

from different disciplines working in close proximity is the ever-broadening global economy, respondents pointed out. Many companies believe it's important to have a presence in the non-US markets where they are selling products. That requirement could strain a company's financial resources. But electronic communications have made it easier to establish and maintain that presence without unduly increasing costs, some respondents said.

"Generating successful new prod-

ucts requires the combination of input from both customers and researchers in order to ensure that the products truly meet customer needs," said Duke. "In a global economy, this requires global research facilities housing collaborative groups that typically communicate via the internet."

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Karen H. Kaplan

Interim sites for spent nuclear fuel are of limited value

With the future of nuclear power in the US linked to the resolution of what to do with thousands of tons of radioactive waste at commercial nuclear reactors, a new American Physical Society report concludes that moving the spent fuel to interim storage sites offers no significant economic, safety, or security benefits if the planned permanent waste repository at Yucca Mountain, Nevada, isn't substantially delayed.

With waste piling up at the 103 operating US nuclear reactors and the future of Yucca Mountain legally and politically stalled, pressure has been mounting from some members of Congress and the nuclear industry to develop a system of interim storage sites.

But according to the APS report, *Consolidated Interim Storage of Commercial Spent Nuclear Fuel*, "there are no technical barriers to long-term safe and secure interim storage of spent nuclear fuel" at the nuclear plant sites where it now resides. The report also says that consolidating the spent fuel at several regional interim storage sites "would not significantly change the overall safety and security risks associated with its storage."

The report was released just as the US Department of Energy offered a new legislative proposal to Congress in hopes of advancing the long-delayed development of the Yucca Mountain repository. The DOE proposal, sent to Capitol Hill by energy secretary Samuel Bodman, would allow the federal government to take control of the land around the mountain, eliminate the 70 000-metric-ton cap on disposal capacity, and streamline licensing procedures. DOE officials have said they hope to have the repository operating by 2017. (See *PHYSICS TODAY*, May 2006, page 25.)

But Yucca Mountain faces two significant hurdles. Senate majority leader

Harry Reid is from Nevada and has repeatedly said he will not allow the federal repository to open in his state. And still unresolved is a 2004 US Court of Appeals ruling against a 10 000-year groundwater safety standard the Environmental Protection Agency had set for Yucca Mountain. That standard was about 290 000 years short of the time a National Academy of Sciences study said the radioactive waste would be dangerous.

Former Nuclear Regulatory Commission chairman John Ahearne, who cochaired the APS study with the University of New Mexico's Roger Hagen-gruber, said the report doesn't tie its recommendations or conclusions to Yucca Mountain other than to note that "there are no compelling cost savings . . . so long as Yucca Mountain is not delayed well beyond its currently planned opening." The report concludes that "there is sufficient space at all operating nuclear reactors to store all spent nuclear fuel in pools and in existing or additional dry casks." That storage space is sufficient to last "for the duration of the plant licenses," the report says.

Although interim storage sites can't be justified on economic, safety, or security grounds, the report notes that "consolidated storage could facilitate the decommissioning of sites with reactors that have been shut down." Ahearne said that nine sites could be completely decommissioned if the stored spent fuel could be removed, "but how valuable that is, we didn't try to assess."

Another positive effect of interim storage sites, the report says, is that "their implementation would establish a process for taking Federal title to commercial spent fuel and decouple private sector nuclear power plant operators from the long-term spent-fuel management problem." That would remove "a

potential obstacle to siting new nuclear power plants and to continued operation for existing plants."

Steven Kraft, director of used fuel management for the Nuclear Energy Institute (NEI), said the report's conclusion that interim storage could help clear the way for construction of new nuclear power plants "was the real headline." Kraft, who made a presentation to the APS study group as the report was being developed, said he took exception to the report's conclusion that interim storage would provide no "compelling economic benefit" if Yucca Mountain opens on time.

Kraft said the federal government was supposed to take possession of commercially generated spent fuel in 1998, "and they are nine years behind." Given the federal record on spent fuel and the political and technical problems that plague Yucca Mountain, few involved in the nuclear industry believe the repository will open by 2017. But that aside, Kraft said, "only if you look at interim storage in the narrowest sense, of one spent fuel storage site versus another, can you say there is no economic benefit. If you put [interim storage] in the context of keeping existing plants running and enabling the building of new ones, then there is significant economic benefit. What [NEI is] trying to do is create conditions in which new plants can go forward."

Although currently no efforts in Congress are under way to create interim storage facilities, Senator Pete Domenici (R-NM) included language in a report that accompanied an energy and water appropriations bill in the last Congress that would have forced states with commercial nuclear reactors to create a "separate facility within the state or at a regional facility" to store spent fuel. The bill wasn't successful, and the problem of what to do with the spent fuel remains.

Ahearne spent much of March briefing members of Congress and officials from the Nuclear Regulatory Commission and DOE about the study.

Jim Dawson

Campaign aims at scientists and engineers

For physicist and US Representative Rush Holt (D-NJ), the decision in 1998 to leave his job as assistant director of the Princeton Plasma Physics Laboratory and run for Congress wasn't too surprising. His father, Rush Dew Holt,