Los Alamos NATIONAL LABORATORY
NewsLetter

Week of Oct. 14, 2002 Vol. 3, No. 20

And the winners are ...

Meet the newest Distinguished Performance Award winners, honored for outstanding achievements and performance on the job in 2001.

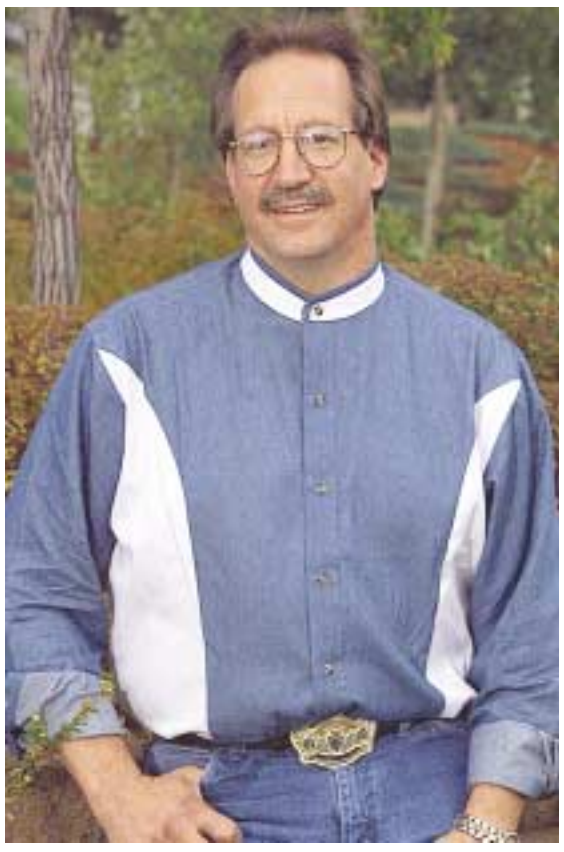
Those considered for this honor were nominated by their colleagues and co-workers. Nomination packages were screened by an award review committee, and Director John Browne approved the final selections.

Eight individuals, seven small teams and six large teams were named 2001 award winners.

The individuals and small teams made unique and outstanding contributions to the Laboratory's programmatic efforts and had a positive impact on the Laboratory's status in the scientific community. The large teams brought distinction to the Laboratory by completing projects that resolved significant problems and/or made Los Alamos the recognized expert in a field.

Each recipient of the Distinguished Performance Award receives a plaque and a pin.

In addition, each winner of an individual award receives $1,000, and each member of a winning small team receives $500.



John Balog, MST-6

Kemp Beebe, IM-1

Leisa Davenhall, C-ACT

Michael Fitzsimmons, LANSCE-12

2001 Distinguished Performance Awards

Individuals

John Balog, MST-6

As head machinist in the Materials Technology: Metallurgy (MST-6) machine shop, John Balog supports many critical Laboratory programs, including the Enhanced Surveillance, Pit Manufacturing and Directed Stockpile Stewardship programs. He serves these clients with extraordinary skill in both manual and computerized machining. He is one of the Department of Energy's experts in computerized numerical control multiaxis work.

In 2001, Balog modernized the production of graphite molds for Pit Manufacturing to cut production time from 80 to 15 hours per mold, a reduction of 82 percent. He did that by working with a manufacturer and writing the programming to allow one CNC machine to do the work of three. He went on to modernize the entire machine shop. In addition, he redesigned the coolant-recovery system he and his colleagues had introduced to the shop in 1999, tripling the system's capacity.

In late 2001, Balog completed several complex machining jobs simultaneously, work that showcased his expertise and the efficiency of his shop. His efforts allowed vital Laboratory programs to meet deliverable dates on time.

Kemp Beebe, IM-1

Kemp Beebe of Communication Arts and Services (IM-1) is a senior technical illustrator, an artist with the rare ability to turn complex concepts into pleasing, communicative graphics. He has a strong customer base throughout the Laboratory, especially in the Director's Office, the Weapons Engineering and Manufacturing Directorate, the Threat Reduction Directorate and the Pit Manufacturing program.

Beebe produces materials for the director's congressional testimony and state-of-the-Laboratory addresses and for Laboratory presentations to high-level visitors. The requests for these materials often come on short notice in a crisis atmosphere, but Beebe always comes through, even working nights, weekends and holidays to deliver on time.

Recently, Beebe took proactive steps to save his clients time and money by standardizing desktop configurations between the Director's Office, the weapons directorates and IM Division. He also has created an archive of weapons drawings and presentations that allows his clients to respond quickly to governmental requests for information.

His initiative, illustration skills and work ethic have made Beebe a key resource at the Laboratory.

continued on Page 3

Los Alamos NEWS LETTER

The *Los Alamos NewsLetter*, the Laboratory bi-weekly publication for employees and retirees, is published by the Public Affairs Office in the Communications and External Relations (CER) Division. The staff is located in the IT Corp. Building at 135 B Central Park Square and can be reached by e-mail at *newsbulletin@lanl.gov*, by fax at 5-5552, by regular Lab mail at Mail Stop C177 or by calling the individual telephone numbers listed below.

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Los Alamos National Laboratory is operated by the University of California for the National Nuclear Security Administration (NNSA) of the U.S. Department of Energy and works in partnership with NNSA's Sandia and Lawrence Livermore national laboratories to support NNSA in its mission.

Los Alamos enhances global security by ensuring safety and confidence in the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction and improving the environmental and nuclear materials legacy of the Cold War. Los Alamos' capabilities assist the nation in addressing energy, environment, infrastructure and biological security problems.

NNSA National Nuclear Security Administration

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Commuters take heed

Construction project on U.S. 84/285 between Santa Fe and Pojoaque to extend through June 2004

An Arizona construction company will rebuild a 12-mile section of U.S. 84-285 between Pojoaque and Santa Fe. The State Highway and Transportation Department hired FNF Construction Co. in Tucson for the 18-month-long project on the heavily traveled four-lane, divided highway. Work began Oct. 7 and is expected to continue through June 2004, weather permitting.

More than 2,000 Laboratory workers who live in Santa Fe County and points south use U.S. 84-285 to get to and from work.

Highway department officials estimate the construction cost for the project at about $51.5 million.

Three design-engineering firms are working on the design of separate stretches of U.S. 84-285, but work will proceed simultaneously on both ends of the highway, road agency officials have said.

One section, from the NM 599-U.S. 84-285 interchange north to about the Santa Fe Opera, includes construction of an interchange at County Road 73 and an overpass for local traffic at Tano Road.

Two miles of "climbing" lanes for heavy vehicles will be added in each direction on U.S. 84-285 and frontage roads also will be added for local vehicle traffic in this stretch of the project.

According to the highway department, the contractor will be required to limit construction activity next summer during 2003 Santa Fe Opera performances. There also will be times in the morning and afternoon during peak traffic volume when construction will be limited. The posted speed limit through the construction area will be 45 miles per hour.

Another section of the project calls for a new bridge over the Rio Tesuque near County Road 73. A temporary traffic signal will be installed at the north exit/entrance to Tesuque and will remain in place while construction of a new interchange at the southern entrance/exit to Tesuque is completed.

The third section of the project stretches for 2.2 miles from the boundary of Tesuque Pueblo north to County Road 89D in Pojoaque. There will be a new four-lane highway, two new interchanges and a frontage road system providing access to all adjacent businesses and residences.

About 40,000 cars a day travel U.S. 84-285, known informally as the Pojoaque Corridor, according to Mary Ann Hatchitt of Proof Positive, an Albuquerque company that provides public information services for the state road agency.

The Laboratory has flexible work hours in place for its work force. The Commuter's Corner of the online Daily Newsbulletin publishes van and car pool and ride share information. The Commuter's Corner can be found at *http://www.lanl.gov/orgs/pa/newsbulletin/rideshare.shtml* online.

The State Highway and Transportation Department has established a project office at 810 West San Mateo, Suite 200A, in Santa Fe. Information on the project will be available at this office. A World Wide Web page also has been created on the reconstruction project. It can be found at *http://www.us84-285.com/index.shtml* online.

For more information, call 690-8105 or write to *Nmroads@aol.com* by electronic mail.

Lab events range from creative to tried-and-true

Raising money for United Way

Divisions and groups from across the Laboratory are planning activities to raise money for this year's United Way campaign, which began Sept. 23 with the theme "Strong Homefront ... Stronger Nation!"

As in years past, a number of frito-pie and bake sales will be held, interspersed with some more unusual contests.

The Nonproliferation and International Security Division (NIS) will sponsor one of several silent auctions in which successful bidders can take home artwork and jewelry made by co-workers.

"Last year, no item went unbid for," said Mary Dugan of the Center for Space Science and Exploration (NIS-CSSE). "And our craft fair had original paintings, framed photos, jewelry and tooled leather."

NIS also is sponsoring a horseshoe tournament, open to all personnel across the Laboratory, through Oct. 31. The division has set up a horseshoe pit behind the Space and Atmospheric Sciences (NIS-1) Group Office at Technical Area 3 (behind the Physics Building Auditorium). Two contestants at a time pitch four horseshoes per round until one of the competitors reaches 20 points.

For more information about the horseshoe tournament, the silent auction or other NIS activities to benefit the United Way, contact Dugan at 7-0047 or write to *mdugan@lanl.gov* by electronic mail or Eloisa Michel, also of NIS-1, at 7-2701 or *emichel@lanl.gov* by electronic mail.

The Human Resources (HR) Division has organized a "name that baby" contest. Baby pictures of a half-dozen division managers went on display in a glass cabinet on the wall near Room P280 in the Otowi Building at TA-3. Contestants can guess which baby is now an HR manager and are automatically entered into a raffle. The drawing is scheduled for Oct. 16.

"Although there is no cost to participate, we do hope that everyone will try to make a contribution when they turn in their form," said Tami Enos of HR. For more information, contact Enos at 7-7425 or write to *tami@lanl.gov* by electronic mail.

Accounting (BUS-1) is sponsoring a build-a-burrito fundraiser for United Way on Oct. 23. For $5 each, 60 to 70 group employees will be able to make their own lunch from donated tortillas, beef, beans, cheese and vegetables. The benefit will take place in the TRK/BUS-1 conference room from 11:30 a.m. until the food runs out. For more information, contact Sarah Wright Hoffman at 7-3292 or write to *shoffman@lanl.gov* by electronic mail.

As of last Friday, more than $193,000 has been raised in pledges and donations. The Lab's United Way campaign is scheduled to end Nov. 8.

2001 Distinguished Performance Awards

continued from Page 1

Leisa Davenhall, C-ACT

For the Laboratory's Pit Manufacturing mission, all process materials must be evaluated for compatibility before being approved for use. Process materials are materials that come into contact with plutonium during the manufacturing process without becoming part of the final product. Examples are machining lubricants, gases, o-rings and solvents. Incompatibility can cause long-term damage to the finished pits.

To approve and control these materials, Los Alamos formed the War Reserve Materials Compatibility Board. Leisa Davenhall of Applied Chemical Technology (C-ACT) quickly assumed a leadership role as the board worked to pick up where Rocky Flats, the original home of pit manufacturing, left off. Davenhall's skill at researching the materials, obtaining analyses, locating Rocky Flats reports and transforming everything into usable data soon earned her the chairmanship of the board. Largely because of her efforts, the board was established as a formalized body, fully funded for fiscal year 2002, and is ahead of schedule in compiling a comprehensive approved-materials list.

Davenhall's success on the board added acclaim to a year in which she also won a 2001 R&D 100 Award, her second.

Michael Fitzsimmons, LANSCE-12

Michael Fitzsimmons single-handedly designed and built a polarized neutron reflectometer/diffractometer called ASTERIX at the Manuel Lujan Jr. Neutron Scattering Center. ASTERIX incorporates novel neutron optical concepts to polarize a large, pulsed neutron beam, something the neutron-scattering community had considered difficult to accomplish.

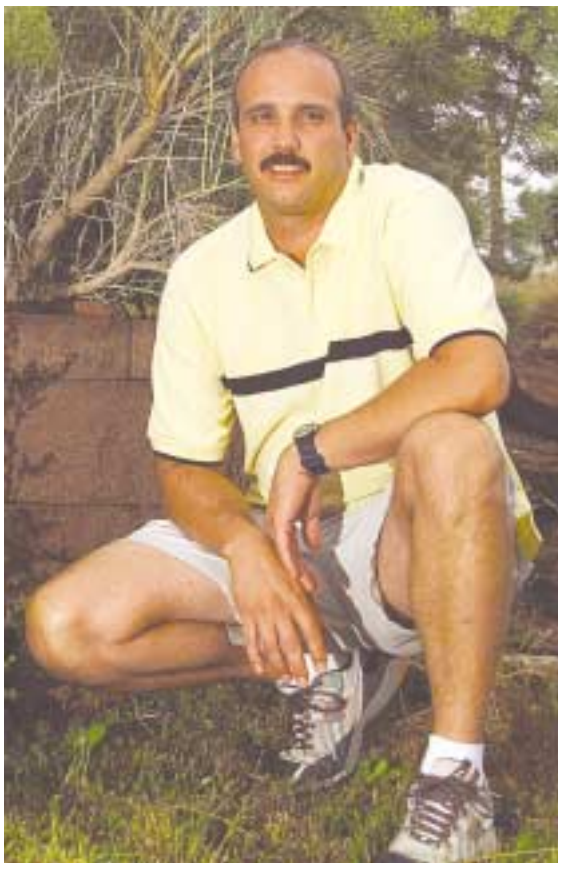
Fitzsimmons built ASTERIX from the ground up, using surplus equipment from the Laboratory and other facilities. He developed partnerships abroad to help in developing and testing components. Because he had to base his instrument on whatever equipment he could find, Fitzsimmons performed much of the work with minimal assistance, in addition to pursuing his regular duties at the Lujan Center.

ASTERIX will support studies of the magnetism of thin films and magnetic nanostructures. It already has produced interesting results related to the magnetic structure of new spintronics devices. This very unique spectrometer will help attract top researchers and young scientific talent to Los Alamos. It also opens new avenues of research in polarized neutron scattering for the Spallation Neutron Source, currently under construction at Oak Ridge National Laboratory.

Gloria Johnson, C-ADI

Gloria Johnson, group office administrator of Advanced Diagnostics and Instrumentation (C-ADI), is an island of stability in what her colleagues call "a three-ring circus." She supports a group whose members work on multidisciplinary projects in five technical areas. In addition to handling office paperwork, personnel matters and travel arrangements, she is part of group leadership, offering advice and contributing substantially to management meetings and decision-making.

Gloria Johnson, C-ADI



Paul Moniz, NMT-9

Susan Voss, NIS-8

2001 Distinguished Performance Awards

Johnson's job increased in complexity during 2001. When a major project's unexpected cancellation necessitated the search for new funding, Johnson edited and ensured the completeness of a large number of proposals, along with her other duties. She also coordinated the effort to get a group team to the 2002 Winter Olympics, where team members used Laboratory technology to certify bobsleds. Most important, Johnson dealt seamlessly with the prolonged absence of the C-ADI group leader and with the absence of the acting group leaders, who were frequently on travel.

Johnson deftly handled all of 2001's special challenges while remaining as organized, efficient, professional and pleasant as ever.

Paul Moniz, NMT-9

Paul Moniz provides exceptional support to Plutonium-238 Science and Engineering (NMT-9). NMT-9 fabricates heat sources with plutonium-238 for space and terrestrial missions. Only Los Alamos performs this nationally significant work.

As part of this work, NMT-9 is installing a glovebox process line that uses aqueous-based chemical recovery techniques to refine scrap plutonium-238. It is committed to having this line fully functional by the end of fiscal year 2002. As point of contact, Moniz led the effort to get the Aqueous Scrap Recovery project on track. He quickly learned the intended application of the glovebox line and redesigned several major components to correct serious deficiencies. Working overtime to become knowledgeable about all facets of the installation, he provided expert assistance whenever needed. He pushed piles of paperwork through the complex work-release system and ensured that all work was performed safely.

With his commitment to excellence and teamwork and his depth of technical understanding, Moniz is one of the critical forces bringing this vital process line into operation on schedule.

Susan Voss, NIS-8

Susan Voss of The Nonproliferation and International Technology (NIS-8) has contributed greatly to the analyst and policy communities involved with national security. She has developed an information tool for analysts known as Sentry that the Defense Intelligence Agency currently uses as its principal system to assist in assessing foreign nuclear infrastructures and threats related to weapons of mass destruction. The Sentry architecture has also been modified for an emergency-response tool called SNIPER.

After Sept. 11, 2001, Voss was instrumental in redirecting Sentry to track and analyze terrorist threats. On Sept. 13, 2001, she organized a Threat Reduction Directorate operations room, the "War Room," as the Laboratory's nerve center to follow terrorist activity. Within one day, numerous Washington intelligence organizations were making use of the War Room. Locally, Voss and her colleagues worked with the Laboratory's Emergency Response Team to provide threat assessment briefings that resulted in now-permanent upgrades of Laboratory security.

Voss is currently developing a data-mining tool that will be used to integrate knowledge from large data sets to better predict and assess terrorist threats.

continued on Page 4

2001 Distinguished Performance Awards

continued from Page 3

Susan Whittington, T-DO

The first Material Science Workshop for National Nuclear Security Agency and the French Comissariat à l'Energie Atomique (CEA) went off without a hitch. The Theoretical (T) Division's Susan Whittington coordinated the workshop, which was held in Los Alamos in February 2002 as part of an international agreement between CEA and NNSA (Los Alamos, Livermore and Sandia national laboratories).

Originally planned for November 2001, the workshop was postponed because of the Sept. 11, 2001, events and required extensive rescheduling. Whittington handled countless logistic details of organization and hospitality. Foreign visitors especially appreciated her assistance with their arrangements. She addressed financial aspects and coordinated interactions between the visitors and Laboratory scientists.

Because she handled all the necessary paperwork, monitored attendance and saw that all participants were informed of their security responsibilities, no security infractions occurred during the workshop. Whittington even designed and assembled a workshop agenda booklet and arranged an evening banquet.

Whittington's organizational skills, professionalism and efficiency were responsible for the success of the workshop and achieved a public relations triumph for the Laboratory.

Susan Whittington, T-DO

Graphical Input Aggregate Control Project Team includes the following members: Dennis Brockway, James Dearing, Michael Koscienlniak and Lynn D. Maas of D-5; and Theodore Reed of D-DOD

Small teams

Graphical Input Aggregate Control Project Team

This team's Graphical Input Aggregate Control is a large-scale software system for military training simulations. It is used in every U.S. military simulation center and in NATO centers because it allows users to integrate worldwide simulation-based exercises; visualize air, land and sea data on a common user interface; and employ a single input device for both command and control of simulation objects. GIAC can handle the distribution, interaction and visualization of more than 50,000 displayable simulation objects

The U.S. Air Force has used GIAC to test tactics and operational concepts to move the military to a new post–Cold War warfare strategy. During 2001, it was used to help plan the Kosovo air campaign. After the 9/11 attacks, the GIAC Team provided the North American Aerospace Defense Command (NORAD) with a way to track hijacked commercial planes and to integrate NORAD data with data from the Federal Aviation Administration. GIAC also played a key role in Millennium Challenge '02, the military's largest simulated live exercise ever.

Gigabyte System Network Analyzer Design Team includes the following members: Thomas Boorman, Gene Dornhoff, Andrew Dubois, David Dubois and Fredie Marshall of CCN-5; and Laura Lang of CCN-12

2001 Distinguished Performance Awards

Gigabyte System Network Analyzer Design Team

The gigabyte system network is a next-generation, high-end network interconnect for supercomputers, an outgrowth of the high-performance parallel interface (HIPPI). Both HIPPI and GSN were developed at Los Alamos and further refined by an American National Standards Institute committee. While HIPPI ran at 800 million bits (megabits) per second, GSN runs at 6.4 billion bits (gigabits) per second.

GSN addresses the needs of today's higher-speed networks like the Laboratory's ASCI Blue Mountain system, but successful deployment at the Laboratory required a GSN data analyzer, a challenging project because of the very high data rates involved. This team accepted the challenge and developed the analyzer hardware and software and the working prototype units.

The analyzer was successfully demonstrated at the Supercomputing and High-Performance Networking Conference (SC'01) in November 2001. Thanks to this team's efforts, GSN is now being deployed on ASCI Blue Mountain and will extend the usefulness of this computer by improving its overall performance.

Headspace Gas Instrumentation Development Team

The Department of Energy must safely dispose of transuranic waste, which began accumulating in the 1940s with nuclear weapons manufacture. Much of the huge disposition cost is associated with characterizing the waste for hazardous volatile organic compounds and hydrogen and methane, a complicated task.

The Headspace Gas Instrumentation Development Team from Applied Chemical Technology (C-ACT) played an important part in reducing the cost. Following a rigorous schedule, the team designed and fabricated a mobile instrument that automates the characterization process and virtually eliminates errors. Previously laborious and lengthy, this task is now one of the fastest, reduced from two weeks to one day. The technology paves the way for accelerated cleanup and is rapidly becoming the national standard for transuranic waste HSG characterization.

Team members showed ingenious application of technology and automation while focusing on regulatory requirements. Their accomplishment continues to impress those acquainted with HSG analysis.

continued on Page 5

2001 Distinguished Performance Awards

continued from Page 4

Lujan Center Mechanical Team

The Manuel Lujan Jr. Neutron Scattering Center Mechanical Team is responsible for the center's operation and maintenance and has helped make it a Laboratory flagship facility.

When several contamination accidents caused a 2-year shutdown, the team participated actively in the months-long cleanup and afterward worked heroically to restart the center. The team provided an extraordinary level of support during the construction and commissioning of new spectrometers and handled operation and maintenance of the existing instruments with extremely limited resources.

Applying a combination of talent, hard work, dedication and professional workmanship, the team raised the center's level of operation to the most exacting professional standards. With customary equanimity, the team always deals successfully with a broad range of safety issues, demands for technical expertise and customer requests. A satisfied user writes, "The outstanding quality of the services offered goes well beyond anything I have ever seen at other facilities, both in England and in the United States."

Headspace Gas Instrumentation Development Team includes the following members: Chris Leibman, David Martinez, Gus Roybal, Jeff Wheat and Mark Willette of C-ACT

Lujan Center Mechanical Team includes the following members: Melvin Borrego, Jonathan Ferris, Michael Geelan, Tim Medina, Ross Sanchez and Thomas Sisneros of LANSCE-12

Protein Crystallography Station Team

The Laboratory's Protein Crystallography Station (PCS), the only facility of its kind, enables the use of neutron diffraction for studying the 3-D structure of proteins. Studying proteins is essential to understanding cellular processes, and neutron diffraction will provide information inaccessible by other methods.

For most proteins, neutron diffraction is the only technique for locating hydrogen and water molecules at atomic resolution. Hydrogen atoms are at the heart of many enzyme catalytic processes, and water molecules often play important roles. Research in structural biology performed on the PCS will provide detailed information about newly discovered enzymes.

The members of the Protein Crystallography Station Team, who designed and built the instrument, have brought distinction to the Laboratory, establishing a major new capability for cutting-edge research. The team's achievement elicited this remark from a professor of biochemistry and biophysics: "This is an awesome undertaking that has been addressed in the finest terms."

Protein Crystallography Station Team includes the following members: Gayle Greene, Paul A. Langan and Benno Scheonborn of B-2

Safe Affordable Fission Engine Team

The Safe Affordable Fission Engine (SAFE) Team's story began eight years ago with a desire to rekindle national interest in space fission reactors as power sources for outer-solar-system exploration. On unpaid time the early team developed the concept of

continued on Page 6

Safe Affordable Fission Engine Team includes the following members: Ray Guffee of ESA-DE; Robert Reid of ESA-AET; and Michael Houts, Richard Kapernick and David Poston of D-10.

2001 Distinguished Performance Awards

continued from Page 5

a heatpipe-cooled reactor using existing technologies. On the basis of this concept's success, the team eventually obtained from NASA modest funding for two experimental modules.

The team grew and completed a major hardware demonstration and several innovative engineering designs that provided the foundation for a $1.5 billion NASA nuclear power and propulsion program. The cornerstone of this success was the SAFE-30 program, a safe, affordable technology that requires no full-power, ground nuclear tests and that reduces the hurdles of launching and operating a reactor in space.

Other major achievements involved the designs of several other advanced space reactor concepts, including the SAFE-400 and the HOMER-15, to be used by NASA and the Jet Propulsion Laboratory for far-planet exploration and Mars surface missions.

Team members are David I. Poston, Michael G. Houts and Richard J. Kapernick of D-10; Ray M. Guffee of ESA-DE; and Robert S. Reid of ESA-AET.

Secure RAVE Project Team

The Reconfigurable Advanced Visualization Environment (RAVE) brings together the Laboratory's supercomputing capabilities, allowing unprecedented insight into ultra-complex predictive models and simulations. It is a large-scale, virtual-reality device and an immersive, interactive facility for displaying large 3-D data sets in real time. One can virtually stand inside an exploding nuclear weapon or the formation of an astrophysical jet and observe it evolving in time. RAVE is the only large-scale visualization facility at Los Alamos with the capacity to operate in both open and secure environments.

The Secure RAVE Project Team provided the support that enabled RAVE operations to swing quickly between open and secure modes. The team members represent a wide range of disciplines required for this first-of-a-kind work. They built up the RAVE visualization software capability, worked on the system hardware, developed security plans and helped obtain final accreditation. All their efforts required hard work, teamwork and persistence far beyond normal expectations.

Large teams

Biological Aerosol Sentry and Information System Deployment Team

The Biological Aerosol Sentry and Information System (BASIS) is a National Nuclear Security Administration/Department of Energy chemical and biological national security program that Los Alamos and Lawrence Livermore national laboratories execute jointly. It is a network of sampling units that collect, store and time-register aerosol samples, which are then taken to a field laboratory to be analyzed for harmful biological agents.

Originally planned for deployment at the 2002 Winter Olympics, BASIS was urgently needed after the Sept. 11, 2001, attacks. The BASIS Deployment Team made the transition from prototype to operational system in time for an urban deployment in October 2001. Team members spent weeks away from their families and accepted the possibility of exposure to dangerous biological agents to apply this technology in the national defense.

Secure RAVE Team includes the following members: Lee Dalton of CCN-18; Robert Greene, Dave Modl and Laura Monroe CCN-8; Georgia Pedicini, CCN-7; and Charles Wilder Jr., CCN-5

After the immediate post-9/11 emergency, the Los Alamos team rebuilt another BASIS and had it ready for the January opening of the Olympics in Salt Lake City, Utah, where they operated it for six weeks while still supporting the nationally deployed system.

The BASIS Deployment Team provided sustained, professional dedication when this country had a critical need for it.

Electric Dipole Moment Collaboration Team includes the following members: Michelle Espy of P-21; Steve Lamoreaux, William Buttler and Seppo Penttila of P-23; Peter Barnes, Deborah Clark, Martin Cooper, Larry Marek and Jen-Chieh Peng of P-25; and Geoffrey Greene of LANSCE-DO

Electric Dipole Moment Collaboration Team

This team from Physics and the Los Alamos Neutron Science Center divisions combined ideas from atomic, nuclear, low-temperature and condensed-matter physics to develop a new technique for studying diffusion in quantum fluids. They used a neutron beam to measure the spatial distribution of a dilute mixture of helium-3 in a cryogenic fluid—superfluid helium-4. With the LANSCE neutron beam illuminating the fluid, the team measured the diffusion coefficient of helium-3 at lower temperatures than ever before. The team's accomplishments will have a significant impact on the work being done with cryogenic mixtures of helium isotopes.

The experiment, carried out over a non-stop, two-week run of the LANSCE beam, was primarily aimed at providing the scientific basis for an experiment to determine the electric dipole moment (EDM) of the neutron. The neutron's EDM has been pursued experimentally for 50 years; it is an extremely sensitive test of the fundamental symmetries of nature. A significantly more sensitive EDM measurement will have broad implications and applications in a number of scientific fields.

continued on Page 7

Biological Aerosol Sentry and Information System Deployment Team includes the following members: Don Dale of C-ACS; J. Wiley Davidson, Norman Hamer, Stephen Judd, Stephen Mortenson, Kristin Omberg, Patricia Nickel, Gary Salzman, Phillip Stroud, Thomas Wehner, Doug Weiss and Robert Wells of D-3; Ramond "Matt" Thompson of ESA-WE; Donald Mikkelson of ESH-1; Patrick Girault of ESH-10; Ray Jermance of NIS-DO; Jerome Romero of NIS-3; Nicholas Olivas and Ralph Stiglich of NIS-4

2001 Distinguished Performance Awards

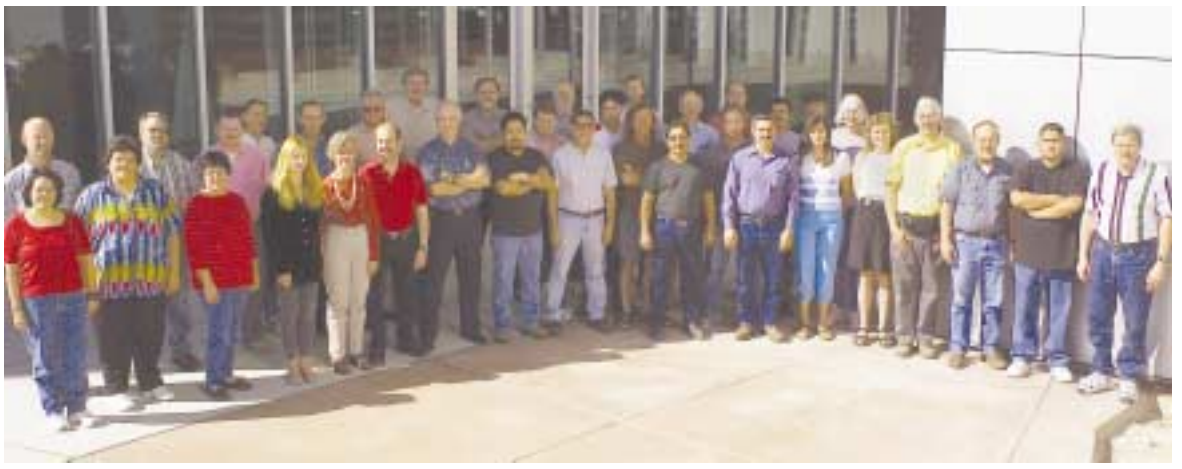
continued from Page 6

Combined X-Ray/ Dosimeter Team

During the Cold War, the satellite-based U.S. Nuclear Detonation Detection System monitored the atmosphere for signals from the detonation of high-performance weapons. It must now focus on weapons of lesser sophistication with extremely weak signals. This team conceived, designed, developed and in 2001 launched an advanced remote-sensing instrument that addresses this post-Cold War need.

The team's new sensor is the culmination of seven years of work. It combines two previously separate instruments — an X-ray spectrometer and a background dosimeter — to monitor a broader range of nuclear events and discriminate the signals of a nuclear detonation from the charged particles of its orbiting environment. The cramped accommodations of its host, a Global Positioning System satellite, imposed power, weight and volume constraints, but the team achieved extraordinary electronic integration to pack dual functionality into the finished product.

The team has received accolades from the NNSA, the Air Force Technical Applications Center and the Air Force Space Command headquarters for its 2001 accomplishments. The Laboratory is committed to eventually delivering 21 or more of these instruments.



Combined X-ray/Dosimeter Team includes the following members: Robin Gurule, Carol Haynes, S. Kathleen Kelly and Corine Romero of BUS-2; Jose Trujillo Jr. of ESA-AET; Jose Serna of MST-NHMFL; Roger Byrd of NIS-1; Thomas Cary, Donald Casperson, Thomas Cayton, James Distel, Edward Fenimore, Alan Gibbs, John Ingraham, Gina Lujan, Connie Romero, William Scarborough, Michel Tuszewski and John Valencia of NIS-2; Robert Dingler, Patrick Majerus and Evan Noveroske of NIS-3; Dolores Archuleta, Fabian Atencio, Nancy Baca, Alfred Beldring, Maureen Cafferty, Mabel Cata, Becky Cordova, Donald Enemark, Timothy Garbett, Benny Garcia, Theodore Garcia, Celestino Gonzales, Irma Gonzales, Virginia Herrera, Anthony Hinchey, Julian Martinez, Billy Medina, Ignacio Medina, Leland Morrison, Gary Richardson, Amelia Roybal, Kathleen Roybal, Carlos Salazar, Marquita Sena, James Sheldon, Gary Smith, Paul Snow, Kenneth Spencer, Ralph Stiglich, Robert Whitaker and Lavern Wiig of NIS-4; and Roger Bartlett of P-22

Genetic Imagery Exploitation Team

The Genetic Imagery Exploitation (GENIE) Team has created a remarkable tool that rapidly and intuitively develops algorithms for identifying features of interest in many types of imagery. GENIE can evolve an ideal algorithm for a specific image based on input and then, applying what it has learned, quickly tailor other algorithms to find the same feature in other images. It has many applications, such as detecting and identifying vehicles, buildings, land use, environmental damage, mining, cloud cover, craters on Mars, cancerous cells and DNA.

GENIE-assisted analysis was used on Sept. 13, 2001, to quickly and accurately identify, quantify and delineate hotspots, the smoke plume and the ash debris field created from the World Trade Center attack. The GENIE Team has supported installations of this software in several U.S. government facilities. In addition, by applying GENIE to biochemical data, the team enhanced development of hyperspectral biochemical imaging toward solving important problems in biothreat reduction, disease detection and identification and fundamental bioscience.

GENIE reflects exceptional intellectual accomplishment, careful attention to the intended users' needs and the true collaborative spirit of the team.

Genetic Imagery Exploitation Team includes the following members: Jeffrey Bloch, Steven Brumby, Nancy David, Mark Galassi, Neal Harvey, Simon Perkins, James Theiler, Cody Young and Cathy Plesko of NIS-2; Reid Porter, Diana Esch-Mosher and Curt Novak of NIS-3; and John Szymanski of NIS-RD

Octave Project Team

In just over 13 months, the Octave Project Team did what a prior assessment predicted would take five to seven years of work — it planned, prepared and conducted a complex nuclear experiment of crucial importance to the Stockpile Stewardship Progam.

The team did the most comprehensive review ever done of previously compiled data in a critical area of weapon performance, and that review was then used to plan a series of tests that are relevant, realistic and conservative with respect to stockpile conditions.

The team worked with several different nuclear materials at a number of facilities

continued on Page 8

Octave Project Team includes the following members: Lesley Lacy and Alvin Valdez of BUS-4; David Harradine of C-PCS; Art Guthrie of ESA-DE; Brett Kniss of ESA-DO; Dale Anaya of ESA-AET; Hong Bach, Byron Denny, Dolores Garcia, Roland Gille, Suzanne Kitten and Erica Larson, Ruby Molinar, Louise O'Brien, Jane Poths, Greg Rand, Scott Richmond, Ward Rupprecht, Victor Salazar, Carol Sutcliffe, Julie Thompson, Dale Tuggle, Diana West and Gail Zimmerman of ESA-TSE; Ron Barber and Tony Cimabue of ESA-DE; Burt Davis and Brad Meyer of ESA-GTS; Alex Guererro, Gerard Martinez and Ed Rodriquez of ESA-WR; Cheryl Faust and Rick Larson of ESA-WSE, test consultants; George Carlson of ESA-WSE/CON, test consultant; Valerie Chavez, Sarah Hoover, Dennis Duran, Vince Griego, Louis Jaramillo, Dominic Pompeo, Billy Terrazas, Kenneth Vigil and Lucretia Williams of HSR; Joe Martz of MST-DO; John Balog, Robert Hanrahan and Ralph Trujillo of MST-6; Keith Lacy, Doris Harvey and Joel Vargas of NMT-4; Ted Cousins, Doug Kautz and Jeff Kinser of NMT-5; Art Blair of NMT-8; Dave Horrell of NMT-10, test consultant; Chuck Grigsby, John Morris and Dane Spearing of NMT-11; Wendel Brown, Daniel Martinez and Darryl Vigil of NMT-15; Bobby Gonzales, Adrian Padilla, Bob Putnam and Joe Reynolds of NMT-16; Bonnie Koch of PS-OAB; Lloyd Foster, Richard Harford and Terry Hogan of PTLA; Ralph Garcia and David Telles of S-1; Patrice Stevens of AD-WEM; and Harold Agnew, Dick Alire and Jack Newmeyer, test consultants

2001 Distinguished Performance Awards

continued from Page 7

previously unapproved for handling and experimentation in the proposed test configuration, so safety and security were of particular concern. But the team obtained the necessary NNSA approvals and successfully passed all audits and formal technical reviews.

Results of the Octave Project Team's work have been briefed at the highest levels of NNSA management and have brought widespread acclaim to the Laboratory.

Yucca Mountain Program Team, Los Alamos

The need for safe long-term storage of spent nuclear fuel and high-level radioactive waste is a critical national environmental problem. The 1982 Nuclear Waste Policy Act directed the Department of Energy to find and characterize a geologic site where a repository for such wastes could be built. On February 14, 2002, the Secretary of Energy was able to recommend that site — Yucca Mountain, Nevada — for development, and President W. George Bush in turn recommended it to Congress the following day.

The sound scientific work of the Yucca Mountain Program Team, an interdisciplinary collaboration of technical and support staff from several Laboratory divisions, made those recommendations possible.

Research at Yucca Mountain is aimed at predicting how well the site's geological barriers, combined with the finished facility's engineered barriers, will protect the environment from the spread of radionuclides over 10,000 years. The Los Alamos team has played a key leadership role in that research.

In addition, team members in the Test Coordination Office have coordinated the entire program and orchestrated all testing activities, taking responsibility for test logistics, test-implementation planning, technician support, electronic data acquisition and safety.

Yucca Mountain Program Team, Nevada

At the Yucca Mountain Exploratory Studies facility and Busted Butte Underground Laboratory, team members have led and conducted complex field tests to evaluate the suitability of Yucca Mountain as the location for a high-level radioactive waste repository.

Technical evaluation of the site has been one of the great challenges in the history of science. It has meant nothing less than analyzing and predicting the performance of a complex natural system for the next 10,000 years. Team members have studied the area's geology, hydrology, biology and climate and in doing so have combined laboratory tests, large-scale field experiments and numerical simulations to prepare a comprehensive characterization of the site. They have also carefully assessed the probability and consequences of volcanism in the area.

This outstanding scientific effort and its documentation in an extensive series of reports provided the technical basis for President Bush's recommendation that Congress approve the site for development. All members of the team, in Los Alamos and at the Nevada site, excelled in every aspect of the program. Their superb efforts and the defensible documentation they produced will allow DOE to seek a license for the repository.

Photos by Presley Salaz of Imaging Services (IM-4)

Text by Faith Harp and Eileen Patterson of Communication Arts and Services (IM-1)

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