

# THE EXCHANGE

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## Coast-to-coast computer network impresses Exchange visitors

### People on the move

**Ralph Carlson** has become manager of Administrative Services at LLNL-Nevada, a position vacated by **Ed Harp's** retirement.

**Christy Kato**, formerly a principal secretary in EE, is now working for the leaders of Environmental Sciences' Instrumentation and Measurement section as an executive secretary.

**Denise Kellom**, formerly a technical publications practitioner with TID, has moved to Communication Resources as a senior office assistant.

Max Allison explains how members of the magnetic fusion energy research community across the nation can instantaneously share knowledge using this advanced computer facility dedicated to their kinds of problems.

The two-story-tall magnets and containment vessel of LLNL's Magnetic Fusion Test Facility began as spidery drawings and lines of code on computer screens connected to the National Magnetic Fusion Energy Computer Center (NMFEECC). During the July Exchange tours, administrative employees trooped through the decade-old NMFEECC to learn about its mission and machines and to discover its role in the magnetic fusion research effort at LLNL and throughout the U.S.

Program Manager John Fitzgerald, one of the tour guides, said that MFE scientists and engineers in locations throughout the nation turn to the NMFEECC to model physics and engineering theories and designs. Researchers use the results of these computer models to help in building expensive experimental systems. By modelling their ideas on the

computer first, they save time and money that might otherwise be spent rebuilding experimental mistakes. Their ultimate goal is to convert fusion energy into electricity using magnetic fields to confine a plasma. (Plasma is basically a gas made up of electrically-charged particles.)

Four participants saw what makes the NMFEECC tick: the heart of the communication network, the main computers and the data storage systems.

The communication network allows more than 3,000 users to interact with the center's computers and filing systems. Two satellite dishes outside the NMFEECC building beam signals to six User Service Centers throughout the U.S. Users at 70 other locations — national laboratories, universities and commercial companies — can reach the NMFEECC

*continued on page four*



## Welcome, new administrative employees!

The pages of The Exchange fill up fast. To maximize the space available for materials created exclusively for you, we hereby mothball our monthly roster of new administrative employees. A list of persons LLNL has newly hired is in general circulation. Plus, survey statistics show that while this column has interested readers somewhat more than average, it's not a runaway favorite. Let us continue to welcome newcomers in person.

## Correction

Principal Accountant Lulu Green's job classification was misstated in our last issue. The Exchange regrets the error.

## Touring NMFEEC

continued from page one

through telephone links to the nearest service center. As John noted, the network also allows users to communicate with each other. For instance, a physicist from the Princeton Plasma Physics Laboratory can share computer programs and approaches, and exchange notes with an engineer from TRW. John explained, "NMFEEC acts as the hub for all communications going from one user to another."

The center has two Cray computers — the fastest in the world, John noted — and is adding two more in the next nine months. One of these will be a new Cray-2 computer. Since greater computing speeds come from packing a computer's components closer together, the new Cray will be 10 times faster and half the size of the current Cray. The Cray-2 will be immersed in a tank and room-temperature liquid pumped through to help dissipate the increased heat.

Other computers in the center perform functions such as directing the network and the data storage systems.

The center uses data storage systems to store user files that are not currently being run on one of the problem-solving computers. A file in the NMFEEC is stored in one of three systems, depending on whether users reference the file weekly, monthly or annually. Files called up at least once a week are stored on disks and can be accessed in less than a second. Files used monthly are stored in the Mass Storage Device (MSD), which takes about 20 seconds to retrieve a file. The Automated Tape Library (ATL) holds files used only rarely. It can take from two to five minutes to retrieve a file from the ATL. Mechanical "robots" in the MSD and ATL retrieve files faster than a human operator could, but the times involved are still long by computer standards. (The zippy robots impressed many of the tour participants, including Barbara McDonald of Business Services, Ellen Rodenhizer from Electronics Engineering, and Donna Christensen from Employee Development.) Max Allison, another tour guide, explained, "We trade-off time for money. It takes longer to retrieve a file from one of the long-term storage systems, but

## Payroll is retiring rickety computer system

When your paycheck arrives on schedule — with correct deductions, taxes and contributions — it's almost a miracle, according to computer-wise folks in Accounting. That's because your check is one of 16,000 checks per month that an antique and cumbersome computer system must calculate and print. In recent years, extensive manual intervention by clerks, operators and programmers has been necessary to steer each month's 30 million payroll and benefit dollars in the right directions.

The paycheck miracle is about to get a firmer foundation. Fred Lather, a management analyst from Accounting, reports that new computer software is being installed this month "to bring the Laboratory's payroll system into the 80s."

The software, a product of Personnel Data Systems, is being customized for the Lab by PDS. Bob Zanetell emphasizes that people from the Administrative Information Systems group are cooperating in this software upgrade. Fred notes that a major goal has been to bring payroll operations and pertinent Human Resources record-keeping into a single, shared data base for the first time. The customization should be complete by the end of December.

Fred and his colleagues expect that the new software will give much needed flexibility and speed in accommodating changes requested by employees and organizations. Electronic automatic bank deposits, enabling the Lab to avoid looming bank service charges, should be possible.

those storage systems are less expensive than disk drives."

The NMFEEC continues to expand. Researchers in high energy physics, environmental and material sciences, and other energy fields have now joined the network. In addition to its other benefits, the center's fee for an hour of Cray computer time is five to ten times less than commercial company rates. And, a participating institution can avoid spending the \$8-10 million it takes to buy a Cray computer. That's really service!

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