

Nonetheless, prospects for the reactor have improved since Brookhaven's crisis peaked in March, at which time some scientists feared the reactor would never reopen. "It is now clear that there are numerous voices, across the community, for restart," says Martha Krebs, assistant secretary for energy.

But BESAC's debate over restart demonstrates how far the expectations of the US neutron community have fallen. According to Lyle Schwarz, chair of Associated Universities Inc., the sacked Brookhaven contractor, the community has always said it needs the new NSNS as well as the existing reactor sources. "I find it strange that we're even discussing the question [of whether HFBR is needed]," he says.

Prospects for the construction of the NSNS have improved somewhat this summer. Both houses of Congress have allowed the administration's request of \$23 million next year for design work on the project. After a detailed review by 60 outside scientists who visited Oak Ridge last month, Dehmer says that money to start construction will be in the 1999 budget, which President Bill Clinton will propose next February.

But the review estimated the cost of NSNS at \$25 million higher than the \$1.265 billion proposed by the design team, and even the latter figure has crept up from the \$1 billion which some observers had expected the facility to cost. The review also ques-

Table 1 Comparison of main US and European reactor neutron sources

Reactor	Power	Flux (10^{14} ntrns/cm ² s)	Instruments	No. of users	Operating cost (annual)
United States					
High-Flux Isotope Reactor (HFIR)	85 MW	5	13	200	\$29m.
High-Flux Beam Reactor (HFBR)	30 MW	10	17	270	\$26m.
NIST Centre for Neutron Research	20 MW	4	25	750	\$6m.
University of Missouri Research Reactor	10 MW	1	7	[60]	\$8m.
Europe					
Institut Laue Langevin (ILL)	57 MW	12	32	1,500	\$26m.
FRM-II (under construction)	20 MW	8	25	[-]	\$25m.

tioned whether it could be built in six years. Any stretch in that timescale would add further to its cost.

NSNS benefits from its proposed location in the home state of Vice-President Al Gore, who is also the favourite to serve as president during its construction phase. Objections to the facility's location from Gore's political opponents in the Congress have been assuaged by a strongly collaborative management plan that will share the project with laboratories outside Tennessee.

In the short term, however, the outlook for neutron availability is bleak. Upgrades will create a better spallation source at Los Alamos and a more flexible reactor at Oak Ridge by the year 2000. But in each case, the modifications will curtail research activity between now and then.

The most popular neutron facility in the United States, at the National Institute of

Standards and Technology (NIST) at Gaithersburg in Maryland, has made some of its capacity available this year to researchers displaced from Brookhaven. The 20-MW NIST reactor has many instruments and a large and diverse user base, but it provides a lower neutron flux than either Brookhaven or Oak Ridge. "I have high-quality science going on which I am displacing to help meet a short term-need," says Mike Rowe, director of the NIST reactor. "I can't keep doing it forever."

The University of Missouri at Columbia, meanwhile, has stepped forward with a proposal to alleviate the shortage that some laboratory officials did not want to hear. According to Missouri's Bill Yelon, a 10-MW reactor at the university could take one-fifth of Brookhaven's users, if the department gives it \$500,000 for instruments and another \$500,000 a year in running expenses. Yelon hopes that this support would help to persuade his university to build a \$28-million facility that is needed for housing extra neutron experiments.

Iran Thomas, deputy director of basic energy sciences at DOE, says that backing for Missouri would bring pleas for support from all the other US university reactors. But several BESAC members like Yelon's proposal. "What's wrong with that as an interim solution?" enquired panel member Jan Herbst, of General Motors.

The answer, unfortunately, is that politics will preclude the DOE from shopping around, either in the United States or abroad, to fill its neutron gap. The cancellation of the ANS, the leak at Brookhaven, and the still precarious status of the proposed spallation source add up to a *de facto* deprioritization of neutron science by the energy department.

While investigators crowd on to the United States' lavish new photon-based facilities, the neutron community will have to fight for space on the facilities remaining. BESAC does not seem impressed by the argument that this is unacceptable: it sent the community leaders off to a room to identify the weak science that will be lost under existing capacity constraints. The EPRI's Stringer hopes the outcome will help BESAC make a compelling case for the restart of Brookhaven. "The decision we're looking for is a positive one," he says. **Colin Macilwain**

Women researchers take on 'old boys' network'

[WASHINGTON] Women members of the US Department of Energy's Basic Energy Sciences Advisory Committee (BESAC) have challenged what they see as the remnants of an 'old boys' network' pattern of neutron use that risks circumventing the peer review process.

At last week's meeting of BESAC (see above) several women questioned whether DOE facilities were really open to all scientists on the basis of merit, or whether people with the right connections monopolize beam time at the expense of outsiders. And the women suggested that their gender is heavily underrepresented among neutron users.

Patricia Dehmer, director of the department's \$700-million basic energy sciences programme, has transformed the composition of the advisory panel.

In doing so, she has not

only shifted the gender balance but also demolished the cosy consensus that used to exist between the panel and the programme managers it is supposed to supervise.

Last week's collision arose when Jack Fischer, vice-chair of the Neutron Scattering Society of America, told the panel how researchers with contacts at the facilities can often find ways to explore ideas that they consider interesting.

Geraldine Richmond, a chemist at the University of Oregon and two-year member of BESAC, asked why this was going on, when "this community doesn't have a reputation of generosity to outside users". Fischer responded that good ideas "didn't go away" just because they failed the peer review process.

At that point, Marye Anne Fox, vice-president for

research at the University of Texas at Austin, and the most senior female scientist on the panel, rebuked Fischer for failing to treat Richmond's question seriously and accused him of condoning "a circumvention of the peer review process".

Patricia Thiel, head of materials chemistry at Iowa State University, then asked Fischer for a breakdown of the Neutron Scattering Society's membership. An office-bearer of the society said that women members numbered 15-20 out of a total of 750.

As Thiel observed, this suggested women are grossly underrepresented among neutron users, as compared with their representation in fields of science such as structural biology and many branches of chemistry that could use the technique. **C.M.**