OAK RIDGE National Laboratory

Reporter

UT-BATTELLE

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The right balance

Lab Director Thom Mason intends to build ORNL on its multiprogram strength

Larry Hamill

Thom Mason

Thom Mason begins his tenure as ORNL's Lab director this month. *ORNL Reporter* sat down for a fast-paced, 20-minute interview.

Where is ORNL now? We seem to have pretty much completed modernization with the nanoscience center, the SNS, the joint centers. Is it time now to do work?

There is an element of that. I don't think the modernization is quite done yet. There are still areas we still have to work on, such as renovating the central campus and 4500, so to some extent part of the challenge is to keep the momentum. However, we've accomplished a lot over the past several years building up new capabilities, and it is time to turn our focus to the scientific exploitation of those new capabilities. But I think we need to keep making progress on new initiatives so that, five years from now, we don't find that all the stuff we've done is starting to get long in the tooth. I think the challenge is to strike the right balance in producing science with the assets we have and continuing to invest in new capabilities for the long-term future.

So you agree with Jeff Wadsworth that we won't rest on our laurels; we'll keep going after new facilities and programs.

You have to do that. It would be easy to look at what has been accomplished, say 'that's a great job' and sit back and enjoy it, and a few years from now we find ourselves being left behind. There is no such thing as just holding steady. You're either getting better or getting worse. We need to be continuing to get better.

Does your selection mean that ORNL's future is directly tied to neutron science or do we keep our focus on being a multiprogram lab?

> *There is no such thing as just holding steady. You're either getting better or getting worse. We need to be continuing to get better.*

Multiprogram is at the core of what ORNL is. In fact, it's such a broad place that a Lab director can't have a background that covers everything. Obviously neutrons are going to be important, but I don't think the selection of the Lab director says anything about the priority of any one area. The strength of ORNL is its breadth.

You are the first internally selected director since Herman Postma. Do you feel like you've got a learning curve about the Lab or do you feel confidently knowledgeable about the different programs?

There's definitely a learning curve; that's one of the reasons I find it exciting. I will have to very quickly get up to speed about areas I know superficially—

(See BALANCE, page 5)

Lab wins bid for DOE bioenergy research center

ORNL will host a $125 million, Office of Science bioenergy research center that will seek new ways to produce biofuels, Secretary of Energy Samuel Bodman announced on June 26.

The Bioenergy Science Center will be located at ORNL in the Joint Institute for Biological Sciences, which is funded by the state and owned by the University of Tennessee. The joint institute, one of four completed or planned, is now under construction on the west campus and slated to open this fall.

Tennessee Governor Phil Bredesen, who came to ORNL for the announcement, noted that DOE's award followed by two weeks approval by the state legislature of a $61 million package for bioenergy research at ORNL and the University of Tennessee. The appropriation includes construction of a five million gallon-per-year pilot plant for demonstration of switchgrass-to-ethanol conversion based upon research at the DOE Bioenergy Science Center.

"These two investments together position Tennessee and the South to be among the leaders in the emerging field of bioenergy," Bredesen said.

Manuel Gillispie

Gov. Phil Bredesen (left, with Bioenergy Science Center chief scientist Brian Davison) came to Oak Ridge for the announcement that ORNL would host one of DOE's bioenergy science centers.

The center will employ the interdisciplinary expertise of the team's partners in biology, engineering and agricultural science and commercialization to develop processes for converting plants including switchgrass and poplar trees into fuels.

The two other DOE bioenergy research centers are the DOE Great Lakes Bioenergy Research Center, led by the University of Wisconsin in Madison, in close collaboration with Michigan State University, and the DOE Joint BioEnergy Institute, led by the Lawrence Berkeley National Laboratory.

In addition to ORNL and UT, the DOE Bioenergy Science Center partners include Dartmouth College, the University of Georgia, the Georgia Institute

(See BIOENERGY, page 2)

Bioenergy

Continued from page 1

of Technology, the Samuel Roberts Noble Foundation, the National Renewable Energy Laboratory and companies ArborGen in Summerville, S.C.; Diversa in San Diego, Calif., and Mascoma in Cambridge, Mass. The team also includes seven individual researchers from across the country.

ORNL's Martin Keller will serve as director for the center.

ORNL Director Jeff Wadsworth, who was in his final week as Lab director, said the DOE project "will be a critical part of America's efforts over the next decade to develop alternatives to fossil fuels. I am proud that Oak Ridge will continue to play a leading role in addressing one of the nation's biggest scientific challenges."

The ORNL-led project will focus on improving dedicated biomass crops and new methods of processing plants into biofuel. The strategy involves breaking down into simple sugars the lattice of cellulose, hemicellulose and lignin that makes plant cell walls resistant to the stress of weather, insects and disease. These sugars can then be processed into fuel.

To date, no cost effective bioprocessing methods for cellulose-based bioenergy sources have been developed. The DOE Bioenergy Science Center will focus on achieving the specific goals of

- Modifying plant cell walls to reduce their resistance to breakdown, with a focus on the poplar tree—whose genome ORNL researchers helped sequence last year—and switchgrass, a native grass that can be grown easily in most of the U.S. Such modification would decrease or eliminate the need for costly chemical pretreatments now required to deconstruct the cell walls.
- Consolidated bioprocessing, which involves the use of a single microorganism or group of organisms to break down plant matter through a one-step conversion process of biomass into biofuels. —*Larisa Brass*

ORNL wins six R&D 100 awards

ORNL researchers have won six R&D 100 Awards, given annually by *R&D Magazine* to the year's most technologically significant new products.

ORNL leads all DOE labs with 134 total awards, second overall in all-time winners.

The winners came from a broad swath of ORNL's research programs, including computer science, nuclear detection, materials science and superconducting.

The following inventions won awards.

Piranha, developed by Mark Elmore, Brian Klump, Robert Patton, Thomas Potok, Joel Reed and Jim Treadwell of the Computational Science and Engineering Division.

The Piranha knowledge discovery engine uses intelligent agent technology and a very large cluster computer to analyze large volumes of text data with unprecedented speed and accuracy. It has been used by the U.S. military and Department of Homeland Security to analyze large sets of streaming data.

Pharos Neutron Detector System, developed by Richard Riedel of the Neutron Scattering Science Division, Ronald Cooper of the Neutron Facilities Development Division and Lloyd Clonts of the Engineering Science and Technology Division.

Pharos is a small, low-power neutron detection system that can be used to identify nuclear materials at airports and harbors. Pharos can determine from what direction and distance neutrons come, allowing it to track targets after they have been identified.

Cast Nickel Aluminide for Improved Productivity of Steel Heat-Treating Furnaces, jointly developed by Duraloy Technologies, Vinod Sikka and Michael Santella of the Materials Science and Technology Division, Jeffrey McNabb of the Fabrication Division and other industrial partners.

Cast nickel aluminide has a unique combination of high-temperature strength and oxidation resistance, which is critical for continuous operation of steel plate heat-treating furnaces. The nickel aluminide eliminates the need for frequent furnace shutdowns, provides significant savings in energy and cost and reduces CO_2 emissions.

High-Performance LMO-enabled, High Temperature Superconducting Wires, jointly developed by SuperPower, Inc., Parans Paranthaman and Tolga Aytug of the Chemical Sciences Division and Amit Goyal of the Materials Science and Technology Division.

LMOe-HTS is a high-current superconducting wire with the strength, flexibility, fabricability, throughput and low cost needed for power-grid applications. As replacements for copper power cables, cables made from the ORNL/SuperPower wire will carry more electricity much more efficiently and can be retrofitted to the standard grid infrastructure.

Large Area Imager for Standoff Detection, jointly developed by Lawrence Livermore National Laboratory, Space Sciences Laboratory at the University of California-Berkeley, Lorenzo Fabris and Thomas Karnowski of the Engineering Science and Technology Division and Klaus-Peter Ziock of the Nuclear Science and Technology Division.

The Large Area Imager is a search instrument capable of finding radiation sources within a 100-meter swath while traveling at 25 mph. It reduces the search time for radiation sources by a factor of 25 and has unprecedented sensitivity to weak sources.

Armstrong Process CP Ti and Ti Alloy Powder and Products, jointly developed by International Titanium Powder, Inc., Craig Blue, Jim Kiggans, Stephen Nunn and Phil Sklad of the Materials Science and Technology Division, ORNL postdoctoral fellows William Peter and John Rivard, Art Clemons of the National Security Directorate and other industrial partners.

The Armstrong Process is a new method of producing titanium powder that reduces costs significantly. The process extracts titanium from ore much less expensively than conventional methods, making titanium feasible in many new applications. It is the most significant development in the titanium industry in 50 years.—*Charlie Smith*

Jaguar tops in open science

ORNL's Cray XT4 supercomputer, or Jaguar, is now the second fastest system in the world, according to a semiannual list of the world's fastest computers.

The new Top500 List was released at the 2007 International Supercomputing Conference in Dresden, Germany. Although No. 2 on the list, Jaguar can claim to be the world's most powerful supercomputer dedicated to open science.

"We are very excited about the contributions we have been able to make to scientific discovery, and we fully expect these contributions to accelerate in the coming months and years," says Thomas Zacharia, associate Laboratory director for Computing and Computational Sciences.

Reporter

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Lab Notes

Italian fusion group teams with Lab

The dismantling of Libya's nuclear weapons program brought more than just centrifuges and uranium to Oak Ridge.

Francesca Bombarda came along, too.

Bombarda, a scientist from ENEA, the Italian equivalent to DOE, has been collaborating with ORNL on fusion pellet research for over 15 years, but she has never been able to come to ORNL because she was born in Libya.

She was able to enter the Lab for the first time in late June because Libya was removed from the list of restricted countries after they stopped their nuclear weapons programs.

Bombarda and ENEA colleagues Silvio Migliori and Antonio Frattolillo tested equipment at the High-speed Pellet Injection Test Facility in preparation for the shipment of a new high-speed pellet gun to ORNL. The gun will inject deuterium pellets—frozen to just above absolute zero—into plasma with a temperature of about 100 million degrees Kelvin.

Curtis Boles

From left, fusion researchers Steve Combs, Antonio Frattolillo, Francesca Bombarda, and Silvio Migliori work on the pellet injection system.

Steve Combs from the Fusion Energy Division calls it a "snowball in hell."

"It's the coldest thing known to man going into the hottest thing," Steve says.

The new gun will shoot the pellets at 4,000 meters per second, four times faster than the current gun. The increased speed allows the pellet to penetrate deeper into the plasma, replenishing more fuel and, ultimately, producing more power.

Steve says ORNL is a leader in this specialized area of pellet fueling. The pellets must be very strong to withstand the high speeds, and they should be as dense as possible so the maximum amount of deuterium can refuel the plasma.

The R&D collaboration is for Italy's proposed ignitor fusion experiment. ORNL makes the cryogenic system for freezing the particles, and ENEA provides the propellent.

Steve says that if the pellet system works well, a similar system could be used on ITER. The Italian researchers will return to ORNL in a few months to install and test the finished gun.

Visitors share views on changing India

Budhu Bhaduri and Billy Stair compared their recent experiences in India at a Multicultural Friendship Club brown bag lunch on June 14. They traveled to India within two weeks of each other last December. Although they were in the same place at the same time, they saw two very different worlds.

Indian culture is rapidly transforming, Budhu said.

Budhu grew up in India and returned to visit family. The huge construction projects and the preponderance of cell phones and American-style stores made Budhu wonder if it was really India. He could just as well have been in Dayton, Ohio, or any other American city, he says.

Billy was in India for the first time as part of an ORNL delegation exploring collaborative scientific opportunities. A drive to the Taj Mahal on his first day there introduced him to the country. It took five hours to go 120 miles; along the way he ran into trained monkeys, snake charmers and children hawking copies of "The World is Flat" in the middle of a major highway.

Lumbering beasts of burden competed with traffic.

No one could mistake that for an American city, he said.

Bluebirds in bid to boost native plants

Facilities & Operations, Environmental Sciences Division and Water Quality Programs staff members have teamed up to restore native vegetation in riparian zones.

Workers from F&O installed bluebird houses on posts in the riparian zone along White Oak Creek in late April. The areas between the birdhouses and the creek are "no mow zones," where native bushes and trees will be encouraged in these zones and future seasonal inspections will be done to eliminate invasive plants.

Elizabeth Wright of Water Quality Programs says that until 1992 workers mowed all the way down to the creek with weed-eaters. Since then mowing has generally been to the tops of the banks. Elizabeth believes the birdhouses will effectively extend the "no mow zone" and give native plants a chance to grow.

Last fall ESD staff made a major effort to remove invasive species such as privet, honeysuckle, Johnson grass, multi-flora rose and Chinese yam from riparian zones and along roadways. Eliminating the foreign plants cleared the way for native growth. Right now, most of the plants between the birdhouses and the creek banks are grasses, but that should change.

"It's not the grass that's the goal. It's the trees and the bushes that are the goal," Elizabeth says.

About 500 native bushes and trees have been planted near White Oak Creek. As they grow, you may recognize these trees and shrubs as button bush, elderberry, silky dogwood, spice bush, white dogwood, red maple, red oak, river birch, sycamore and redbud.

Flex-fueled fleet grows

ORNL's fleet added 28 new flex-fuel vehicles this spring and summer. The vehicles run on E85, a mix of 85 percent ethanol and 15 percent gasoline. Flex-fuel vehicles now make up nearly a fourth of the fleet.

Logistical Services Division Director Jon Forstrom says, "This has been a good year for seeing new vehicles arrive at ORNL and older vehicles leaving. With the participation of all of the divisions, we have had the opportunity to purchase a significant number of vehicles in FY 2007 compared to previous years."

ORNL's diesel fuel station has also followed the green trend. In January, it began a shift from diesel to biodiesel. Vehicles filling up at the station now receive a 20 percent biodiesel mix.

Old trucks: Rust and dents are being replaced with vehicles that burn biofuels.

—Reported by Charlie Smith

Charlie Smith is an intern from the University of Tennessee's science writing program.

‘Planet Fleenor’

Amateur astronomer shares credit for discovery of extra-solar world

ORNL nuclear inspector and amateur astronomer Mike Fleenor is 5,304 years old, or at least he would be on XO-2b, an extra-solar planet he recently helped discover from his suburban Knoxville observatory.

Mike’s team of professional and amateur astronomers announced the discovery of two planets in May at the 2007 American Astronomical Society meeting in Honolulu. Mike is listed as a co-author in two articles that will be published in the Astrophysical Journal.

Fleenor

Because XO-2b orbits very close to its star—much closer than even Mercury to the sun—a year on it lasts only 2.6 Earth days. On Earth, Mike is 37 and part of the NASA Space Telescope Science Institute’s XO Project, an effort to search for Jupiter-class planets outside our solar system by measuring light from nearby stars.

The team uses a technique called the transit method to measure the change in light intensity when a planet moves in front of its star along the line of sight to Earth. The light intensity from the star decreases by about 1 percent during a typical transit. Astronomers can determine the radius of the planet by measuring how much the star dims.

The 16-person XO Project team led by Dr. Peter McCullough named the planets they found using this transit method XO-2b and XO-3b.

The discovery process for extra-solar planets begins when professional astronomers with the XO survey telescope in Hawaii find stars that dim periodically. They send that information to an extended team, which includes Mike, in different parts of the United States and Europe to collect more data.

The extended team observes the objects to verify they are actually planets since most of the initial candidates end up being false positives. Professional astronomers then use the data from these observations to select promising stars to investigate further using high-resolution spectroscopy, which is required to confirm an object as a new planet.

Mike says astronomy is the only scientific field that encourages amateurs to collaborate on research, but even in astronomy it is not commonplace, especially on cutting-edge research like this.

Astronomers did not find the first extra-solar planet until 1995 and discovered the first transiting extra-solar planet only in 1999.

“There are several amateurs that get published, but it’s not like it’s an everyday occurrence. I’m kind of proud of that,” he says.

Mike, a lifelong astronomer, built his home observatory in 2004 when he decided he wanted to move beyond taking pictures of the skies to the science of astronomy. Its 10-foot dome houses a 14-inch telescope that automatically tracks stars, takes images and records data. Mike analyzes the data afterward.

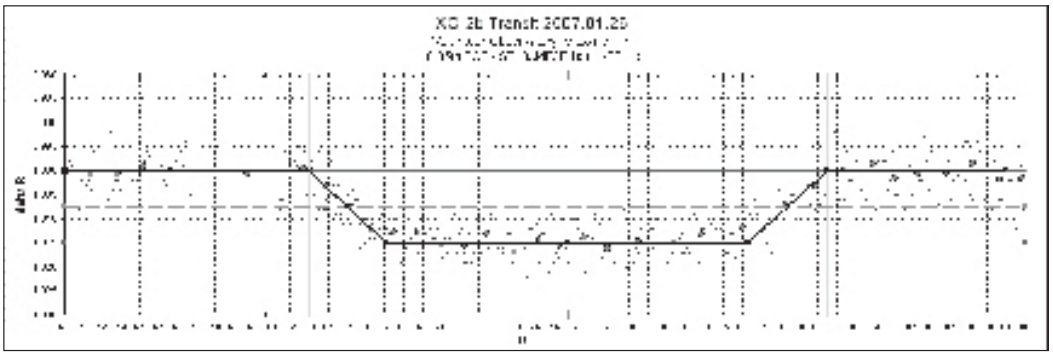
“It’s not something I spend hours on each day. I don’t stay up all night. I have a job to do here, and my wife wouldn’t allow it,” he says.

His home observatory is in a subdivision off Dutchtown Road in Knoxville. Mike receives an occasional knock on his door from people wondering what that large, white dome in his yard is. Mike says his neighbors are very supportive.

Despite lots of artificial light, Mike says he gets about 130 nights a year of good viewing. For his planetary observations he overcomes many of the adverse effects of light pollution with red and near-infrared filters.

The extra-solar planets that have been found so far are called hot Jupiters. They are about the size of Jupiter but orbit 5 percent to 10 percent as far from their stars as the earth is from the sun, making them very hot. Astronomers have discovered about 300 extra-solar planets; only 14 of them transit.

Not many kids can boast an observatory in their backyard like Chloe and Olivia Fleenor.



Extra-solar plants are too far away to be directly observed, but they show up in data, as in this chart showing a dip in light intensity caused by XO-2b’s transit of its sun.

XO-3b is the biggest planet discovered to date. It is 12 times more massive than Jupiter, which puts it near the maximum mass of a planet. An object 13 times more massive than Jupiter is considered a brown dwarf, an object similar to a star but without enough mass to sustain nuclear fusion of hydrogen.

However, the difference between a massive planet such as XO-3b and a brown dwarf is not altogether clear. To really know which one it is, astronomers would have to know how it formed. Through spectroscopy of the planet’s atmosphere, XO-3b may help scientists figure that out.

Mike says, “It (XO-3b) really allows us to explore our theories of planetary formation.”

XO-3b has been approved for research time on the Hubble and Spitzer space telescopes. The Spitzer telescope detects infrared light so it will be able to see changes as the planet passes behind its star, something that is impossible from ground-based observatories.

The launch of NASA’s Kepler telescope in 2008 will allow for the detection of exo-earths, planets similar to earth in size and distance from the sun. Until then, Mike’s research with the XO project is on the forefront of planetary discovery.—*Charlie Smith*

Balance

Continued from page 1

national security, computational sciences, energy—things I'll obviously have to understand in greater depth. I find that interesting.

The advantage of being an internal hire is I do know something about the institution. I have an understanding of the 'wiring diagram' and who the people are.

You have a Leadership Team that you know.

That's certainly a leg up. I know I can rely on them to help me get up to speed.

Battelle emphasizes tech transfer. What are your views about the Lab's role?

Tech transfer and economic development is one of the ways that we return value to the taxpayers who fund us. One of the reasons that there are major investments here is the economic benefits that come from those developments. If things don't flow from the Lab to the marketplace, then we won't be realizing those benefits. So it's important to the federal government in terms of return on investment that innovations make their way to the marketplace, and tech transfer is the way we do that.

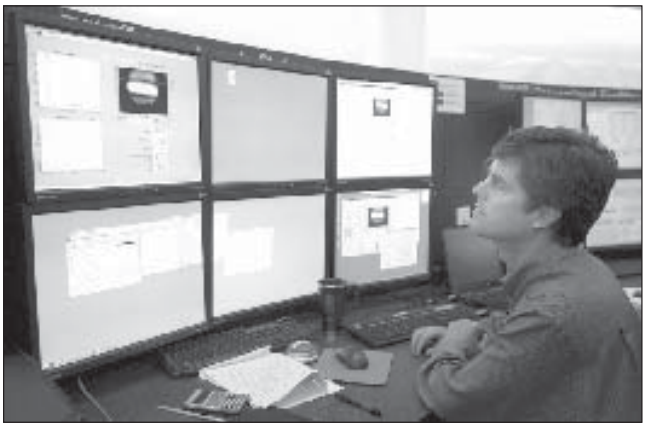
That's been a mechanism for presenting the SNS to the public: how essential neutrons are to the development of advanced materials vital to new products for the economy.

And that's true across the Lab. We have a broad spectrum: We have very fundamental research and we have research that is very applied, and everything in between. One of the things that is important that we do and will continue to work on is getting the flow of fundamental research to things that are deliverable in the form of products.

What is going to change most about your job, from directing a facility of this size [the SNS] to being a Lab director? The branching out?

I think that's the main thing: the diversity of programs and sponsors, the issues that go with those. Neutrons are quite broad scientifically but it's really a single program with a single sponsor. It's fairly easy to define success with an objective that everyone's focused on. With a Laboratory there are multiple measures of success that are all different for the different parts of the organization, so it's a more complicated optimization problem, if you will.

The other thing is that the place and time we find ourselves now—the policy dialogue and public dialogue about energy—is very broadly defined in terms of impacts on our environment, national security implication and economic implications. This is a major theme; you see it in the political debate and read it in the newspapers. It's an important time to be a Department of Energy lab, I think. We're very well positioned because of the neutron sources, leadership computing, the bioenergy center, the strong national security programs and rebirth of nuclear power. All these things link to one another. Positioning the Lab so it's able to take advantage of all those linkages and use them to deliver things that are significant on a national and international scale will be the challenge and not just for the next year or two. It is as durable a mission as the national security mission that resulted in the birth of the DOE complex. I think it's going to define the Laboratory for the next couple of decades.



April 28, 2006, was a red-letter day in Thom Mason's career, when the Spallation Neutron Source produced its first neutrons.

You are from Nova Scotia. Still have family there?

Yeah, my parents are there and my wife has family there. We still have a lot of family connections in Halifax.

Do they talk about climate change? Are the winters getting milder up there?

Oh, yeah.

So now you're in a position to do something about it.

(Laughs.)

Did you have a special mentor, or some particular event, that put you on the path to your career in science? What generated your interest early on?

My interest in science really came from the fact I grew up in a science-rich environment. My father is a geophysicist who worked at a Canadian lab, the Bedford Institute of Oceanography, which was part of the Energy, Mines, and Resources Department—Canada's DOE, if you will. My mother worked as a technician in biochemistry at Dalhousie University when I was young. All the family friends were scientists, so it seemed perfectly natural... to study physics. It never really occurred to me to do anything else.

In terms of mentors I've been very fortunate that at every stage of my career, as a student, post-doc, junior faculty member and here at Oak Ridge, I've worked for and with people who were outstanding role models and teachers.

What did Mrs. Mason say when you came home one day and said you might become Lab director?

First, she's not Mrs. Mason; she's Ms. MacGillivray (laughs). Jennifer has always been very supportive of the things I'm going to do and willing to move to places around the world as we've gone from one thing to the next. She's pleased that we're going to be staying in Oak Ridge for quite a while longer because she likes it here and the kids like it here.–*Bill Cabage*

Energy is a major public theme; you see it in the political debate and read it in the newspapers. It's an important time to be a Department of Energy lab.

‘Second’ chance

U.S. ITER assignees find life, work in southern France *très bien*

For U.S. ITER scientists and engineers assigned to Cadarache, France, the charms of living in a picturesque village and experiencing European culture appear to outweigh any occasional frustrations caused by the more leisurely French lifestyle.

Nine employees affiliated with the U.S. ITER Project have been temporarily assigned, or “seconded,” to the construction site in the South of France and are working with the ITER International Fusion Energy Organization, which will build the full-scale experimental device aimed at demonstrating the scientific and technological feasibility of fusion energy.

ITER – Latin for “the way” – involves a scientific collaboration among the United States, China, the European Union, India, Japan, Korea and Russia. It is expected to be completed by 2016.

U.S. secondees assigned to the ITER site in Cadarache are, from left, Ken Sowder, Idaho National Lab; ORNL’s Paul Holik; Dennis Baker, Savannah River; Remy Gallix, General Atomics; Craig Taylor, Los Alamos; ORNL’s Gary Johnson; Larry Lew, High Bridge Associates; Chang Jun, PPPL; and Jerry Sovka, Advanced Technologies.

The U.S. ITER Project Office is hosted by ORNL with partner labs Princeton Plasma Physics Laboratory and Savannah River National Laboratory. The U.S. contributions to ITER will be accomplished through a collaboration of DOE laboratories, universities and industry.

U.S. ITER “secondees” in Cadarache include ORNL’s Gary Johnson, who is no stranger to European assignments, having worked on earlier stages of the ITER project in Germany during the 1990s. He has been serving as deputy director general for the ITER tokamak, with responsibility for its design, procurement and construction. This includes the superconducting magnets, vessel systems, blanket and divertor systems and assembly and remote handling.

Gary says he has enjoyed working in an international environment. “Living in southern France is also very nice. Cadarache is in a beautiful area.”

Current professional challenges include helping to build the organization that will finish the design of the tokamak. It involves hiring candidates from all seven ITER parties. The process is time consuming, he says, but adds that they are making real progress.

Gary finds eating dinner in France to be a very different experience than in the United States. “Many restaurants don’t even open until 7:30 p.m., and then the meal may take more than three hours. This has definitely been an adjustment.”

Secondee Chang Jun of PPPL works closely with Gary. The mechanical and electrical engineer is involved in computer analysis of the vacuum vessel and other structures and will be working on manufacturing control.

“I speak French and English, so I have adjusted here quite well,” he says. “I’m on a very good team, and as a recent secondee, I am working to catch up on the details of the project.”

Chang has two school-age children in Princeton and is working a schedule of three weeks in Cadarache and one week in New Jersey. “My biggest challenges have been the travel and being away from my family. I hope to bring them here as soon as possible to limit the travel time and be able to focus even more fully on our mission,” he adds.

Another secondee, Dennis Baker, spent the previous 34 years supporting the DOE’s Savannah River Site. He helped develop DOE’s Magnetic Fusion Safety Standards. In France, he is in the safety group developing and defending the ITER safety basis.

“This assignment has been an adventure,” Dennis says. “I have enjoyed the technical work and have already been given assignments with considerable significance. For example, I updated the general ITER confinement strategy and participated in presentations on it to the Safety Working Group of the Design Review Activity and the French Nuclear Regulatory Agency in Paris.

“I have also very much enjoyed working with people from other countries and experiencing the culture of the Region of Provence. I have joined a chorale at the Darius Milhaud National Conservatory of Music in Aix en Provence, which has afforded the opportunity to meet many new friends in the area,” he adds.

Dennis said dealing with the bureaucracy long-distance has been a challenge – even though everyone does his or her best to help. “The whole international assignment thing is rather new to me and to my company at Savannah River.

“I’m also living away from family, and I’m working to get comfortable finding and eating in restaurants, etc. After work, I consider myself a hunter-gatherer, spending my evenings seeking out places to eat or feeling my way through grocery stores studying microwaveable dinners.”

Ken Sowder has been employed by Idaho National Laboratory since 1991 and has provided quality assurance management support to various programs such as ITER, the National Spent Nuclear Fuel Program (Yucca Mountain) and the New Production Reactor Program.

As responsible officer and division head for ITER Quality Assurance, Sowder represents ITER and INL on various American Society of Mechanical Engineers and American Society for Quality committees.

“In this role, I have really enjoyed working with the many diverse and intelligent people from all over the world brought to this project to support its construction,” he says.

Living and working in a different culture and language have provided the greatest challenges, he added, along with dealing with relatively expensive living conditions.

Larry Lew has been a project controls engineer on various large-scale civil, nuclear, fossil and transportation construction projects in North America, Japan, Hong Kong and Europe. Larry has found much to enjoy in his assignment, including “all the challenges of working on a truly unique project with fascinating people from all parts of the world, daily life in a small village in Provence and the sites and people of France.”

He also is adjusting to marathon restaurant dinners. Additional challenges include ensuring a smooth transition to French life for his children and obtaining an ADSL (asymmetric digital subscriber line) connection, which required seven weeks.

Other U.S. secondees to Cadarache include Remy Gallix, mechanical engineer from General Atomics; Paul Holik, plant system engineer from ORNL; Jerry Sovka, site layout, buildings and assembly group leader from Advanced Technologies; and Craig Taylor, physicist from Los Alamos National Laboratory, who is working on design and integration of tritium exhaust processing.—*Cindy Lundy*

Top managers welcome summer students with safety message

Thom Mason credits summer jobs with helping him along the way to becoming Lab director, and that included working safely, he told this year's crop of summer students.

The Safety Services Division hosted its sixth annual Safety First luncheon for students and their hosts on June 25 to remind students of their personal safety responsibilities while they work at the Lab.

"How did I get to be Lab Director at ORNL?" Thom asked students and mentors, observing, "It must have had something to do with the summer jobs I had."

Thom shared his summer job experiences, focusing on the "things you shouldn't do." Michelle Buchanan, associate Laboratory director for Physical Sciences reinforced his safety message.

"There are very simple ways of thinking about safety," she explained. "For example, the most dangerous situations are the ones where you're in the groove and doing something you do all the time. You need to anticipate what might go wrong and have on the right protective equipment so that what could be a nasty accident will only be an incident."

Referring to the old TV series, she said, "Don't take the opportunity to MacGyver something. There are all sorts of people here who are willing to help you. Don't ever worry about asking them a question."

"No one needs to put themselves in danger," Michelle said. "Plan your work. Set up your equipment properly, including your protective gear. Run your experiment and then go back as you're examining your data and rethink what you've done and new ways you could protect yourself."

At the close of the seminar she reminded the audience to, "Have fun, and do the best you can."

"We want to make sure you have a great experience with no injuries," she said.

"People at ORNL care about each other," ESH&Q Operations Manager Carol Scott reminded guests. "We care about you, and we want you to care about us." —*Reported by summer intern Amanda Russell*

Service Anniversaries

July 2007

50 years: Sydney J. Ball, Nuclear Science & Technology

35 years: Mary L. Johnson and George F. Flanagan, Nuclear Science & Technology

30 years: Penny L. Hosford, National Security Dir.; Gaston Eugene Powers, J. David Barncord, Jeanie Johnson Vivyan and Danny A. Cantrell, Craft Resources; Charles Kenneth Valentine, Jr., Environmental Protection & Waste Svs; Ann M. Aaron and Trent Primm, NScD Research Reactors; Mary Ann Collins and Joseph Gregory Winfree, Information Technology Services; Susan N. Lewis, Safety Services; William L. Jackson,Computational Sciences & Engineering; Bill Jones, Laboratory Protection; Brenda C. Gouldy, Robin L. O'Hatnick and John David Randolph, Nuclear Science & Technology; Candace Mead, Contracts; Gary Q. Kirk, Quality Systems and Services; Daniel T. Ingersoll, Energy & Engineering Sciences Dir.

25 years: Stephen J. Pennycook, Materials Science and Technology; Steven W. Cox and Sherl Reed, Craft Resources

20 years: James Edward Lee, Facilities Management; Michael Roy Moore and Timothy J. Theiss, Engineering Science & Technology; Walter S. Koncinski, Communications & External Relations Dir.; Kirby L. Wilcher, US ITER Project Office; Charlene M. Patrick and Scott B. Ludwig, Nuclear Science & Technology; Richard Howell Goulding, Fusion Energy; Jeff Patton, NScD Research Accelerator; Steven J. Pawel, Materials Science and Technology

Club ORNL

Interested in the most up-to-date Club ORNL News? Check out the club's Web page online via the ORNL home page. To gain access to the ORNL home page, one must first register in XCAMS by going to http://www.ornl.gov/adm/clubornl_signup.shtml. After receiving your XCAMS account and Club ORNL membership, retirees can then go directly to https://www.ornl.gov/adm/clubornl. Nancy Gray (576-9479, graynl@ornl.gov) is Club ORNL's point of contact for retirees.

M&C's Jim Weir dies

James Robert Weir Jr., retired division director and researcher, died June 11. He was 74.

Jim directed the former Metals & Ceramics Division. He received DOE's E.O. Lawrence Award in 1973 for his work in metallurgy and alloy studies. He was noted for his theory of how neutron bombardment embrittled steel in reactor vessels. Jim also took particular pride in his role in introducing "matrix management" to the Laboratory in the 1970s.

A memorial service was scheduled for July 21 at Weatherford Mortuary in Oak Ridge.

New Staff Members

Brian Keith Beal, Information Technology Services

Roy Lee Boyd Jr., Samuel Simpson Cummings, Timothy Wayne Hines, Robert Mark Lively, Philip Uriah Payne, Jeffrey Len Whitaker, Stephen Parker Daugherty, Brandon Matthew Dishman, Michael Cody Jones, Shane Stephen Cromwell, Rahshaad Marquis Dowdell, Gregory Dean Miller and James Douglas Yarber Jr., Craft Resources

Nicholas Brabson and Louis Phillip Wilder, Computational Sciences & Engineering

Scott William Brackett and Bryce Devin Hudey, Facilities Management

Katherine Johnson Evans and Travis Humble, Computer Science & Mathematics

Mostofa Kamal Howlader and Earl Ike Patterson, Engineering Science & Technology

Kyran Bernard Kemper, Computing & Computational Sciences Dir.

David Gordon Lett, Human Resources Dir.

David Alexander Reass, Neutron Scattering Science

Scott Christopher Roy and Mark Stephen Connell, Neutron Facilities Development

Jonathan Lynn Underwood and Benjamin Thomas Jr. (transfer), National Security

Maohua Du, Materials Science & Technology

John David Mammosser and David Conrad Dunthorn, Research Accelerator

Jamie Michael Messman, Center for Nanophase Materials Sciences

Sandra Kay Monroe, Health Services

Cellostine (Tina) Marie Mynatt, Audit & Oversight Dir.

Ernest Bryan Robertson III, Quality Systems & Services

Summer Junelle Widner, Nuclear & Radiological Protection

Bai Yang, Environmental Sciences

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ORNL People

The Biosciences Division's **Thomas Thundat** has been chosen by *Nanotech Briefs* magazine to receive a Nano 50 award. The awards recognize the "top 50 technologies, products, and innovators that significantly impacted, or are expected to impact, the state of the art in nanotechnology." Thomas is cited for his pioneering work on nanomechanical sensors for physical, chemical and biological detection. The award will be presented in November in Boston.

Claus Daniel has received the Werner Köster Prize for his article, "Laser Interference Metallurgy: Using Interference as a Tool for Micro/Nano Structuring," which appeared in the *International Journal for Materials Research.* Klaus is a Wigner Fellow working in the Materials S&T Division. The Köster prize is presented by the German Materials Society and the Carl Hanser Publishing Company.

Gary A. Baker of the Chemical Sciences Division is a co-author on a paper that resulted in a cover for Green Chemistry, May 2007, Vol. 9, pp 449-454. The paper is titled, "The large-scale synthesis of pure imidazolium and pyrrolidinium ionic liquids."

Steve Zinkle, director of the Materials S&T Division, received the IEEE Nuclear and Plasma Sciences Society's 2006 Fusion Technology Award. Steve was recognized for his "outstanding contributions to the understanding of radiation effects in structural materials and exceptional leadership in the U.S. fusion materials program."

Brian Rodriguez of the Materials S&T Division has been awarded a prestigious Humboldt Research Fellowship. The fellowship pays for outstanding young scientists to perform research of their own choice in Germany for a year, with the possibility of an extension. Brian will work with Dr. Marin Alexe at the Max Planck Institute of Microstructure Physics in Halle, Germany.

Johney Green of the Engineering S&T Division has been selected to participate in the National Academy of Engineering's Frontiers of Engineering program. The program brings together engineers ages 30 to 45 who are performing exceptional engineering research. The 83 program participants come from industry, academia and government and were nominated by fellow engineers or engineering organizations. The symposium will be held at Microsoft headquarters in Redmond, Wash., Sept. 24-26.

Bill Knee, group leader of the Transportation Technology Group in the Engineering Science & Technology Division, has received a committee appointment from the Transportation Research Board Executive Committee to serve a three-year term on the Committee on Vehicle-Highway Automation. The TRB is a division of the National Research Council.

Eddie Vineyard, research staff member in the Cooling, Heating, and Power Group in the Engineering S&T Division, received an Exceptional Service Award from ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.) during the society's annual meeting last month.

C.C. Hermes, daughter of NSTD's Bill Hermes, won the state of Tennessee's junior group documentary, 7th and 8th grade division with partner Xrista Christopolous. The project film is titled, "Tuskegee Airmen: Triumph in the Air and Tragedy on the Ground." C.C. and Xrista competed in the national competition held recently in Washington, D.C.