

# Newsletter

Week of April 10, 2006

Vol. 7, No. 8



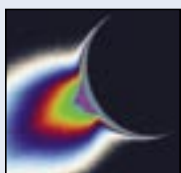
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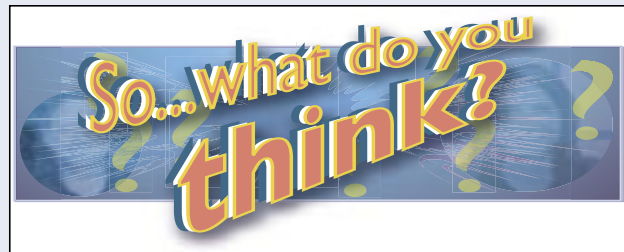


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Cassini data obtained during a close flyby of the Saturn moon Enceladus support an observation that large amounts of water are spewing into space from the tiny moon's surface. .... Page 5

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Several months ago a "Fix-it" initiative was launched by Director Bob Kuckuck to identify and help remove small obstacles that impede science. This grassroots effort solicits input from organizations and staff about small, nagging issues that prevent them from getting their work done and then seeks assistance from subjects-matter experts and champions to help resolve these problems. What small, nagging problem that affects your ability to get work done would you like to see resolved? Learn what your co-workers had to say on Page 6.

# Avian flu modeled on supercomputer

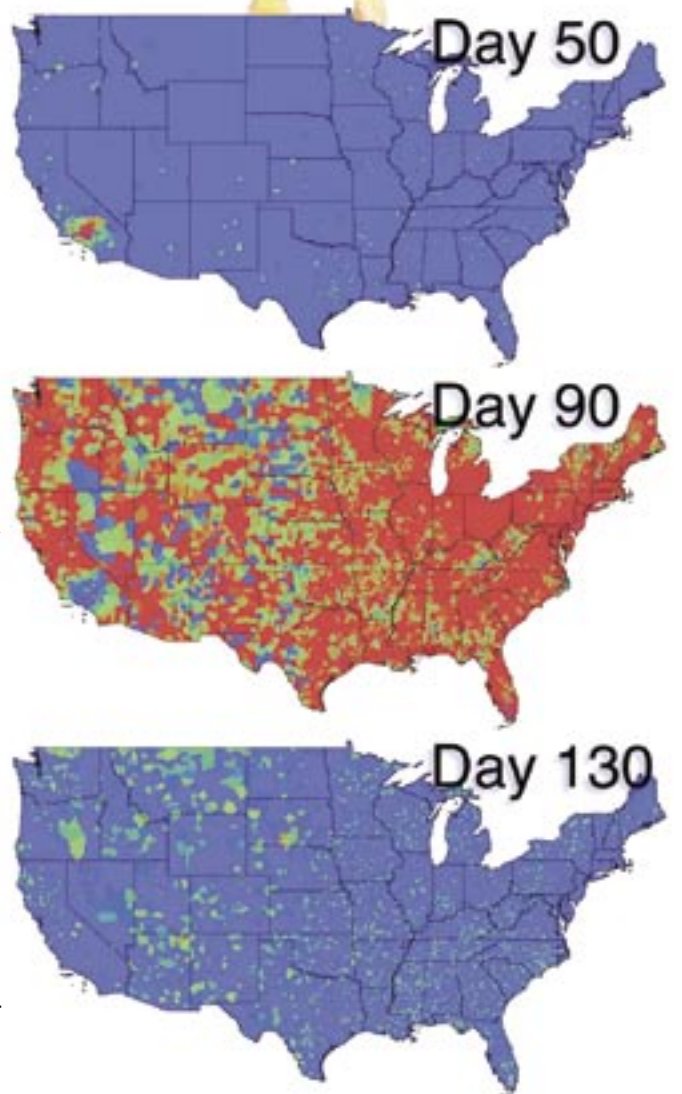
by Nancy Ambrosiano

Using supercomputers to respond to a potential national health emergency, scientists have developed a simulation model that makes stark predictions about the possible future course of an avian influenza pandemic, given today's environment of worldwide connectivity. The research, by a team of scientists from the Laboratory, the University of Washington and the Fred Hutchinson Cancer Research Center in Seattle, is presented in the Proceedings of the National Academy of Science online the week of April 3-7, and in this week's print issue.

The large-scale, stochastic simulation model examines the nationwide spread of a pandemic influenza virus strain, such as an evolved avian H5N1 virus, should it become transmissible human-to-human. The simulation rolls out a city- and census-tract-level picture of the spread of infection through a synthetic population of 281 million people over the course of 180 days, and examines the impact of interventions, from antiviral therapy to school closures and travel restrictions, as the vaccine industry struggles to catch up with the evolving virus. "Based on the present work ... we believe that a large stockpile of avian influenza-based vaccine containing potential pandemic influenza antigens, coupled with the capacity to rapidly make a better-matched vaccine based on human strains, would be the best strategy to mitigate pandemic influenza," say the authors, Timothy Germann, Kai Kadau, Ira Longini and Catherine Macken.

Longini is a biostatistician with the Fred Hutchinson Cancer Research Center and the University of Washington, while the rest of the team is at Los Alamos. Their collaboration is supported by grants from the Department of Homeland Security and the National Institute of General Medical Sciences MIDAS (Models of Infectious Disease Agent Study) program.

"It's probably not going to be practical to contain a potential pandemic by merely trying to limit contact between people (such as by travel restrictions, quarantine or even closing schools), but we find that these measures are useful in buying time to produce and distribute sufficient quantities of vaccine and antiviral drugs," said Germann of Applied Science and Methods Development (X-1-SEC1).



The above simulation is of a pandemic flu outbreak in the continental United States, initially introduced by the arrival of 10 infected individuals in Los Angeles. The number of symptomatic cases at any point in time, is shown from 1 or fewer (blue) to 100 or more (red) cases per 1,000 persons. Without vaccination, antiviral drugs, or other mitigation strategies, the entire nation becomes infected within a few months, peaking about 90 days after the initial introduction. Image courtesy of the authors

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## High fire danger calls for precautions

Anyone who lives in Northern New Mexico or anywhere in the southwest knows that the dearth of precipitation this winter has left the area extremely dry heading into spring.

Between Nov. 1, 2005 and March 30 of this year, only .87 inches of precipitation has been recorded in Los Alamos, according to information from Meteorology and Air Quality (ENV-MAQ).

Another sign of the extreme dry conditions are the 1,000-hour fuel-moisture content measurements, which measure the modeled moisture content in dead fuels in the 3- to 8-inch diameter class and the layer of the forest floor about 4 inches below the surface. The 1,000-hour fuel moisture value is based on a running seven-day computed average using length of day, daily temperature and relative humidity extremes (maximum and minimum values) and the 24-hour precipitation duration values. Currently, the 1,000-hour fuel moistures are at a level that usually occurs in mid-May, thereby putting the region about a month ahead of normal.

The tinder-dry conditions, above-normal temperatures, prevailing winds and the availability of fine, dry fuels, such as standing grasses and thick mats of pine needles — that can be measured in depths of inches near some buildings — are a wake-up call for Lab employees to use precaution during this extremely dry period.

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**Laboratory Director Bob Kuckuck stands next to a vase of flowers he was given at an all-employee meeting by an employee for his work on the child-care issue.** Photo by LeRoy N. Sanchez

## Director: Laboratory is making safety improvements

### *Kuckuck also announces child-care 'quick wins'*

by Steve Sandoval and Kaiti Ferguson

The Laboratory and its employees have learned some valuable lessons in improving safety as a result of three recent incidents, Director Bob Kuckuck told workers at a recent all-employee meeting. The talk focused primarily on the safety incidents and lessons learned. Kuckuck also announced to the work force some of the accomplishments made by the child-care team he created last

year to develop and/or enhance existing child-care services in the community.

Kuckuck discussed these safety incidents that have occurred during his nearly year-long tenure as director, saying he wanted to “bring some closure” to them. He said he met with employees and groups involved in the incidents.

Investigations into one of the incidents led to the development of new processes “not based on a bunch of paper [but] on a path forward through which the people doing the work believe they are safer,” he said.

“This was a serious accident; it could have been much, much worse,” he said, referring to one incident last summer involving duplication of an experiment. The outcome of this incident was a new peer-review process for analyzing work processes, causes of the incident and what can be done to avoid a similar occurrence in the future.

“I think it is a tremendous example of Integrated Work Management and how to implement IWM,” said Kuckuck, adding that in this incident, there were no personnel actions taken, no willful misconduct on the part of employees.

Another accident involving americium led to a Department of Energy Type B investigation. The Lab did its own internal investigation. “We learned a lot. We need to get in front of the learning curve instead of behind it,” Kuckuck said. As a result of this incident, Kuckuck said new procedures are in place for packaging, ensuring proper monitoring equipment is in place and even how the Lab engages its emergency response team. “We really have learned very valuable lessons,” he said.

A third safety incident occurred when two acids were mixed together outside a [chemical fume] hood; it was discovered weeks after it occurred when a Lab employee ended up being hospitalized after experiencing respiratory problems, Kuckuck said.

“There’s no excuse for doing that sort of thing, mixing those acids outside the hood,” said Kuckuck.

Kuckuck said the Lab has work to do on eliminating a fear of reporting safety [incidents]. “I think that gets in the way and drives reporting underground,” he said. “I really think we have to get past this feeling of fear and get folks engaged in dealing truthfully and without fear,” said Kuckuck.

“Integrated Work Management is critical to this Laboratory. It has to be followed,” said Kuckuck. “Implementation is key; thinking is essential. It involves worker involvement and thinking,” he said.

“My objectives are be safe and report accidents so we can continue to work safely,” said Kuckuck.

On the matter of child care, Kuckuck acknowledged the work of a team of Lab employees, headed by Carolyn Zerkle, deputy associate director of administration, and reiterated his commitment to addressing the issue.

“I think we’ve got something going here,” said Kuckuck, who received some flowers from a Lab employee for advocating and supporting the efforts of the child-care committee.

“There’s no simple, single one solution to this and we really have to work it as a team,” Kuckuck said. “What we really want to do is work this with the community ... Working together is the solution.”

Zerkle has met weekly since last fall with community and education leaders and existing child-care providers, Kuckuck said. The committee is looking at enhancing existing services and possibly creating a Lab-operated facility.

Two of the recommendations of the committee includes establishing nursing rooms for mothers at Occupational Medicine (HSR-2) at Technical Area 3 and at the Community Relations Office (CER-30) in downtown Los Alamos, and creating “work breaks” for nursing mothers to go to child-care sites to nurse their babies. He said at the outset, the work breaks would likely be piloted in Los Alamos and White Rock.

And he said that it is possible that three community child-care providers may, as early as this summer, create 15 additional spaces for child-care enrollments. “This is something we can do right now. Negotiations are under way,” said Kuckuck.

Kuckuck also noted that the Lab has a dependent-care Web page with information on child care, elder care and other work-life issues.

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Los Alamos  
NATIONAL LABORATORY

## NewsLetter

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 at 135 B Central Park Square and can be reached by e-mail at [newsbulletin@lanl.gov](mailto: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. For change of address, call 7-3565. To adjust the number of copies received, call the mailroom at 7-4166.

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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.



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## LANSCE



by Tom Bowles,  
chief science officer

LANSCE (Los Alamos Neutron Science Center) is a central part of our science capabilities at the Laboratory. It provides a great example of basic and programmatic research and development working together in a broad range of science.

The Lujan Center is a national user facility that hosts more than 700 visitors each year to carry out neutron-scattering experiments [ranging] from materials science to bioscience to energy to nuclear physics. The Weapons Neutron Research (WNR) Center also is a user facility that hosts another 700 visitors a year who carry out R&D in nuclear science, including work with industry that provides the ability to test large-scale integrated circuits to do accelerated tests of susceptibility to damage from naturally occurring radiation. Proton radiography provides the ability to understand dynamic materials properties that are critical in determining nuclear weapons performance.

The Isotope Production Facility meets important national needs for radioisotopes used in medicine. And [the Laboratory] is commissioning an Ultra-Cold Neutron facility for fundamental nuclear physics research and a Materials Testing Station that is important in assessing materials issues in next-generation nuclear reactors.

LANSCE not only performs outstanding research and provides strong connections to the national and international scientific communities; it also is a dominant pipeline for new staff into the Laboratory. In the last 20 years, we have recruited more than 700 technical staff to the Laboratory through the research programs that use the accelerator. About two-thirds of those staff have gone into our national security programs.

LANSCE evolved from LAMPF (Los Alamos Meson Production Facility), a national nuclear physics user facility that was built in the 1970s. After more than 40 years of operation, the accelerator requires significant investments (~ \$200 million) to provide continued reliable operation in the future and to upgrade performance.

While this is a challenge in fiscally constrained times, both [Laboratory Director] Bob Kuckuck and [Laboratory Director Designee] Mike Anastasio are working with the National Nuclear Security Administration to obtain the required funding. Los Alamos National Security, LLC is well aware that the science done at LANSCE is a key component for the future of the Laboratory, and it is heartening to see LANS taking a very proactive role in the effort to sustain and improve our science capabilities at LANSCE.

## Lab launches Lean Six Sigma Program

The Laboratory's Lean Six Sigma program may hold the key to continued quality improvement, efficiency and a new level of performance as the Laboratory executes its national security mission.

What is a Lean Six Sigma Program?

Developed in the 1980s, Six Sigma is the philosophy and science of reducing costs and improving customer satisfaction through statistical and lean methods. The Lean part of the program refers to a set of principles and techniques designed to eliminate waste, continuously improve, and execute to actual demand. In short, Lean Six Sigma is a system that can continuously improve safety, quality, productivity and delivery, while reducing lead times and costs.

The Lean Six Sigma approach, which is applicable to all Laboratory activity — from business systems to manufacturing to administrative processes, is one of industry's best practices to eliminate waste, improve standardization, reduce variability, and improve the use of human and financial resources. During the past year, the Laboratory has used this quality-improvement method on several projects in the Weapons Engineering and Manufacturing Directorate with noteworthy results.

"[The program] is helping us foster an atmosphere of continuous improvement at the Lab," said Deborah Lucero, program lead for Manufacturing Systems and advocate of the Lean Six Sigma Program. "We are not only improving quality, efficiency and cost effectiveness, we are growing our organization and achieving worker and customer satisfaction in the process."

Lab projects that used Lean Six Sigma technology and tools include the following:

- Weapon manufacturing product certification process
- Measuring and test equipment
- Nuclear Material Technology property management warehouse



- Weapon material diversion process
- Weapon Production Control router and traveler process
- Engineering Authorization System Advance Change Order tracking process
- Pit Lean initiative for pit activities.

Each project was formed with a cross-functional team of individuals who are involved in

Lean Six Sigma program activities and included facilitators, such as Danny Salazar of Manufacturing Science and Technology (NMT-10), Linda Pace of Manufacturing Capability and Integration (MSM-5) and William Bivens of ADWEM-MSI, who supported the line project activities. The teams for each project met over several months to identify better ways of performing each process — cut waste; streamline and simplify operations; clarify roles and responsibilities; establish project objectives; revise work flow and facility layout; meet project objectives; and revise procedures.

Several Laboratory personnel (managers, staff members, and technicians) were trained during the initial phase of the program on Lean Six Sigma tools and concepts using University of Michigan's certification program. Through this Manufacturing Systems and Methods (MSM) Division-sponsored training program, the Laboratory has trained 131 employees in Lean principles and 84 in Six Sigma principles. MSM Division currently is sponsoring core Lean training and Manufacturing Engineering (MSM-4) is sponsoring Six Sigma training, led by Mike Lackner of MSM-4, who is a Six Sigma "black belt" or advanced practitioner.

"This effort is a starting point to build lean-thinking capability and a philosophy that is integrated into the way we do work," said Deborah Lucero of MSM Division, who heads the Lab's Lean Six Sigma Program.

For more information about the Lean Six Sigma Program and available training, go to the LANL Lean Six Sigma Web site at <http://lss.lanl.gov> online or contact Lucero at [djlucero@lanl.gov](mailto:djlucero@lanl.gov) by e-mail.

## Director ...

*continued from Page 2*

Kuckuck said Los Alamos National Security, LLC, the Lab's new management and operations contractor effective June 1, has committed to the Lab's plan for child care.

To see slides Kuckuck used on the child-care issue, go to [https://www.lanl.gov/news/bulletin/pdf/Director\\_All\\_Hands\\_032906.pdf](https://www.lanl.gov/news/bulletin/pdf/Director_All_Hands_032906.pdf) online.

Kuckuck also said that the "Places" phase of the transition is continuing. "The feedback I'm getting is it's going quite well. We're reassessing where we are with these facilities," he said.

Kuckuck reminded Lab employees to continue to work safely during the transition and recounted a recent incident with an employee who was conducting some experiments with several liquids. The employee was in a hurry to go to a meeting about the transition, but the employee realized that she hadn't followed proper procedures for safe use and stopped her experiment. The following day, Kuckuck said, the employee reported to a supervisor that she hadn't followed proper procedures.

"So while there was a perfect example of a distraction having to do with the transition ... I think this is an indication of people being willing to speak up. I couldn't be more pleased," he said.

# Los Alamos Transition Project information

*Editor's Note: Rich Marquez, leader of the Transition Team, writes a weekly column on the transition project that is posted to the Transition Web site at [transition.lanl.gov](http://transition.lanl.gov). Following are his last two messages.*

## Transition Project information and resources

March 29 — With 64 days left until June 1, 2006, the Laboratory has reached the two-thirds mark in the transition process.

Transition teams are now pursuing activities in all three transition phases: people, places and processes. Consequently, we are amidst the busiest time in transition thus far. Los Alamos National Security, LLC Transition Manager Tom Gioconda recently shared that of the 913 documented, specific transition activities that must be completed by June 1, about 600 are currently in process, while about 200 have been closed out to date. This means transition activities likely will now peak as we head into the home stretch.

As we stay very busy, as a general rule, we often don't look out for ourselves. Given that the heavy workload at this time likely will continue through transition's end and the fact that many people working these issues are also working programmatic activities, we all must take the extra time and care to look out for one another. If you're seeing something that is not safe or you're seeing someone who is too tired or distracted to safely or effectively complete a task, please step in and intervene for everyone's benefit. Safety and timely completion of programmatic deliverables remain paramount during transition; they both start and finish with a team taking care of each other for safe and secure mission accomplishment.

With that in mind, here is a brief update about the three phases of transition.

### People

This continues to be an extremely busy week in the human resources arena. Since establishing the Transition Hotline (1-888-505-9292) on March 8, LANS has received nearly 1,000 calls about a variety of issues. Additionally, a few employees have not yet received a LANS Employment Offer package caused by everything from incorrect home addresses to missing mail delivery. Those who have not yet received a package should contact the hotline because LANS wants to get you that information for your deliberation as soon as possible.

I also urge line managers to communicate with employees within their organizations who are located off-site about the Employment Offer Packages. LANS has had several visits and/or video-conferences with them, but line managers can provide personal guidance to off-site employees about how to receive a package if they haven't yet received one, or about mapping issues in cases where employees feel they might have been mapped incorrectly into an organization.

[Recently], specialists from the University of California and LANS [hosted] a series of employee benefits information sessions. The sessions [covered] current UC benefits as well as the approved LANS total compensation and benefits packages, and are designed to help you make benefits decisions. [A video of the presentation can be found at <http://int.lanl.gov/media> online]. In light of the fact that it is difficult to read slides when viewing the presentations, employees can access the LANS slides at [http://transition-int.lanl.gov/docs/LANS\\_Benefit\\_Package\\_final.pdf](http://transition-int.lanl.gov/docs/LANS_Benefit_Package_final.pdf) and the UC Slides at [http://transition-int.lanl.gov/docs/Final\\_Posting\\_UC.pdf](http://transition-int.lanl.gov/docs/Final_Posting_UC.pdf).



### Places

The Laboratory continues to coordinate facility walk-downs by LANS. Tom Gioconda, LANS transition manager, reminded me that facility walk-downs are not inspections, but rather a way to assess facilities from a liability viewpoint for an incoming limited liability company. The walk-downs are assisting LANS in development of "pre-existing conditions" for each facility. Each responsible division leader is receiving a copy of the LANS walk-down observations for their relevant facilities. LANS has completed about 33 percent of their scheduled walk-downs so far in accordance with their transition plan.

### Processes

The "Processes" phase of transition has just begun. In this phase, LANS will review, endorse or offer a change process for all Laboratory policies and procedures for LANS use beginning June 1. In a process called "Blue Sheeting," LANS will document policies that will carry over on June 1 or potentially identify policy modifications or changes that could be implemented after transition. All Blue Sheeting must be completed on or before April 29 in order for LANS to meet its deadline of posting policies and procedures for employees to review on May 22 for safe and secure and orderly operation on June 1, 2006.

Please continue to refer to the Laboratory's Transition Web site for the latest official information about the Laboratory Transition process, questions and related topics.

### Processes phase

April 4 — The third phase of transition, the "Processes" phase, has begun. In this phase of transition, personnel from Los Alamos National Security, LLC will review all current Laboratory policies and procedures and accept or make changes to them for use beginning June 1, when LANS assumes management and operation of the Laboratory.

As you know, the Laboratory is not lacking in an abundance of policies and procedures. Thus the "Processes" phase is another ambitious phase of the transition process that is taking place under an already tight schedule.

### Three tiers

LANS Transition Manager Tom Gioconda has informed us that the LANS transition team has divided our existing Laboratory policies and procedures into three tiers. The majority of policies and procedures that provide overall governance of the Laboratory—for example, policies found in the current Administrative Manual or safety and security procedures—comprise tiers 1 and 2 and include hundreds of items. Despite the number of these policies and procedures, Tom reports that LANS has a pretty good handle on Tier 1 and 2 because most are available for review on the Laboratory Policy Office Web site.

More daunting, however, are the Tier 3 policies and procedures, which include all of the individual policies and procedures for individual work areas, buildings, laboratories,

firing sites, etc. Many of these types of policies and procedures exist in paper form and must be obtained from subject matter experts at individual locations. Because of the sheer number of Tier 3 items, the LANS team will be working quickly to meet deadlines required for this phase of the transition.

### Blue Sheeting

Each policy and procedure under each tier must be identified and reviewed in a process called "Blue Sheeting." During this process, policies or procedures will be identified for use by LANS on June 1 "as is," with minor changes, with major changes or with the caveat that major changes will be implemented sometime in the future. Under the schedule envisioned by LANS, Blue Sheeting must be completed by April 29. This will enable LANS to post policies and procedures for the incoming work force to review by May 22.

Blue Sheeting is not intended to yield major changes in the process, or significant revisions that would require changes in operating documents like the Technical Safety Requirements. Tom has informed me that if deleting or proposing significant changes to policy will result in disruption to organizations come June 1, deletions or changes are not going to be approved unless safety, security or operational concerns are too significant for LANS to proceed without adjustment. Where changes to division-specific procedures are necessary, LANS will coordinate with Laboratory managers on creating reasonable changes under an acceptable timetable.

### No policy revisions after April 15

Due to the Blue Sheeting requirements and scheduling, after April 15 the Laboratory will not initiate new or revised policies or procedures that would become effective prior to June 1 without prior coordination between LANS and the Laboratory Policy Office. Associate directors and managers must coordinate with division, group and team leaders to ensure compliance with the April 15 cutoff date.

As mentioned, LANS plans to have all policies and procedures posted for employee review by May 22. This review will enable employees to understand work requirements after the June 1 changeover.

Please remember that no part of LANS Transition or University of California closeout activities is so important that it trumps safety, security and timely completion of programmatic deliverables. Employees who have concerns about those issues are encouraged to stop work or contact their line management immediately. We must continue to look out for one another during this busy time.

## On-line resources for information about the Laboratory's contract transition



[transition.lanl.gov](http://transition.lanl.gov)



[lansllc.com/index.html](http://lansllc.com/index.html)



[www.doel.gov/LASO](http://www.doel.gov/LASO)



## High fire danger ...

continued from Page 2

Fire season officially begins in mid-March and the Laboratory already has seen several red-flag days. A red flag warning is issued by the National Weather Service in Albuquerque when forecasted winds are expected to exceed 20 miles per hour, and forecasted relative humidity will be below 15 percent. When these conditions are expected to persist for three straight hours, and if the fire danger already is high, the National Weather Service issues a red flag warning.

Some common sense precautions are the only things standing between Laboratory and county residents and a catastrophic wild fire, according to Rob Farris, of Fire Protection (FIRE).

"A grass-fueled fire will run fast and hot — far faster than the Cerro Grande wild fire in 2000. It is everyone's responsibility to do everything possible to prevent the sparks that could set a fast-moving fire," Farris said.

Newly issued Implementing Policy 909, replacing an earlier Administrative Manual policy and a Director's Instruction regarding smoking policies at the Laboratory, are located at <http://policies.lanl.gov/pods/policies.nsf/MainFrameset?ReadForm&DocNum=IMP909&FileName=imp909.pdf> online.

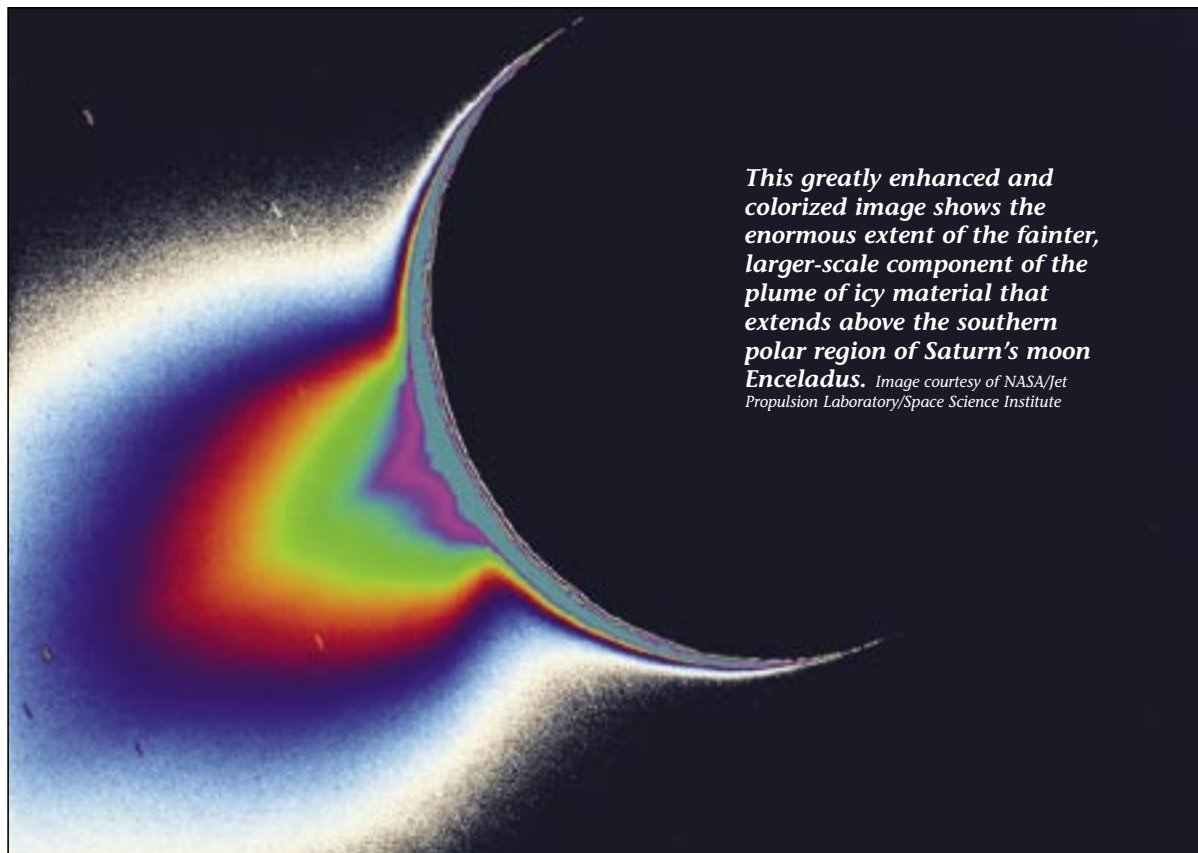
Employees who are smokers are asked to review the policy and follow the restrictions it contains. That includes smoking only in those areas where it is specifically permitted, carefully disposing of spent matches, embers and cigarette butts only in the containers provided, and refraining from tossing lit cigarettes or spent matches from an automobile or alongside a walking or biking path.

Nonsmokers can help by remaining vigilant and protecting colleagues and property from the consequences of an errant ember.

All Laboratory workers should check the fire danger rating daily and adhere to the restrictions that accompany it. The fire danger rating is published every day in the Daily Newsbulletin and on the Laboratory's home page.

Lab leaders should walk the areas surrounding buildings. If a commonly used "smoking permitted" area is matted with pine needles and/or on the edge of a canyon that could quickly funnel flames to surrounding structures, move the smoking area or close it down. Initiate work orders to clear pine needles away from buildings, especially near temporary structures that are particularly vulnerable to fire, and cut pine branches that overhang structures.

"Everyone's vigilance is needed to get the Laboratory safely through what is expected to be a very dangerous fire season," said Farris.



*This greatly enhanced and colorized image shows the enormous extent of the fainter, larger-scale component of the plume of icy material that extends above the southern polar region of Saturn's moon Enceladus. Image courtesy of NASA/Jet Propulsion Laboratory/Space Science Institute*

## Cassini measures geysers of Saturn's moon Enceladus

by Nancy Ambrosiano

Cassini data obtained during a close flyby of the Saturn moon Enceladus support an observation that large amounts of water are spewing into space from the tiny moon's surface. This water originates near south polar "hot spots" on the moon, possible locations for the development of primitive life in the solar system.

Announced by the Cassini Imaging Science Team in a recent issue of *Science*, the theory is bolstered by measurements from the Cassini Plasma Spectrometer, as reported in the same issue by a team led by Robert Tokar of Space Science and Applications (ISR-1). CAPS was partly designed and built at Los Alamos.

"During the July 14 close flyby we began getting signatures, far from Enceladus, of water ejection. From the deflections we could measure of the ionized gas in the magnetosphere, it was erupting at 100 kilograms per second (220 pounds per second), and the data are consistent with measurements from the spacecraft's other instruments. It is actual H<sub>2</sub>O molecules," said Tokar.

Enceladus is a small moon, but highly reflective due to the fresh layer of snow and ice on its surface. Tokar suggests that the icy geysers at the south pole, erupting from a series of cracks, are pumping a continuous flow of water particles into the area above the moon. Much of the material falls back to the surface as snow.

In addition to constantly refreshing the snowy moon's surface, the geysers also appear to be supplying oxygen atoms to the planet's E ring. Like an icy version of a steam engine, the little moon is chugging around Saturn, leaving a floating trail visible to the spacecraft's cameras and strong telescopes.

"Our paper, with 12 coauthors from the U.S. and Europe, looks at the plasma of hydrogen, water and electrons in the ionized gas of the magnetosphere. The magnetosphere itself deflects in the vicinity of Enceladus, and we measure the plasma and that deflection. That is how we were able to determine the amount of water being ejected," said Tokar.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency and is run by NASA's Jet Propulsion Laboratory. The principal investigator of the multi-national CAPS team is David Young of Southwest Research Institute.

Images of Enceladus and Saturn are available at <http://ciclops.org>, <http://saturn.jpl.nasa.gov> and <http://www.nasa.gov/cassini> online.



## Wildfires pose serious threat to nearby national forests

National Forest Service officials already have announced fire restrictions for some forests in New Mexico because of the extreme dry conditions.

The public can help protect forests from devastating wildfires by reporting any sightings of smoke and being responsible campers. The U.S. Forest Service reports that the number one cause of non-natural fires is improper extinguishing of campfires. A fire last month at American Springs campground in the Jemez Mountains burned 5 acres and was caused by an abandoned campfire.

Campfires should be built only where permitted and they should not be left unattended. Campfires should be extinguished and cold to the touch and smokers should always use an ashtray.

For fire restriction and closure information, call 1-877-864-6985 or go to [www.fs.fed.us/](http://www.fs.fed.us/) online.





## So... what do you think?

**Q:** Several months ago a "Fix-it" initiative was launched by Director Bob Kuckuck to identify and help remove small obstacles that impede science (see the Fix-it Web site at <http://int.lanl.gov/projects/fixit/index.shtml>). This grassroots effort solicits input from organizations and staff about small, nagging issues that prevent them from getting their work done and then seeks assistance from subject-matter experts and champions to help resolve these problems. What small, nagging problem that affects your ability to get work done would you like to see resolved?



**Sonya Ortiz of Science and Technology Base (STB) Programs**

None that I'm aware of. I just had an ergonomic evaluation done and they suggested a copy holder in front of my monitor rather than to the side. Other than that everything is good.



**Karen Trujillo of Training Services (PS-13)**

I don't see that there are any problems in my area. The one thing I do notice, especially during the summer when all the summer students are in for training, that with all the other students, parking is hard to find. Additional parking space is needed to address that problem.



**Carla D. Martinez of Procurement (SUP-6)**

What I would like to see in our building is a change room like we used to have at SM-30. A place where people can change in or out of their gym clothes. Right now we have to use the restrooms and there just isn't enough room.



**Sharol Tafoya of the HR Service Center (HR-SC)**

One thing that my co-worker has expressed is that she would like a light fixture in her work space moved so she doesn't have the glare from the light shining on her computer monitor.



**Mike Kolb of the Community Relations Office (CER-30)**

The system is in overload and with the transition in place it is even more overloaded. It's taking several weeks to get things fixed unless it is an emergency. So they need to fix the response time.



Laboratory staff members Lin Shao, left, of Structure/Property Relations (MST-8), David Chavez of Materials Dynamics (DX-2), and Richard Schaller, right, of Physical Chemistry and Applied Spectroscopy (C-PCS) share a laugh with Laboratory Director Bob Kuckuck at a luncheon reception at University House. The three received the annual Postdoctoral Distinguished Performance Award, which recognizes outstanding and unique contributions by Lab postdocs, which results in a positive and significant impact on the Laboratory's programmatic scientific efforts or status in the scientific community. Photo by LeRoy N. Sanchez

## Three receive Postdoctoral Distinguished Performance Award

by Kaiti Ferguson

David Chavez of Materials Dynamics (DX-2), Richard Schaller of Physical Chemistry and Applied Spectroscopy (C-PCS), and Lin Shao of Structure/Property Relations (MST-8) are the recipients of the annual Postdoctoral Distinguished Performance Awards.

The award recognizes outstanding and unique contributions by Lab postdocs, which results in a positive and significant impact on the Laboratory's programmatic or scientific efforts or status in the scientific community. The award also recognizes unusual creativity, innovation, or dedication and level of performance substantially beyond that which would normally be expected.

Ken Laintz and Robert Dye of DX-2 nominated Chavez, a current Distinguished Reines Postdoctoral Fellow, for his research in new energetic materials. Chavez's preparation of a high-nitrogen material with the fastest burn rate ever measured is currently under consideration for use in satellite micropropulsion applications and propellant use. In addition, Chavez has set a record with one of his two prepared high-nitrogen materials with incredibly low burn rates, which is under consideration as gun propellant by the U.S. Navy. Working with DX-2 employees, Chavez and his co-workers have developed a highly efficient gas generator and discovered a high nitrogen compound with the largest positive heat of formation recorded. Chavez's work is highly valuable to government agencies and the scientific community. He has more than 30 publications, eight patents and has been invited to present his work at the American Chemical Society. Chavez also serves as the postdoc representative on the Science Council.

Victor Klimov of C-PCS nominated Schaller for the award. Schaller came to Los Alamos as a postdoctoral research associate and was selected as a Director's Postdoctoral Fellow and later as a Distinguished Reines Postdoctoral Fellow. In 2003, Schaller constructed an amplified femtosecond laser system, and demonstrated the first light amplification in infrared using nanocrystals made of lead and selenium (PbSe), which was recognized in multiple publications. Schaller also demonstrated for the first time in 2004 that a semiconductor nanocrystal could produce multiple excitons from a single photon with complete efficiency and his work was featured in multiple publications.

Yongqiang Wang of MST-8 and Michael Nastasi of the Center for Integrated Nanotechnologies (MST-CINT) nominated Shao for his research demonstrating new methods to control and fabricate

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## In Memoriam

### Thomas Geelan

Laboratory retiree Thomas B. Geelan died Feb. 19. He was 82.

A veteran of the U.S. Army, Geelan joined the Laboratory in February 1951. At the time of his retirement in 1988, Geelan worked as a mechanical technician in the former Mechanical Fabrication (MEC) Division. He also worked in the former Chemistry and Metallurgy Research (CMR) and the Chemistry-Metallurgy "Fowler" (CMF) divisions.

Geelan is survived by his wife Edna, of Los Alamos; brother, Pat Geelan of North Tonawanda, N.Y.; son, Mike Geelan of Fort Worth, Texas; daughters Elizabeth Ann of Los Alamos and Marie of El Rancho; two grandchildren; and one great-grandchild.

### Richard James Cordovano

Laboratory retiree Richard James Cordovano died Feb. 20. He was 64.

Cordovano came to Los Alamos in July 1987 and worked in Laboratory Counsel (LC). At the time of his retirement in January 1997, he worked in the former Business and Patent Law group (LC-BPL). He received his bachelor's degree in chemical engineering from the University of Rochester. He also received his juris doctorate from John Marshall Law School.

He is survived by his wife, Margaret of Sun City West, Ariz.; his son, Richard Jr., of Colorado Springs, Colo.; a daughter Shandra of Denver; his sister, Nancy George and his brother James Cordovano, both of Rochester, N.Y.; and one grandson.



## Lab sponsors volunteers training for pueblo education outreach

Jeff Carmichael, seated right, of Solid Waste Regulatory Compliance (ENV-SWRC) reads instructions to volunteers at the model rocket-building training activity at San Ildefonso Pueblo. Next to Carmichael is Trish Granich of Deployed Services (PM-DS). Standing is Elmer Torres of the Government Relations Office (CER-1), while seated left are Jose Aguilar and Bernice Martinez of San Ildefonso Pueblo. Inset photo: Martinez glues together pieces that will make up a model rocket. The volunteer training was coordinated by the Tribal Relations team in CER-1. The activity is one of three that are planned at area pueblo schools. The workshops are aimed at bringing science concepts into the classroom. Photos by Ed Vigil



## Avian flu ...

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"Based on our results, combinations of mitigation strategies such as stockpiling vaccines or antiviral agents, along with social distancing measures could be particularly effective in slowing pandemic flu spread in the U.S.," added Longini.

The results show that advance preparation of a modestly effective vaccine in large quantities appears to be preferable to waiting for the development of a well-matched vaccine that may not become available until a pandemic has already reached the United States.

"Because it currently is impossible to predict which of the diverging strains of avian H5N1 influenza virus is most likely to adapt to human transmission, studies of broadly cross-reactive avian-influenza based vaccines with even modest immunogenicity in humans are important," said Macken, an influenza researcher in Theoretical Biology and Biophysics (T-10). Ideally, both vaccine strategies would be done in parallel: Stockpile a modestly effective vaccine to use while the better-matched one is being developed, the authors suggest.

### How it all computes

The computer simulation models a synthetic population that matches U.S. census demographics and worker mobility data by randomly assigning the simulated individuals to households, workplaces, schools and the like. Department of Transportation travel data is used to model long-distance trips during the course of the simulation, realistically capturing the spread of the pandemic virus by airplane and other passenger travel across the United States.

"In the highly mobile U.S. population, travel restrictions alone will not be enough to stop the spread; a mixture of many mitigation strategies is more likely to be effective than a few strictly enforced ones," said Kadau of Explosives and Organic Materials (T-14).

The model of disease transmission involves probabilities that any two people in a community will meet on any given day in any one of a number of settings, such as home or workplace. Thus, simulated disease transmission is more likely for two people in the same household and less likely for two people who have less in common. "So we are only computing the probability of any person becoming infected on any given day,

and a roll of the dice is needed to decide whether they are infected or not," said Germann.

Other elements of randomness modify the simulated disease course. A significant fraction of infected people (33 percent in the present model) never develop clinical symptoms, although they are themselves infectious. In addition, the durations of the incubation and infectious periods can vary and are randomly chosen from distribution functions for each individual, involving more throws of the virtual dice.

"Computer models serve as virtual laboratories where researchers can study how infectious diseases might spread and what intervention strategies may lessen the impact of a real outbreak," said Jeremy Berg, director of the National Institute of General Medical Sciences. "This new work exemplifies the power of such models and could aid policymakers and health officials as they plan for a possible future pandemic."

The pandemic simulation model has been implemented in the Laboratory's celebrated Scalable Parallel Short-range Molecular dynamics (SPaSM) large-scale simulation platform developed for the nuclear weapons program. It runs on the Los Alamos supercomputer known as Pink, a 1,024-node (2,048 processor) Linux/BIOS/BProc "Science Appliance" running Clustermatic 3, the largest single-system image Linux cluster in the world. Pink's nodes have dual 2.4 GHz Intel Xeon processors (Pentium 4) with 2 gigabytes of memory per node. The purchase of the Science Appliance was funded by the National Nuclear Security Administration's Advanced Simulation and Computing program. Pink currently is a system software research platform, a science appliance cluster concept invented in Los Alamos' Computer and Computational Sciences (CCS) Division. Los Alamos has four science appliance clusters in use at this time for a variety of projects across the full range of Laboratory mission areas.

Images and Quicktime video of the computer simulation are available at <http://www.lanl.gov/news/images/avianflu.shtml> online.

## Three receive ...

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ultra-thin semiconductor layers. In his research, Shao explored the use of hydrogen atoms and strain engineering to localize and control facure in semiconductor materials as a means to separate nanometer-thick layers. Shao's discovery is a new method to transfer ultra-thin silicon layers with improved smoothness and superior crystalline quality and greater thinness. Shao is a Director's Postdoctoral Fellow and his research on transferring thin layers is expected to have widespread applications.

Receiving an honorable mention was Andrei Piryatinski of Theoretical Chemistry and Molecular Physics (T-12). Piryantinski was nominated by Sergei Tretiak of T-12 and Avadh Saxena of Condensed Matter and Statistical Physics (T-11).

Recipients of the postdoctoral award are first nominated by a Laboratory employee(s). The nominations are then sent to a committee of six technical staff members who review each candidate and then submit their final recommendations to the Laboratory director and chief science officer for approval.

The recipients all received a certificate and monetary award at a luncheon at the Lab. They also will have an opportunity to present their work at a future Director's Colloquium.





# Women: Builders of Communities and Dreams

A poster contest for school children was one of several activities the Laboratory sponsored in March to celebrate Women's History Month. Students were asked to design posters illustrating the theme of Women's History Month, "Women: Builders of Communities and Dreams." Posters were judged for creativity and artistic quality. The posters are scheduled to be displayed in Mesa Public Library in downtown Los Alamos through April — they were on display in the Otowi Building second floor lobby in March. The student artists were recognized at a ceremony at the library and they received a certificate and spoke briefly about their posters. Panel discussions and several Diversity Cinema screenings also were held in March for Women's History Month. The Women's Diversity Working Group, the Office of Equal Opportunity and Diversity (HR-OEOD) and the Diversity Affirmative Action Board sponsor Women's History Month at the Laboratory.



Leisa Davenhall of Chemical Sciences and Engineering (C-CSE), chair of the Women's Diversity Working Group, hangs a poster as part of a poster contest celebrating Women's History Month. Photo by Ed Vigil



Clockwise from top right: "Maria Montessori" by Lauren Tencati, Pinon Elementary School; "Harriet Tubman Escaping" by Rosemary Sartor, St. Anne's Home School; "Maria Martinez" by Katie Lofton and Alix Morgan, Chamisa Elementary School; "Vote Woman President" by April Morrison, Capital High School; "Teachers Build Kids Dreams!" by Allison Garcia, Pablo Roybal Elementary School; "Barbara Frietchie" by Linda Sartor, St. Anne's Home School; and "Christa McAuliffe" by Megan Euy, Pojoaque Valley Intermediate School.

