LASER FUSION

O'Leary Ignites Debate on Laser Lab

Last week's announcement that the Clinton Administration wants to build a $1.1-billion laser fusion facility at Lawrence Livermore National Laboratory showcased Secretary of Energy Hazel O'Leary's flair for politics and her ability to make an end run around the federal bureaucracy. Standing before a cheering crowd at the Livermore lab and flanked by members of Congress, O'Leary clearly enjoyed bringing an economic plum to the state of California. "If you want to infer something from this decision, it's that there is a strong future for this lab," she told reporters after an outdoor rally with several hundred of the lab's 7300 workers.

The project, called the National Ignition Facility (NIF), would give Livermore, which along with Los Alamos is responsible for designing nuclear weapons, a new lease on life after the Cold War. But the announcement comes just as two federal panels—one led by the White House Office of Science and Technology Policy (OSTP) and the other convened by O'Leary herself—are deep into major studies of the future of the Department of Energy's (DOE's) national labs. "This clearly undermines the OSTP study," one Administration official said bluntly. Some White House officials are also privately dismayed by O'Leary's ability to win approval from the Office of Management and Budget for the project at a time when domestic budgets are flat and the future of nuclear weapons research and government laboratories is uncertain.

One OSTP official tried to put the best face on the move, however. "There are a lot of projects that deserve attention, and we will have to see how this one stacks up to other science efforts," said Kitty Gilman, who directs the OSTP review. "There are still a wide range of options for Livermore."

The chair of DOE's 23-member commission, former Motorola CEO Robert Galvin, said the panel will consider the facility as a given when it assembles its report. The commission has held a series of hearings on the proper role for DOE's $5-billion network of national labs. "This is a positive endorsement of the lab system and Livermore, but it does not look like a political phenomenon that will affect our committee," said Galvin.

Larger than a football stadium, the facility will house 192 powerful lasers that will focus 1.8 million joules of energy—about 500 trillion watts—on a tiny container of hydrogen. That amount of power, generated for three billionths of a second, is 33 times more energy than can currently be generated by any laser system. If the beams are precisely balanced, the light will compress the fuel evenly, to a density far greater than that of lead (*Science*, 3 December 1993, p. 1504).

The intense pressure—equivalent to 100 billion Earth atmospheres—will then convert the hydrogen into helium at the fuel's core, just like in the sun's interior. If everything works smoothly, the process could yield up to 10 times the amount of energy it took to create the fusion reaction. NIF would mark a radical departure in fusion research, which until now has focused on creating fusion in a magnetically confined plasma called a tokamak.

The facility could also be used to conduct scaled-down tests intended to make sure the U.S. nuclear weapons stockpile remains effective. That's important for a weapons program facing a self-imposed ban on underground tests and the prospect of a comprehensive test ban in the next few years.

The Energy Department plans to spend about $55 million in the next 2 years on initial design studies for NIF. But in most big science efforts, the decision to make blueprints is the most critical point in a project's birth. Next summer, O'Leary will decide whether the facility poses any threat to nonproliferation. If, as expected, she determines it would not, construction could begin in 1996 and be completed by 2002. Once built, NIF would cost $60 million a year to operate.

That scenario may be a bit rosy, however. "Secretary O'Leary does not represent the whole government, and the fact is that we have to make budget choices," said one exasperated White House official. While the president is now certain to request funding for NIF in his 1996 budget request to Congress in February, Congress is expected to take a hard look at its cost and its potential impact on test-ban negotiations and the U.S. stance on nuclear nonproliferation.

–Andrew Lawler

BIOTECHNOLOGY

Merck Hires Top Academic Geneticist

With the era of gene-based medicine rapidly approaching, the pharmaceutical giants are jostling for a share of the expected commercial fruits of human genome research. SmithKline Beecham, for example, has acquired commercial rights to products resulting from the work of The Institute for Genomic Research (TIGR), a private genome-sequencing institute in Gaithersburg, Maryland, that has accumulated a treasure trove of DNA data. Eli Lilly owns shares in Myriad, the Salt Lake City gene-hunting company that recently played a key role in isolating *BRCA1*, a breast cancer susceptibility gene.

But the game is big enough for many players, and now, Merck & Co. Inc. is jumping in. Merck has recruited Thomas Caskey—president of the international Human Genome Organization (HUGO) and head of a major genetics team at Baylor College of Medicine in Houston—as senior vice president of basic research for Merck's West Point, Pennsylvania, facility. Caskey, who is expected to take some members of his team with him, starts his new job on 1 January. His responsibilities include oversight of Merck's vaccine, cancer, and HIV programs, and its new genomics program.

"A smart move on Merck's part," is how TIGR director Craig Venter describes Merck's recent acquisition. "We're strengthening our efforts in human genetics and moving [part of] our drug-discovery efforts into the area of gene therapy," says Bennett Shapiro, Merck's executive vice president of worldwide basic research.

Merck first demonstrated its interest in genomics earlier this month, when it offered to bankroll a public database of expressed sequence tags (ESTs)—gene fragments that can be used, among other things, to rapidly track down genes of potential pharmaceutical value (*Science*, 7 October, p. 25). TIGR has already amassed a gargantuan human EST database, but it will share the information with researchers only if they sign over proprietary rights to TIGR, which has contractual obligations to SmithKline. By creating a competing, no-strings-attached EST database, Merck could undermine SmithKline's investment in the database. Caskey will play a large role in developing Merck's database.

"I'm looking forward to ... the challenges of drug development."

—Thomas Caskey

The thrust and parry of industrial research intrigues Caskey. "I'm looking forward to ... seeing if I can take what I've learned in the academic world and match wits with the challenges of drug development," he says.

–Rachel Nowak