

of contingencies under which we would ever use or threaten to use nuclear weapons,” he said. “My administration’s nuclear posture recognizes that the massive nuclear arsenal we inherited from the cold war is poorly suited to today’s threats, including nuclear terrorism.” A comprehensive study of US nuclear forces Obama ordered last summer is still under way, he said. “But even as we have more work to do, we can already say with confidence that we have more nuclear weapons than we need.”

According to a new report from Harvard University’s Belfer Center for Science and International Affairs, the threat of nuclear terrorism continues to grow in Pakistan in tandem with that country’s growing nuclear arsenal and increasingly capable adversaries. The report also noted that 120 research reactors worldwide continue to use HEU. It said that nations with nuclear materials should build up their defenses sufficiently to repel an attack from well-trained and well-armed terrorists and



President Obama and Russian president Dmitry Medvedev confer during the nuclear security summit in Seoul.

should drastically lower the number of locations where the materials are kept.

Former Senator Sam Nunn, cochair of the Nuclear Threat Initiative, said governments still need to establish best

practices for security and benchmark their progress. Greater transparency by governments that possess the materials, he said, is needed in order to build international confidence.

Joseph Cirincione, president of the Ploughshares Fund, calls the summit “underperforming” and says it “didn’t demand attention and didn’t reach for new goals.” He says that plutonium received little attention at the gathering because South Korea has indicated it wants to use mixed oxide fuel—which contains plutonium—in its nuclear reactors.

Cirincione also criticizes the Obama administration for its silence concerning summit remarks by South African president Jacob Zuma that his country may resume producing HEU. In 2010 the South African Nuclear Energy Corp became the first of the world’s major producers of the medical isotope molybdenum-99 to ship a commercial quantity of the material made without HEU (see PHYSICS TODAY, February 2011, page 17). **David Kramer**

Nuclear security agency and weapons labs at odds

Micromanagement by NNSA is blamed for adding hundreds of millions of dollars in labs’ extra costs.

A lack of trust between the US Department of Energy’s National Nuclear Security Administration (NNSA) and the nuclear weapons laboratories that it oversees is harming the labs’ scientific productivity, according to a recent report by the National Research Council (NRC) and recent testimony from several former lab directors. “The relationship between NNSA and its [labs] is broken to an extent that very seriously affects the Labs’ capability to manage for quality [science and engineering],” states the NRC report *Managing for High-Quality Science and Engineering at the NNSA National Security Laboratories*. “There has been a breakdown of trust and an erosion of the partnering between the Laboratories and NNSA to solve complex S&E problems; there is conflict and confusion over management roles and responsibilities of organizations and individuals.”

The White House Office of Science and Technology Policy issued a statement on 5 April saying that at its request, the Science and Technology Policy Institute (STPI) is carrying out a study on governance of the laboratories. The statement said the goal of the study is “better understanding [of] various governance structures, including

those in the Departments of Defense, Energy, and Homeland Security; how they are implemented; and governance characteristics that most effectively support national security missions.” The STPI is a federally funded R&D center managed by the Institute for Defense Analyses.

Accretion and accumulation

Cochaired by former Lawrence Berkeley National Laboratory director Charles Shank and UCLA professor C. Kumar Patel, the committee that wrote the NRC report urged the NNSA to reduce reporting and administrative burdens on lab directors and free the lab chiefs to establish strategic science and engineering directions. The report recommends that the labs and the NNSA agree on the boundaries and roles of their respective managements and “recognize that safety and security systems at the Laboratories have been strengthened to the point where they no longer need special attention. NNSA and Laboratory management should explore ways by which the administrative, safety, and security costs can be reduced, so that they not impose an excessive burden on essential S&E activities.”

The Shank committee said the erosion of trust has been most prominent

at Los Alamos National Laboratory (LANL), where past lapses in safety, security, and business practices have been well publicized. The resulting aversion to risk there has led to a bias against experimental work and greater reliance on computational modeling, Shank says. The report says the distrust has spilled over to affect the NNSA’s relations with Sandia National Laboratories and Lawrence Livermore National Laboratory (LLNL) as well.

“Erosion of trust on both sides of the relationship shapes the oversight and operation of the Laboratories, resulting in excessive bureaucracy governing Laboratory activities at a deep level of detail, including the conduct of S&E,” the report states. It later describes the relationship as follows: “Like barnacles on the bottom of a boat, mistrust accretes and accumulates over time until it compromises performance.”

Former LLNL director George Miller told a 16 February House Armed Services Committee hearing that excessive NNSA oversight is costing taxpayers “several hundred million dollars” each year. And Michael Anastasio, a former director of LANL and LLNL, complained that “a significant risk aversion has developed within the bureaucracy at NNSA” and “has manifested itself in a growing focus on compliance at the expense of delivering the mission.”

“The multiple steps and difficulties

that must be overcome to accomplish even simple tasks within technical programs or projects have reached the point that they have become unworkable for the scientists and engineers," said C. Paul Robinson, former director of Sandia.

Checklists versus outcomes

The former directors faulted the NNSA's "transactional oversight" model of operations, saying the agency specifies the precise steps to be followed in carrying out the work performed at the labs. Historically, they said, the labs operated through "process oversight," with DOE ensuring that the right processes were in place and allowing the work to proceed. The NNSA, said Anastasio, should oversee the outcomes of lab operations rather than monitoring each activity.

The NRC report cites a senior staff member at LANL who complained that three or four signatures were required for him to take a laptop home to continue working and that five approvals were needed for him to attend a meeting of the American Physical Society. Over time, the NNSA has provided funding to the labs in smaller chunks known as budget reporting categories. Whereas the agency once "delivered money in tanker trucks" to the labs, said Robinson, "today it's delivered in teacups."

Officials at the NNSA declined a request for an interview. In a statement, Joshua McConaha, NNSA director of public affairs, said, "We are already actively working to reshape the relationship between the laboratories, sites, and headquarters; engage in efforts to examine and reduce the number of budget reporting categories; enact a series of management reforms intended to both improve the way we do business and increase the efficiency of our operations; and maintain a safe, secure, and responsible security posture at our sites."

Former NNSA administrator Linton Brooks says that although everyone is against micromanagement in principle, "if you're the lab, everything looks like

micromanagement. If you're a fed, you're adding value." Micromanagement, he says, develops over time as problems at the labs catch the attention of congressional overseers, who demand remedies. Some of the growth in paperwork, he adds, has been "self-inflicted" by the labs.

Independence an option?

Representative Michael Turner (R-OH), who chaired the Armed Services Committee hearing, said the NRC report and testimony affirmed "long-standing, well-documented, and fundamental concerns with the way NNSA manages its labs and plants." Turner cited the Congressional Commission on the Strategic Posture of the United States, which concluded in 2009 that the NNSA had "failed to meet the hopes of its founders" and "may have become part of the problem, adopting the same micromanagement and unnecessary and obtrusive oversight that it was created to eliminate."

A second 2009 report, *Leveraging Science for Security: A Strategy for the Nuclear Weapons Laboratories in the 21st Century*, by the Henry L. Stimson Center, said that the NNSA had failed to achieve its intended autonomy from DOE. "An excessively bureaucratic DOE culture has infiltrated NNSA as well," the report said. Both the commission and Stimson reviews recommended the creation of an independent agency to oversee the labs. But the NRC report stops short of calling for an independent NNSA; Congress established it as a semiautonomous agency in 2000. The commission said the NNSA should continue to report to the president through the secretary of energy, while Stimson did not specify whether the new agency should have cabinet rank.

Brooks agrees that the NNSA should become an independent agency. "Semiautonomous sounded like a great idea," he says. "But we tried it for 10 years, and most would agree that it didn't bring the changes we'd hoped for."

David Kramer

Taking steps toward the next big particle collider

Two candidate successors to the Large Hadron Collider are closing ranks, and a move is afoot for Japan to be the host.

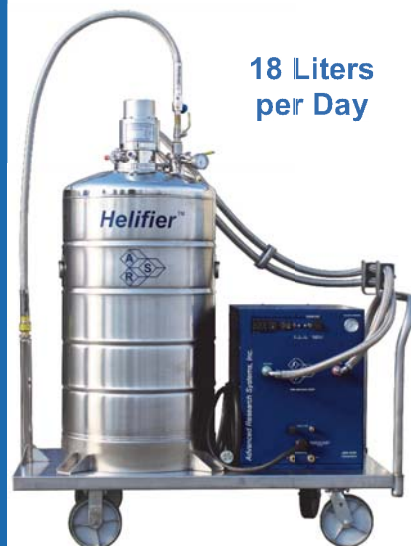
In creating a single governance structure for two linear collider projects, particle-physics leaders hope to avoid redundant R&D, unify the broader community, and increase the odds that

a next-generation collider is actually realized. The timing of the merger is driven by the impending expiration of the International Committee for Future Accelerators oversight body for the

Laboratory Cryogenic Systems

Helium Liquefier

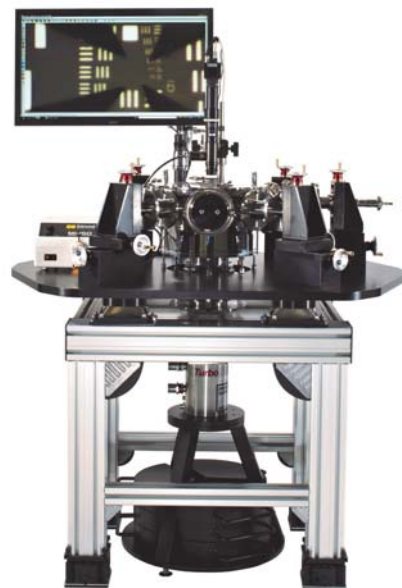
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