the virtues of carpooling, just in time for anticipated summer spikes in the price of gasoline.

Closely tied to the parking initiative is the change of Lab access from a perimeter- to a facility-based approach. That initiative gets its start this month when the first proximity reader is installed, on Building 4501. Over time, all ORNL buildings will be equipped with the readers, and ORNL employees will be issued "proximity cards" that will provide access to individual buildings.

Beginning in early October, the vehicle portals and pedestrian rotogates that currently control access to most of ORNL will be open during the day. That's timely because some of the slack in parking spaces will be taken up by expansion of lots inside the current fence.

Stay tuned: One of the parking group's goals is to minimize stress and inconvenience when folks have to change their parking habits, so information on where to leave your car will be coming during the summer, leading up to the new construction.

Curie's granddaughter: Century of discovery

She is Madame Curie's granddaughter, and her parents were also scientists. And so is she. Dr. Helene Langevin-Joliot visited ORNL on April 2 as

part of an Oak Ridge visit that also included a lecture at the American Museum of Science and Energy.

Langevin-Joliot, director of research *emeritus* of the National Center for Scientific Research in Paris, recounted the series of discoveries of the past century that has led to the current discipline of nuclear physics. Her famous grandparents bear out her belief that "the human aspect of science history is quite important" in increasing science literacy in the general population. She's also an advocate of increasing opportunities for women in science.

One of her more surprising revelations during her talk before a Physics Division seminar audience was in response to a question as to whether her parents, Irene and Frederick Joliot-Curie, thought, on hearing the first reports of nuclear fission in the late 1930s, that it would be applied to development of a nuclear weapon.

"No," she responded, "many scientists saw it as an energy source."



Curie

TYCTW, and something for the grown-ups

ORNL observed its first "Take Your Child To Work Day" in several years on April 26. The Lab encountered no shortage of takers: Around 325 progeny of Lab staff members came to work.

Some of them are shown on the back page.

Lab Director Bill Madia, who once hosted a TV science show in his earlier years, gave the kids a morning overview by inviting an audience member to hammer a nail into a board with a banana. After the subject encountered the expected difficulties, Bill showed how scientists do it—he dipped a 'nanner into some liquid nitrogen and allowed the young man to pound away. He also demonstrated the Lab's graphite foam and displayed some of our famous mice.

Lab employees responded to the occasion by arranging demonstrations and events for the grades 5-to-12 audience. Some parents said they found out things about ORNL that they didn't know, something that's bound to happen when an opportunity to get out and about comes along.

Notice something different?

ORNL Reporter has a different "feel" to it. Reporter is now printed on a web press, which is how most newspapers are printed. So Reporter now feels more like a newspaper.

The new method is quite a bit less expensive than the previous method, and that will help us keep supplying you with news and features about what's happening at ORNL. Send comments, article ideas or ideas in general to either of the folks listed in the box on page 2.

Reported by Bill Cabage

Wamp: A balanced energy approach

You wouldn't expect the opening of a gas station to be that big an event, but these are interesting times. Rep. Zach Wamp made a stop by ORNL's filling station in the 7000 area, along with several congressional representatives and DOE officials, to dedicate ORNL's ethanol fuel tanks, which serve a growing Lab fleet of alternative, "flex" fuel vehicles.

The Lab's E-85 (85 percent ethanol, 15 percent gasoline) station is the first of its kind in Tennessee. With gasoline prices predicted to rise and energy supply issues in the spotlight, the congressman said that ORNL's E-85 program serves as an important example of the need for a multifaceted strategy toward solving the country's energy concerns.

"We cannot pump our way out of this dilemma," he said, calling for a "balanced approach." Wamp noted that a three-percent reduction in fuel demand can result in a 20-percent reduction in price. "Our high consumption drives the high cost, and that hits the poor especially hardest," he said. "There's not a greater drag on the economy than the cost of energy."



Bill (left) and Zach peek into the E-85 tank.

Lab Director Bill Madia said the Lab's E-85 program makes a statement. "We believe in leading by example. The American Museum of Science and Energy is committed to green power. We made the first regional buy of green power from TVA, and our new facilities will incorporate as many green technologies as possible," Bill said.

Best of both worlds

Continued from page 1

about 25 shared faculty that have been put in place over the last 20 years. We do that well.”

In the current job market it is hard to attract the best scientists and engineers to the national lab environment, Lee says. The private sector is a strong competitor for talent, and universities are attractive.



Lee Riedinger

“How does a national lab bring in the best talent? That’s the starting point for success; you’ve got to have young people,” Lee says.

“Partnerships allow us to attract people we may not attract on our own. These people often want the best of both worlds—a high technology atmosphere, sophisticated tools and a broad set of disciplines, which you would find at a national lab, plus access to students and teachers that you find at universities. Joint appointments allow the best of both worlds. We want to broaden these partnerships out with our core universities.”

Similarly, joint institutes will make it easier for the Lab to attract visiting researchers and students, enabling the Lab to institute an ongoing and strategic infusion of talent.

“Joint institutes were modeled between UT and ORNL,” Lee says. “I helped set up the Joint Institute for Heavy Ion Research—Building 6008—around the Holifield Facility, a remarkable resource. Similar joint institutes will help us do special things, and we’re gearing up for joint institutes in neutron sciences around the SNS, biological sciences around the new Mouse House and compu-

tational sciences around teraflop computing. These joint institutes open up new avenues of cooperation.”

The third way partnerships will help ORNL is by bringing in more graduate students.

“Bill Madia did experiments here in the early 1970s. I did research here for two years in the late 1960s. We’d like for more students to spend a couple of years here—have these bright young minds here and hope they’ll decide to come back and build careers,” Lee says.

“There are still other ways, such as leveraging our capabilities and facilities to team with universities to go after non-DOE funding. The Tennessee Mouse Genome Consortium, with National Institutes of Health funding, is a good example: The universities do the research on mice that we provide.”

Lee believes the proposed Oak Ridge Center for Advanced Studies will help further the Lab Agenda in a different way: “It will be a way for us to bring together experts—from both inside ORNL and outside—into what is partially a think tank so that they can spend weeks or months on a special policy topic, whether it’s national energy policy or mapping a new direction in biology research.

“ORCAS will provide offices, meeting space and even high-tech classroom space. ORCAS will help us to do distance education with partner universities, which will allow students to come here and still do their required class work. That would make it easier to persuade graduate students to come here.

“We’ve been getting very good feedback on ORCAS; many circles say it’s a good idea.”

It’s long been said that ORNL’s strength is in its people. The Lab is laying the groundwork now to ensure that the “bright young minds,” as Lee describes them, pick ORNL as a prime place to do science.

Jim Roberto—World-class

The situation we’re in now is extraordinary,” says Jim Roberto, Associate Lab Director for Physical and Computational Sciences.

“We’re very well-positioned in materials sciences. We’re developing new facilities that will make us leaders in neutron science. We’re on a path to being a leading laboratory in high-performance computing. And we have strong proposals for major new



Jim Roberto

facilities in nanoscience and nuclear physics. We need to utilize these unique assets to serve the scientific community and strengthen core science programs across the Laboratory,” Jim says.

“It’s the core science programs that created the opportunities for these initiatives.”

Jim echoes Lee Riedinger’s point that partnerships will play a crucial role.

“We have a broad and compelling agenda that we can’t accomplish alone. The opportunities are too large. We need to engage our partner labs, core universities and other collaborating institutions to fully realize our potential.

“We have a world-class staff, but one of the most important things we can do for the future is *recruit* the next generation of leaders. I believe that the initiatives we have under way will help us do that. We also need program growth, and our new facilities and partnerships will provide leverage for growth.”

Jim’s directorate houses one of the world’s largest supercomputers for unclassified research. It currently operates at 1.5 teraflops, and they are developing plans to leapfrog to 100 teraflops in the next few years. “This opportunity is driving growth in computing and computational science,” Jim says.

“Our world-class materials programs are developing powerful new neutron scattering capabilities, electron microscopes, and synchrotron microdiffraction facilities, adding to an already daunting array of synthesis and characterization capabilities. These programs have been very successful leveraging fundamental and technology-driven research to develop new opportunities.”

The High Flux Isotope Reactor, currently in the latter stages of a major upgrade, is getting a cold source and new instrumentation. “HFIR and SNS are complementary; we need both for leadership in neutron science,” says Jim. He says HFIR’s restart is within sight, well before the end of the year.

Nuclear physics sees opportunities in neutrino and neutron physics and in upgrades to the Holifield facility: “Our radioactive ion beam facility is unique, and SNS will provide the world’s most intense neutrino beams,” he says.

Chemistry occupies a unique position at ORNL,

contributing to strengths in many fields including materials and life sciences. “You can’t overlook the importance of chemistry; for example, our mass spectrometry capabilities are critical to biology and national security programs as well as chemistry,”

Jim says.

Nanoscience is bringing many parts of the Lab together, including materials, chemistry, computational science, neutron scattering, biology, engineering, and other disciplines. “Nanoscale science and technology is the future for many of our programs, and the proposed Nanophase Materials Sciences Center at ORNL will enable that future.”

Across directorates,

Jim sees many opportunities with life sciences, energy technologies, environmental science, and others. For example, neutron scattering is particularly useful for studying macromolecular systems in water, which is where biological molecules work.

“Neutron science is how we’ll approach proteins when we’re trying to understand the functional aspects of macromolecules,” says Jim. “We’re positioning ourselves to do that; in fact, CASD, LSD, and SSD will have a beam line on the cold source at HFIR to do those kinds of studies.”



ORNL’s supercomputing capabilities are key to many future research opportunities

Gil Gilliland—The E³ approach

Gil Gilliland's Energy and Engineering Sciences directorate is the largest in terms of organizations under it, with seven divisions, five program offices and six user facilities, housing some 1200 employees. E&ES also houses DOE's largest energy R&D effort.

The Bush Administration budget request—with its focus on energy supply—calls for some striking changes in R&D spending strategy that will undoubtedly affect ORNL programs. But the Lab's breadth in energy research, Gil says, leaves it in good shape to accommodate these changes.

Change also brings opportunity to grow some programs even as others decline. Gil believes it is crucial to reinstitute the elements on economics into ORNL's energy and environment research strategy. That concept has been dubbed E³—a formula to give ORNL and its customers alike an advantage as the nation faces a renewed enlightenment about its energy-supply issues.

"Integrating energy, environment and economic analysis is not a new concept. We've talked about energy and environmental systems of the future, but it's been a long time since we've chosen to involve



Gil Gilliland

economic analysis. We must develop cost-effective energy technologies that don't harm the environment," Gil says.

"In the past we have had cadres of economic people at ORNL—we still have economic talent here, but possibly not as many as we need. Universities do have economists, and we can leverage our partnering universities. Why not use the economic talent in the core universities or anywhere else?"

"It's a very simple concept: Take our strengths in energy and environmental areas and couple them to economics. That would differentiate us, make us unique from our competition, whether its university or national laboratory."

Gil and others believe that energy conservation and renewable energy programs, although seemingly out of favor, may not be down for the count. It's early in the budget process, and many conservation-related programs have strong supporters and could recover.

"When you think about it, energy efficiency improvements really address supply problems," Gil notes.

Fiscal realities, whatever they are or become, don't significantly alter what Gil says his directorate needs to do: integrate capabilities and solve the nation's energy problems with the E³ model—energy, environment and economics.

"We have opportunities in energy, and we can still have growth in our energy programs. Energy is still the biggest thing we do, and we need to maintain our position," Gil says.

"As a very large multiprogram, multidisciplinary laboratory, we have more opportunities than most of our competition. We and our competition vie for slices of the same pie in a lot of cases, and we need a bigger share of that pie. And we especially need to make sure we don't lose our share."



User facilities like the High Temperature Materials Laboratory, attractive to visiting scientists and industries, underscore the role economics can play in forming a research agenda.

Thom Mason—Beyond 2006

Thom Mason assumed leadership over a daunting task just recently. He now occupies the associate Lab director's seat for the Spallation Neutron Source project. Although Thom came to ORNL only a few years ago, he's been tabbed as the one with the expertise and drive to take the project to completion in 2006. Prospects look good, with a full peak request of \$291.4 million in the Bush administration's FY 2002 budget.

But now is the time to start thinking about what the SNS will mean to ORNL once it sheds its skin as the nation's biggest science construction project and

emerges as the world's best neutron science facility.

"In the near term, the agenda is pretty obvious—finish the project on time, on budget and safely," Thom says. "We're getting over the hump in terms of funding. But we should be getting ready for the future, when it's finished. How will the SNS's capabilities affect ORNL's

programs? If you look at the current neutron activities at ORNL, it's condensed-matter physics, mainly in the Solid State Division, with some activities in the Metals and Ceramics Division.

"If you look at the international community, however, or even the National Institute of Standards and Technology, the use of neutron scattering is much broader. Both the SNS and the HFIR upgrades will give us capabilities to expand our programs in similar fashion—expand beyond the traditional activities, into inorganic, organic and polymer chemistry, for instance."

Thom believes the life sciences have some exciting possibilities for SNS research—for instance, in protein structure and protein dynamics. The SNS will also play a role in the nanotechnology initiative. Key to it all, he says, is that the SNS depends on researchers to provide the new materials for neutron scattering analysis.

"It's not too early to start moving to link the instrument capabilities of the SNS with Lab programs," Thom says. "It's going to be a lot easier to do projects at SNS if you're two miles down the road as opposed to the other side of the continent."

Toward that end, the SNS has specific initiatives with research counterparts within the Lab to do strategic hires in order to use the SNS's capabilities to secure new program funding. "DOE has said it wants to see this sort of thing happening," Thom says.

"I'd like to see instrument scientists find homes with research divisions—cross appointments that bridge into the research groups. These are the seeds from which new programs will grow.

"To be sure, the SNS will be international in scope, but ORNL is well-positioned to capitalize on its capabilities and interests. If ORNL isn't positioned to do it, who is?"



The Spallation Neutron Source site today. It's not too soon for ORNL to plan new programs around the capabilities the SNS will offer.



Thom Mason

Frank Harris— Emerging next steps

The Biological and Environmental Sciences directorate is undergoing one of ORNL's most striking renewals—the revitalization of its biology programs in the wake of the draft Human Genome map and a shift to applying the map to complex biological systems.

Two new facilities, one very real and one on the drawing board, are meant to address the needs that arise with emerging S&T demands. The FY 2002 budget request includes at least \$10 million for a new mouse genetics facility—a Mouse House. Also on the BES wish list is a large and complex facility that may be one of a DOE series called the Terrestrial Environmental Research Facility, or TERF.

“The new Mouse House has the most visibility and currency of our new initiatives,” says Frank Harris, BES's associate Lab director. “We hope to break ground this summer and have it done in 18 months. That gives us a modern mutant mouse facility.”



Frank Harris

Mice at the new Mouse House will arise essentially as test-tube babies, which will mean they'll be free of the diseases that their parents may have.

“We're freezing mouse embryos and sperm, which are pathogen free, and that's what will come over here. The 'dirty' mice will live out their lives at the old facility—none will make the move,” says Frank.

“The new Mouse House will be pathogen-free—they will be 'clean' mice. The technology for the husbandry will be totally different—scrubbed, air-

locked, quite different from the current facility. We don't raise mice just to raise mice; we raise them for scientific studies.”

The current facility at Y-12 has few of these controls, and thus its mice aren't suitable for use by other research facilities.

Frank adds that emerging Laboratory-directed R&D projects focus on using stem cells, which can differentiate into different tissues. That's a very timely subject, and it represents the next stage of biological research.

Rounding out the facility footprint on the west side of the Lab are other pieces of the new facilities puzzle—including the Joint Institute for Biological Sciences building and the Center for Systems Biology. These new facilities will make the Marilyn Lloyd Complex for Life and Environmental Sciences a true “complex.”

On the environmental sciences side, BES is currently laying plans for the next phase of climate-change research. The directorate's scope and background in environmental research, skill with data access and proximity to a large reserve of land—the Oak Ridge Reservation—gives ORNL opportunities in the environmental arena.

“In the conceptual stages, the Terrestrial Environmental Research Facility is a complex that allows us

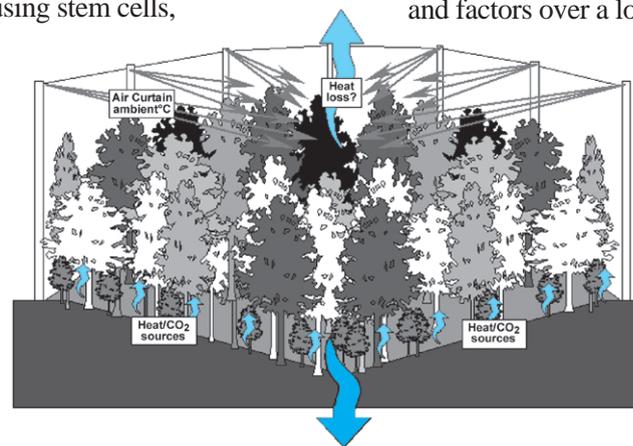
to look at how an intact forest would react and respond to elevated CO₂ levels, as predicted later in this century.

“The Department has set up a number of experiments, including here, that look at certain aspects individually—experiments such as the Free Air Carbon Dioxide Exchange and Walker Branch throughfall experiments. But a TERF facility would allow you to take into account multiple processes and factors over a longer time at a longer scale,”

Frank says.

“For example, to look at nitrogen cycling you need a watershed where you can control input and output. As you increase in scale, you 'hybridize' biological problems with engineering problems.”

To answer the scientific and policy questions pertaining to climate change, researchers need experimental facilities quite different from and larger in scale than what



The Terrestrial Environmental Research Facility concept would offer a complete climate study package.

currently exists. TERF would be in acres or hectares—stadium sized.

“We need to study exactly what kind of facilities we need. Now is the time to begin planning those,” Frank says.

“The ORR is of tremendous value for such a mission and the TERF is an ideal mission for a national lab: It's big, complex and requires long-term stewardship. As an effective user facility it will have a core of outstanding scientists in its own right, and it will attract people to come and work here.”

Frank Akers— The Oak Ridge brand

Frank Akers wears two hats at Oak Ridge: One for the Y-12 National Security Complex and one as ORNL's associate Lab director for National Security. It's not as awkward a fit as one might suspect.

The National Security directorate's mission is to provide programmatic and organizational focus for Lab activities supporting the National Nuclear Security Administration, the Department of Defense and other national-security related agencies, departments and organizations.

“The other associate Lab directors are focused on research divisions. I'm focused on the customer base—the national security customer. We have an understanding of what that market means in terms of the future. It helps us coordinate an approach to working with those customers,” says Frank, a retired brigadier general.

Involved in that task, on the ORNL side, are developing national-security-related programs and business, identifying and communicating national-security customer requirements to the R&D divisions and integrating the Lab's capabilities to those customers' requirements.

Very importantly, the National Security directorate manages customer relationships.

Frank believes any barriers to be encountered are primarily cultural, which can be overcome by demonstrating success, by establishing integrated business development processes and tools across the Lab and by becoming expert at marketing the Lab's capabilities.

“One of the things we're doing over the summer is positioning a new hire in each of the three R&D directorates: experienced individuals who will focus on the national-security customer base. One will focus on intelligence;



Frank Akers

another will focus on operational logistics. A third will focus on the testing and evaluation community. These people won't work in isolation—they'll integrate with other individuals,” Frank says.

“What these individuals do is maintain contact with the customer. Often that relationship takes time to develop. It may be months or it may be years: *All of a sudden, I remember you telling me about such and such, and I remember Oak Ridge.*”

“We want to brand ourselves as Oak Ridge. When people have a problem, we want them to think of Oak Ridge as the place to come to get it solved.”

To get to that point, Frank says the Lab needs to improve on integrating national-security customers with R&D divisions. Meanwhile, the national security group will be working on building name recognition for ORNL.

“We've been successful in getting Oak Ridge mentioned in *Armed Forces Journal* and other trade magazines. Under our contact plan, we want Oak Ridge to pop into their minds. This happens with a lot of frequency of contact, velocity of contact and a developed plan,” Frank says.

“It takes time, but as we go through the process I'm confident we can make it happen.” **oml**

Costs, needs spur recent medical, pension changes

ORNL employees and retirees received word recently on changes related to medical and retirement benefits. The announcement included a pension increase for retirees and cost increases for health-care services users.

The changes, which were approved by both UT-Battelle and BWXT-Y12, who share the plans, come in response to changing conditions in both the retirement and medical services areas. "It was a collective decision by the two companies," says ORNL Human Resources and Diversity Programs Director Darryl Boykins.

On the health-care side, the companies are faced with controlling the increasing cost of health care, for both employees and the companies. That trend is nationwide.

CIGNA copayments increase. A \$10 office visit increases to \$20, the inpatient hospital payment increases from \$100 to \$250, outpatient care increases from \$50 to \$100 and emergency room visits increase from \$75 to \$100. These increases are effective July 1.

The deductible for out-of-network medical costs increases from three-fourths of a percent of the employee's base pay to one percent, effective Jan. 1, 2002.

Also increasing is the Merck-Medco prescription plan retail deductible, from \$50 to \$100, effective Jan. 1, 2002. Generic and brand-name drug retail copayments increase from 10 to 20 percent and 20 to 30 percent, respectively, on July 1, 2001.

Why the increases?

"Our drug plan costs went up by 24 percent last year. It's happening all over the country," says ORNL's benefits manager, Sally Jaunsen. "These changes in copayments reflect the ever-increasing cost of health care. On the other hand, office-visit copayments haven't increased since 1990, and drug copayments haven't increased since 1993.

"One of the choices we always face is an increase in payroll and pension check deductions across the board. This time we chose to increase the cost to plan users, and the increases overall are modest. The percentage of total premium paid by active employees remains at 12 percent," she says.

Not increasing are mail-order drug copayments.

"People who take a long course of medication or are on maintenance drugs should consider the

savings they'll realize by mail-ordering prescriptions. In most cases those savings are very significant," Sally says.

The mail-service pharmacy copayments stay at \$5 generic and \$15 brand name drugs. There is no deductible in the mail-service program. On a first-time prescription, the physician should provide two prescriptions—for a 14-day retail supply and a 90-day mail-order supply.

One employee reports saving \$675 off a \$915 annual retail drug bill by mail ordering. Drug companies practice scrupulous quality control on mail orders, which are available to CIGNA/PHP and United Healthcare health plans.

"We want to give plan participants a role in keeping the costs down as much as possible. We need to continue to ensure that we're spending our health-care dollars in the most effective manner."

The pension changes are a bit more complex.

"With respect to pension benefits, the companies saw the need and acted," says Darryl. "We are trying to put the most benefits where the most people are, and where the need is greatest."

Retirees: Most retirees will receive an adjustment in their pensions on a scale, depending on the length of retirement, ranging from 23 percent for those who retired before December 1988 to four percent for those who retired between Jan. 1, 1997, and April 1, 1998. The pension awards of those who retired after April 1, 1998, were deemed recent enough to be in line with the cost of living because the calculations were based upon salaries, which included recent increases.

Retirees who select the surviving spouse option receive a correspondingly lower pension. Those who retired before April 1, 1990, and have outlived their spouses will see that reduction eliminated. This is known as the "pop-up" feature. To receive the adjusted payment these retirees need to contact Benefits Delivery, 865-574-1500 or 1-877-861-2255. All retirees who retired April 1, 1990, or later are already covered by this feature.

Active employees: Eligibility requirements haven't changed and the minimum formula hasn't changed.

However, two new formulas have been established that will replace the 1.2 and 1.5 formulas. These new formulas are effective July 1 and will increase, for most, the annual pension.

For example, under the old formula, a 57-year-old employee with 30 years of service who averaged \$44,000 of annual salary during the highest three years of the last 10 years would receive \$16,056 per year under the old formulas. Under a new formula, the payment would be \$18,480 a year, a 15-percent increase.

There are circumstances where a retiring employee could find the old pension formula more advantageous. In light of that, for 10 years beginning July 1, 2001, retiring employees will have their pensions calculated under both old and new formulas and will receive the highest benefit amount. For employees who retire after June 30, 2011, the pension will be calculated using the old formulas and average straight-time monthly earnings and service as of June 30, 2011. The result will be compared with calculations using the new formulas and service and average earnings as of the employee's actual retirement date. The employee's pension benefit will be the highest of all the calculations.

Increasing the pension multiplier was the top vote getter in ORNL's Quality of Work Life survey. Sally notes that the company pension along with Social Security and personal savings make up a retiree's total income. "We recognize that the pension is a vital component of retirement income," she says.

Examples of how the formulas work under different variables, plus information on an alternate pension formula, were given in a series of information sessions. The materials used are posted on the Web at <http://www.y12.doe.gov/benefits/bp-delivery/bcw/sld001.htm>.

Call OneCall, 865-574-1500 or 1-877-861-2255, with questions about the medical and pension changes or for any benefits delivery service or information needs.—B.C. [oml](#)

Protection & Waste Svcs; Larry E. Creech, Chemical Technology; Kaye Johnson and Carolyn H. Krause, Communications & Community Outreach Dir.; Joseph A. Marasco, Legal Directorate; Ronnie Revels, Logistical Services; Charles T. Garten Jr., Environmental Sciences; Kathie C. Shearer, Business & Information Services Dir.; F.W. Baity, Jr., Fusion Energy
20 years: Rolf P. Migun, Contracts and Procurement; Thomas M. Rosseel, Metals & Ceramics; Rick Goeltz, Energy; William B. Alcorn and K.L. Francis, Plant and Equipment; Brian C. Sales, Solid State; David L. Moses, Energy & Engineering Sciences Dir; Chad M. Pflieger, Computing, Information, and Networking; Steve DeGangi, Business & Information Services Dir.

Deaths

Ronald D. Sharp, who worked in the Computational Physics and Engineering Division's Computational Modeling and Simulation section, died suddenly on April 10. He was 51. "RD" was an avid fisherman and supporter of the Juvenile Diabetes Research Foundation.

His wife, Janie, of the Computing, Information and Networking Division, expresses her gratitude for the "outpouring of support" from her friends and colleagues at the Lab.

Oak Ridge National Laboratory

Service Anniversaries

May

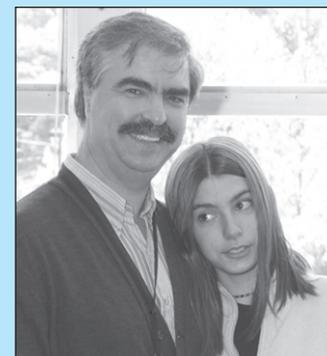
41 years: T. A. Lewis, Instrumentation & Controls

35 years: Ronald L. Klueh and A. J. Moorhead, Metals & Ceramics; Howard T. Kerr, Engineering Technology

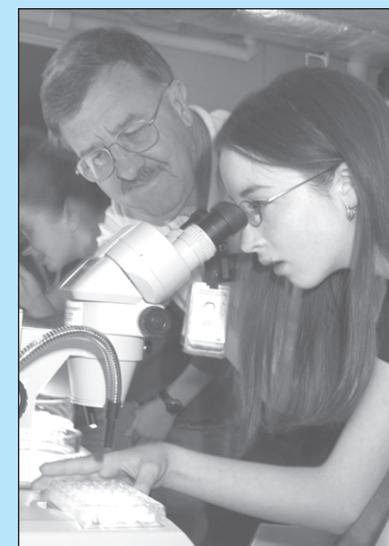
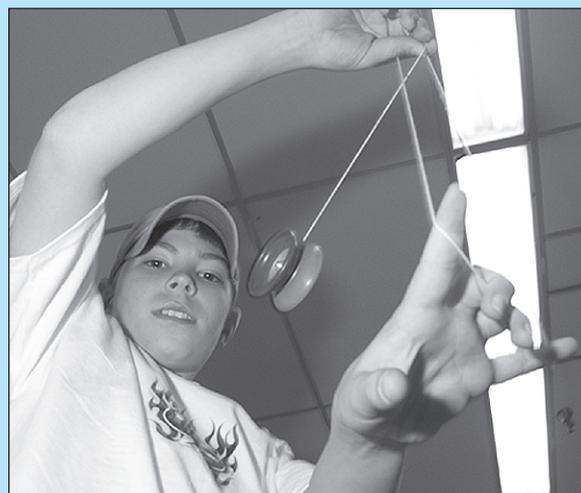
30 years: Charles E. Bush, Fusion Energy

25 years: Virgil E. Copeland, William B. Raby, J.W. Chesney Jr., James M. Gibson, Linda S. Moyer, Jeff A. Patty, Fred L. Morgeson, Roger D. Lawson, and Ginger F. Thornton, Plant and Equipment; David M. Duncan, Instrumentation and Controls; Robert A. Anderson, Environmental

Kids at work



April 26 was Take Your Child To Work Day. Clockwise, from top left: A group watches machine shop work in progress; Bill Madia lets Bryan Leister use a banana as a hammer; Pedro Otaduy with daughter Lorea; Alex, Mikhail and Nikita Sokolov; David Edds with daughter Miranda; Rachel Harrell; Chuckie Hembree; and Keith Joy Jr. Story on page 3.



Photos by Curtis Boles

om1 reporter

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ALD views, starts on page 1

Eco-exercize, page 1

Work environment survey, page 2

Lab Notes: Parking, access changes; E-85; Curie kin;
page 3

Benefits changes, page 7

