



## Spinback

### Jeff Wadsworth explains the multiple rewards of tech transfer

ORNL—encouraged and aided by the Battelle side of the contracting partnership of UT-Battelle—has major initiatives under way aimed at commercializing the Lab’s technologies.

Transferring the work of the Lab’s researchers to the marketplace brings distinct benefits to the community. Tech transfer boosts economies both locally and nationally and it also improves the financial state of UT-Battelle through royalties, licensing income and potential equity shares from those licensed technologies.

It is particularly rewarding when the technology a lab has introduced into the marketplace comes back to aid the lab in its research. For the ORNL director, that sort of a “spinback” cycle is a measure of the value of tech transfer.

Success at commercialization can have its pitfalls, however, as ORNL Director Jeff Wadsworth recalls from his days at Lawrence Livermore National Laboratory, where he was deputy director. But the problems he has encountered along the way to the marketplace for the most part have been outweighed by the gains.

“I spent a lot of time in tech transfer at Livermore, where there were some very

successful programs. Through these, I observed a set of paradoxes. The short form of those is that, if you are successful, you have probably succeeded in the following inevitable outcome: You have teamed with a part of industry that is now winning more market share, and so now those industries’ competitors wake up and realize that their tax money has gone to a national lab that is helping their competitor,” Jeff says.

“My observation with tech transfer is that if you fail, no one much bothers you, but if you succeed, you encounter all sorts of issues with competitors. My answer to that is, ‘Well, we put out a request for proposals from interested companies, you had the opportunity to team with us, and you didn’t choose to do so.’”

But Jeff acknowledges that some will still see it as somehow being unfair and choose to pick a political way to solve their loss of

market share.

In his days at Livermore, the West-Coast weapons lab had one of the largest tech-transfer projects in DOE’s history—the

privatization of the Atomic Vapor Laser Isotope Separation, or AVLIS system—through the U.S. Enrichment Corporation. (ORNL also has a significant program with USEC, described in *Reporter* No. 48.) Livermore also was involved with one of the largest cooperative R&D agreements, a CRADA involving Livermore, Sandia and Berkeley national labs to develop Extreme

Ultraviolet Lithography, or EUVL, with Intel Corporation. Third, Livermore had one of the best patent and licensing portfolios among the labs, largely based on a technology called MicroImpulse Radar, or MIR.

“Each brought major successes along with

(See SPINBACK, page 6)



Curtis Boles

ORNL Director Jeff Wadsworth says commercializing technology can benefit industries and labs alike.

## Awards Night 2003 ORNL recognizes its best of the year

Awards Night 2003 was held November 21. The Awards Night Committee notified finalists in advance but the winners weren’t announced until the ceremony. The individual and team category members are listed here first. Congratulations to everyone selected to attend this year’s Awards Night.

### Outstanding Community Service

#### Exceptional Volunteerism within ORNL by an Individual

Carol J. Leffew. For her many and significant contributions of energy, enthusiasm, and selflessness to numerous worthy ORNL community initiatives

#### Exceptional Volunteerism outside ORNL by an individual

Gary T. Alley. For his outstanding contributions of time and resources to enrich the lives of others by putting their needs ahead of his own, thus exemplifying the true essence of a volunteer

### Finalists

James R. (Jim) Keiser. For sustained, multifaceted volunteer contributions to youth sports programs in Oak Ridge

Bonnie Lu. For sustained devotion to enriching the quality of life in our communities by integrating the Chinese culture

### Exceptional Volunteerism by a Team

Karen Garrett, Brenda Hackworth, Ed Mee, William M. Pardue, E. W. Seals. For outstanding leadership and coordination of volunteer teams to deliver timely and critical assistance to Morgan County families who suffered acutely from the November 2002 tornadoes

### Community Leadership

John David Randolph. For creation of and tireless leadership of the Blount County Sister City Organization

### Finalist

Patricia D. (Pat) Parr. For her extraordinary leadership of the successful Oak Ridge Reservation land use planning process, demonstrated through highly effective

communication skills and commitment to gaining consensus among the community’s stakeholders

### Science Communicator

Gary J. Van Berkel. For educating public officials about technology pertinent to Homeland Security and advancing ORNL’s role in Homeland Security

### Finalists

Dale P. Kaiser. For creatively bringing climate-change issues to the public by developing stories concerning holiday weather, to which the lay public can relate, and making

Richard, W. (Dick) Reid. For dedicated effort in communicating the SensorNet concept to key stakeholders

### Outstanding Accomplishment in Laboratory Operations

Administrative Support exempt payroll

(See AWARDS NIGHT, page 4)

# Volunteers help preserve Lab's history

Preserving the past has become a major pastime for 10 former ORNL employees. Since the Team UT-Battelle Project, "Preserving the Past: Collecting the Artifacts" was undertaken in September 2002, these volunteers have spent more than 300 hours evaluating, researching and determining the best home for many materials that have been identified as having historic value. These volunteers — Charles Congdon, George Lawson, Jim Weir, Don Miller, Ray Evans, Ellison Taylor, Bobby Lyon, Fred Young, Don Trauger and Jim Cox—are members of the Friends of ORNL, the network of former and current ORNL employees who all have a common interest in promoting ORNL's scientific legacy and future needs.

"This historic preservation initiative was implemented as part of the ORNL 60th anniversary celebration to help capture any historic items that might otherwise end up in salvage, the dumpster or other less desirable places," says project director Marilyn McLaughlin, visitor relations coordinator in ORNL's Communications and Community Outreach Office.

The timetable surrounding this effort has resulted in some concern by history buffs and ORNL management that items worth preserving needed to be brought to the attention of people qualified to recognize historic value. Consequently, the ORNL History Room volunteers have provided that important mechanism since September 2002."

Each volunteer brings a wealth of knowledge and expertise relative to their respective research area while working at ORNL to the task of evaluating, identifying, assessing and cataloging each item. In particular, three of the ORNL retired volunteers — Charles Congdon, Jim Weir and George Lawson— have taken ownership of numerous projects during the year. Since last fall, they have

logged more than 280 hours. While each person had a different focus initially, all of them have become involved recently in meeting the needs of one particular project.

As part of ORNL's celebration of its 60th anniversary this year, some 31 oral histories were videotaped to capture some of the reflections of the people who worked at ORNL over the last six decades. While a copy of each videotape resides in the history room, a written description of the various subject areas discussed and important "sound bites" that might be referenced were needed. The team devised a form to be used in reviewing all the tapes so a table of contents and indexing system would be available for users. They are in the process of completing this form on each tape reviewed.

Volunteer Jim Weir, who served in several positions at ORNL from 1955 to 1994 including director of the Metals and Ceramics Division, has a unique perspective on the importance of this effort.

"Very few people understand the depth of the scientific endeavors carried out in the past, as well as the breadth of that history," says Jim. "The opportunity to listen to the people who were here and made large contributions to the history of the Lab is very interesting to those of us who also were here during much of that period," he adds. "The understanding of this history in part requires an understanding of the people who created this history—those who found themselves in scientific leadership positions — either in

management or in research. What they did really counts in the legacy of the Lab," he says.

Jim was successful in locating and obtaining High Flux Isotope Reactor and Oak Ridge Research Reactor fuel elements for display at the Graphite Reactor. These elements help illustrate for tour groups and ORNL visitors the importance of neutron science and its evolution in Oak Ridge.

Curtis Boles



**ORNL History Room volunteers Jim Weir (seated), Charles Congdon, and George Lawson have logged more than 280 hours working on projects.**

Charles Congdon focuses his attention on the Biology Division's research, particularly capturing historic materials relative to its research areas.

"The history room project allows me to concentrate on a research timeline covering 51 years of history of the Biology Division before it merged with the ORNL Life Sciences Division," says Charles, who worked in the Mammalian Recovery group that did pioneer development research in bone marrow transplantation. "At one time, it was likely the largest radiation biology research lab in the world and ORNL's largest division in numbers of personnel," he says. "Working as an ORNL historian has allowed me to see the incredible strength that a national lab provided during many past decades and can provide in the future to meet national needs in research and development."

Charles is working on a Biology Division timeline recounting its evolution and many accomplishments over the past six decades.

Volunteer George Lawson, who worked at ORNL from 1951 to 1985 in the Reactor Projects Division, says of the tapes, "Listening to the interviews with former scientific and administrative leaders brought home the strong guidance and direction of the scientific and technical efforts as laboratory science advanced from Newtonian through atomic and now the nanoscience physics," he says. "This effort extended to the biological fields as well. In addition, ORNL continues to have a leadership role in radiation health physics and industrial health," he added.

One interesting artifact found by George was a set of notes by Glenn T. Seaborg on radionuclide physics and dated March 1942. He indicated that this lecture course was given at the University of Chicago at the very beginning of the Manhattan Project.

For information on the History Room, contact Marilyn McLaughlin at 574-4163.

— *Marilyn McLaughlin*



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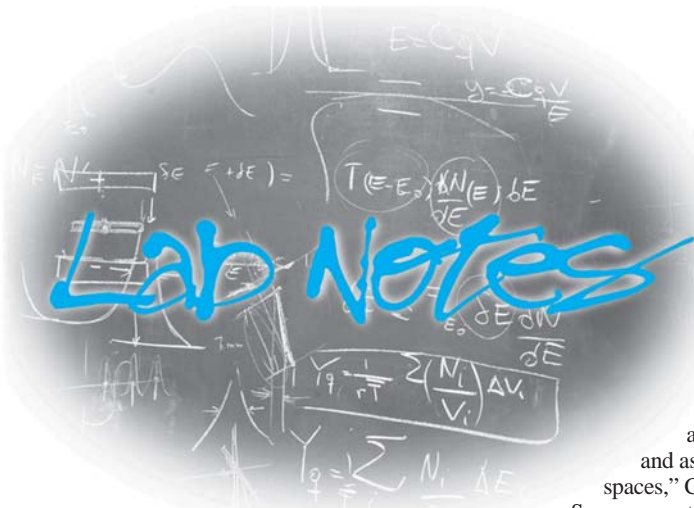
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Richard Woods of Craft Resources carves exquisite animal figures from wood.





### Burning plasma for bright minds

With ITER—the proposed multinational burning plasma fusion experiment—at the top of the Office of Science’s 20-year facilities plan, it can be said that fortunes are improving for fusion research. What better time, then, to get the youngsters on board?

ORNL fusion researchers participated in a recent teachers and student expo at the American Physical Society’s Division of Plasma Physics conference in Albuquerque, N.M.

The Fusion Energy Division’s Lee Berry helps organize the annual Plasma Expo, which this year introduced more than 1,000 middle and high school students to the mysteries and marvels of plasma physics and applications.

Lee acknowledges that getting the idea of plasma physics across to high school students “is a challenge.”

“You’re after the excitement of science,” says Lee. “We do really simple demos that explain plasmas; for instance, fluorescent lights and spark plugs involve plasmas.”

ORNL participates in the APS/DPP’s Teachers Day event along with 14 other institutions that include national labs, universities, and companies such as General Atomics. They are a “significant effort,” Lee says, that have been part of the fusion meetings “for over a decade.”

The fusion researchers did a more advanced demo last month for ORNL’s Day of Science, which attracted more than 250 college students from the region.

### Through this portal no more

The Laboratory, in addition to adding new, up-to-date space, has also been demolishing old, out-of-date facilities. One building slated for the wrecking ball next year is familiar to many.

Building 5000, the former visitor processing center, Lab protection offices and main gate for many, will be demolished this spring as part of the DOE-funded Research Support Center project, says the Facilities Development Division’s Carlo Melbihess. The RSC, when completed, will house the new Visitor Center and other operations that Building 5000 once housed.

“Building 5000 is one of many the Lab has

excessed or earmarked for demolition,” says Carlo. “It’s definitely not the first building we want our visitors to see when visiting ORNL.”

Unlike other demolitions around the campus, 5000 will leave no trace.

“We’ll be taking the building and foundation and applying new sidewalks and asphalt, adding some parking spaces,” Carlo says.

Some current spaces in the adjacent parking area may be roped off during the demolition, but Carlo believes the demolition itself will occur over a late-spring weekend. “Impact on parking should be minimal,” he says.

The building is currently best known as home to the Lab’s ATM machine, but new, state-of-the-art ATMs are now in operation at the ORNL Federal Credit Union’s new offices across the way on the private facility’s Main Street.

### Doing their part

ORNL employees have established a stellar track record in generosity, particularly when it comes to helping others who are down on their luck or otherwise in need. Witness this year’s United Way campaign, which burst its fundraising goal to a record total. Lab employees also opened their pocketbooks to help those rendered homeless in the November 2002 twister outbreak and contributed elbow grease toward a Habitat for Humanity home for one family, which was finished in May.

UT-Battelle chipped in another \$75,000 to the United Way and \$15,000 to the Habitat

house, just two of dozens of corporate contributions and gifts made by the ORNL contractor in fiscal year 2003. The complete list of UT Battelle contributions runs down five spreadsheet pages.

Some highlights of the list include science lab equipment for several high schools (including Clinton, Maryville and Oak Ridge high schools), support for the Southern Appalachian Engineering and Science Fair and Oak Ridge High School’s Science Olympiad team. The University of Tennessee Collaborative for Enhancing Education received more than \$150,000. Science and math education contributions in FY 2003 exceeded \$350,000.

Arts and culture contributions of \$22,500 were divided among the Oak Ridge Civic Music Association, the Knoxville Symphony Orchestra, the Arts Council of Oak Ridge and the Oak Ridge Playhouse. Director’s Funds contributions supported the various research directorates’ Science Olympiad teams and other educational outreach activities, such as the American Physical Society’s plasma expo, described elsewhere on this page.

Other UT-Battelle beneficiaries include the American Red Cross, YWCA, American Cancer Society, Juvenile Diabetes Association, Second Harvest Food Bank, Friends of ORNL and the Boy Scouts. Civic, health and welfare expenditures in FY 2003 totaled nearly \$140,000.

Nearer the holidays, ORNL’s Angel Tree, which provides toys for underprivileged kids, had more than 50 names left in the waning days of the campaign. Following a modest publicity blitz, the tree was picked clean within a day. That’s an example of how ORNL people step up.

*Reported by Bill Cabage*

### Crispy relic of the Cold War

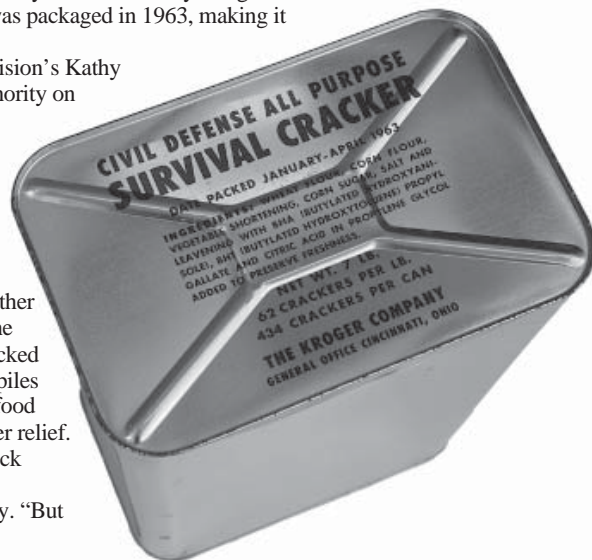
As the Lab reduces its inventory of old and obsolete facilities, cubbyholes and corners not much looked at in years are getting cleaned out. Every once in a while they produce a gem.

This tin of crackers turned up recently from a formerly designated fallout shelter area. The label indicates it was packaged in 1963, making it 40 years old.

The Environmental Sciences Division’s Kathy Gant, who is the Lab’s resident authority on civil defense, says that many designated fallout shelter areas were stocked with food and water along with radiation detectors, instruction manuals and all the necessary forms and paperwork a fallout shelter might require. As the move toward fallout shelters waned and other civil defense strategies took over, the instruments and other resources stocked in the shelters were moved to stockpiles or reassigned to other uses and the food items discarded or donated to hunger relief.

This tin of crackers, however, stuck around. Are they still good?

“They may be edible,” says Kathy. “But probably not too fresh.”



Allen E. Ekkebus. For his personal dedication in support of the Laboratory's mission of making ORNL the world center for neutron scattering

*Finalists*

Lynn D. Duncan. For sustained contributions in the development of HR subject areas in SBMS that are helpful to staff and managers

Charlene M. Horak. For contributions in developing highly regarded and effective communications products of the Spallation Neutron Source

### **Administrative Support Nonexempt Payroll**

Denise Overton. For sustained accomplishment in providing exceptional administrative service in support of the Distributed Energy Resources Program

*Finalists*

D. Beth Bailey. For exemplary work process leadership in ESD for Work-for-Others, subcontracting, and financial support

Loretta Simpson. For effectively reducing SNS's telecommunications costs while improving technical and customer support

### **Environment, Safety, Health, and Quality**

David B. Poker. For outstanding accomplishments that have greatly benefited the Condensed Matter Sciences Division and ORNL Environmental, Safety, Health, and Quality programs

*Finalists*

Samuel (Sam) McKenzie. For demonstrating leadership in setting up and maintaining a safety culture on a construction site that includes training programs, supervision and excellence

Cathy P. Wilson. For outstanding safety and health technical support and helping ESTD accomplish the mission of world-class research in a safe and healthy environment

### **Integrated Safeguards and Security Management**

Sandy Bolinsky, Contracts. For sustained support of the principles and core functions of Integrated Safeguards and Security Management and for significantly enhancing and promoting workplace security at ORNL by her direct action

*Finalists*

Richard A. (Rick) Lowden. For establishment of the Small Arms Ammunition Test Facility at the Central Training Facility

R. S. (Steve) Owens. For effectively integrating the Safeguards and Security principles and staff into the work planning process and for efficient utilization of Safeguards and Security staff in the operational planning for the Special Nuclear Material Vault

### **Work Force Diversity**

Lynn A. Kszos. For her commitment to increasing awareness of the value of a diverse work force at ORNL and in the Environmental

Sciences Division

*Finalists*

E. C. Fox. For his constant advocacy of, and personal and financial support for, workforce diversity within ORNL, thus serving as an extremely efficacious role model to his managers, staff, and others throughout the Lab

Debbie McCoy. For her exemplary leadership and management of the Research Alliance for Minorities Program dedicated to promoting diversity in the workforce

### **Secretarial Support**

Mary Anne Hensley. For unparalleled administrative ability, strong leadership, and exceptional initiative in her role as administrative secretary to the SNS Project Office staff

*Finalists*

Teresa A. (Teri) Hagan. For sustained excellence in providing secretarial support for the Physical Sciences Directorate including the administrative organization of two high profile Washington conferences for DOE

Jeanine Holbrook. For sustained valuable performance in the Environmental Sciences division office and outstanding contributions toward change at the Laboratory

### **Administrative and Operational Leadership at the Group Level**

Paul F. Gubanc. For his tireless leadership, compelling presence, and commitment to operational excellence in the formation of the ORNL Nonreactor Nuclear Facilities Division in its inaugural year

*Finalist*

Stephen Dirk Van Hoesen. For outstanding and exemplary leadership and management of the program to successfully disposition half a decade of legacy materials, thus creating a safer and more efficient working environment for our staff

### **Bargaining Unit Support by a Team**

Charles Bruce, Buddy Johnson, Louis Brummett, David Edington, Clarence Goins, David S. Harmon, Danny R. Hickman, Keith M. Phillips. For sustained excellence in operational support to the Spallation Neutron Source for temporary power service

### **Operations Support by a Team**

Kathlyn Boudwin, Charles Bruce, W. Frederick Carden, Jr., James R. Lawson, Odell Frye, Dennis P. To, Russell D. Henderson, Larry L. Radcliffe and Judith S. Wilson. For their exemplary leadership of an innovative, joint ORNL-Department of Energy-Tennessee Valley Authority effort that enabled the construction of the SNS 161-KV/70-MW substation, which resulted in a cost avoidance of approximately \$4.84 million for the SNS project

### **Outstanding Science and Technology Awards Technical Support**

Hu Foster Longmire. For mastery of technically difficult tasks, contributions to work that is consistently featured on journal covers and technical calendars, and leadership that has

earned him the reputation as the "go-to" person in the metallography lab

*Finalists*

Karen S. Cox, Mary Lynne Howell, Rebecca A. (Becky) Lawson, Karen Nolan and Sara L. Trammell. For their exemplary efforts in the implementation of an electronic document management system for the SNS project

### **R&D Leadership at the Group Level (2 Winners)**

John R. Haines. For extraordinary leadership skill as the coordinator of a multidisciplinary international team that enabled the team to make critical decisions on the design of the SNS target under severe time constraints, thus developing a path toward high- power operation

Edgar Lara-Curzio. For excellence in leadership of the Mechanical Properties and Mechanics Group of the Metals and Ceramics Division, including mentoring of staff, revitalization of facilities, and development of programs

*Finalists*

Sherrell R. Greene. For visionary leadership in establishing ORNL's key role in the resurgent space fission nuclear power program and NASA's featured planetary space exploration program to the icy moons of Jupiter

Lee R. Riciputi. In recognition of his exemplary record of achievement as the Chemical and Isotopic Mass Spectrometry Group Leader

### **R&D Leadership at the Director Level**

Gordon E. Michaels. For exemplary leadership and dedication as program director for the Nuclear Technology and Homeland Security programs

*Finalists*

George A., Fisher Jr. In recognition of his sustained leadership and outstanding support to the Oak Ridge National Laboratory's scientific and national security missions

Linda L. Horton. For outstanding contributions to ORNL as Project Director and Deputy Scientific Director of the Center for Nanophase Materials Sciences

### **Early Career Award for Engineering Accomplishment**

Robert M. Wagner, Engineering Science and Technology. For excellence in engineering research on advanced engine controls and novel combustion regimes that are critical pathways for meeting the Department of Energy's dual goals of higher energy efficiency and lower emissions in transportation

*Finalists*

Nidia C. Gallego, Metals and Ceramics. For her exceptional, early career accomplishments that demonstrate her potential



for leadership in the area of applied materials engineering

Bradley T. Rearden, Nuclear Science and Technology. For establishing a practical nuclear analysis software package that utilizes sensitivity and uncertainty techniques to enhance understanding of the physics and improve the uncertainties associated with nuclear system and experiment design

#### **Engineering Development by a Team**

Jeffrey A. Ball, Mark Champion, Mark Crofford, Taylor L. Davidson, Jr., Hengjie Ma, Maurice F. Piller, Jr., Thomas J. Shea, Craig Swanson. For demonstrating leadership in times of crisis in a technical area that involves collaboration with other national laboratories (Lawrence Berkeley and Los Alamos National Laboratories)

#### **Inventor of the Year**

Thomas Thundat. For the development of a new model for achieving biomolecular transport and separation using optical manipulation of surface charge

#### *Finalists*

Philip R. Bingham. For development of important intellectual property that extends the relevance and national impact of ORNL's digital holographic microscopy technology

Baohua Gu. For outstanding technical leadership in concluding two licensing agreements, based on three patents, for commercialization of a suite of innovative processes to remove perchlorate contamination from drinking water

#### **Distinguished Engineer**

Craig A. Blue. For his innovative efforts in developing the engineering and science behind infrared heating of materials and devising ingenious ways to use high-power infrared heating to solve materials problems

#### *Finalists*

Calvin M. Hopper. For sustained and dedicated leadership in developing guidance, tools, and innovative concepts to further the discipline of nuclear criticality safety

Rusi P. Taleyarkhan, Engineering Science and Technology. For a distinguished career and outstanding contributions in the application of metal-water vapor explosion technology and sonoluminescence

#### **Early Career Award for Scientific Accomplishment**

Daniel W. Bardayan. For innovative precision spectroscopy measurements that clarify the production of elements and radioisotopes in exploding stars

#### *Finalists*

Rongying Jin. For her sustained excellence in basic research on crystal growth and basic physical properties of layered ruthenates, exotic pyrochlores, and high-Tc superconductors

Christopher A. (Chris) Tulk. For his outstanding early-career performance, and in particular for significant contributions to the

understanding of the structural transitions in the amorphous ices

#### **Scientific Research by a Team**

Donald B. Batchelor, Lee A. Berry, Mark D. Carter, Eduardo F. D'Azevedo and Fred Jaeger. For the development of the All-Orders Spectral Algorithm computer model that enables new physics insights and a quantitative understanding of a wide range of radio frequency-plasma interactions

#### **Distinguished Scientist**

Tuan Vo-Dinh. For his extraordinary scientific

contributions over a 26-year career at ORNL, which include numerous publications and innovations in the field of human health improvement and environmental protection

#### *Finalists*

Chain T. (CT) Liu. For his research on advanced materials, both in increasing fundamental understanding of their mechanical properties and in their applications

Stephen J. (Steve) Pennycook. For pioneering new approaches and insightful applications to electron microscopy

## Director's Awards



**From left, Taylor Davidson Jr., Thomas Shea, Jeffrey Ball, Mark Crofford, Craig Swanson, Mark Champion, Hengjie Ma, Maurice Piller Jr.**

#### **Outstanding Team Accomplishment**

(Director's Awards are chosen from among team award winners in all categories) SNS Accelerator Systems Division, For their important contributions in overcoming a critical roadblock for the SNS's Low Level RF Control System



#### **Outstanding Accomplishment in Science and Technology**

Tuan Vo-Dinh, Life Sciences Division. For his extraordinary scientific contributions over a 26-year career at ORNL, which includes numerous publications and innovations in the field of human health improvement and environmental protection

#### **Outstanding Accomplishment in Laboratory Operations**

David Poker, Condensed Matter Sciences Division. For outstanding accomplishments that have greatly benefited the Condensed Matter Sciences Division and ORNL ESH&Q programs



#### **Inventor of the Year**

Thomas Thundat, Life Sciences Division. For the development of a new model for achieving biomolecular transport and separation using optical manipulation of surface charge.

#### **Outstanding Accomplishment in Community Service**

Gary Alley, Engineering Science and Technology Division. For his outstanding contributions of time and resources to enrich the lives of others by putting their needs ahead of his own, thus exemplifying the true essence of a volunteer



Photos by Curtis Boles

# DOE Oak Ridge Facilities Public Tour

## Historic adventure for Friends of ORNL volunteers, public

During the celebration of ORNL's 60th birthday, much has been said about the importance of preserving the history of all three DOE Oak Ridge facilities. One community outreach vehicle that for almost seven years has been heavily used to capture that emphasis on history is the DOE Oak Ridge Facilities Public Tour program.

The program, sponsored by ORNL and the American Museum of Science and Energy, Y-12, and East Tennessee Technology Park, offers visitors to Oak Ridge an opportunity to look back in time to the World War II era and learn about one of the most top-secret government projects in American history. Since the one-of-a-kind tour program began in 1995, more than 800 tours have been given for more than 17,000 visitors from all 50 states.

Visitors have learned how Oak Ridge employees played pivotal roles in working around the clock to bring about a quicker end to the war.

The tour program is possible largely because of the volunteers provided by the Friends of Oak Ridge National Laboratory. During 2003, Dick Raridon, who serves as the liaison for the FORNL/Public Tour partnership, ensured there were guides to cover the tours for two days each week. These guides were Grady Whitman, John Bigelow, John Moyers, Gerald Slaughter, Jim Weir, Bill Yee, Don Trauger, Jack Russell, Joe McGroy, Ken Cowser, Hal Smith, and John Murray. ORNL tour consultants Jim Alexander, Donna Powers, and Wilma McNabb handle the tours on two other days. While the tour guides' presentations describe the birth of the city and all three Oak Ridge facilities, their most important role is providing first-hand knowledge of what it was like to see history made while working at the Oak Ridge facilities over the last six decades.

Volunteer Grady Whitman came to Oak Ridge in 1944 as part of the Special Engineering Detachment. He offers a unique perspective because he can reflect on what it was like to work on several programs while at two of the three facilities. He was at Y-12 from 1944 to 1946 and then moved to ORNL's Stable Isotopes Division in 1947.

"I have found participation as a tour guide to be a very rewarding activity," says Grady. "I am able to share memories on the early days of the Manhattan Project—in particular, the startup and operation of the Y-12 Plant. I can also relate some of the events unique to living in a secret community. My role as a public tour ambassador has encouraged me to keep abreast of current research, so I can continue to present a more complete picture of the many exciting activities taking place in Oak Ridge today," he adds.

There are four site tour coordinators: Lissa Clarke of AMSE, Marilyn McLaughlin of ORNL, Jane Miller of Y-12 and Marvin

Yarber of ETTP. They have handled the funding, publicity, and details of the program from year to year.

The 2003 tour program hosted 1,116 visitors who saw special exhibits at AMSE; visited the ORNL Graphite Reactor, a National Historic Landmark, to learn about its historic design features; and viewed the ETTP complex from its Visitor Overlook, to learn about the facility's role in enriching uranium using the gaseous diffusion process.

When visitors finish the tour, they have appreciation of the special town Oak Ridge is and the commitment of these "ambassadors" to its future. — *Marilyn McLaughlin*



Curtis Boles

Ross Toedte (second from left), a research staff member in Computer Science and Mathematics Division, shows a visualization inside the "Visible Human" to tour volunteers (from left) Hal Smith, John Bigelow, Don Trauger, Gerry Slaughter, Charles Congdon and Bobby Lyon.

## Spinback

Continued from page 1

unique and unexpected challenges," Jeff says. "Somebody else claimed they had discovered MIR and we ended up on the front page of *USA Today*. I think the headline was "Giant Lab Gorilla Beats Up Lone Inventor." I had some of my most difficult management meetings with people who claimed they had supported that inventor. The patent office upheld everything we'd done, however, and we learned a lot about dealing with adverse publicity."

The EUVL CRADA, set in an extremely competitive environment, also had its problems with competitors. "One of them went right to the Hill," Jeff recalls. "One member of the EUVL consortia was a Japanese company. The competitor's concern was that we were giving technology to the Japanese by working with them. But you can't build the next-generation computer chip manufacturing capability without being global.

"So our approach evolved through these experiences, and I think there are several good criteria to think about. The problems success may bring should never stop you from doing something, but it should make you think clearly about what you're doing and why."

"One criterion is if the technology is for the public good, such as a medical device—like the artificial retina that ORNL has had a major hand in. Most people are very supportive of public health products," Jeff says.

"A second criterion is to ask if the collaboration will lead to spinback. We talk about spinning off technologies, but the notion of spinning something out that spins back to you is a most interesting cycle. For example, with EUVL, one of the reasons we were interested in commercializing the

technology was that we need those next-generation computer chips for our own future massively parallel computers. We were the beneficiaries of the technology being commercialized. In that sense, that's a cycle—spinning out the technology to a commercial company that develops it and spin it back to support the capability for our programs. We've been able to find a number of such examples.

"One technology that captured both criteria was a cancer-treatment capability called Peregrine, which is used to calculate precise radiation doses on hard tumors. That calculation engine was commercialized and sold. The spinback advantage was that in order to commercialize the software, it had to be made much more efficient, and those advances were turned back into our own program. Of course, it was also one of obvious benefit to public health advances.

"An obvious reason to commercialize is to generate financial wealth, which brings with it job creation. So, yes, you can make money and spin things off. But you can also ask, how is that thing you've done to help industry going to help the Lab?"

In an individual example of spinback at ORNL, not too long ago a staff member who worked decades ago on ion-implantation technology to improve artificial hips received one of the resultant improved hips.

"There's an argument that goes: We're not here to make people wealthy or pick an industry and make it successful, but we are here to get our technology into broad U.S. use. With things like homeland security, that's rather easy. With cancer treatments, I think we'd all sign up to a broad human use," Jeff says.

"And it may have a personal spinback to a lot of us." — *Bill Cabage*

*The problems success may bring should never stop you.*

# Fuel being removed from Tower Shielding Facility

The reactor at the Tower Shielding Facility, which played many roles in ORNL research, is currently undergoing fuel removal.



Tower Shielding Facility during a drop test in 1978. The photo was made with a fisheye lens.

The facility was built in 1953 as part of the Aircraft Nuclear Propulsion Project. The towers could lift a reactor with a 55-ton shield 200 feet into the air, where it was used to answer questions about radiation.

Following the demise of the ANP project, the facility was used for other research projects, including various types of power reactors, missile silo protection, space reactor shielding and as a drop-test facility for radioactive materials transportation casks. DOE ordered the facility shut down in 1992.

The facility was initially scheduled for decontamination and decommissioning in 2009. But the events of September 11, 2001, and the potential for significant long-term cost savings led DOE to accelerate removal of fuel from the reactor, along with radiation sources used at the facility.

Once the fuel is removed, the facility can be downgraded to a “radiological facility,” which will yield an estimated \$1.95 million in savings between 2004

and 2009, when the fuel was originally scheduled for removal.

The reactor fuel will be shipped to the Savannah River Site. The remainder of the facility will be left in safe shutdown until D&D of the buildings begins in 2009.

Plans for the removal of the fuel began in June. The project is scheduled to be completed this month.

## Service Anniversaries

December

**35 years:** Tony A. Gabriel, SNS Experimental Facilities; S. M. Margle, Computational Sciences & Engineering; Joseph A. Williams, Nuclear Science & Technology

**30 years:** Kenneth D. Adcock, Metals & Ceramics

**25 years:** Philip C. Arwood, Networking & Computing Technologies; Barbara G. Ashdown, Energy & Engineering Sciences Dir.; Keith F. Eckerman and Thomas L. Ferrell, Life Sciences; Michael L. Emery, Business & Information Services Dir.; Rebecca A. Fortner, Chemical Sciences; Sherrell R. Greene and Glenda F. Montcalm, Nuclear Science & Technology; William W. Koch, Jr., Integrated Operations Support; Frank C. Kornegay, Spallation Neutron Source Project; Ranell W. Lane, Operational Safety Services; Mary H. Phillips, Computational Sciences & Engineering; David B. Poker, Condensed Matter Sciences; Robert H. Staunton, Engineering Science & Technology; Michael W. Stooksbury, Craft Resources; James W. Terry, Environmental Sciences; Norma G. Vineyard, Research Reactors

**20 years:** George F. Baber, Larry P. Garland, Peter P. Hillis and Tracey L. Rollins, Craft Resources; Cecil A. Carmichael, Jr., Metals & Ceramics; Dwight A. Clayton, Engineering Science & Technology; David H. Cook, Research Reactors; Gary H. Henkel, Quality Services; Randal (Randy) L. McPherson, SNS Accelerator Systems; Doug Miller, Operational Safety Services; George Ostrouchov, Computer Science and Mathematics; Sherry E. Williams, Environmental Protection & Waste Services

## New Hires

Robert Duckworth, Fusion Energy  
Stephanie Melton, Facilities Development  
Robert Sangrey, Experimental Facilities  
Gerald Smith, Business Information Services  
Clair Gudmundson, Networking and Computing Technologies  
Ho Nyung Lee, Condensed Matter Sciences

## Metallurgist, economic development advisor dies

William D. Manly, pioneering metallurgist at ORNL who went on to become a corporate leader with Union Carbide and Cabot Corporation, died November 22.

At ORNL, Bill helped establish the Laboratory’s metallurgy and materials programs and led the Lab’s gas-cooled reactor project. Following a successful career in industry, he returned to Oak Ridge and served as an advisor in economic development and technology transfer at the behest of former ORNL Director Herman Postma.

“He asked if I would be interested in consulting for the Lab—to show them that there is such a thing as a marketplace. I told him all I needed was an office with a phone and a secretary. And I’m here,” Bill told *ORNL Reporter* in 1999.

“Bill was one of—if not the most—distinguished engineer ever to have been associated with ORNL, having won the National Medal of Technology and having been elected to the National Academy of Engineering,” says Honors and Awards Coordinator Phil King. “He always was, without a doubt, the most persistent person at ORNL in trying to get others elected into the National Academy of Engineering,” Phil says.

Bill’s group at ORNL came up with a new form of the alloy Hastelloy-B, called INOR-8 after International Nickel Company and Oak

Ridge. That alloy was to become an industrial alloy called Hastelloy-N. He also helped form one of the United States’ first non-destructive testing groups.

His time at ORNL was also spent with the nuclear airplane project and fusion energy. He is known for a statement he made during an early discussion of the technical challenges of burning-plasma fusion.

“I told them that if they could solve the plasma and wall problems, we could solve the blanket

problem on a Sunday afternoon,” he recalled.

Asked by his son, David Manly, why he was so driven to excel in his career, Bill replied, “Well, now that you’ve asked, I continue to ask myself three questions:

“What can I do for my country?”

“What can I do for my family?”

“What can I do for my profession?”

In addition to his donations of time and wisdom, Bill was also a generous benefactor to many causes, including, locally, to the Boy Scouts of America, Methodist Medical Center of Oak Ridge and Roane State Community College.

He was 80 years old. —*Bill Cabage, reported by Phil King*



Bill Manly



# ORNL hosts Day of Science

ORNL hosted more than 250 undergraduate science, math, engineering, and technology students from selected Historically Black Colleges and Universities and core universities for a Day of Science on November 17.

Students in the disciplines of business and finance also attended.

The Day of Science seeks to increase the number of minority students that apply for ORNL's summer or semester undergraduate research programs. The event informs

students about research programs at ORNL, explains how they can apply, and increases their chances of getting selected. It also familiarizes them with ORNL's environment and exposes them to some of the Laboratory's research projects, as well as enables them to meet the scientific staff who might ultimately serve as their mentors.

ORNL's Day of Science provides a forum for ORNL staff to meet and get to know the qualifications of students who may be able to contribute to ORNL's research mission and beyond.



Lynn Boatner of Condensed Matter Sciences and a Day of Science visitor examine a crystalline structure.

"It is important for us to promote science education to not only train new scientists but to help the country," says Lee Riedinger, ORNL's deputy director for Science and Technology. "It is critically important that we help encourage, attract and train the next generation of scientists."

Lee notes that unlike the post-Sputnik period of the late 1950s and early 1960s, today there is a shortage of young people interested in pursuing science as a career.

"After the Russians launched Sputnik, nearly every kid in the country wanted to study science or engineering," Lee says of the 1957 satellite launch. "By the late '60s and '70s, we were producing many scientists and engineers with master's degrees and doctorates."

Lee says the number of students pursuing careers in science, engineering and technology has declined during the past 30 years. ORNL is trying to help increase those numbers.

"We want and need students who are interested in pursuing science and engineering with the same frequency that are going into medicine and law," Lee says. "This is a tremendous endeavor we are undertaking."

—Fred Strohl

## ORNL people

The Southern Appalachian Man and the Biosphere executive committee recently awarded its Hinote Award to **Pat Parr** of Environmental Sciences Division, along with the Tennessee Valley Authority's Jon Loney. They were recognized for their sustained personal dedication in promoting the objectives of SAMAB. Pat was specifically recognized for her energy and leadership in promoting stewardship and ecosystem management at the Oak Ridge Reservation and in addressing the Oak Ridge Reservation's invasive species issue.

**Joe (Jizhong) Zhou** of Environmental Sciences Division has been selected Editor for *Applied and Environmental Microbiology*.

**Lynn Boatner's** and **Hu Longmire's** entry in the 2003 *Advanced Materials and Processes* cover competition won the grand prize. It was the cover image on the ASM International publication's November issue. The micrograph by Lynn, of the Condensed Matter Sciences Division, and Hu, of the Metals and Ceramics Division, illustrates features formed by the physical separation of two large single grains of titanium carbide.

Physics Division's **Ted Barnes** and Life Sciences Division's **Tom Ferrell** have been named a fellows of the American Physical Society. Ted was cited "for his seminal work on hybrid and exotic hadrons and his contributions to hadron spectroscopy and to the quantum properties of spin systems." Tom was cited "for his pioneering work in developing the photon scanning tunneling microscope and the elucidation of the fundamental physical principles underlying imaging and spectroscopic mechanisms of the photon tunneling microscope."

**ornl** reporter

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