



Blanca Peaks

by Kathy DeLucas

The Laboratory's Blanca Project has achieved a major milestone for the Accelerated Strategic Computing Initiative Program, completing its computer simulation of a nuclear detonation safety test ahead of deadline.

Blanca ran two calculations on the ASCI Blue Mountain computer system. It simulated a hydrodynamics experiment previously conducted at the PHERMEX radiographic facility and a one-point safety test that was actually done in 1990 at the test site.

Blanca calculations were nearly 10 times larger than previous safety calculations run on older computer systems.

"The Blanca Project Team deserves tremendous credit for dedicated efforts under extreme circumstances," Project Leader Forrest Brown said.

"It completed the milestone on schedule despite uncertainty and stress caused by the Cerro Grande Fire in which two members of the team lost their homes. Challenges for the team continued during the missing hard drive incident and subsequent security stand-down."

The two calculations used a detailed, 3-D model with 115 million cells. The first calculation, a simulation of the hydrodynamics experiment, required 47 CPU-years of computation and was completed in 206 hours using 2,016 processors on Blue Mountain. The calculated data compared very well with the previously measured experimental results.

The second calculation, a simulation of an Nevada Test Site event, required 32 CPU-years of computation and was completed in 180 hours. The results compared well with measured experimental results.

The second simulation used a windowing technique, where the number of processors was varied according to the extent of the active portion of the computational mesh, growing from an initial 126 processors to 2,016 processors at the end of the problem. This technique reduced the overall calculation time by a factor of two to three, which contributed to Blanca's early

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Emerging opportunities — emerging threats



A guest editorial by Don Cobb, associate Laboratory director for Threat Reduction

During the 1990s, the pace of globalization increased dramatically, perhaps not just coincidentally in line with Moore's law, (which holds that the data density on integrated circuits doubles about every 18 months). The global economy with virtually boundary-free information technology has enabled improved living standards and stunning extensions of democracy across the globe. At the same time, globalization spawned new and growing transnational threats, including proliferation, terrorism and potentially widespread environmental or societal disasters.

Meanwhile, the nation-state continues to be the fundamental unit of international relationships.

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Director's Q&A



The following question is from the online "Ask the Director" located at <http://www.lanl.gov/worldview/news/director/ask-director.html>.

Photo ID cards

Q: Can we return to making photo ID cards for employees? Almost all hotels will give government rates to government employees even though the employee states that he or she is not on government business. However,

the hotel staff does want proof that an individual is a government employee. I realize the Lab cannot give us the advantages that private companies give their employees, but the ID card is possible, and I assume that it is relatively inexpensive to produce.

A: There is no longer a clear need for the photo ID cards we used to issue. And, in fact, no DOE site provides them anymore. This is primarily because it is now permissible to use your standard security badge as

identification to obtain hotel and airline discounts. For more information, see the Badge Office Web site at <http://www.lanl.gov/orgs/s/badge/documents/MM1056.pdf> and <http://www.lanl.gov/orgs/s/s6/Fact%20Sheet1.html>.

Emerging opportunities ...

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One need only think of the India and Pakistan nuclear tests in 1998 to be reminded that nations will act in their own perceived self interests, even at the expense of favorable international political and economic advantages. [To those interested in learning more about "globalization" vs. the "nation-state," I recommend "The Global Security Environment for Threat Reduction" by Maaranen, et.al.; LAUR-00-5718 (12/00).]

The United States with its unmatched political, military and economic strength is at the nexus between globalization and traditional national self-interest. In the future, America will continue to share disproportionately in emerging opportunities and threats, while science and technology will continue to be the key enablers to increase the former and reduce the latter.

For this reason, the role of Los Alamos and its sister laboratories as centers of innovation is likely to increase in the future. The following are but a few examples as seen from today's perspective. The list surely will grow and change in the coming years. The connections to academia, industry and government should be evident.

- **Revolution in military affairs** — The U.S. military of the future will employ rapidly deployable forces and advanced precision strike weapons enabled by instantaneous information or situation awareness. In partnership with the Department of Defense and industry, the Lab can make major scientific and engineering contributions in the development of these future systems.

- **Homeland defense** — Experts predict that our vulnerability to transnational or state-sponsored terrorism will increase, especially to biological threats. We, in partnership with others, can help transform public-health surveillance while at the same time helping prepare for a bioattack against the United States.

- **Proliferation** — Advances in sensors and information technology are improving monitoring of proliferation and overcoming sophisticated denial and deception practices.

- **Critical infrastructure, including cyber** — Advances in modeling and simulation and high-performance computing reveal mutual vulnerabilities inherent in our critical infrastructure, and thus inspire ways to make it more robust.

- **Energy** — The need for improved energy sources, including nuclear, can only increase in the future. We also must reduce potential threats of global warming or nuclear proliferation.

Benefits Buzz

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LANL

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Please recycle

Plant committee takes root

by Judy Goldie

In an office filled with flora and a table “nursery” of budding possibilities, Becky Cortesy, a member of the Otowi Plant Committee, recounts the joys and trials of indoor gardening. Necessity may be the mother of invention, but it also is the catalyst for intervention. Otowi Building Manager Jim Dalton put out a call for volunteers in the fall of 1999 to see if something could be done to improve the state of the plants in the building. Several folks, from the Business Operations (BUS) and Human Resources (HR) divisions, volunteered, and the Otowi Plant Committee took root.

The goal of the committee revolves around quality of work life, beautification of the workspace and enhancing relationships beyond the committee. “Healthy plants in the Otowi Building provide a favorable impression to those visiting and working there,” said Cortesy of Staffing (HR-5).

The committee of volunteers first had to replace some of the soil. “You can’t have healthy, thriving plants without the basics,” said Cortesy. The volunteers then fertilized existing plants and added new ones. The Facility and Waste Operation (FWO) Division provides the support for the “raw” materials and committee members also bring in cuttings and the labor of love.

Though it doesn’t take a green thumb to qualify for membership, it does help that the committee has several members with expertise and success with plants to instruct other volunteers. “Good reference materials are important, too,” added Cortesy. Two the committee relies upon are the “Encyclopedia of Indoors Plants” and “The New House Plant Expert.”

The growing committee, which includes 12 members from four divisions, has planted and tended peace lilies (*Spathiphyllum Wallisli*) geraniums (*Pelargonium Red Elite*), pothos (*Scindapsus Aureus*), arrowhead (*Syngonium Podophyllum*) and other varieties. All are chosen for their adaptability to the indoor climate and ability to thrive without a lot of looking after.

But that is not to imply that the plants lack attention: They get their leaves clipped, wiped and dusted and, yes,

get spoken to on occasion. And because there are no nearby faucets, all watering is done by old-fashioned watering can. The members can be seen tending their “gardens” of more than 100 plants. Often people will stop to ask about the plants and for horticultural advice. The committee added small signs in each planter that tells a little about the plant and, much like the local zoo, asks that folks not “feed or water” them.

The volunteers meet on a monthly basis to develop plans to improve green areas within the building. The goals for the committee were to plant poinsettias, which



Otowi Plant Committee members Becky Cortesy, left, and Carol Hogsett, both of Staffing (HR-), tend to one of the Otowi Building’s common-area planters. In the new year, committee members hope a “water trolley” will help make watering more efficient.

Photo by LeRoy N. Sanchez

they were able to do; Easter lilies in March and April; and some perennials and annuals in outdoor planters for spring.

One unanticipated benefit was the interaction of the various committee members and the relationship building that arose among people who normally would not be working together. “It builds a real sense of community that helps when their workday paths do intertwine,” said Cortesy.

The committee does accept donations of healthy plants. If you’d like to contribute, you can contact the Otowi Plant Committee at otowiplants@lanl.gov. More information about the committee is available online at http://arania.lanl.gov:8080/fpub/otowi/pdf/2otowi_plant_committee.pdf.

SEAC tackles tough issues

by John A. Webster

Have you wondered if any forum exists at the Lab through which ideas for improving the quality of science and engineering can be voiced? Certainly one, the Science and Engineering Advisory Council, can do just that. SEAC has advised upper management on issues of importance primarily to technical staff members but also to all employees.

Bob Margevicius joined SEAC in January 1999 because he was concerned about several issues affecting TSMs and wanted to help address them.

"One has an opportunity to improve the work environment on several fronts," he says. "We believe to effect changes, management must be engaged, and participation in SEAC is one of the best ways to do that."

Margevicius, team leader for actinide ceramics in Pit Disassembly and Nuclear Fuels Technology (NMT-15), chaired SEAC during 2000, a year during which the organization tackled such issues as travel, change of station procedures, recruiting and retention, and "internal sabbaticals" — a vehicle by which employees can work temporarily in other Lab organizations. In the recent past, SEAC also developed questions for inclusion in the check-point survey, provided input into various security issues and examined the change to the 9/80 work schedule for employees.

"We feel we have been able to influence a number of decisions at the Lab," Margevicius said. "We understand that the concerns of the TSMs are seriously considered by Lab management."

A recent initiative has involved the restrictions on travel, he said. Early last year, SEAC gathered specific, quantitative information on

how they affected every aspect of productivity at the Lab, from recruiting to participation at conferences to engaging in programmatic meetings. The information supplied by SEAC served as part of the basis by which Lab management could inform Congress and the Department of Energy about the serious consequences of the travel restrictions. In late October, legislation was signed that increased the

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National Bioenergy Center established

The Department of Energy has established the National Bioenergy Center to help the nation meet energy needs, manage its environmental challenges and strengthen opportunities in rural America. The center, funded from existing department dollars, will be based at the National Renewable Energy Laboratory in Golden, Colo. It will be the focal point for technology development and information about bioenergy in the state-of-the-art laboratory facilities at several federal agencies.

American Indian policy revised

DOE recently revised its American Indian policy. The policy provides for enhanced consultation with tribes before taking action that would affect tribal interests; assures compliance with laws and executive orders to better protect tribal resources; pledges the department to take actions that uphold treaty rights of tribes; and recognizes the need for direct funding from DOE for tribal initiatives.

Detecting buried land mines

The Pacific Northwest National Laboratory is developing a low-cost, quick assessment, easy-to-use technology system that can quickly and easily detect buried land mines. The Timed Neutron Detector system is portable and can scan a 100-square-foot area. The United Nations' Land Mine Database estimates that there are 110 million land mines hidden in nearly 70 countries.

SEAC members

The current members of the Science and Engineering Advisory Council are:

Naomi Becker, EES-5
Joseph Borovsky, NIS-1
Jerry Brock, X-3
Cynthia Eaton, CCN-5
Jeffrey Goettee, LANSCE-9
Rick Gustavsen, DX-1
Robert Kraus, P-21
Kenneth J. Lagattuta, X-1
Karen LaRue, B-N2
Brad Meyer, ESA-WE
Ronald Minnich, CCS-1
C. Shane Reese, TSA-1
Ann Schake, NMT-5
Ronald Scripsick, ESH-5
Barbara Smith, C-ACT
Pieter Swart, T-7
Jennifer Young, MST-7

Two Lab developments — flow cytometry and fuel cells — have been recognized for their benefits to American consumers, contributions to U.S. competitiveness and potential for growth. They were among 23 innovations at Department of Energy facilities to receive Energy@23 Awards. Two other Lab developments — magnetoencephalography and the KIVA computer code — were included in a list of 100 top innovations and nominated for the Energy@23 Awards.

The Laboratory's Atlas pulsed power generator reached an important milestone last month by discharging 28.7 million amperes of current into a test load, duplicating the world record

for current produced by a capacitor bank and completing its acceptance testing. Physics (P) Division Director Susan Seestrom said Atlas is expected to become "a valuable tool for stockpile stewardship experimentation." She said the project has met construction and safety requirements while remaining on schedule and within budget.

Researchers at the Lab's Superconductivity Technology Center

have developed a new process for producing high-performance superconducting tape that operates at the temperature of liquid nitrogen. When scaled up to commercial production, the process will enable industry to manufacture long lengths of tape for

myriad electric power applications. Potential applications include electric motors, transformers, transmission cables and levitated trains.

Science magazine recently listed its science story of the year 2000 — genomics — and nine runners-up for story of the year. The runners-up included the discovery of the composition of the asteroid Eros by the NEAR Shoemaker spacecraft, for which Bob Reedy of Space and Remote Sensing Science (NIS-2) is an investigator. Reedy and other researchers are using an array of packaged experiments to find out what asteroids are like during the spacecraft's year-long rendezvous with Eros.

SEAC ...

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travel cap for DOE laboratories from \$150 million to \$185 million, which includes \$10 million held back by DOE for contingencies.

The rewards for joining SEAC are not only institutional, they are personal.

"You sometimes get exposed to major issues facing the Laboratory before you read about them in the newspaper," said Jeanne Robinson, a physical chemist in Physical Chemistry and Applied Spectroscopy (C-6) and vice chair of SEAC last year. "Also, there's a wide range of experience represented by those on the council, which helps you broaden your own perspective."

SEAC was established in 1987 to address issues affecting the quality of work at the Laboratory and provide a link between the technical staff and senior management. It deals only with those issues that affect, either directly or peripherally, the quality of the scientific and technical work that is done at the Lab.

"Our input can range from one-page memos, such as recent ones related to the impact of the Cerro Grande Fire and security, to extensive, multi-month efforts such as our report on the impact of travel restrictions," Margevicius said.

SEAC seeks members from each technical division in the Laboratory. Managers at the group leader level and higher are not eligible to serve on the council. The members, who are nominated by their divisions, serve two-year terms. Half the members are replaced each year, so continuity is maintained year to year.

Members of SEAC spend about 10 percent of their normal schedule, or about four hours a week, on work for the council. The time includes a two-hour meeting every other week.

"We invite employees to bring their science issues to SEAC," said Margevicius. "Just contact a council member, and you can get on the [meeting] agenda. Sometimes the best improvements in the quality of work come from individuals simply speaking up."

Lab scientists, joined by colleagues at the University of Queensland's Centre for Quantum Computer Technology in Australia, have made an advance in the quest for a functional quantum computer. The concept, presented in the Jan. 4 issue of Nature magazine, proposes a novel use of photons for quantum information processing based on existing technology: beam splitters, phase shifters, single photon sources and detectors. A functional quantum computer could solve certain large mathematical problems and crack secret codes faster than today's fastest supercomputers.





Gen. John Gordon, head of the National Nuclear Security Administration, recently presented Defense Program (DP) Weapons

Awards of Excellence to one employee, **Brad Meyer** of Weapons Engineering (ESA-WE), and 13 Laboratory teams for their outstanding work during calendar year 1999. The awards were established by the Department of Energy to recognize contributions by DP contractors in support of the Stockpile Stewardship Program.

Claudia Lewis of Geology and Geochemistry (EES-1) has been awarded a second Fulbright grant to continue her study of the structural geology and plate tectonics of a particular area of the Spanish Pyrenees. Lewis, who earned her doctorate in geology from Harvard University and joined the Lab as a postdoc in 1996, is studying fundamental questions about the topography of mountainous areas following continental collisions.



Claudia Lewis

Leaf Turner, a theoretical physicist in Plasma Theory (T-15), served as coach of the U.S. Physics



Leaf Turner

Olympics Team for the fourth straight year. Unofficially, the U.S. team finished seventh of 64 nations participating in the International Physics Olympiad in Leicester, England, last July. All five members of the team came home with medals, one silver and four bronze. Only four other nations accomplished the feat.

Elmer Salazar of the Industrial Business Development (IBD) office has been appointed to New Mexico Highlands University by Gov. Gary Johnson. Highlands University is in partnership with community colleges around the state in an effort to prepare students for university life and help nontraditional students earn their bachelor's degree. Salazar, a 22-year employee of the Lab, is project leader for Regional Initiatives in IBD. He also served as a project leader for the Los Alamos Research Park located across from Technical Area 3.



Elmer Salazar

Wes Myers has stepped down as director of the Earth and Environmental Sciences (EES)



Wes Myers

Division to focus on civilian environmental research as acting deputy director of the Environmental Sciences and Waste Technology (E) Division. During the temporary, six-month assignment, Myers will examine new ways to help the Laboratory expand its civilian research emphasis, primarily focusing on environmental issues.

Six Lab researchers recently were selected as fellows of the American Physical Society, a prestigious honor awarded to no more than one-half of one percent of the APS membership each year. They are **Lev Bulaeviskii** of Condensed Matter and Statistical Physics (T-11), **Paul Ginsparg** of Elementary Particles and Field Theory (T-8), **Beverly Hartline** of Strategic and Supporting Research (ALDSSR), **Michael Leitch** of Subatomic Physics (P-25), **Ferenc Mezei** of the Los Alamos Neutron Science Center (LANSCE-DO) and **Darryl Smith** of Electronic and Electrochemical Materials and Devices (MST-11).



In Memoriam

Marion Timm

Former Laboratory Diversity (DV) Office Director Marion Timm, 55, died on Thanksgiving Day at her Santa Fe home. She is survived by daughter Angelique Metivier of North Hollywood, Calif., and son Timm Metivier of Penbrook Pines, Fla.; parents, Fred and Phyllis Timm of Meriden, Conn.; brothers, Fred, John and Jesse; and sisters, Charlotte Begnal, Elaine James and Madeline Timm; and numerous other relatives.

Elmer Richberger

Lab retiree Elmer Richberger died July 18. Richberger graduated from Berkeley High School in California in 1941. He served in the U.S. Army as an Air Corps officer from 1943 to 1945. He came to work for the Lab in 1969 with Fabrications (SD-1) as a Lab machinist. He left the Lab in 1982 while working as a TEC III prototype machinist with Branch Shops (MEC-5).

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January employee service anniversaries

35 years

Rodney Biddle, NIS-9

30 years

Robert Haight, LANSCE-3
Carl Hildebrand, STB-DSTBP
Huan Lee, X-1

25 years

Robert Behrens, CARLSBAD
Lee Dalton, CCN-18
Robert Day, DX-DO
Harry Dilello, MST-7
William Earl, TSA-DOD
S. Peter Gary, NIS-1
Philip Goldstone, ALDNW
Beverly Gonzales, T-14
Steven Jaramillo, P-23
Thomas Jones, LANSCE-8
Henry Lucero, AA-3
Lloyd Ortiz, ESH-4
Charles Villareal, FWO-SWO
William Watson, LANSCE-9

20 years

Thomas Beery, DX-7
Anselma Bustos-Gonzales, PM-DO
Marjorie Gavett, E-ET
Johnny Herrera, HR-5

Tommy Herrera, DX-4
Keith Hosack, P-26
Steven Long, NMT-4
Anthony Lucero, ESH-2
Leonard Martinez, CCN-2
Martin Martinez, ESA-WMM
Yvonne Martinez, BUS-1
Arthur Montoya, ESH-4
Cleo Naranjo, B-N2
Cecilia Olivas, DIR
Joseph Ortega, QIO
Joseph Ortiz, ESA-DE
Michael Padilla, BUS-4
Phillip Palmer, E-ET
James Parkinson, DX-5
Bruce Reinert, ESH-5
Richard Robinson, C-ACS
Marquita Sena, NIS-4
Steven Smith, TSA-5
Rudolph Valdez, AAA-TPO
Donna Vigil, BUS-1
Kyle Wheeler, IM-1

15 years

Lydia Apodaca, C-ACS
Gregory Bird, NMT-2
Steven Buelow, C-PCS
Rhonda Carter, HR-5
Tim Cash, DX-5

Juanita Cordova, ESA-DE
Rebecca Cortesy, HR-5
Sumner Dean, CCS-1
Edward Dooley, IM-7
Sharon Eklund, S-1
Allen Epperson, ESH-2
Robert Estep, NIS-6
Steven Eversole, DX-8
Cyndee Fresquez, BUS-4
Timothy Gosnell, MST-10
Chris Hammel, MST-10
Roger Hill, P-23
Douglas Kothe, CCS-2
Henry Lichtenstein, CCS-4
Carla Martinez, ESH-12
Danny Martinez, ESH-4
Suzanne Padilla, IM-5
Matty Perez, S-6
Deborah Pirkel, EES-DO
C.L. Radosevich Jr., NMT-5
Michael Randow, C-ACT
Kersti Rock, T-DO
Ronald Salazar, E-ET
Amadita Sanchez, BUS-2
Cindy Sandoval, TSA-5
Tina Sandoval, ESH-18
Scott Schilling, ESA-DO
James Scovel, CCS-3
Brian Smith, ESA-DE
Richard Staroski, NMT-7

Kathleen Straw, C-ACS
Michael Trujillo, NMT-7
Robert White, LANSCE-6

10 years

Stanley Bodenstein, ESH-12
Jeff Carmichael, ESH-19
James Danneskiold, CER-20
Paul Dowden, MST-STC
Rochelle Follmer, BUS-8
Candace Frostenson, ESH-7
David Hayden, LANSCE-6
Jeffrey Hoffman, ESH-4
Steven Love, NIS-2
Maureen Oakes, IM-1
Sean Reilly, C-SIC
Scott Robinson, NIS-4
Brad Thurgood, BUS-7
Laurie Waters, AAA-TPO

5 years

Richard Elliott, NMT-8
Thomas Ilg, SNS-03
Loan Le, C-PCS
Jessica Martinez, BUS-1
Atul Parikh, B-S2
Jennifer Rudnick, IBD
Cecilia Sanchez, IM-7
Loren Sivils, C-ACT
Linda Zwick, LC-LEL

This month in history

January

1801 — Italian astronomer and monk Giuseppe Piazzi discovers the first asteroid, Ceres

1887 — The Chili Line railroad unites Santa Fe and Denver as it skirts the Pajarito Plateau

1943 — The Manhattan Project acquires the Hanford Engineer Works, 780 square miles in eastern Washington, for plutonium production reactors and separator plants

1948 — Trucks deliver 100 two-bedroom homes to Los Alamos to be set up for civilian workers and their families

1956 — Meetings of the Technical Exchange Committee begin, providing an opportunity for Los Alamos and Sandia national laboratories to discuss technical information

1970 — The National Environmental Policy Act, requiring evaluations of federal actions that might significantly affect the environment, is signed into law

1987 — The Department of Energy announces President Reagan's approval of the construction of the Superconducting Super Collider

1995 — Federal data show that AIDS is the leading cause of death of Americans aged 25 to 44

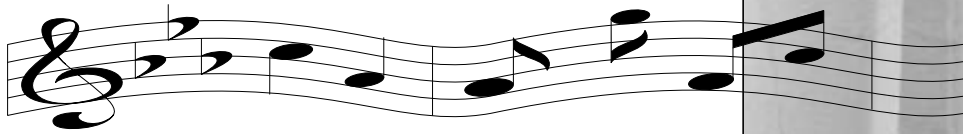
Blanca ...

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completion of the milestone.

The Blanca Project is one of the major ASCI code projects that are developing full-physics simulation capabilities for the Science-Based Stockpile Stewardship Program. Blanca is responsible for developing multidimensional production codes for modeling the safety and performance of nuclear devices and predicting other weapons phenomena.

By adapting emerging computational approaches to large-scale scientific software systems that scale well for parallel architectures, the Blanca Project is facilitating the addition of more complex physics and promoting rapid implementation of new computational models for code verification/validation testing.



Making music at St. Francis Cathedral

by Steve Sandoval

As a young boy, environmental engineer Bill Turney attended St. Francis Cathedral. He was baptized and received the sacraments from the landmark downtown Santa Fe church built in the 1800s by Archbishop Jean Baptiste Lamy.



When he was 18 years old, fresh out of Santa Fe High School, Turney walked into the cathedral parish office and asked the late Father Reynaldo Rivera if he could be the organist for the church's weekly masses — he has played piano since he was five years old.

"I always wanted to be the organist at the cathedral," said Turney, a lifelong member of the cathedral. "They needed some help," he recalled of his meeting with Father Rivera. "I walked in and said 'I want to do this.'" He started with two masses and it quickly grew to four masses on weekends.



Turney of Water Quality and Hydrology (ESH-18) has been director of music for the cathedral for 25 years and also directs its Schola Cantorum. Schola Cantorum is Latin for "school of singers," dating back to St. Gregory I in the sixth century. But its modern day interpretation, Turney said, is understood as a multitude of singers.

Several other Laboratory employees participate in the St. Francis Cathedral choir as singers and instrumental accompanists or by assisting with lighting or audio. Consuelo Montoya, also of ESH-18, sings. Dina Sassone of Industrial Hygiene and Safety (ESH-5) plays the cello. Marke Talley of Johnson Controls Northern New Mexico and Lab retiree Alice Mutschlechner both play violin. The quartet of Sassone, Talley, Mutschlechner and middle school math teacher Jackie MacFarlane has accompanied the Schola Cantorum.

Turney said the music is part of the worship and celebration of the mass. "We've never done anything where it is a one-sided, performer-audience relationship," he said. "We lead the music. We're part of the mass. We're part of the congregation."



"You can't say 'this is my song, my feelings,'" he continued. "This isn't just singing. With sacred music, text is always number one. That has been a concern of the church from the very first day."

Turney and choir members spend at least five hours a week practicing, sometimes longer when they are preparing for a concert. During traditional Catholic holy



For the past 25 years, Bill Turney of Water Quality and Hydrology (ESH-18) has directed the St. Francis Cathedral choir. Photo by LeRoy N. Sanchez



observances such as Easter, the choir practices as many as 15 hours a week.

The Schola Cantorum, in addition to singing weekly masses, has given several free concerts singing a breadth of works spanning the 12th century's "Aeterna Cristi munera" to "If You Believe, I Believe," a traditional Zimbabwean piece, to more contemporary works from the 20th century.

"We have a chance to share our music," Turney said of the free concerts. "This is our chance to do an evening of our music ... We're giving a gift ... Part of what we do is to uplift the congregation."

"It's all woven together. Whether we do solos, choral music or congregational singing, when it works it's not by mistake," he continued. "All [the members of the audience] know is that they've had a good experience."

"Many people come up to us and say 'I'm not Catholic and I was really inspired, comforted, uplifted by the music.'"

The next Schola Cantorum concert is scheduled for 7:30 p.m. July 21 at the St. Francis Cathedral. The program will include Gregorian chants, Renaissance music from Italy, Spain and New Spain (Mexico), and contemporary music.

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