

***A report from the 2001  
American Nuclear Society  
Annual Meeting.***

# Decommissioning Hot Topics

**A** session on Decommissioning Hot Topics, organized by Thomas La Guardia, from TLG Engineering, and held during the ANS 2001 Annual Meeting in Milwaukee, focused on issues ranging from PCBs in paint to license termination plans, with stops along the way for other issues as well.

## **PRIVATE FUEL STORAGE**

John Parkyn, CEO of Private Fuel

Storage (PFS), a utility consortium trying to build a spent-fuel storage facility in Utah, gave an update on the progress made at this point. The license is expected from the U.S. Nuclear Regulatory Commission in 2002, he reported, and commercial operations are still scheduled to begin in 2004. The site plans to take all waste types (including failed fuel and mixed oxide fuels, he stated specifically), current plans are for shipments only by rail (to cut down on public interactions), and the site itself should

remain free of any contamination, making final cleanup at end of life much easier.

In the meantime, the state of Utah recently passed a law against spent-fuel storage, prompting PFS to sue on the grounds that federal law supersedes state law in this type of case. The case is being closely watched by the state of Nevada, Parkyn said, since if the PFS lawsuit fails, Nevada plans to pass a similar law to prevent spent-fuel and high-level waste storage at Yucca Moun-

tain. Thus, he said, "this will be a test case."

In response to an audience member question on whether the facility



John Parkyn

will accept greater-than-class-C waste, Parkyn said that the issue had not yet been brought up before the company's directors. They do plan to discuss the issue, he ensured the audience, as soon as the license has been received.

But in response to a question on his confidence level about whether the facility will indeed ever operate, Parkyn hedged slightly. He is very confident, he said, that the facility will be licensed. However, he added, if the member utilities decide that they don't want to use it, it will never be built.

### SAXTON DECOMMISSIONING

Jim Byrne, from GPU Nuclear, reported on experiences with the Saxton test reactor decommissioning efforts. His primary message: "If you've got a fossil plant located next to your nuclear plant, make sure you check it first before you

knock it down." A fossil plant shared the site of the Saxton plant for many years. When the plant was taken out of service, several buildings were demolished. Only later did workers test the rubble and debris in the fossil building basement, and, of course, they discovered contamination. This contamination resulted because the nuclear

steam from Saxton ran through the fossil turbine, Byrne said, and the wastewater ran through the fossil plant piping.



Tracy Goble

### DECOMMISSIONING PLANS AND LICENSE TERMINATION

Robert Nelson, from the NRC, reported on lessons learned from recently submitted decommissioning plans (DPs) and license terminations plans (LTPs). Among the most important of these were in the areas of groundwater monitoring and modeling issues.

Additional groundwater modeling may be needed, he stated, since there is not likely to be enough operational environmental monitoring of groundwater to enable adequate site characterization and dose assessments. And in the area of modeling issues, he said that any derivations of concentration guideline levels should include the assumptions and justification for parameters used.

Throughout the DP and LTP process, he urged, utilities should maintain early and frequent consultation with the NRC staff, especially during the planning and scoping phase supporting the preparations of the submittals.



Robert Nelson

### PAINT

Tracy Goble, from the Consumers Energy's Big Rock Point Restoration Project, spoke about the problems the site had with PCBs on painted surfaces. At the plant, she reported, between one-third and one-half of all components showed some level of PCB contamination above 50 parts per million. In all, she said, workers analyzed some 400 samples, finding low (but actionable) lev-

els on most surfaces.

One discovery made was that paint color could sometimes provide a clue to whether PCBs were present.

"It became a case of 'Blue paint, no, orange paint, yes,'" she noted. Location also provided a clue, she added.

One question she pondered was how the PCBs got there; her investigations revealed that it could have been from cross-contamination at the paint manufacturers' facilities or perhaps in the oils used in the sprayers that applied the paint.

Regardless of how the PCBs got there, however, Big Rock Point had to deal with them. The plant focused on worker protection throughout the process. This involved lots of training and education, Goble reported. To

prevent airborne contamination, paint was stripped from any metal that had to be cut. If the paint could not be removed, then workers used respirators during the cutting operations.

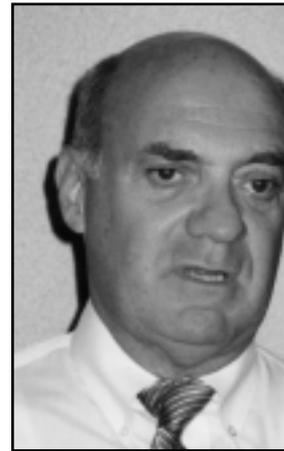
But in the final analysis, she said, she did not think PCBs were that great a hazard to workers. Lead in the paint, she said, was probably a

much greater hazard.

### SITE CHARACTERIZATION

Site characterization issues for a plant that may be sold were the focus

of a presentation by session organizer La Guardia, whose company performs such assessments. These site characterizations are necessary for a buyer to learn the decommissioning liabilities. Based on his experience, La Guardia said, most characterization time is spent on soils, and this is also the area where they do the most "due diligence" studies.—Nancy J. Zacha, Editor



Thomas La Guardia

# Spent-Fuel Storage Rhetoric, But No Resolution

**T**he increasing demand for dry spent-fuel storage for both operating plants and those in various stages of decommissioning is stretching the U.S. Nuclear Regulatory Commission's resources "to the limit," stated Bill Brach, director of the regulatory agency's Spent Fuel Project Office. Brach was speaking at a session on dry storage at the 2001 ANS Annual Meeting, held June 17-21 in Milwaukee, Wis. Russ Mellor, CEO at



*Bill Brach*

Connecticut Yankee, organized the session. Just three years ago, in 1998, Brach noted, the agency completed 16 licensing actions on dry storage. Last year, in 2000, the agency completed 62 such licensing actions, with basically the same resources. In addition, he said, the casework is becoming increasingly complex.

Because of the increased caseload, Brach added, the NRC's limited resources are being directed to the needs of operating plants, rather than decommissioning plants. Thus, he said, schedules are "being juggled" to deal with operating reactor needs. The message to a decommissioning plant, therefore, is to "plan ahead," to give the agency time to allocate resources.

An NRC priority in dry-storage licensing is stakeholder involvement, Brach said. There is a growing interest in the process from Congress, state and local governments,

Native Americans, and special-interest groups, he noted, and dry-storage plans submitted must include stakeholder involvement. "If we don't plan for it, we'll be swamped," he said.

Another issue that is receiving increased scrutiny is quality assurance. The licensee of any independent spent-fuel storage installation (ISFSI)

has ultimate responsibility for quality, he said. "Whose ISFSI is it, anyway?" he quipped.

In response to a question about an upcoming Topical Report from a cask vendor and whether the NRC likes the Topical Report approach to licensing changes, he answered that the NRC at this time is giving lower priority to individual vendor initiatives.

Given the limited resources the agency has to devote to this issue, he said, they prefer to deal with broad industry initiatives rather than vendor initiatives.

## DOMINION EXPERIENCE

What to do with high-burnup fuel (HBF) was the one of many topics covered in a presentation by Tom Brookmire, supervisor of spent nuclear fuel for Dominion Resources. Dominion's Surry plant was the first U.S. station to build an ISFSI. It has been licensed since July 1986. At the current time, the Surry ISFSI contains 990 fuel assemblies loaded into 40 casks of five different designs. North Anna, Dominion's other Virginia-based nuclear plant, contains 288 fuel assemblies loaded into nine

TN-32 casks.

North Anna and Surry are running out of "storable" fuel, Brookmire said. At the same time, both plants have an increasing inventory of fuel assemblies with burnups beyond 45 000 MWd/MTU. Surry anticipates depleting its inventory of fuel assemblies having burnups less than 45 000 MWd/MTU in the 2003-04 time frame,



*Tom Brookmire*

while North Anna needs to have approval for storing fuel with a burnup of 45 000 MWD/MTU by early 2003.

The problem with the current, "step function" approach to increasing allowable burnup (by combining high-burnup with low-burnup fuel), Brookmire stated, is that it depletes the inventory of lower burnup fuel assemblies. Thus, he said, later casks have more fuel with higher burnups and high dose rates (especially neutron doses), which can have an impact on worker safety.

Dominion is also currently at work on preparing for renewal of its ISFSI license for Surry. The license expires in July 2006, and the renewal application is due July 2004. Surry is working with the NRC on this process, Brookmire stated. The current plan is to submit the application in 2002, using personnel who recently worked on the Surry plant's license extension application.

### THE VENDOR PERSPECTIVE

Curt Lindner, from NAC International, a cask vendor, also addressed the HBF issue, as well as other technical issues needing NRC resolution. He

said that at Maine Yankee, a decommissioning plant, the NRC is treating fuel with burnups greater than 45 000 MWD/MTU as "damaged fuel." As such, this fuel must be packaged in a can, which doubles the cost of storage, and must be placed on the outside portion of the canister, which can increase worker exposures.

Another technical issue needing resolution is higher enrichment fuel. Interestingly, Lindner said, the NRC is currently working on improved burnup credit criteria but is excluding fuel with greater

than 4 weight percent uranium-235, "the fuel that needs it most," he said. He urged the NRC to resolve all the outstanding technical issues "early and consistently."

### THE NRC VIEWPOINT

At an earlier session on spent-fuel storage, organized by Robert Einziger, from Argonne National Laboratory, the NRC's Kim Gruss noted that HBF is number one on the agency's Generic Issues Priority List. The problem, she said, is that there is a lack of data on HBF, and there is a "lot of scatter" in the data that do exist.

The technical issues include identifying fuel failure models and conditions for failure, as well as failure likelihood and consequences; gaining an understanding of the mechanical and creep properties of HBF; and identification of expected changes in properties if there is a change in storage conditions. The solution, she added, will likely require some sort of cask demonstration program for HBF, similar to the testing work done at the Idaho National Engineering Laboratory in the 1980s. The NRC is working with the Nuclear Energy Institute and the nuclear industry to try to get this kind of effort launched. In the meantime, she said, the industry must notify the NRC as to when the critical year will be for loading HBF into casks, so the NRC can plan and allocate its resources accordingly.

### WHEN THINGS GO WRONG

Mike Lackey, from the Trojan plant, which is undergoing decommissioning, reported on that plant's difficulties with transferring its spent fuel to an onsite ISFSI.

The problems began back in June 1995, when Trojan owner Portland General Electric contracted with Sierra Nuclear Corp. (SNC) to design, fabricate, and supply dual-pur-

pose dry storage casks based on the TranStor design. SNC experienced financial difficulties in the following years, reducing staff and expending fewer and fewer resources on the Trojan contract. Ultimately SNC was acquired by BNFL Inc. in April 1998.

In 1999, the first of the TranStor canisters was delivered, but when Trojan attempted to load spent fuel into the first basket, the basket's internal coating failed, causing excessive turbidity in the spent-fuel pool. Before the coating problem could be solved, BNFL withdrew the TranStor license application and discontinued the TranStor product line. Trojan had just lost more than four years of work on dry storage.

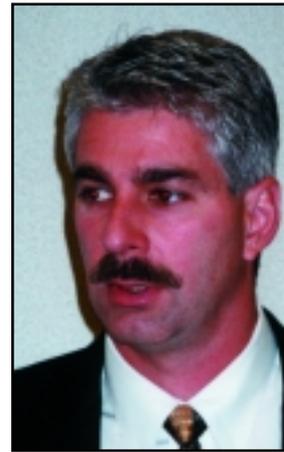
In March of this year, Trojan awarded a new contract to Holtec International for a hybrid storage system that will use the current storage pad and the ventilated concrete casks at Trojan, as well as other existing facilities and structures, but will integrate Holtec canisters into the system. Fuel loading now is scheduled to take place between September 2002 and August 2003. Thus, Lackey said, the plant has experienced a three-year delay in decommissioning as a result of the ISFSI problems.

The lessons learned from this experience include the following, Lackey said:

- Plants must monitor vendor performance. If they fail, you fail, he noted.
- Plants must become concerned if it becomes necessary to get deeply involved with vendors' technical work.
- Plants must ensure that technical experts are appropriately involved.
- Plants should obtain a performance bond or letter of credit from critical vendors.
- Plants should have a backup vendor or technology as a contingency on critical activities.—Nancy J. Zacha, Editor



Kim Gruss



Mike Lackey



Curt Lindner

# Catching Up with Clearance Criteria

**D**oes the nuclear industry need a standard or a rule on releasing solids from a contaminated site? Perhaps not, many people suggested during a panel session on clearance criteria, held during the June 17–21, 2001, ANS Annual Meeting in Milwaukee, Wis. The session was organized by Jas Devgun, of Sargent & Lundy. As one panel member noted: “Be careful what you ask for, because you may not like it once you get it.”

Robert Meck, with the U.S. Nuclear Regulatory Commission, reported that the agency began work on a technical basis for controlling release of solids almost a decade ago, in 1992. This work resulted in publication of draft NUREG-1640 in 1999, which analyzed doses to a critical group from releases of concrete and scrap metals and from equipment reuse. In August 2000, however, the commissioners directed the staff to refer the rulemaking decision, asking in-



*Robert Meck*

stead for a National Academy of Sciences (NAS) study on the topic. At the current time, the commissioners are undecided about whether they will go forward with the rulemaking.

The NAS study is currently under way, and the organization held meetings in January, March, and June of 2001. A recommendation is expected next February, and a final staff rec-

ommendation to the commission is due in May 2002. In the meantime, the NRC staff is continuing its work on developing the technical bases for the rulemaking. According to Meck, remaining technical issues to be resolved include dose assessments to individuals and major populations, the current solid material inventory (“Just how big is the



*Paul Neeson*

problem?”), cost estimates, soil reuse scenarios, and measurement methods.

Paul Neeson, with the U.S. Department of Energy, noted that in February 2000, the DOE issued a moratorium on release of volume-activated metals pending the NRC decision on solid materials release. This decision was reaffirmed the following July. The suspension applies to

metals from radiological areas for release to commerce. This could include metals from an X-ray area in a facility, regardless of the chance of contamination of that material.

The impact of this decision, he said, is that metals, many of them nonradioactive, are piling up at DOE cleanup sites, taking up valuable storage space, while the department prepares draft after draft of an environmental impact statement. “If we are spending this much time for nonradioactive metals,” he mused, “how are we ever going to deal with radioactive metal?”

In response to an audience ques-

tion on whether the change in presidential administrations has made any difference in the process, Neeson stated that in terms of politics, the new energy secretary has not yet got his people all on board, and the matter is still being handled by [former Energy Secretary Bill] "Richardson's people."

Al Johnson, with Duratek Inc., took the position that perhaps such efforts as the NRC's were not terribly useful for the industry. There is no comprehensive standard governing free release of material today, he noted, but materials are being released every day. For instance, he said, if you walk into a nuclear power plant, you can usually get out again. That is an example of free release.

Johnson described three types of release programs in use today:

- Unconditional release, which can be for the purposes of reuse, recycle, disposal, etc.
- Conditional release, for disposing of very low levels of residual radioactivity. The endpoint in this type of release is disposal.
- Beneficial reuse, in which large (slightly radioactive) ferrous components are turned into shield blocks. Unfortunately, he noted, there is not much need for this type of use, given the limited market for the product. In fact, this may be more expensive than disposal. ("You have to pay to be politically correct," he said.)

Whether or not standards or regulations are issued, any kind of material release will always be under strict scrutiny, Johnson said. The case-by-case approach currently being used is working, he stated. In contrast, in developing a national standard, there may be so many compromises involved that the industry

would be better off keeping the case-by-case approach.

If the industry still wants a standard on clearance levels, said Kathleen McAllister, from the Massachusetts Radiation Control Program, then the clearance levels need to include a "bright line in the sand" between regulated and trivial dose that the public can trust. On the other hand, she noted, echoing Al Johnson, if we do not have a nationwide clearance standard, it does not mean materials are not being released.



*Kathleen McAllister*

Audience members and panelists noted that a recent standard produced by the Health Physics Society contains a "trivial dose" level of 1 millirem to the most affected person. This number may, in fact, become a de facto U.S. release standard regardless of any regulatory action taken. If that were to happen, it would mean that European or Asian countries would have a very hard time trying to establish a higher limit, stated Shankar Menon, program coordinator with the Organization for Economic Cooperation and Development's Nuclear Energy Agency Cooperative Program on Decommissioning. The 1-mrem number would become "an economic penalty," he said.

The audience tended to agree. As one audience member declared, "Doing the surveys and measurements to get down to 1 millirem will kill you financially; the better option is just to bury everything."

Johnson stated that it is perhaps just as cost-effective to send such material to Envirocare for burial as to send it to



*Al Johnson*

a local landfill. But another audience member countered: "Why bother to try to ship it out at all? Just bury it onsite and release the site to the NRC's 25-millirem limit."—Nancy J. Zacha, Editor