

NewsLetter

Week of August 13, 2007

Vol. 8, No. 17

Want to know who's really the best in baseball?

Lab scientists say 'play more ball!'

by Todd Hanson

Want to know who's really the best in baseball? Play more games. When the baseball season ends each year, fans and players alike might while away the off-season speculating how many games it might have taken for them to prove they were truly the best in their league. Now, Los Alamos scientists Eli Ben-Naim of Complex Systems (T-13) and Nick Hengartner of Information Sciences (CCS-3) have written a paper that might help put some of that off-season speculation to rest. In the National League, it would take at least 256 games per team to make sure that the best team in the league ends up with the best record. That number of games is significantly more than the 162 games each team currently plays in the regular season.

In a paper scheduled to appear in a forthcoming issue of the scientific journal *Physical Review E*, Ben-Naim and Hengartner describe their analysis and simulations of baseball league play where there is at least a minimum chance that a lesser-qualified team can win any given game. The randomness of outcome requires a large number of games to be played to guarantee that the best team wins the most games.

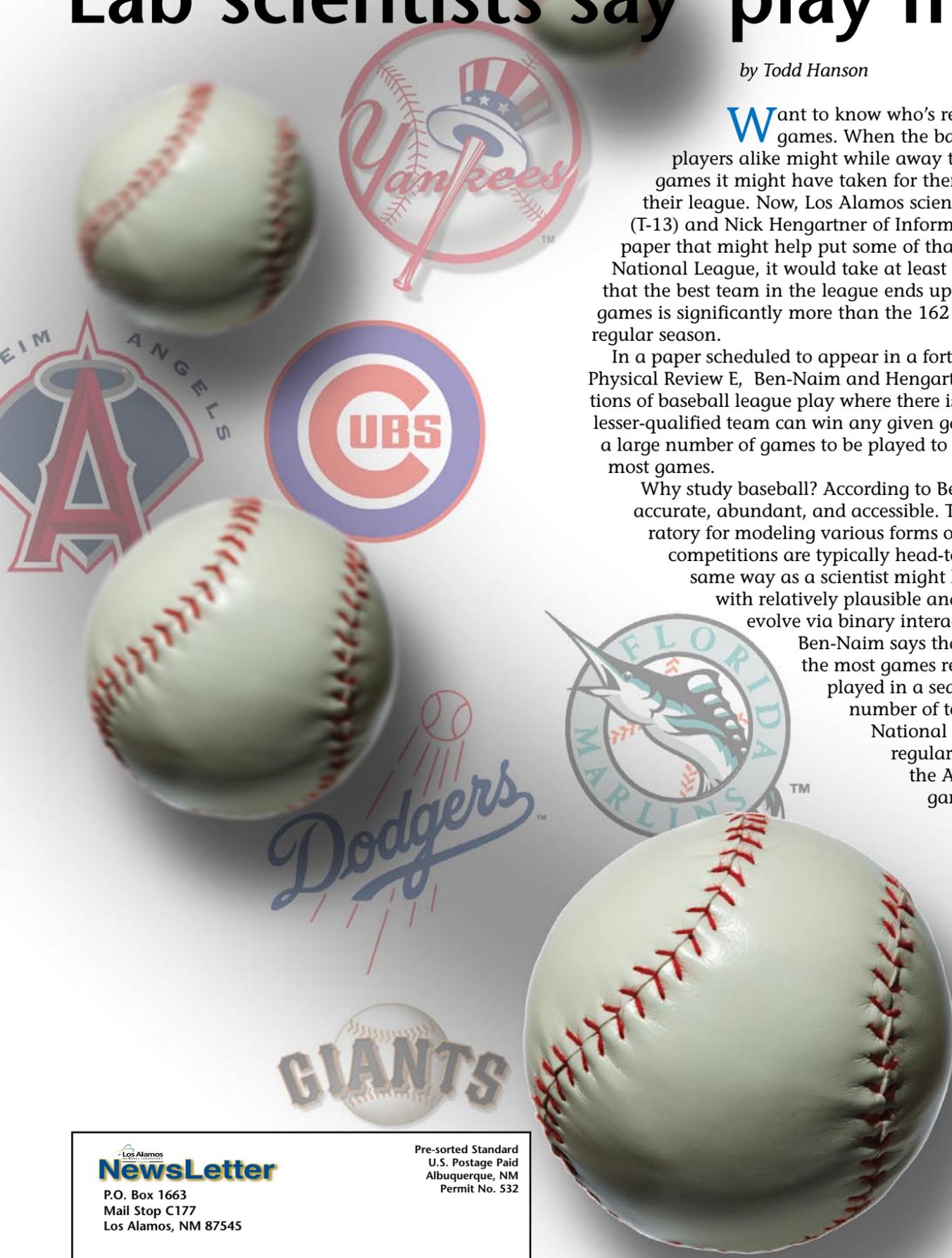
Why study baseball? According to Ben-Naim, because sports game data are accurate, abundant, and accessible. The sports world provides an ideal laboratory for modeling various forms of competition. Furthermore, since sports competitions are typically head-to-head, sports can be viewed in much the same way as a scientist might look at an interacting particle system, with relatively plausible analogies with other physical systems that evolve via binary interactions.

Ben-Naim says that guaranteeing that the best team wins the most games requires that the total number of games played in a season is equal to roughly the cube of the number of teams involved. For the 16 teams in the National League, that means a total of 4,096 regular season games, and for the 14 teams of the American League, it would require 2,744 games.

Because playing all those extra games would extend an already long season, Ben-Naim said a modified schedule could make sure that the titles only go to the very best team in any given year with a significantly lesser number of games.

By simply adding a preliminary round to each season that eliminated the weakest teams before regular season play began, the best team in the league would be almost guaranteed to be among the top two or three teams with the best records at the end of the season, and the top teams wouldn't be eliminated from the playoffs because of bad luck.

Hengartner points out that because of the relatively large number of games that baseball teams play each year, the analysis yields better results than one might find in professional football, hockey, and basketball. For example, because the National Football League, which has a comparable number of teams to Major League Baseball, yet plays fewer games each year, the outcomes of the professional football season are even more random.



Los Alamos
NewsLetter

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Be safe in school zones

The 2007-08 school year is approaching in Northern New Mexico districts, and with it comes a need for an increased awareness of children in and around schools. Laboratory employees and all motorists should be aware of pedestrians, school buses, and other vehicles and use safety precautions.

The Española Municipal School District gets a jump on the 2007-08 school year, starting last week. Other Northern New Mexico school districts and their starting dates are as follows:

- Pojoaque—August 14
- Los Alamos—August 15
- Taos—August 20
- Santa Fe—August 27

The speed limit in school zones during school hours is 15 miles per hour. Laboratory employees and other motorists should use caution in and around school zones and obey posted speed limit signs.

According to the American Red Cross, 25 million students ride on school buses. Here are some safety tips for children to help prevent injury.

- Line up facing the school bus door—not along the side of the school bus.
- Don't play in the street while waiting for the school bus.
- Carry belongings in a backpack or book bag.
- Never reach under a school bus to get anything that has rolled or fallen underneath it.
- After getting off the school bus, move immediately onto the sidewalk, out of traffic.
- Wait for a signal from the bus driver before crossing the street. Walk at least 10 steps away from the front of the bus so that the bus driver can see you.
- Never cross the street behind the school bus.



Laboratory Director Michael Anastasio spoke to the state's Laboratory Legislative Oversight Committee July 27 in Santa Fe. Anastasio briefed legislators about progress the Laboratory has made in the past year on safety and security, and also outlined some of the major scientific accomplishments of the past year. Photo by Kevin N. Roark

Anastasio addresses state legislators

The Laboratory has made progress in the past year on safety and security and continues to build on its record of major scientific accomplishments. That's the message Laboratory Director Michael Anastasio gave to members of the State Laboratory Legislative Oversight Committee at a meeting last month in Santa Fe.

Anastasio also told state lawmakers that the Lab has successfully managed spending in the face of increased costs and flat budgets.

"I'm pleased to say we've made a number of improvements in safety," Anastasio told the panel, "reducing the number of injuries and lost days due to injury by about a third."

In the area of security, the director told legislators that managing security is all about managing risk. "We've taken on the challenge to reduce risk in security," he said.

"We've worked hard to deal with this issue across the Lab, to reduce not only the number of mistakes that are made but to also reduce the opportunity to make those mistakes by reducing the overall quantity of classified material, the number of vaults and vault type rooms by 15 percent, and staying on target to reduce the number of classified parts by 50 percent. And we are making sure that Lab staff understand their responsibilities and that we are all accountable."

Anastasio outlined for the committee a few of the Laboratory's outstanding scientific accomplishments, including progress in developing a new class of fuel cells, advancements in superconducting wires, the CIBOLA flight experiment mission, involvement in analysis of the North Korean weapons program, the first replacement W88 pit delivery, and advances at the Dual Axis Radiographic Hydrotest facility, including the first ever fully contained hydrotest.

The director gave the committee some examples of how the Laboratory is managing in a climate of increased costs and flat budgets. "We are always looking to increase our business efficiencies," he said, telling legislators that the Lab is looking to get out of old, expensive to maintain facilities. "We have already reduced our footprint by 140,000 square feet, and by the end of the year we hope to be down by 500,000 and will continue to increase that number in the following years," he said.

Nearly all of the committee's members expressed some level of concern about a call by some federal officials for the Laboratory to either diversify or initiate some shift in mission. Representative Thomas Anderson, R-Bernalillo, called for the Lab's continued focus on nuclear weapons and national security while the committee chairman, State Sen. Phil Greigo, D-San Miguel, Santa Fe, Los Alamos, Sandoval, Bernalillo, Torrance, proposed a move to a more diverse mix of defense and nondefense work.

Speaker of the House Rep. Ben Lujan, D-Santa Fe, spoke of Northern New Mexico's legacy in support of national defense. "We must not lose sight of the fact that to simply turn our focus to energy or related issues is a mistake," said Lujan. "We need to continue the [Laboratory's] mission of national defense."

Anastasio explained to the committee that the Laboratory's mission is determined by the federal government. "I don't determine the specific mission," he said. "We serve the country's needs with the best science and technology we can create, and change in the future would be up to policy makers in Washington, D.C."

Earlier in the day, the panel was addressed by Principal Associate Director for Science Technology and Engineering Terry Wallace and Duncan McBranch, head of the Lab's Technology Transfer (TT) Division.

Los Alamos National Laboratory NewsLetter

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Los Alamos National Laboratory is a multidisciplinary research institution engaged in strategic science on behalf of national security. The Laboratory is operated by a team composed of Bechtel National, the University of California, BWX Technologies and Washington Group International for the Department of Energy's National Nuclear Security Administration.

Los Alamos enhances national security by ensuring the safety and reliability of the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction, and solving problems related to energy, environment, infrastructure, health and global security concerns.



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When disasters strike

by Todd Hanson

When disasters like the bridge collapse in Minnesota occur, elected officials and the general public alike often are left wondering what can be done to avert such tragedies in the future. In many cases, it often falls to America's national laboratories to research and develop advanced scientific and technical solutions to these issues of national safety and security.

In the case of the Minneapolis bridge collapse, engineers working in Structural Health Monitoring at the Laboratory's Engineering Institute already may be well on their way toward developing an engineering solution to the challenge of monitoring bridges.

Los Alamos Engineering Institute Director Chuck Farrar and his students are working on a technology using RFID (Radio Frequency Identification)-based sensing, in situ data analysis, and model-based reasoning for the rapid, economical, and reliable assessment of changes and damage in large concrete and steel structures such as bridges.

One such RFID project is being developed by David Mascareñas, a doctoral student from the University of California, San Diego's Jacobs School of Engineering now working at the Engineering Institute. Mascareñas' project would use electronic sensors powered by microwaves to gather and send data via radiotelemetry to an airborne computer for analysis. In this case, the computer is airborne thanks to a radio-controlled helicopter that Mascareñas has retrofitted to serve that function. Low-cost sensors placed on a bridge or similar architectural entity would detect electrical charges emitted by stress on materials, such as the steel-reinforced concrete used to construct



This radio-controlled helicopter provides computing and electrical support to a sensor node developed to detect structural changes in bridges. Inset photo: An experimental electronic sensor that could possibly be used to detect electrical charges emitted by stress on material, such as steel-reinforced concrete. Photo of helicopter by David Mascareñas, LANL Institutes; inset photo by Tim Overly, LANL Institutes

many bridges, and transmit the signals back to a receiver in the helicopter as it passes.

"Using RFID and a radio-controlled helicopter," said Farrar, "David has developed a potentially cheaper, safer, and easier way to monitor the structural health of our nation's bridges, which ultimately helps keep both bridge inspectors and the bridge users safer."

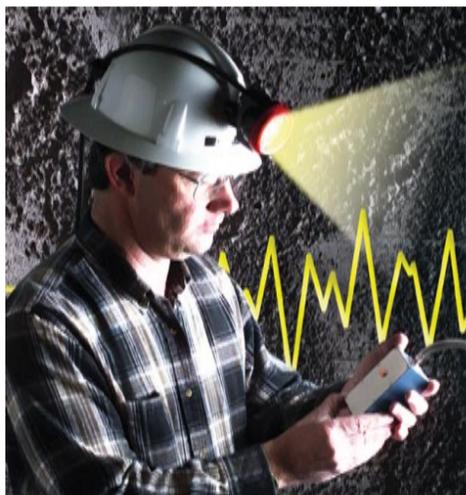
In 2006, Mascareñas became the first student in the Jacobs School of Engineering to complete the Engineering Institute's new multidisciplinary graduate degree program in structural-health monitoring, damage prognosis, and validated simulations. That program is now one of several that are

under the auspices of the Laboratory's new National Security Education Center.

Structural Health Monitoring capitalizes on continuing advances in sensors, electronics, and communications to develop sophisticated technical and scientific methods for monitoring the condition, or so-called "structural health" of buildings, bridges, dams, and other important elements of the national infrastructure.

In the next several weeks, Mascareñas, Farrar, and their research team will travel to a bridge near Truth or Consequences to test the technology in the field. After that, it someday may be coming to a bridge near you.

Test of Through-The-Earth Communication System™ exceeds expectations



by Nancy Ambrosiano

Rigorous testing at the Lake Lynn Experimental Mine last month proved the viability of Vital Alert Technologies' system for emergency warning, evacuation, and rescue communications.

Developed by the Laboratory, the Through-The-Earth Communication System™ proved capable of sending two-way, very-low-frequency voice signals from the surface of the mine to depths

exceeding 300 feet at the experimental mine operated by the National Institute for Occupational Safety and Health.

The innovative technology is capable of allowing first responders, rescue teams, and underground miners to communicate with each other in extreme environments such as subways, tunnels, skyscrapers, and mines, during critical emergency situations where lives are at stake. Through-The-Earth Communication will offer high-level security to managers of critical government, industrial, military, commercial, and public infrastructure. It also can be used by first responders in the advent of terrorism and natural disasters, such as hurricanes, earthquakes, and floods.

In deep underground mines, the reliable and portable system will provide two-way voice reception that can be used to locate trapped miners and alert individuals of underground conditions caused by blasts, fires, or structural collapse.

The Through-The-Earth Communication system was developed for the Department of Energy at the Laboratory's Superconductivity

Technology Center with a development team led by David Reagor. In 2006, the technology earned a prestigious R&D 100 Award from *R&D Magazine*.

The system uses very-low-frequency electromagnetic radiation in the range of 3 to 30 kilohertz (kHz) and digital audio compression to transmit wireless voice and data signals through the earth. Materials that block higher radio frequency signals, such as rock, concrete, metal, and high-density ore bodies, do not restrict its signal. Unlike RF devices, the new technology does not rely on line-of-sight signal transmission or hard-wiring. The system can be coupled with conventional RF equipment to provide enhanced communication coverage both above and below ground.

Incorporating Sprint/Nextel i325 mobile phones, supported by Raytheon's JPS Communications ACU 1000 cross-band repeaters, the Through-The-Earth Communication system demonstrated its capabilities in the Lake Lynn Mine, which is composed of several long tunnels used for mine safety experiments. The mine consists of nonflammable limestone with a tunnel height of about 10 feet and an overburden of up to 370 feet.

In response to the Sago and Alma mine accidents in January 2006, the U.S. Department of Labor, Mine Safety and Health Administration solicited proposals to evaluate communication and tracking system technologies in underground mines that could improve communications and benefit search-and-rescue efforts. More than 100 proposals were submitted and six systems were selected for further consideration. Vital Alert responded with a proposal in anticipation of the prototype system that has since been developed in partnership with the Lab.

In May 2007, Vital Alert (www.vitalalert.com) notified representatives of MSHA and NIOSH that its system was available for testing. Vital Alert requested the opportunity to demonstrate its new wireless capabilities and was subsequently invited to conduct testing at the Lake Lynn Experimental Mine.



Principal Associate Director Terry Wallace opened the National Security Education Center dedication ceremony and introduced each of the visiting speakers.

A National Security Education Center is born

by Todd Hanson

Recognizing that the whole can be greater than the sum of its parts, the Laboratory's five Institutes—the Engineering Institute, Materials Design Institute, Institute for Multiscale Materials Studies, Information Science and Technology Institute, and Institute for Advanced Studies—were united last week into the National Security Education Center.

Director Michael Anastasio and Principal Associate Director Terry Wallace hosted the NSEC dedication ceremony that included Congressman Tom Udall; Gloria Zamora, field representative for United States Senator Jeff Bingaman; Gerald Parsky, University of California Regent and chairman of the Los Alamos National Security, LLC, Board of Governors; Bruce Darling, senior vice president, University of California Office of the President; Don Winchell Jr., Los Alamos Site Office manager; and Van D. Romero, vice president for Research and Economic Development at New Mexico Institute of Mining and Technology and representing the New Mexico Consortium.

"There is no doubt" said Udall, "that Los Alamos National Laboratory has the best scientists in the world, but the combination of institutes under the NSEC allows for new fluidity, new opportunities for students, and new scientific advances. As we look forward to where we need to be on the cutting edge of science, the NSEC will play a critical role in keeping LANL at the top of its game."

Occupying the institutes' existing physical spaces in the Los Alamos Research Park, the NSEC will help the Laboratory recruit the next generation of scientists and engineers, while helping revitalize and retain the Laboratory's current technical staff.

At the National Security Education Center dedication ceremony last week at the Los Alamos Research Park, David Mascareñas, left, uses his hands to describe how electronic sensors powered by microwaves to gather and send data via radio telemetry to an airborne computer for structural analysis work to Congressman Tom Udall and Laboratory Director Michael Anastasio. Mascareñas is the first student to earn an advanced degree from the National Security Education Center. Photos by LeRoy N. Sanchez, Records Management/Media Services and Operations



New name, same mission

Despite being under a new name, the leadership and educational missions of the five institutes will remain the same.

- In 2003, Los Alamos National Laboratory and the University of California, San Diego Jacobs School of Engineering created the **Engineering Institute**, an institute dedicated to engineering education and aimed at developing a future supply of world-class engineers to work on challenges of national security.

Leaders—Charles Farrar (Los Alamos National Laboratory) and Michael Todd (University of California San Diego Jacobs School of Engineering)

- The **Materials Design Institute**, an educational collaboration with the University of California, Davis College of Engineering that focus on the ability to predict and tailor properties and responses of materials for a given engineering application.

Leaders—Dan Thoma (Los Alamos National Laboratory) and Billy Sanders (University of California, Davis College of Engineering)

- The **Institute for Multiscale Materials Studies** is collaboration with the University of California, Santa Barbara College of Engineering and focuses on soft matter and engineered materials that are used in mission critical national security applications.

Leaders—Alan Graham (Los Alamos National Laboratory) and George "Bud" Homsy (University of California, Santa Barbara)

- The **Information Science and Technology Institute** with the University of California, Santa Cruz and Carnegie Mellon University, ISTI will tackle the most important and relevant challenges facing the nation in computer science, computational science and information science and technology issues.

Leaders—Gary Grider and Carolyn Connor (Los Alamos National Laboratory), Darrell Long and Scott Brandt (UCSC) and Garth Gibson (Carnegie Mellon)

- Created in 2006, the newest of the NSEC Institutes is the **Institute for Advanced Studies**, which consists of the University of New Mexico, New Mexico State University, and the New Mexico Institute of Mining and Technology (New Mexico Tech) in partnership with the Laboratory. IAS will focus on the development of new sustainable sources of energy, medical radioisotopes—from production to use in clinical trials, threat reduction focusing on sensor development, safeguards, and systems studies and fundamental scientific inquiry.

Leaders—Steve Buelow (Los Alamos National Laboratory) and Robert Duncan (New Mexico Consortium)

Plasma Physics Summer School engages students

by Cynthia Casados

In the universe, matter exists in four different states: solid, liquid, gas, and plasma. Plasma, the fourth state of matter comprises 99 percent of our known universe, including the stars and the sun.

"Plasma is tricky. It's hot, it's fast, and it doesn't go where you want, which makes for an interesting experimental situation," said Chris Leibs of Plasma Physics (P-24). Leibs currently is attending the Plasma Physics Summer School hosted by Plasma Physics.

Each year, staff from P-24 and distinguished outside speakers present the Plasma Physics Summer School. The program continues through the first week in September. The lectures are scheduled from noon to 1 p.m. on Wednesdays at Technical Area 35, Building 86, Room 205.

All employees are welcome to attend the lectures, but undergraduates, graduate students, and present and future technicians are encouraged to attend. No clearance is required.

The goal of the school is to educate students in the fields of plasmas and laser-plasma interactions and to attract long-term student interns as well as prospective upper level students to the Laboratory later on in postdoctoral or staff positions.

"The lectures and the P-24 team are helping me secure an idea as to where I may want to head after my undergraduate studies. I didn't know much about plasma physics prior to the start of the summer, and now I can confidently say I really enjoy the field and am considering it as a potential direction for my future," said Leibs.

Distinguished invited external speakers

as well as staff members and postdocs from the Lab give the weekly lectures. To see a schedule of speakers go to wsx.lanl.gov/R SX/PPSS_2006/abstractsPPSS2007.html online.

According to Leibs, the lectures for summer students start with an introduction to plasma physics and require no previous knowledge of the subject. The lectures build in complexity and have examined topics such as magnetohydrodynamics equations, stability, and kinetic theory.

"The theory is multidisciplinary. It is wonderful to have a topic so vast that you have to recall all parts of your education to bring it into perspective. There truly is something to be found by everyone in this study," said Leibs.

For more information, contact Tom Intrator of Plasma Physics at 5-2927, intrator@lanl.gov by e-mail, or go to wsx.lanl.gov/R SX/PPSS_2006/PPSS2007.html online.



A participant in the HAZMAT Challenge is on top of an overturned tanker drilling an opening to transfer liquids into a secure container. This exercise, called the “Stinger Operation,” is designed to test emergency responders’ ability to secure an accident scene, including off-loading potentially hazardous liquids or other materials to another secure container.

Laboratory hosts HAZMAT Challenge



A participant in the 11th annual HAZMAT Challenge wears personal protective equipment while collecting and identifying a sample of a simulated chemical. In this exercise, emergency responders are tested on their ability to analyze and identify a potentially chemical/biological hazard. Midwest City, Oklahoma Fire Department took first place overall in the HAZMAT Challenge at Technical Area 49. Second place went to the Farmington Fire Department. The Laboratory’s HAZMAT team came in third. Thirteen teams from New Mexico, Oklahoma, and Arizona competed in the challenge.

Left: Participants construct a dam to help stop a product spill from a motor carrier. This exercise, called “Damming and Diking,” is designed to test emergency responders’ ability to use specialized tools for overturned tankers, identify and control hazards and construct retention dams.



A participant in the HAZMAT Challenge stops a leaking pipe in the exercise called “Valve/Pipe Tree.” This exercise tests the responder’s ability to use proper materials and tools to stop pipe and valve leaks. Photos by Larry Gibbons, Records Management/Media Services and Operations



A member of the Las Cruces Fire Department pulls a “dummy” from a confined space prop. The exercise is designed to test the rescue-and-response capabilities of emergency responders.



So...what do you think?

Q: At some point, either on the job or away from it, many individuals find themselves faced with the need to know basic first aid. The Laboratory offers Cardiopulmonary Resuscitation (CPR) and other first-aid training through the Virtual Training Center (<http://int.lanl.gov/training/>), but this training is not mandatory for all employees. How important is it for at least a few employees in each organization to be certified in first aid or other basic emergency-care treatment? Are you certified or would you take such training?



Denise Jaramillo of the Human Resources Service Center (HR-SVSCTR)

It is very important for individuals to be first aid certified. Someone's life could be saved. I am not certified, but I would take the training.



Star Martinez of Pit Manufacturing (WCM-1)

I think it is very important that at least two people in an organization are trained in first aid. Life is unpredictable, and you never know when your help might be needed.

I, myself, would like to have that type of training.



Floyd Ortiz of Disbursements (CFO-DISB)

I believe everyone should have some CPR training. You may be required to give aid to someone at work and home. I have had several occasions to use it. Just this last weekend at the lake, my granddaughter was choking on a grape, and I was able to help and not panic. I'm just so grateful that all went well.



Kristy Trujillo of Occupational Medicine Operations (OM-OMO)

I think it is critical for every employee to be CPR and first aid trained. In our division, it is mandatory for each employee to continually be certified in order to assess an emergency situation should it arise in our facility. I am certified in both CPR and first aid per my mentor and division's mandatory policy.



Miguel Gurule of Environmental Geology and Spatial Analysis (EES-9)

I, unfortunately, am not CPR trained. However, there are several members in the group who are. I feel that this training is essential because you never know what can happen on the job.



April Trujillo of Personnel and Financial Applications (IST-APP51)

I think CPR training is a very valuable skill to obtain. Emergency situations occur daily at the Laboratory and the skill could be very useful in possibly saving a co-workers life. I am not CPR certified but would enroll in the training.



Susan Barns



Clifton Meyer

2006 CLES Technician of the Year Award winners

Susan Barns of Genome Science JGI/Los Alamos (B-6) and **Clifton Meyer** of Atmospheric, Climate, and Environmental Dynamics (EES-2) are co-winners of the first annual Chemistry, Life, and Earth Sciences Directorate (CLES) Technician of the Year Award. The award was presented by Laboratory Director Michael Anastasio at the CLES directorate-wide meeting in June. Meyer and Barns were selected for their outstanding technical contributions in science, leadership, and teamwork.

The award was created to honor and acknowledge outstanding technicians in the Chemistry, Life, and Earth Science Directorate. Meyer and Barns were each presented with a silver star and a cash award at the meeting.

Meyer supports several laboratory and long-term field research projects in ecosystem dynamics, hydrology and carbon cycling. In 2006, he worked in calibration and testing of state-of-the-art instrumentation such as tunable diode lasers and laser-induced breakdown spectroscopy. As the summer student coordinator for the ecohydrology team, Meyer also has taken a very active role in working with students in EES Division.

Barns' work involves environmental molecular biology research in support of biothreat agent detection and microbial diversity studies. She is a technical lead for sequence data management, comparison, and phylogenetic analysis. In addition to her busy work life, Barns is an active member of the Mountain Canine Corps search-and-rescue team.

The CLES Directorate selects the recipients of the award based on professionalism and accomplishments within their field. Meyer and Barns, chosen for their accomplishments up to and including the 2006 calendar year, are widely acknowledged in both of these areas, as well as for leadership and technical innovation.

Zavicar competes in Mrs. New Mexico pageant

In the April 23, 2007, edition of the newsletter, **Karen Zavicar** was featured as Mrs. Los Alamos County on her way to compete in the statewide Mrs. New Mexico Pageant in Albuquerque.

While Zavicar was not crowned Mrs. New Mexico, she didn't come home empty-handed. She garnered the Mrs. Congeniality and Most Accomplished Business Woman of New Mexico titles.

"I accomplished what I set out to achieve: that is to win friends and influence people in a positive way," said Zavicar.

Indeed, Zavicar made close friendships with the other competitors.

"The pageant, was a great and life changing experience," said Zavicar. "I met wonderful ladies who really made me see that my reason for doing the pageant in the first place is so needed. It made me realize my purpose to educate these women is the most important thing I can do. I hope to spread

[the message of self-defense for women] throughout the state and educate all women."

A second-degree black belt, Zavicar developed her "Key Technique" program to instruct women and girls on self defense, rape prevention, ground fighting, and weapons defense as well as lectures on health, fitness, and focused goal setting.

Because Zavicar feels that her message of self-defense is so important, she is retaining her county title and will compete again next year.



Karen Zavicar

In Memoriam

Robert L. Osborn

Laboratory retiree Robert Osborn died June 22. He was 84.

Osborn joined the Laboratory in 1947 in the former CL-2. He retired from the former Health, Safety, and Environment (HSE) Division as a health protection technician in 1988. In 1990, Osborn returned to the Laboratory as an associate in HSE Division where he remained until 1993.

He is survived by his wife, Martha Osborn of Rio Rancho; son Robert; daughter Jill Hanson of Los Alamos; and four grandchildren.

Valerie Lopez

Laboratory employee Valerie Lopez of the Physics (P) Division died in May at her home. She was 44.

An executive office administrator in P Division, Lopez joined the Laboratory as an administrative clerk in December 1983.

She is survived by, among others, her husband Elias and four children.

Students and science in the Valles Caldera

Hands-on activities stimulate students' interest in math and science



by Jaclyn J. Valdez

On a hot sunny summer day, students from nearby Santa Clara, San Ildefonso, Jemez, and Cochiti pueblos got to stand in a meandering stream, catch bugs, and learn how to operate a global positioning system in the Valles Caldera National Preserve. In the process, they also learned how science and the natural world interact.

The students are part of a science education outreach program the Laboratory's Tribal Relations team in the Government Affairs Office (GAO) sponsors in partnership with four accord pueblos. Middle- and high-school students from the pueblos took part with the expansive Valles Caldera serving as a laboratory of sorts for the students.

"This program has two primary goals: to stimulate interest in math and science for these students, and create a pipeline of the next generation of scientists and mathematicians and possible Laboratory employees," said Elmer Torres of the Tribal Relations team.

After a welcoming by Valles Caldera Chief Scientist Bob Parmenter, students divided into four groups. Each group participated in hands-on activities such as coyote telemetry, where students were able to use an actual coyote-tracking device. Scientists at the Valles Caldera National Preserve use global positioning system collars to track the coyotes in an effort to learn about their space and habitat use, population dynamics and diet, and eventually to learn about their interactions with other species in the preserve.

Other activities included catching and examining terrestrial insects, evaluating the habitat of water creatures, and learning about land and moisture. Students were shown demonstrations about evaporation, cloud formation, and erosion. They also learned how plants absorb moisture from rain and how the sun makes moisture evaporate.

"I learned about different kinds of bugs and what they do and what they eat," said Mariah Peña of San Ildefonso Pueblo. "I've had a lot of fun and everything has been very interesting. I would like to come back and do it again."

Peña was one of 21 students to attend from San Ildefonso and Santa Clara pueblos. Students from Jemez and Cochiti pueblos also are part of the summer program.

While some students were catching big insects, spiders, and butterflies in large nets, others were waist-high in waders examining various water creatures and learning how to calculate stream flow. "I never knew what a riffle was and that it had so many bugs until now," said Pena. A riffle is a shallow area of a stream causing broken water.

Laboratory scientist Julianna Fessenden-Rahn of Hydrology and Geochemistry (EES-6) started the program. It is one of the science education outreach programs specifically targeted to local pueblo students.

"The program has been a success for the last four years, it is composed of an exceptional team from the Government Affairs Office, as well as the environmental staff," said Fessenden-Rahn. "It is very rewarding to be able to teach and guide students in the area and hopefully make a difference."

Photos counterclockwise from top: Isaiah Gutierrez of Santa Clara Pueblo searches for bugs in the Valles Caldera National Preserve at the 2007 Accord Pueblo Summer Environmental Science Program.

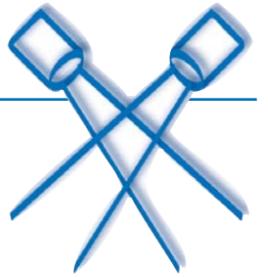
Michelle Mirabal of Nambe Pueblo and Andrew Garcia, right, of San Ildefonso Pueblo admire a giant insect found by Justine Fender of the Government Affairs Office. Mirabal is a Laboratory employee at the Research Library who attended the trip as a mentor.

Amanda White of Earth and Environmental Sciences demonstrates the effects of erosion on the earth while Dalton James Torres of San Ildefonso Pueblo watches.

Justin Naranjo, Brian Suazo, both of Santa Clara Pueblo, along with Andrew Garcia sift through the stream for sediment samples and aquatic insects.

Zoe Anna Duran, left, a Valles Caldera National Preserve Trust employee, explains what the students found in the stream while Justin Naranjo, right, points to the interesting findings. Photos by Jaclyn J. Valdez





Laboratory retiree brings Hurricane Audrey to life again

by Caryn Johansen

Laboratory retiree Cathy Post anticipated an easy and laid-back retirement, not the whirlwind book publishing adventure she got herself into. Post, who retired three years ago from an administrative assistant position in the Director's Office, authored the best selling historical narrative *Hurricane Audrey: The Deadly Storm of 1957*.

"I'm still in shock," said Post during a phone interview. Hurricane Audrey, which came out May 1, continues to be a top bestseller on Amazon.com in the category United States History 1950's.

"My first intention was to write something like a term paper," said Post, a native Louisianan who lived forty miles inland. Though she was just ten, Post remembers Hurricane Audrey vividly. "I wanted to be able to hand something to my children and my grandchildren and say 'This is what happened to your family.'" Once word of the project spread, more families wanted their stories told as well.

Once the family document became a book, Post changed her goal. She decided to spread the word internationally, both about Hurricane Audrey and its aftermath and how the Weather Bureau's mission changed because of Hurricane Audrey.

"I have achieved my goal; I have spread the word," said Post. The list of countries outside the United States where her book is being sold includes Canada, Australia, New Zealand, the United Kingdom, Germany, France, Italy, Sweden, and Japan.

When asked about the international appeal of her book, Post said simply: "The weather is something we all have in common."

Post went on book tour from her home in Nevada, where her husband David is the division leader of defense facilities and nuclear operations at the Nevada Test Site. Post has had book-signings in New Mexico, Texas, Florida, and, most importantly, Louisiana, where she spoke before the Louisiana State Legislature.

Hurricane Audrey made landfall in Cameron, Louisiana, just after sunrise on June 27, 1957. Until Hurricane Katrina two years ago, Hurricane Audrey was Louisiana's most devastating natural disaster.

Nevertheless, most people have not heard of Hurricane Audrey. The main reason, Post explained, is simply that the survivors could not talk about it.

"The term used by most was 'horrific,'" Post said. Sheer terror and trauma prevented most from discussing the subject for decades.

The storm surge and the waves were between ten and twenty feet. The tidal wave, once it reached the beach, was a terrifying and devastating seventy feet.

When everything was over, fifteen towns had been completely washed away. Approximately five hundred people were dead, including about two hundred children.

Hurricane Audrey was the first hurricane to be tracked using radar. The people of Cameron and other coastal towns, having been told that Audrey would arrive the next day, were packed and ready to go the evening before it struck.

After an unexpected explosion of intensity, Audrey arrived twelve hours early just after dawn. Residents awoke to a nightmare; water was inside their homes and all avenues for escape were blocked. Few people who saw the tidal wave hit the beach lived to tell, but those who did never forgot.

"Other books have been written about Audrey," she said, "but the few before me were printed at local print shops; they were not published by a publishing company that is both nationally and internationally known."

Post spent a year traveling, doing research, collecting data, shuffling through archives and personally interviewing those whose memories make up the book.



Cathy Post

HURRICANE AUDREY

THE DEADLY STORM OF 1957



CATHY C. POST

"People would speak in very general terms the first five minutes, but as they continued talking, the memories and the details would begin to flow," Post said.

Hurricane Audrey follows the separate stories of six families, the survivors of which Post mostly met when the children attended her school because Audrey had destroyed theirs. Post's own family story is that of the Cagle family.

As part of her research, Post spent a good amount of time creating charts, maps and graphs and doing extensive research on the Internet, skills she gained from her job at the Laboratory.

Before working at the Lab, Post taught math, science, and English. Despite her background, she said, "If I can do this, anyone can do this."

Since the publication, Post has received positive reviews from both critics and public figures.

In a press release, the Pelican Publishing Company said: "Post's non-fiction book provides factual accounts and historical details surrounding one of the most devastating natural disasters in U.S. history, but it does so in a compelling narrative style that reads like a modern suspense novel instead of a documentary."

Louisiana State Senator Willie Mount said: "This book is fabulous ... I could not put it down. Cathy Post, a native but only a child at the time, brings Hurricane Audrey to life again ... with tragedy, horror, heroism, and the mysteries of nature!"

When asked if she was going to continue writing, Post said the idea was tempting, but she wanted to relax for a while, get back on track with the retirement life, and catch up on her "soaps."

Note: Cathy Post will hold a book signing in Los Alamos for *Hurricane Audrey: The Deadly Storm of 1957* on August 30 from 11 a.m. to 1 p.m. on the Hot Rock Java Cafe patio, 4200 West Jemez Road (Los Alamos Research Park).