guessing we're going to be in the 200-people range, probably a little less. So our jobs will be to manage programs that will be conducted in the labs, industry, and universities. And that means we need to have scientifically trained people who have strong program management skills.

PT So you would use university researchers to develop sociological profiles of terrorists?

McQUEARY That's exactly right. I've had some groups come in to see me already to discuss how they would approach this. The University of Chicago is one that's been in to see me. They bring a number of different disciplines together, including the religious aspect of the study.

PT There is always concern over restrictions on university research, on classified research, and prepublication review. What are your views on those issues?

McQUEARY I come from a background, having worked with DOD, in which in some cases we could keep the technology unclassified, but what became classified was the particular application. So I would certainly envision trying to maintain a similar view in what we do in the DHS. We need to make sure that we do have free and open research to the maximum extent that we can. At the same time, I would hasten to say there are probably areas of scientific research where the scientific community ought to try to come up with standards for itself. We are not going to be putting out lots of standards for research or classification guidelines, because so much of the research is done internationally. To put an imposition just on our own science and technology would not be a good idea.

PT You've talked about establishing an academic center for antiterrorism research. Is that progressing?

McQUEARY Yes it is. We haven't chosen a university. In fact we don't even have a short list at this point. What we've done is engage the American Association for the Advancement of Science, the American Association of Universities, and NSF to help us identify where potential centers might be. We expect to develop a shortened list, and then have a request for proposals that would go out to see if those on the list are interested in bidding. The original legislation [establishing DHS] called for there to be only one center, but the legislation was subsequently changed, and I think for the better, because it is difficult for me to imagine one university having the full breadth of capability we need from a homeland security standpoint. There will be more than one, and less than ten. It's a matter of looking at the scientific coverage, and it is from that that we'll decide how many we need. We will have the first one selected by November.

PT Do the centers have to be strictly university based, or can they be coalitions of several organizations?

McQUEARY What I'm finding is a phenomenon where universities, private industry, and in some cases government labs that happen to be in the same location are getting together to identify how to work collaboratively to help us solve the homeland security issues. And if you have organizations that get together and form a coalition, that could reduce the number [of centers] we need because they could cover a broader spectrum than what one university could do by itself. I'm happy to see places that are moving out and helping to decide what needs to be done because, quite frankly, we don't have all of the smarts here in Washington. I'm anxious to have all of these great minds helping us work the issue.

PT As a scientist, you have a different view of risk assessment than the general public. How do you talk to the public about the risk of terrorism?

McQUEARY What I do when I stand before people is ask the question, "What is your personal expectation of DHS?" We have policemen, firemen, and emergency responders in the country, yet we're not able to provide perfect protection for people. The DHS is never going to be able to provide perfect protection for every single American citizen. So there are variations, or gradations, in the risk assessment. The way I think about it is, What is the ease of accomplishment for someone who would do us harm, and also the weight of the damage that could be done by whatever it is people might use to attack us.

Everybody wants 100% assurance and that's why I think it's important that we in the DHS help frame the expectation that people should have from us. I'm not saying that because I think we haven't got a major responsibility, because we do. But there are some things that we just cannot do. You take somebody, as we saw, with a rifle here in Washington. You can create a great deal of uncertainty and havoc when you have something like that, and DHS doesn't have a plan that says we're never going to have that kind of incident again.

Jim Dawson

Neutron Source Revs Up With Bomb-Grade Fuel

Having apparently outwaited its opponents, the research reactor near Munich in the southern German state of Bavaria is set to turn on late this summer and could be running at full power within a year.

The FRM2, as the reactor is known, had sat finished but fallow for about two years on the Garching campus of the Technical University of Munich. As the first reactor in years built to burn highly enriched uranium (HEU), it has attracted concern at home and abroad about nuclear proliferation (see PHYSICS TODAY, March 1999, page 78). Now, although the reactor will start up using HEU, Germany's federal government has stipulated that it be converted to a lower enriched uranium fuel before 2011.

Germany's controversial neutron reactor looks set to start up with highly enriched uranium.

Ironically, it fell to the antinuclear Social Democratic–Green coalition government to give the FRM2 the green light. Incremental permits had been issued by the previous government, says Jür-

gen Maass, a press officer in the environment ministry. "It's very difficult to stop it after that. We haven't been very glad that Bavaria wanted this type of reactor, but there is a big need of diplomacy." This past February, Maass adds, FRM2 officials submitted documents that satisfied the government's safety concerns in the case of an airplane crashing into the reactor, a steam explosion, and other emergency scenarios. For his part, Bavaria's science minister, Hans Zehetmair, greeted the permission—needed before the state could issue the actual startup permit, which it did on 16 May—by saying that "the federal environment ministry has finally abandoned its blockade posture and agreed to the startup of this topnotch facility."

The 20-MW FRM2 is designed to produce a continuous flux of 8×10^{14} neutrons/($cm^2 \cdot s$) at its core, and five or so orders of magnitude less at the sample sites. The reactor's dozen beam lines will provide neutrons from 3 meV to 1 MeV. The lowest-energy, or "cold," beam lines will stretch into the *atomei*, or atom egg, the shell of the site's first reactor and now a local icon. Neutrons will also be used to generate an intense beam of positrons for detection of microcracks, Auger spectroscopy of surfaces, and other things, says Winfried Petry, the facility's scientific director. Research planned for the reactor spans physics, chemistry, biology, materials science, engineering, tumor treatment, and contract work for industry.

It's clear that this will be a unique research tool, says Thomas Brueckel, who studies magnetic nanostructures at the Jülich Research Center and chairs Germany's committee on neutron scattering. "There are a lot of enthusiastic scientists who built the instruments. They are waiting to do science." The cash-strapped government "could not both postpone the ESS and keep the FRM2 on hold," adds Kurt Clausen, a Danish neutron physicist currently at Jülich, referring to Germany's cool response to the proposed European Spallation Source (see PHYSICS TODAY, April 2003, page 35). Moreover, the FRM2 is already paid for, mostly by Bavaria, although the federal government is supposed to reimburse about half of the €435 million ($518 million) construction tab. Bavaria and the Technical University of Munich, with contributions from the federal government, will also foot the FRM2's expected €20 million annual running costs.

But critics are not assuaged by plans to convert to a lower enriched uranium. For one thing, the new fuel will be enriched to roughly 50% with uranium-235 (HEU is 93% ^{235}U), which is higher than the rule-of-thumb cutoff of 20% for nuclear bomb usability. "I would even say that such a conversion is counterproductive," says Franz Fujara, a neutron physicist at the University of Darmstadt. "It makes the public believe that the nonproliferation goal might be reached. All those who have in the past converted their reactors down to below 20% are betrayed. And in the future, the motivation to go down to 20% will be lost."

Critics further doubt that, once the reactor is running, the conversion will actually be carried out. FRM2 officials say they will switch if a fuel is developed that doesn't require modification of the reactor core and if the neutron flux doesn't drop by more than a few percent. Groups in France and the US are working on high-density uranium–molybdenum fuels that might work. "We are confident that we are able to change to a lower enriched fuel. But we are concerned that the timing is tight," says Petry. "FRM2 has never been, and never will be, a proliferation risk," he adds.

Says Clausen, "From a technical point of view, the FRM2 will be a good reactor. From a political point of view, it's a disaster."

Toni Feder

US Team Prepares for SARS-Threatened Olympiad

The 24 members of the 2003 US Physics Olympiad team and several of their coaches gathered at the Albert Einstein Memorial in front of the National Academy of Sciences in Washington, DC, in late May. Following a nine-day physics training camp at the University of Maryland, five of the students were chosen to represent the US in the international physics competition scheduled for early August in Taipei, Taiwan. Whether the event will take place remains in doubt, however, because of the recent SARS outbreak in Taiwan. Olympiad organizers already delayed the competition from its original 12 July date to 2 August because of SARS, but that may not be enough to ensure the competitors' safety. The US team did not compete in last year's Olympiad in Indonesia because of concerns about terrorism. **Anthony Tweed**

AIP

Visa Restrictions Bite Into Graduate Enrollments

Since the attacks on the World Trade Center and the Pentagon on September 11th, the fraction of foreigners among incoming physics graduate students in the US has taken a dive, according to a recent report by the American Institute of Physics.

After climbing for decades to a peak of 55%, the fraction of new physics graduate students who were noncitizens shrank by 10% in the past two years. The AIP report estimates that around one-fifth of foreigners accepted to study physics were at least initially prevented from enrolling in 2002 because they were not allowed into the US. Hardest hit in terms of percentage were students from China—who make up the largest single block of foreign physics students—and the Middle East.

Top-ranked physics departments suffered the least, with 10% of accepted noncitizens denied entry to the US, compared with more than 20% at lower-ranked PhD-granting and 40% at master's-granting departments. The lower-ranked departments also reported a decrease in the number of foreign applicants. In a way, says Michael Neuschatz, a coauthor of the