

and that was seen as a bad sign by science lobbyists in Washington.

Marburger said the perception by some in the science community that he doesn't have the same job title and status in the White House as some of his predecessors is "a naive point of view. I am the president's science adviser. The president calls me his science adviser, and I'm paid by this White House to do that, and I was paid to do that before I was confirmed by the senate to be the director of OSTP."

Marburger said he had "no idea" why the NAS committee raised the title issue. "You know, this idea of titles has puzzled me from the very beginning. I don't understand it. I think it's irrelevant. It doesn't seem to have had any impact on my ability to get things done in this White House and I think it's a red herring, so I just tend to ignore it."

Appointing panels

The NAS report makes three recommendations for appointments to federal S&T advisory committees, and

the first one deals directly with the concerns that science advisory panels are being shaped by ideology. The recommendation says individuals should be selected for such panels "on the basis of their scientific and technical knowledge and credentials," as well as their professional and personal integrity. "It is inappropriate," the recommendation says, "to ask them to provide nonrelevant information, such as voting record, political-party affiliation, or position on particular policies."

At the July forum of the NAS committee, Porter asked Ehlers if it was acceptable to ask candidates for science advisory panels about their party affiliation or who they voted for in a presidential election. "I think it's an appropriate question," Ehlers said.

Marburger said recently that "in general, we think it is not appropriate to ask questions that are irrelevant to a person's service on a panel." The difficulty, he said, is that the "law requires that those panels be balanced,

but the law doesn't say what balanced means. So there is a judgment call on how balance should be achieved." But, he added, "I don't think people should ever be asked who they voted for. We have secret ballots in this country."

The report concludes with two recommendations, one urging that the nominating process for advisory panels be more "explicit and visible," and another recommending that "department and agency heads should establish an [advisory panel] appointment process supported by explicit policies and procedures and hold staff accountable for its implementation."

Asked if the report would lead the administration to change any of its procedures for seeking science advice, Marburger said, "the practices described in the report are practices that we tend to adhere to. I don't think it requires any huge policy change because the report seeks to identify best practices." The report, he said, "is a good guide for people who are involved with this process." **Jim Dawson**

After Serious Accident, SLAC Experiments Remain Shut Down and DOE Report Faults Lab's Safety Oversight

All the accelerators and storage rings at SLAC have been shut down since 11 October, when an electrical accident at the laboratory severely injured an electrician working for a subcontractor. SLAC director Jonathan Dorfman ordered the shutdown immediately after the accident, and he has decided that all experimental facilities should remain closed pending the findings of a Department of Energy accident-investigation board and implementation of the remedies it mandates.

SLAC is funded by DOE. The investigation board, headed by DOE's Richard Stark, was charged with investigating the proximate and root causes of the accident.

The board's report was released on 15 December. (It can be requested at <http://www.eh.doe.gov/csa/reports/accidents>.) It expresses some harsh judgments about safety oversight and procedures at the lab. Among its conclusions is the finding that "SLAC's emphasis on the scientific mission as a means to secure funding from the [DOE] Office of Science and compete with other laboratories reached [the

field-supervisor] level as direction to 'just get the job done.'"

The most visible competition in which SLAC is at present involved is the rivalry between the laboratory's flagship BaBar experiment and the very similar Belle experiment at the KEK laboratory in Tsukuba, Japan (see *PHYSICS TODAY*, May 2001, page 17). Both ongoing experiments, dedicated to the investigation of fundamental symmetry violation in the decay of B mesons, are based on novel electron-positron storage ring colliders called asymmetric B factories. BaBar's collider, named PEP-II, is filled with high-energy electrons and positrons from SLAC's 3-km-long linear accelerator.

BaBar and Belle both began taking data in 1999, and each group is loath to fall behind its rival in the accumulation of data. The accident report suggests that SLAC has been cutting safety corners in the pursuit of maximal data acquisition. "The significant breakdown in the enforcement of health and safety requirements is indicative of a work environment where occupational safety and health poli-

cies, programs, and procedures are not fully implemented," says the report. "The [site engineering and maintenance department], in particular, has not balanced the priorities of accelerator operation and worker protection."

The accident

On the morning of 11 October, a SLAC field supervisor asked David Simon, an electrician employed by a local maintenance contractor, to install a circuit breaker for a ventilation fan in a 480-volt electrical panel in the linear accelerator's klystron gallery (see the figure on page 25). The linac was running in preparation for the startup of the PEP-II collider after a 15-week summer shutdown for routine maintenance, and the panel was energized. Such "hot work" is sometimes justified because it avoids the delays involved in shutting off electric power. But because it can be risky, SLAC safety rules mandate a special permit for each such task.

As Simon was installing the circuit breaker in the energized panel, an arc flash ignited his clothing. He was wearing protective gloves, but not the appropriate fire-retardant clothing. The pressure burst from the arc also knocked down a fellow worker nearby. A third worker in the room attempted to smother the flames, but Simon suffered second- and third-degree burns over about half his body. The 51-year-



Dorfman

Cover of the electrical panel at which the 11 October accident occurred in the klystron gallery at SLAC. Despite its warning labels (PPE means personal protective equipment), the 480-volt panel was energized when the electrician was installing a circuit breaker, and he was not wearing fire-retardant clothing.

old electrician was hospitalized for a month and is now recovering at his family home in West Virginia.

The investigation board found that there was no justification for installing the breaker while the panel was energized. In any case, no permit had been sought or issued for the hot work Simon was doing. The report calls the events leading up to the accident "characteristic of an unstructured and largely undocumented approach to work that does not ensure safety." In fact, an internal safety review at SLAC earlier in 2004 had concluded that, of the 31 hot-work permits issued in the preceding three months, 23 did not have adequate justification. Nonetheless, the DOE report concludes, "SLAC management and [DOE's Stanford Site Office] did not demonstrate a sense of urgency in implementing the recom-

mendations that resulted from the [internal] review."

What needs to be done

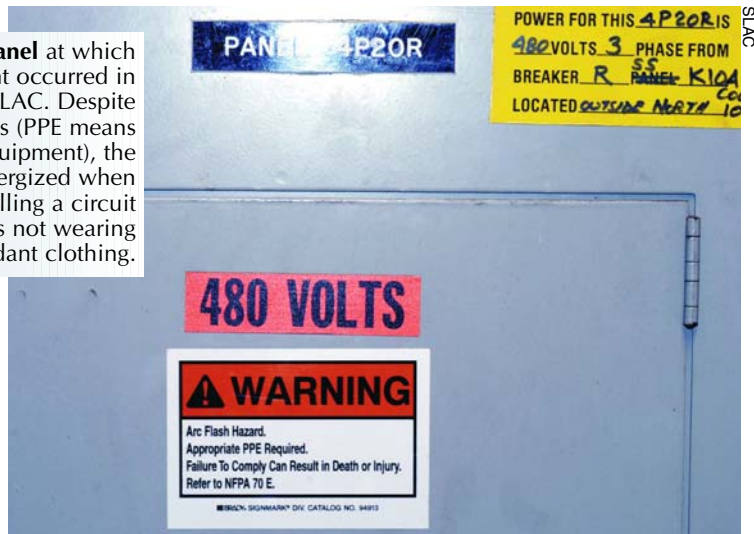
Accompanying the report's conclusions are a dozen "judgments of need." The report stresses that "the SLAC director needs to balance the priorities between operation and safety . . . and ensure that employees at all levels understand that concern for mission accomplishments not outweigh [safety]." More specifically, the report enjoins SLAC to enforce all applicable safety standards and to ensure that employees and outside contractors who work near ener-

gized conductors—and their supervisors—are trained in safe practices. The report contends that DOE's Stanford Site Office needs to develop safety oversight programs and, when necessary, exercise its authority to stop work or embargo funds.

"The board did a very rigorous job of looking into the underlying causes of the accident," says SLAC spokesman Neil Calder. "And we thank them for it. Our aims are the same, namely to make SLAC a

completely safe place to work." To implement the board's recommendations, DOE has appointed a corrective-action committee of experts from SLAC and other labs, coordinated by George Malosh of Oak Ridge National Laboratory. The committee began work as soon as the accident report was released and is to report its progress by the middle of this month.

Because SLAC is also subject to Stanford University, which runs the laboratory for DOE, university president John Hennessy has appointed his own "blue ribbon panel" in the wake of the accident report. Charles Shank,



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former director of Lawrence Berkeley National Laboratory, is a member of the panel. "Although safety might have been lacking in some areas at SLAC," says Shank, "Dorfan is well known among lab directors for his strong commitment to safety."

The Stanford panel is asked to ensure that appropriate systems and procedures are in place for safe resumption of the SLAC experimental program. The panel is expected to report to Hennessy by 1 March. Final approval for restarting the accelerators and storage rings on the SLAC site, including the Stanford Synchrotron Radiation Laboratory's stand-alone SPEAR ring, must come from DOE. **Bertram Schwarzschild**

Publishing Restrictions Eased, but Not Rescinded

US publishers may conduct normal publishing activities with private citizens in Cuba, Iran, and Sudan, countries under US economic embargo, according to a 15 December 2004 ruling by the Treasury Department's Office of Foreign Assets Control. The ruling overrides prohibitions that had led to self-censorship, fears of fines and jail time, and lawsuits against OFAC by authors and publishers.

In a press release, Stuart Levey, an under secretary for the Treasury's Office of Terrorism and Financial Intelligence, said, "OFAC's previous guidance was interpreted by some as discouraging the publication of dissident speech from within [the] oppressive regimes [of the embargoed countries]. That is the opposite of what we want."

For publishers and lawmakers, the ruling is an improvement, but it's not what they really want: no governmental regulation of publishing. Before this latest ruling, OFAC "had insisted that activities assisting 'works in progress' such as co-authorship and 'artistic or significant enhancement' were prohibited," says Marc Brodsky, executive director of the American Institute of Physics and chairman of the Association of American Publishers professional and scholarly publishing division, a party to a lawsuit filed last year against OFAC (see PHYSICS TODAY, November 2004, page 33). The new ruling "removes for a while the sword hanging over the heads of authors and publishers," says Brodsky. But, he adds, it excludes many governmental entities. "I don't know what the implications are." As an example, he asks how publications from

government organizations similar to National Institutes of Health in the embargoed countries will be handled.

Moreover, says Brodsky, "publishers worry that OFAC might again arbitrarily and capriciously change its regulations, and we think they have no right to even issue regulations on publishing." In response to the new ruling, Representative Howard Berman (D-CA), author of the 1988 amendment that exempts "information" and "informational materials" from government regulation, released a statement saying, "OFAC is still acting like they have the authority to grant permission and that interferes with our fundamental right to freedom of expression."

"The plaintiffs are still considering whether to continue the lawsuit," Brodsky says. Besides the principle of free speech, he adds, "we'd like to recover our [legal] costs. It's been hundreds of thousands of dollars." **Toni Feder**

Countries Race to Launch Moon Missions

When James B. Garvin, NASA's newly appointed chief scientist, first spoke to PHYSICS TODAY last month about President Bush's space vision of returning humans to the Moon, he was caught in afternoon rush-hour traffic around Washington, DC. The Beltway traffic seemed like an apt metaphor for the surge of interest in lunar scientific and human exploration. After the initial rush of US and Soviet lunar programs in the 1960s and early 1970s, exploration was reduced to a few flybys by spacecraft on their way to the outer planets.

That changed in 1994 when a low-cost Defense Department spacecraft called *Clementine* reached lunar orbit and mapped the Moon. The craft measured the Moon's shape and aspects of its mineralogy, and conducted radar observations that appeared to suggest tantalizing deposits of water ice in permanently shadowed polar craters. *Lunar Prospector*, a NASA spacecraft launched four years later, made detailed measurements of the Moon's near-side gravitational field, discovered indications of hydrogen—potentially related to water ice—in the polar regions, and

Japan's lunar probe *Selene* will pick spots for firing *Lunar-A*'s penetrators into the Moon.

found indications of new crustal magnetic signatures.

Now, a new wave of research is beginning with more than seven spacecraft prepped, planned, or arriving in lunar orbit from the US, Japan, Europe, India, and China. "*Clementine* and *Lunar Prospector* were the catalysts for lunar exploration that is long overdue," says lunar researcher Carlé Pieters of Brown University.

Why the Moon?

The global interest in the Moon can be summarized in three main points. First, "the Moon is the scientific gateway to understanding the formation and evolution of the inner solar system and the early crusts of Earth and Mars," says NASA's Garvin. Second, the Moon serves as a good destination for humans leaving low-Earth orbit to practice techniques that could eventually be used on Mars. Third, the Moon is also "relatively easy to get to for a nation just beginning a robotic exploration program," says Mark Robinson of Northwestern University.

The first of the new spacecraft, Europe's *SMART-1*, arrived in lunar orbit last November. It will be followed by two Japanese spacecraft, *Lunar-A* and *Selene*. In 2007, India will launch *Chandrayaan-1*, which will be closely followed by China's *CHANG'E-1*. In 2008, the US will send the *Lunar Reconnaissance Orbiter* (LRO) to help scout locations for human exploration. If NASA gives the go-ahead this summer, the \$700 million *Moonrise* mission to the South Pole Aitken (SPA) Basin will launch in the 2009–2010 time frame and return a lunar sample to Earth.

Lunar gold rush

Although the European Space Agency has talked about lunar missions for decades, the launch of *SMART-1* was more associated with the results from *Clementine* than with any long-term lunar program. The ESA craft also acts

