

when particle physics needs to be ever more international, the political process in the US has resulted in real damage to the relationships with our international partners,” Drell lamented. As the lab’s highest priority for the future, the Linac Coherent Light Source, which is under construction, will be protected from the funding cuts. But the lab’s Synchrotron Radiation Laboratory will have to cut operations 15% to accommodate the budget reductions.

US ITER support slashed

The jettisoning of all but \$10 million of DOE’s scheduled \$160 million contribution to ITER won’t immediately affect jobs, but it will cement the reputation of the US as an unreliable partner in international scientific collaborations, observers said. Raymond Orbach, undersecretary of energy for science, told ITER director general Kaname Ikeda that DOE was “forced to defer” its cash contribution, postpone some US design and R&D activities, and forego some long-lead hardware acquisitions. Stephen Dean, president of the industry trade group Fusion Power Associates, said the fiscal impact on ITER will be small, since the project is just getting under way and won’t need the money this year. DOE was specifically enjoined by the legislation from diverting any of the \$289 million appropriated for the domestic fusion research program to pay for ITER. The department could use resources from other programs but would first need approval from its authorizing and appropriations committees.

A spokeswoman for the European Commission said the European Union, as host of the ITER project, trusts that the US will find a way to honor its commitment to contribute.

An effort to develop energy applications for inertial confinement fusion also was reduced, from \$25 million last year to \$14 million in FY 2008. That high-average-power lasers program

owes its existence to a recurring congressional earmark in the nuclear weapons budget.

Research initiatives halted

The budget shortfall has forced the basic energy sciences unit of DOE’s science office to halt research initiatives in solar energy utilization, hydrogen, advanced nuclear energy systems, and mid-scale instrumentation, said the unit’s acting director Harriet Kung. Her division had planned on funding a portion of the 660 grant proposals in those areas that were left over from a 2007 solicitation, she said in a letter to colleagues. Smaller appropriations than expected last year provided only enough for 40 awards.

The Intense Pulsed Neutron Source user facility at Argonne National Laboratory has been shut down permanently, Kung said. Each of the other user facilities at national laboratories—synchrotron light sources, neutron scattering facilities, electron-beam micro-characterization centers, and nanoscale research centers—will have to reduce their hours of operation by as much as 20%. Construction funding for a successor to the National Synchrotron Light Source at Brookhaven National Laboratory has been cut by one-third, and construction and major instrumentation fabrication under way at SLAC and at Lawrence Berkeley and Oak Ridge national laboratories will be stretched out.

The basic energy science unit’s core programs will be funded at 2007 levels, and Kung said some layoffs are likely, due to the effects of inflation.

NSF, which stood to get a 7.4% increase in the appropriations bills, will have to make do with a 2.5% rise. The research and related activities accounts, the grants-issuing side of NSF, ekes out just a 1.1% increase. Tony Chan, assistant director for mathematics and physical sciences, by far the largest of the NSF directorates, admitted that “a lot of hard

decisions will have to be made, but we have a lot of experienced people here.” In accommodating the smaller budget, Chan said, all efforts will be made to protect the individual investigator grants that are the agency’s bread and butter. It’s also been determined that the \$52 million NSF-wide Cyber-enabled Discovery and Innovation initiative will be fully funded in 2008.

Finger-pointing

Congress and the administration took turns blaming each other for the bad news. The omnibus bill “turned its back on Congress’s concern for competitiveness,” Marburger said, by wiping out most of the increases for science and technology that had received strong bipartisan support in the America COMPETES Act, which was signed into law in August 2007.

But the White House was hardly without fault. Bush’s 11th-hour refusal to negotiate with Democrats on a spending ceiling he had imposed forced lawmakers in the dead of night to trim back spending bills that had been assembled and approved in a far more thoughtful process. In doing so, they unsurprisingly took their red pen to presidential priorities. The increases for the physical sciences were part of Bush’s American Competitiveness Initiative to revitalize US technological leadership. Marburger said he had little doubt that Congress has deliberately chosen the science programs for the budget-cutting scissors.

Ironically, House Speaker Nancy Pelosi’s (D-CA) “Innovation Agenda” proposed to double nondefense R&D spending over 10 years. Admitting that funding levels this year fall short of the 7% annual increases needed to meet the goal, Pelosi assured the scientific community in a letter that her commitment to growing the physical sciences budgets “remains strong and steadfast.”

David Kramer

New UK research council abruptly abandons some major international projects

Withdrawal from the International Linear Collider and from several observatories without peer review or even consultation angers British research communities.

What appeared last spring to be a rational reorganization of the way in which the UK funds several fields of science and technology has now elicited howls of outrage from British particle physicists and astronomers. In April the Particle Physics and Astronomy Research Council (PPARC) was merged

with the Council for the Central Laboratory of the Research Councils (CCLRC) to create the Science and Technology Facilities Council. Astronomer Keith Mason was appointed chief executive of the new STFC.

The CCLRC had been responsible for the Daresbury and Rutherford Ap-

pleton central laboratories as well as for major UK facilities like the ISIS spallation neutron source and the Diamond synchrotron light source. The STFC also took on the nuclear-physics responsibilities that had been the province of the Engineering and Physical Sciences Research Council.

At first the headlines appeared comforting. In October the UK government announced that its just-completed “comprehensive spending review” for the next three years provided stronger funding for science. But those funding increases, it turned out, were primarily for biomedical research, environmental studies, security measures, and other fields that promised socially useful near-term applications. The rest of science in the UK, it seemed, would have to make do with increases that just kept pace with inflation.

But when the STFC made public its itemized “delivery plan” for the next three years on 11 December, it suddenly became clear that particle physics and astronomy were taking major hits.

Abrupt cancellations

The delivery plan’s starkest proclamation was widely quoted in anger by the surprised community of particle physicists.

We will cease investment in the International Linear Collider [ILC]. We do not see a practicable path towards the realization of this facility as currently conceived on a reasonable timescale.

With equal abruptness, the STFC document informed UK astronomers that “We plan to withdraw from future investment in the twin 8-metre Gemini telescopes . . .” The astronomers also learned that the UK would withdraw from HESS and VERITAS, the world’s two leading ground-based gamma-ray telescopes (see *PHYSICS TODAY*, January 2005, page 19), and from EISCAT, a radar network in northern Scandinavia that studies the interaction of the solar wind with the upper atmosphere.

All of these were ongoing projects in which the UK had already invested significant money and effort over the past decade. The ILC, a proposed 32-km-long electron-positron collider for which a site has yet to be chosen, heads the wish list of the international particle-physics community (see *PHYSICS TODAY*, April 2007, page 26). Britain was one of the ILC collaboration’s principal European members. UK groups have recently been spending a total of about £5 million (US \$10 million) per year on R&D for ILC detectors and beam optics. And the UK had contributed substantially to the building of the telescopes and EISCAT.

Affected scientists found the preemptory character of the STFC with-

drawals particularly galling. “If the community was consulted in any sort of peer review, it was certainly vestigial,” says Brian Foster (University of Oxford), head of the ILC’s European contingent.



Foster

The STFC’s 10 council members are not meant to be representative of the broad range of specialties under their aegis. In principle the council gets its peer-review advice from a science board and its constituent panels of experts. But seeing no evidence of peer review, astronomers and particle physicists have been attributing the withdrawals to fiscal

binds that arose as largely unintended consequences of the merger.

The shortfall

The merger’s devastating bottom line was that the funds available to STFC for the period 2008–10 fell £80 million short of the total necessary to cover all the projects to which PPARC and CCLRC had already committed themselves for that three-year period. Two fiscal novelties contributed substantially to the shortfall: Diamond, which has just begun providing synchrotron light to a broad range of users, is the largest research facility built in the UK in 40 years. Construction began in 2003, but only recently has the UK Treasury ruled that its construction costs, going back to the first shovelful, are subject to the country’s 17.5% value-added tax (VAT). Government facilities are usually spared VAT, but the Treasury is treating Diamond as a public-private partnership. So it is now liable for hefty tax arrears.

The other new fiscal wrinkle is the government’s “full economic cost” (FEC) policy for helping university science departments. FEC will now contribute substantially to the academic salaries of professors doing funded research. “Here, the left hand doesn’t seem to understand what the right hand is doing,” says Foster. “FEC’s avowed purpose is to strengthen university departments. But killing research projects to fund FEC will certainly weaken the departments.”

Hard choices

“Given the £80 million shortfall,” says John Womersley, STFC’s director for science and technology strategy, “we had to make very difficult choices between worthy projects. For particle physics,

our first priority has to be full exploitation of CERN’s Large Hadron Collider,” which is scheduled to start taking data later this year. “And we have more general obligations to international organizations like CERN and the European Southern Observatory [ESO] that cannot be broken.” Then, he explained, there is the large community of biologists, condensed-matter physicists, materials scientists, and technologists who depend on the full operation of Diamond, ISIS, and STFC’s laser facilities.

The loss of the northern Gemini telescope on Hawaii’s Mauna Kea was keenly felt by British astronomers. Although the UK retains access to the ESO telescopes in Chile, Gemini North was their only major window on the Northern Hemisphere sky. After strong protests from the Royal Astronomical Society, STFC announced that it is trying to negotiate continuing UK access to the telescope on Mauna Kea. “We welcome that concession by STFC,” says RAS president Michael Rowan-Robinson. “Without Gemini North, UK astronomers will find it increasingly difficult to compete with their peers overseas. But we remain dismayed at other planned astronomy cuts, including a catastrophic 25% cut to university grants.”

The ILC’s cause wasn’t helped by repeated warnings from the US Department of Energy in 2007 that

the hope of choosing a site and starting construction by 2012 was too optimistic. In November Dennis Kovar, the new acting DOE associate director for high-energy physics, announced that he didn’t think ILC construction could start before the middle of the next decade. “Particle physicists may be used to such far-horizon

plans,” says Womersley, who comes out of particle physics. “But for most other scientists, that seems a very long time for an extremely ambitious undertaking with no convincing financial or political plan.”

In the days following the release of the STFC delivery plan, Womersley’s phone was ringing off the hook with calls from irate ILC adherents. “But just one week later,” he recalls, “my phone went quiet.” That’s because on 18 December the US Congress passed its omnibus spending bill (see the news story on page 20). That bill cut all US funding for ILC design and related R&D in fiscal year 2008 from \$84 million to \$20 million. The British withdrawal no longer seems like an isolated blow.

Bertram Schwarzschild



Womersley