

Facilities Quarterly

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY ♦ FACILITIES DEPARTMENT NEWSLETTER

OCTOBER
2000

Oakland Scientific Facility Nears Completion

The Oakland Scientific Facility (OSF)—the future home of Berkeley Lab's expanded supercomputing capability—is nearing completion.

In addition to housing three of the Cray T3E supercomputers now located in Berkeley Lab's Building 50 (and various administrative computers), the OSF will contain the new IBM RS/6000. This supercomputer can perform three trillion calculations per second (about five times more powerful than an individual Cray T3E). With such increased computing power, the 2,500 researchers across the country who use National Energy Research Scientific Computing Center (NERSC) computers will be able to create more complex and realistic computer simulations and models. These could apply to such research

areas as combustion, climate modeling, fusion energy, materials sciences, and computational biology.

The Computing Sciences Directorate (CSD) will begin moving into the OSF after October 1, 2000. Final touches on the building will be completed during October. Moving and installation of the NERSC computers (including the IBM RS/6000) will occur later in October, with computer hook-up in December 2000. Administrative computers will be installed in January 2001.

The partnership formed between Facilities and CSD to carry out the project worked splendidly. As Howard Walter, the CSD representative on the Facilities design team, said recently, "I'm certainly pleased with the building. The rooms are airy and comfortable, built for people as well as computers. But I'm just as impressed with the process of work on this project. The Facilities project team didn't merely keep CSD apprised, it included me as a dedicated member of the project's design team. There was never a possibility of miscommunication between us, since I was always part of the decision-making process."

Located in downtown Oakland (on the site of a former Wells Fargo bank building), the OSF provides 16,000 square feet of computer area, with an additional 4,000 square feet to be built out over the next two years. This extra room will be welcomed by CSD, which for several years had been looking for space for its supercomputers as well as administrative-support computers. This site was selected and leased to Berkeley Lab in August 1999, and remodeling of the site started shortly thereafter.

Remodeling of the building was extensive. In late 1999 and early 2000, Encinal Broadway, LLC., the landlord, performed extensive retrofitting of the building, which had been damaged in the Loma Prieta earthquake of 1989. Encinal Broadway had to strip the building down to its

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OSF computer area awaits arrival of supercomputers (photo by Roy Kaltschmidt).

Energy Awareness Month

Considering this summer's spate of emergency electrical alerts, you may not need to be reminded, but October is Energy Awareness Month. It is an occasion of particular significance to DOE's Federal Energy Management Program (FEMP), as evidenced by the posters now on display around the Lab, which proclaim DOE's current energy-awareness theme: "Be Energy Smart" at home, at school, at work, and on the move.

FEMP's mission is to reduce the cost of government by helping agencies reduce energy and water use, manage utility costs, and promote renewable energy. FEMP works closely with Facilities' Mechanical-IHEM (Inhouse Energy Management) group to find ways of reducing Berkeley Lab's energy use. Over the last 15 years, this partnership has

achieved reductions in energy consumption at the Lab of almost 35 percent, an average annual savings of over

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Oakland Scientific Facility *continued from page 1*

metal frame, then seismically reinforce and rebuild it to house the supercomputers. Ground-floor work involved building a three-foot raised floor and creating areas for specialized power connections, climate control, fire suppression, and operating/control systems. In addition, the existing ground-floor footprint was approximately doubled by new construction to accommodate the needed computer floor area. The basement was reconfigured with power transformers and cooling systems required by the new facility. The second floor was constructed for CSD office space, while the third and fourth floors have been leased to UC.

The OSF will be connected to Berkeley

Lab and other national laboratories through DOE's Energy Sciences Network, or ESnet. To accommodate ESnet, CSD and Facilities have routed a high-speed network connection to the new center and made improvements in the electrical supply capability of the building. In addition, a new 12 kV service from PG&E has been installed to handle the three new substations that will power the computers and the computer cooling systems.

The cooling plant at the OSF was designed to be as efficient and flexible as possible to accommodate large and growing loads. It also had to be particularly robust to keep the IBM and Cray

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Energy Awareness

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\$1.7 million in energy costs.

Energy Awareness Month culminates with FEMP's Federal Energy and Water Management Awards presentation, to be held on October 12th in Washington, D.C. This event honors the energy management successes and outstanding accomplishments of energy managers in the Department of Energy and other Federal agencies. Over the years, Mechanical-IHEM has received 37 awards from FEMP and others for its work. This year, Berkeley Lab's Environmental Energy Technology Division (EETD) will be honored for its work on the Rodeo Post Office lighting project (See *Currents*, 9/7).

What can each of us do to reduce Berkeley Lab's energy bill? The main thing, according to Antonia Reaves, Mechanical-IHEM's energy analyst, is to shut down our computers and monitors when we go home. The oft-heard warning that frequent reboots will kill your hard drive is, Reaves says, "...a myth from the days when hard drives were larger and made from softer materials. In fact, the Rocky Mountain Institute has conducted studies that show a computer would have to be turned off and on every five minutes for several years before damage would occur. Computers use from 30 to 60 watts and monitors average 150 watts, so leaving them on is the equivalent of having a couple of reading lamps on day and night."

Here are a few more energy saving tips:

- Turn off printers, copiers, personal computers, and monitors when they are idle.
- Turn off lights when leaving a room for more than a minute.
- Turn on task lights; turn off general and overhead lights.
- Turn off display and decorative lights.
- Activate and use the Energy Star, "power saver" and "sleep" features.
- Shut off coffee pots, radios, fans, and other appliances.
- Set thermostats to pre-cool spaces at off-peak times.
- Loosen clothing and dress casually during the warmest hours
- Make certain vent grills are not blocked by plants, books, or furnishings.
- Close fume hood sashes.



FROM THE FACILITIES MANAGER...

With fiscal year 2000 closed and fiscal year 2001 starting, I would like to thank everyone in the department for their usual outstanding performance. In the past few years the department has grown and become more diverse in its operations. The reputation of the Berkeley Lab Facilities Department remains among the best in DOE (I'm trying to be modest—you and I know it's the best). We have had the Peer Review and Landlord Review, and again we came away with high marks and a lot of compliments. Another special delivery was made by Transportation in moving a critical and delicate component of the DARHT to Los Alamos without incident. Our annual Self-Assessment (Appendix F) appears to be an Outstanding for the fifth year and Property Management looks to repeat the Excellent it earned last year.

At the same time our safety record has **NOT** improved. We have had a very bad year in recordable accidents with a total of 27. We had five in May, four in April, and three each in October, March and July. Every one of these accidents could have been avoided if the person had just taken a minute to assess the danger and proceeded more carefully.

We are reacting after a hazard is discovered. Some of the accidents were caused because the employee was not wearing work gloves. We evaluated 130 different pairs of gloves to find the ones best for our department. Seven different types are now in stock, including anti-vibration and other specialty gloves. We are obtaining new driver's seats for the buses to eliminate some of the strains experienced this year. A seven-fold carbonless form was redesigned to allow use of the computer and eliminate wrist strain. The Carpenter Shop analyzed all of their equipment guards and warning signs. The missing signs were installed and new signs were placed where potential hazards were discovered. Special machine guards were purchased. As commendable as these actions were, they would have been better if found and corrected **BEFORE** the injury.

Here's wishing us all a productive and **SAFE** New Fiscal Year.

Bob Camper

Work SMART...

WORK SAFELY...

If it is not safe, STOP the work.

FACILITIES DEPARTMENT

Facilities provides Berkeley Lab with a full range of architectural and engineering, construction, and maintenance services for new facilities and for modification and support of existing facilities.

Architectural and engineering services include facility planning, programming, design, engineering, project management, and construction management. Maintenance and construction functions include custodial, gardening, and lighting services; operation, service, and repair or replacement of equipment and utility systems; and construction of modifications, alterations, and additions to buildings, equipment, facilities, and utilities. Additional services include bus

and fleet management, mail distribution, stores distribution, property management, property disposal, cafeteria operations, and electronics repair.

Ongoing Facilities activities include renewal and upgrade of site utility systems and building equipment; preparation of environmental planning studies; in-house energy management; space planning; and assurance of Laboratory compliance with appropriate facilities-related regulations and with University and DOE policies and procedures.

The Work Request Center expedites facility-related work requests, answers questions, and provides support for facility-related needs.

FOCUS ON SERVICE: The Holiday Shutdown

Though the holiday season is not yet upon us, Facilities Operations and Maintenance Manager Don Weber and his staff are already preparing for the annual shutdown. Starting on Thursday, December 21 at 6:00 pm, Facilities will curtail utility services to about 70 Berkeley Lab buildings for the duration of the holiday break, which ends on Tuesday, January 2. In addition to planning shutdown and maintenance activities, early preparations also focus on identifying the needs of those researchers whose buildings or equipment need special attention, or who will be onsite during the break.

The main benefit of the shutdown is energy savings. According to Facilities utility analyst Tony Reaves, the Lab saves around \$18,000 in energy and other utility costs over the break. Much of the savings results from reduction of space temperatures to 55 degrees F, reduction of building supply air, and securing of fume hood sashes. Weber points out that every dollar saved in utility costs is a dollar earned for research. "To maximize energy conservation," says Weber, "it's important that we shut down all unneeded building lighting, heating, ventilation and air conditioning systems, cooling towers, and process hot and cold water pumping systems. 'Turning off' research environment and process conditioning and vacuum systems, wherever practicable, is very helpful in our cost saving effort."

Although Weber encourages researchers to conserve energy wherever possible, Facilities makes every effort to support researchers who have special needs during the holiday break, such as maintaining room temperature and utility services or monitoring of experiments.

Researchers needing special monitoring of experiments during their absence should contact their building managers, who cooperate with Facilities Operations and Maintenance in compiling all special service requests.

It is also important to let your building manager know of changes in requirements since the 1999 shutdown. "Instructions received from building managers in 1999 will remain in effect unless we are instructed otherwise," says Weber, "If changes are needed it is important that we receive an accurate, timely response—no later than December 14—so we can ensure that we have adequate equipment and staffing."

Those who will be working during the shutdown can help save energy by keeping thermostats low in their own space, using portable heaters and workstation lighting, and keeping windows and doors closed. Bringing a building's central heating up to normal temperature is wasteful if only a small area of the building is being used or if the building is only being used for a day or two.

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COMPLIMENTS

David Edgar of ISS writes that working with Civil/Structural Lead Fred Angliss has been a "...rare treat....He designed a seismic security system for our data center equipment that was strong, economical and flexible." Fred also helped expedite a UPS upgrade project for the data center. "After hearing that the proposed unit weighed in at 2.5 tons," says Edgar, "he quickly located an outside structural engineer to examine floor loading issues and determine a safe location for the equipment." Fred's prompt action allowed ISS to order the equipment before the end of the fiscal year.

Barbara Davis of Administrative Services/Engineering commends the Work Request Center and Paint Shop for their quick action on the Engineering Division's request to paint 46A-1120. The request was made on Thursday, July 13th, and the office was completed on Monday, July 17th. Davis extends "...a special thank-you to Joe Cullen for his quick, excellent job painting the office and for leaving it in a clean condition."

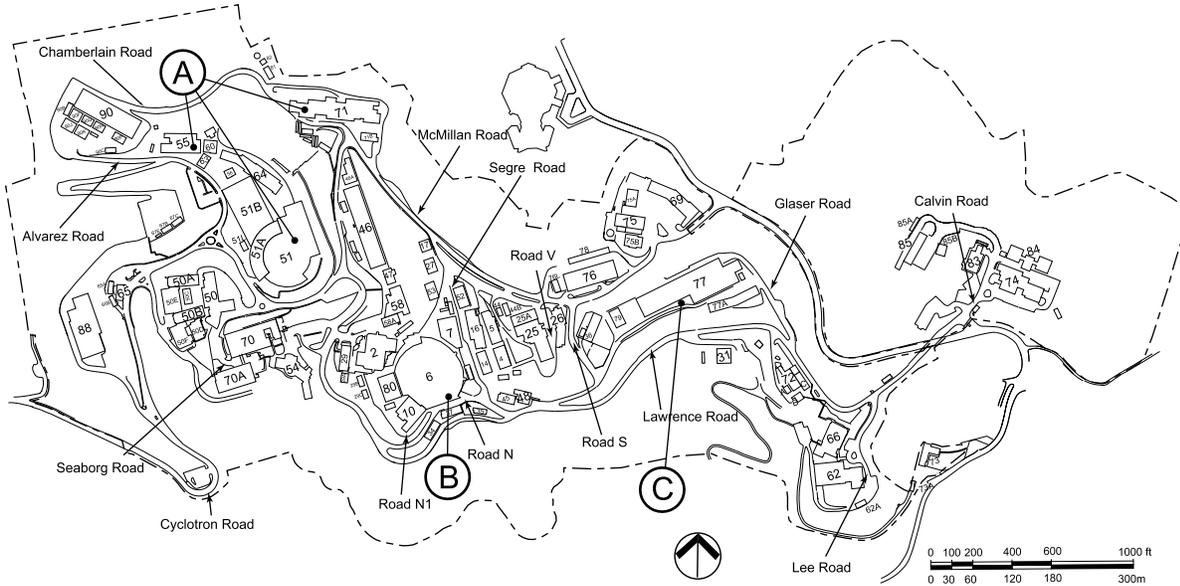
WORK REQUEST CENTER

Telephone	6274
Fax	7805
E-Mail	WRC@lbl.gov
Mailstop	76-222
Web	web3.lbl.gov/wrc

WRC welcomes questions or comments about Facilities Quarterly.

CONSTRUCTION AND YOU

Current construction projects affecting parking, or vehicular or pedestrian circulation



Project Contacts. The name in parentheses after each project is the Project Manager (PM) or other person who is responsible for project oversight: coordinating all phases from design through construction; controlling cost, scope and schedule; and ensuring client satisfaction. This person will be happy to answer any questions about the project.

Bldg 51, 55, 71: Unit Substation Replacements

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There will be repeated day-long power shutdowns in the affected buildings on weekends. Work is expected to be completed by the end of October. (Chuck Taberski, x6076)

Bldg 77: Rehabilitation of Building Structure and Systems

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Construction is scheduled to start in October around the building perimeter and in selected areas within the building. Laydown areas will be located adjacent to Building 77 and Glaser Road. (Bill Wu, x5216)

Bldg 6: 2nd Floor Office & Lab Buildout

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Parking spaces along the south side of Bldg 6 will be reserved for contractor use. (Richard Stanton, x6221)

“CAUTION—CONSTRUCTION AREA”

Construction barricades and warnings are there for your protection. Under no circumstances should you cross a construction barricade, or disobey posted warnings or directions. Contact the Project Manager for escorted access to construction areas.

ON THE DRAWING BOARD

projects in study or conceptual design

Advanced Light Source Nanoscience User Facility

Now in conceptual design, the proposed facility includes 40 laboratories to support ALS users. In addition, the building would provide 300 offices, a user support center, conference rooms, and training areas. Preliminary plans call for a 90,000-SF (8,500-m²) structure to be located immediately adjacent to Building 6 (the Advanced Light Source) in the Old Town area. (Chuck Taberski, x6076)

Administrative Services Building

Planning is going forward on a new 30,000-SF (2,900-m²) building that will house key Berkeley Lab administrative functions now scattered across the site. This "Town Center" will be located on the site of Building 29, which will be demolished. Its central location will allow efficient administration and easy access for all staff and guest researchers. (Richard Stanton, x6221)

Bevalac Decontamination and Decommissioning

Now in the planning stage, this project will remove and dispose of the former Bevalac heavy-ion accelerator and many associated structures. Slated for removal are the entire Building 51 complex, the western portion of the Building 71 complex (including the accelerator, injectors, experimental caves, control rooms, and associated shops and support spaces), and Building 71A. (Dave Tudor, x4171)

Rehabilitation of Site Mechanical Utilities, Phase 2

This project will extend the useful lives of the natural gas, low conductivity water (LCW), compressed air, and storm drain systems. All service risers in the natural gas system will be replaced with nonmetallic pipe. LCW system aluminum pipe will be replaced with stainless-steel pipe. Cathodic protection will be added to the compressed air system. Steel pipe in the storm drain system will be replaced or relined. Facilities has prepared a conceptual design report for FY2002 funding consideration. (Bill Wu, x5316)

Sitewide Water Distribution Upgrade, Phase 1

Much of Berkeley Lab's fresh-water supply system has been in place for over 30 years. This project will replace about 0.9 mile (1.5 km) of cast iron pipe and upgrade the remaining 5 miles (8 km) of pipe with corrosion protection, new valves, pressure reducing stations, improvements to an existing water storage tank, and a new water storage tank in the East Canyon area. Facilities has prepared an updated conceptual design report for FY 2001 funding consideration. (Bill Wu, x5316)

Operations Building

Conceptual design is underway for a multiple-use building for Operations. The new structure is planned at approximately 2,300 sq m (25,000 sq ft). (Danica Truchlikova, x6511)

IN PROGRESS

funded projects

Bldg 88: Seismic Anchoring

Architectural and engineering final design has been completed for seismic reinforcement of caves 1 through 5. Completion of work in cave 4 is scheduled for 1st quarter FY01. (Chuck Taberski, x6076)

Grizzly Substation Improvement

Amelco Electric, under contract to the University of California, has begun construction of improvements to the Grizzly Substation. The substation is de-energized, and all LBNL electrical power is being supplied by the University's new Hill Area Substation, located at the corner of Road S and Glaser. Construction will be completed in May 2001 (See article in *Facilities Quarterly*, 7/2000). (Chuck Taberski, x6076)

Bldg 6: Laboratory and Office Buildout

This project will build out approximately 1,100 sq m (12,000 sq ft) of laboratory, office, and research support space in the existing unfinished area on the second floor of Building 6. (Richard Stanton, x6221)

Bldg 77: Rehabilitation of Building Structure and Systems

Construction will start in October. This project will arrest differential settlement of Building 77, replace building cross bracing, and realign bridge crane runways. (Bill Wu, x5316)

OAKLAND SCIENTIFIC FACILITY *continued from page 2*

supercomputers at optimum functioning temperatures. A spare exists for each piece of cooling equipment (chillers, pumps, and cooling towers), which will be automatically switched into operation immediately upon failure of the operating unit, allowing the computing equipment to continue operating. The chiller plant includes three 800-ton chillers (one for future loads), each of which removes enough heat to melt 800 tons of ice per day. The plant includes two sets of chilled water and tower water pumps in the basement and two cooling towers on the roof. The chilled water serves 16 special computer-room air-handling units installed on the computer room floor, two Cray heat-exchange units, and the relatively small load from the rest of the building.

Fire protection at the OSF consists of a high-sensitivity smoke detection system and dry pre-action sprinklers in the computer room (some equipment also has internal fire suppression). Wet-pipe sprinklers and a conventional fire alarm system have been installed elsewhere in the building.

Maintenance for the OSF will be carried out by a contractor with the experience to handle the specialized needs of a supercomputing center. The maintenance contract includes periodic maintenance and around-the-clock emergency service for computer support utilities, such as the chillers, cooling towers and electrical systems, as well as basic building services such

as interior cleaning. The Facilities Department will work in close cooperation with the contractor, providing second-response support to the OSF.

Facilities project leader Dave Tudor wishes to thank the Facilities in-house personnel who worked on the project:

- Kathie Milano—Architect
- Fred Angliss—Structural Engineer
- Steve Greenberg—Mechanical Engineer
- Richard Baker—Electrical Engineer
- Anthony Yuen—Fire Protection Engineer
- Fred Mecum—Construction Superintendent
- Larry Bell—Construction Inspector
- Dan Galvez—Outfitting Coordinator
- Mary Oxnam—Administrative Assistant

FOCUS ON SERVICE

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With winter storms and freezes always a possibility—and Murphy's Law in force—Weber believes in being prepared for worst-case scenarios. "We would like to know who is going to be in which buildings in the event of a power failure or other emergency." In the past, winter winds have brought down trees, blocking access roads and damaging equipment. Rains have caused flooding, roofs have leaked, and freezes have burst pipes. In these and other conceivable emergencies, knowing where people are located onsite could be of great importance.

The Call...Don't Miss It!

If you need to install a new lab sink, remodel a conference room, add a fire exit, repair exterior stairs, install a bike rack, or accomplish other small projects, you must heed "the Call." Every year Berkeley Lab carries out approximately 100 small to moderately large infrastructure projects. The Call process gives Berkeley Lab's programmatic and infrastructure organizations the opportunity to examine their operational needs and include their project proposals in the budget process. Beginning this month, the Call will determine which projects will obtain funding in FY 2002.

In late October, the Associate Director for Operations issues a request to the Divisions for project proposals. Each Division's Call Coordinator compiles a list of projects that are most important to the division, ordered by priority, and submits it to Facilities Planning in early December.

The period from October to December is a window of opportunity for anybody with a project in mind to contact his or her Divisional Call Coordinator. "This is the one formal chance every year where we look at every request and evaluate it for its benefits and risks to the institution," says Facilities planner Dick Dicely. "If you have any idea, get it in the queue—a few words on the back of an envelope will do." Dicely emphasizes the importance of submitting projects at the beginning of the process. "Every year, around March or April, someone announces 'I need money to do this', and it's a very worthy project, but the money's not there."

The bottom line is you can't win if you don't play the game, so get those projects in!

A current list of Division Call Coordinators is available on the web at <http://www.lbl.gov/Workplace/Facilities/Planning/Library/callcoord.html>.

Safety Corner

Cheryl Durbin, Dee Wentz, Don Prestella, Bob Camper, Bill Birbeck, and Tammy Thompson discuss a workplace injury as part of Facilities' new accident review system. The purpose of the system is to prevent accidents from recurring rather than to assign blame (photo by Roy Kaltschmidt).



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