

His institution is one of the few places that actually pays someone to scout for stuff. Dale Schutte scans federal and state surplus equipment Web sites and keeps track of what researchers want. "Sometimes they give me specific items to look for, sometimes we get a random lead," says Schutte. "We get a lot of test equipment—capacitors, chillers, microwave equipment, oscilloscopes. . . . We got 300 capacitors last month that were left over from Star Wars days. We will use them to build pulse-forming networks to power large klystron tubes." Schutte works for one of Wisconsin's fusion groups but, he says, "I am trying to motivate other physics and engineering research groups to use the various surplus programs on a more regular basis."

And scientists may find that it's become simpler to scrounge from LANL. Since spring 2000, the lab has accepted requests for specific items, rather than periodically posting lists. "We've streamlined the process, and the recipient is transferred title," says Joe Roybal, one of the lab's property managers. "We gave away about \$1 million worth of stuff our first year." (To submit requests to LANL's Laboratory Education Equipment Gift program, e-mail leeg@lanl.gov.)

Round pegs, square holes

But scrounging does have drawbacks. "The trick," says Conrad, "is to know when the scrounged equipment will help you—you can waste a lot of time and energy pushing round pegs into square holes. Also, the equipment may not be in the as-advertised condition. Never accept anything sight unseen." Adds Navratil, "It's rare that you can take and use something the way it was used before. There is nothing worse than compromising your scientific objectives because a machine is the only thing you could get. That's false economy."

Complications can also arise when the government retains ownership. "Prior approval is required before we can lend or cannibalize," says Schutte. And tracking government property can be a nuisance. Says Morse, "One of my cryopumps belongs to the government and is labeled a proliferation risk. So every year when we get audited, I say, 'Skip the first three, but that fourth one is our proliferation cryopump.'"

There is broad agreement that the key to successful scrounging is personal connections. It also helps to have "no sense of shame," says Conrad. "You should always ask. The worst that they can tell you is 'No.'"

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Atlas Lugged from Los Alamos to Nevada

As part of a scheme to give the Nevada Test Site a raison d'être in an era of no nuclear bomb test explosions, the Department of Energy will haul Atlas, a pulsed-power machine built at Los Alamos National Laboratory in New Mexico, to the former testing grounds some 140 kilometers northwest of Las Vegas.

Atlas produces currents up to 30 million amperes, and pressure from the accompanying magnetic fields collapse a liner—a tuna-can-sized cylinder—radially inward. The resulting implosions can be used to study hydrodynamic instabilities, stress, strain, compression, distortion, and failure of metals—either in the liner or in a target at its core—at high pressure, temperature, and magnetic field.

Los Alamos scientists have begun experiments using the \$43.5 million machine, which was completed last year. Moving Atlas is intended to help spread activities among DOE's three weapons labs and the test site and to keep skills at the test site honed to resume nuclear testing should the 1992 moratorium be lifted. The move also fits with a broader push in Nevada to increase scientific and technical training and job opportunities.

Atlas will be taken apart and the first of 50 or so truckloads will set off for Nevada next spring. Moving the machine is expected to cost between \$10 million and \$20 million, including a new building to house it at the test site. The annual tab for operating Atlas, which is scheduled to come on line at the test site in late 2003, is expected to be about \$25 million.

Atlas will join other facilities contributing to the test site's facelift: Already



ATLAS (below) will be moved from Los Alamos to just south of where nuclear bombs were detonated at the Nevada Test Site (see arrow). The test site is becoming home to a host of facilities for studying material properties for the Department of Energy's weapons program.

ongoing are the so-called subcritical experiments, which subject plutonium to high pressures and temperatures, but without causing the chain reactions that would lead to a nuclear explosion; BEEF (Big Explosive Experimental Facility) came on line in 1998 to look at conventional chemical explosives; and since

spring, shock behavior of nuclear materials slammed into each other has been studied with a two-stage gas gun known as JASPER (Joint Actinide Shock Physics Experimental Research). The test site is also a candidate to host a potential successor to Sandia National Laboratories' pulsed-power Z machine. The common thread is the study of material properties for stockpile stewardship, DOE's program of experiments and computer simulations aimed at keeping US nuclear weapons in working condition in the absence of test explosions.

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