

# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

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## TRIP REPORT

**SUBJECT:** Spent Fuel Management Seminar XXII Sponsored by the Institute for Nuclear Materials Management  
Project Number 20.06002.01.321; AI Number 06002.01.321.503

**DATE/PLACE:** January 26–28, 2005  
Loews L'Enfant Plaza Hotel, Washington, DC

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**PERSONS PRESENT:** Registration List Attached

### **BACKGROUND AND PURPOSE OF TRIP:**

The Spent Fuel Management Seminar is held annually and features presentations by the U.S. Department of Energy (DOE), the U.S. Nuclear Regulatory Commission (NRC), national laboratories, utilities, industry suppliers, and policy institutions.

### **SUMMARY OF PERTINENT POINTS:**

The Spent Fuel Management Seminar included presentations from the NRC, the DOE, utilities, and industry contractors. The opening session was an overview of spent fuel management policies and programs. C.A. Kouts from the Office of Civilian Radioactive Waste Management presented general information about the potential Yucca Mountain repository. An overview of the surface and subsurface facilities, types of waste, and transportation to the potential repository was described. *The proposed Caliente rail corridor is approximately 300 miles long and is expected to cost one billion dollars.* The presentation contained information on the funding history and recent information on the utility lawsuits. The present challenges to the program include the vacated U.S. Environmental Protection Agency (EPA) standard and insufficient funding. Kouts stated that although the final EPA standard does not need to be in place for submittal of the license application, an understanding of the how the standard will be revised is necessary. No updated information or schedule of the license application or the licensing support network was provided.

P. McCullough from Bechtel SAIC Company, LLC presented an overview and goals of the company. The draft license application has been delivered to the DOE. No additional information on schedule was presented.

R. McCullum from the Nuclear Energy Institute presented industry views on the potential Yucca Mountain repository. *The industry is cautiously optimistic and sees progress in the program and increasing support for nuclear power, however, near-term challenges such as funding and the EPA standard were cited.* The Private Fuel Storage Facility proposed in Utah was described as an important intermediate step to the potential Yucca Mountain repository. This facility would play an important, cost effective, role by providing temporary spent fuel storage needs. During questioning, R. Weiner from Sandia National Laboratory suggested that the Nuclear Energy

Institute should lead the effort to eliminate partisan politics from the disposal issue.

R. McCullum replied by indicating the Yucca Mountain repository is necessary because it is the end of the fuel cycle and the demonstration of disposal is essential for the Nuclear Power Industry. The 70,000 metric ton limitation for the potential repository at Yucca Mountain is in part based on regional equity. A second repository will be needed to hold additional waste.

J. Silberg from Shaw Pittman reiterated the difficulties that DOE has encountered in repository development. The revision of the EPA standard could be a lengthy process and could likely face additional challenges. A brief description of the Exelon settlement was described and the schedule for spent fuel damages trials by utilities were presented.

B. Danker from the International Atomic Energy Agency (IAEA) presented an overview of the agency activities in spent fuel management. The presentation briefly described agency meetings and publications. Much of the information including the publications are available on the IAEA website.

K. Crowley from the National Academy of Sciences (NAS) presented an update on spent fuel storage and transportation reports. A classified report on spent fuel storage security was prepared and an unclassified version is in preparation. The report addresses security of spent fuel pools, dry cask storage, and dry cask design. The actions taken by operators to mitigate accidents and possible terrorist attacks were reviewed, however, no details were provided in the presentation. Transportation of spent fuel was also addressed. The study conducted by the NAS was motivated by terrorism concerns and the scheduled delivery of the license application for Yucca Mountain repository. The risks associated with transportation were examined along with technical and societal concerns. The study was extended to look at spent fuel transportation routes.

E.W. Brach from the NRC presented information on licensing of spent fuel storage technologies. A growth in the number of independent spent fuel storage installations (ISFSI) is expected in the next 5 years. A decision on the private fuel storage facility is expected in February 2005. Characterization of spent fuel is important for ISFSI to avoid surprises later. The package performance study was discussed. The types of tests simulating accidents were reviewed. A combined impact test including fire would be difficult to construct.

A. Diaz-Mosquera from the IAEA presented information on the safeguarding of geologic repositories. The IAEA has no experience safeguarding repositories, however, a variety of monitoring methods were discussed including methods to assure that waste is not reprocessed underground, and the waste is not repackaged and removed from the disposal sites. Postclosure monitoring may be possible using satellite imaging of repository sites. The possible increased difficulty of monitoring the potential Yucca Mountain repository, owing to the long preclosure period and relatively open system, was mentioned.

The second session on spent fuel storage technologies was opened with a presentation from A. Flint, Staff Director, Senate Energy and Natural Resources. Changing the law with respect to the Nuclear Waste fund will require 60 votes in the U.S. Senate. Because 60 votes are unlikely, Congress will probably not address the issue. Mr. Flint was pessimistic about the EPA court case and offered that the EPA historically takes a long time to act. In addition, Mr. Flint speculated that a quick revision would be challenged. The land withdrawal processes requires legislation and this may be a difficult process. Finally, the issue of carbon emissions remains an

uncertainty in energy production. If carbon emissions are ruled as pollutants, nuclear power may be viewed more favorably.

Several presentations in this session were from storage and transportation cask vendors including Holtec, Nuclear Assurance Corporation (NAC) International, Transnuclear, General Atomics, and British Nuclear Fuels Limited (BNFL). Most of the vendors presented information on amendments to allow loading of high burnup fuels. Much of the fuel in reactor pools is considered high burnup. C. Blessing from Holtec International introduced an underground HI-STROM storage system. The underground system will be proposed in an amendment to the existing HI-STORM system. The benefit of the underground system is lower dose, greater protection of the spent fuel, and visually less obtrusive. J. Razvi from General Atomics presented information on legal weight truck casks. The casks were designed with high strength stainless steel cask body, aluminum honeycomb impact limiters, and depleted uranium shielding. The casks can transport 4 pressurized water reactor or 9 boiling water reactor assemblies.

The transportation of spent fuel and high level waste session included several presentations from the DOE. G. Lanthrum from the DOE Office of National Transportation (ONT) presented information on its activities during the past year. The ONT budget was reduced for 2005. The selection of the proposed Caliente rail corridor was based on the desire to avoid the Las Vegas area, Area 51, and private land. The proposed Carlin rail corridor has about 7 percent privately owned land. N. Larson from the ONT presented an update on the acquisition of transportation casks for the repository program. Reactor crane capability is a key limitation on the size of transportation casks that can be used at some facilities. While most spent nuclear fuel is compatible with modified 125 ton rail cask designs, many utility reactors do not have 125 ton capacity cranes. A medium rail cask may be necessary to meet the utility limitations. Facility access is also a significant limitation in some cases.

J. Holm presented information on transportation planning. The ONT has sought input from state and local governments and Native American tribes through the Transportation External Coordination Working Group. Following the presentation, R. Weiner commended the effort to gain information and establish relationships with stakeholders.

B. Quinn from BNFL Fuel Solutions Corporation presented lessons learned from public concerns about spent fuel transportation. Specific issues raised include the lack of full scale cask testing, the concern that regulatory conditions do not bound real world conditions, increasing the number of shipments increases the likelihood of an accident, terrorism and sabotage, and the ability of local responders to handle accidents.

D. Ammerman from Sandia National Laboratory presented a method for evaluating the consequences to and aircraft impact into spent fuel transportation and storage facilities. The steps include determining the scenario and the types of analyses required. Codes for the consequence analyses were discussed and comparisons of the modeling results with actual impact tests were presented.

The Spent Fuel Storage Projects and Technology Development Session featured presentation on the Private Fuel Storage Project, and the spent fuel storage activities as Dominion, Entergy, and Duke Energy. The history of the Private fuel Storage Project was briefly reviewed. The benefit to the utilities is the cost savings compared to individual independent spent fuel storage

installations. The presentations by the utilities reinforced the need for dry storage options for high burnup fuel.

The final session was focused on spent fuel and high level waste disposal. P. Harrington from DOE presented the design status of the potential Yucca Mountain repository. Currently, DOE is about half way through the preliminary design. Recent design changes include a reduction of the size of the aging facility from 40,000 metric tons to 21,000 metric tons. A fuel handling facility, central control center, and a second waste package closure cell were added to the design. The fuel handling facility was modeled after the Test Area North (TAN) facility at Idaho National Laboratory (INL). The waste package transporter now has only one locomotive. The DOE plans to construct 15 waste package prototypes. The first prototype was scheduled to be completed in September 2005. DOE intends to have multiple prototypes delivered by 2007.

**SUMMARY OF ACTIVITIES:**

None.

**CONCLUSIONS:**

The Spent Fuel Management Seminar provided a venue to obtain the current status of the DOE Repository Program, industry needs, and NRC perspectives. Spent fuel generation rates will force the industry to rely on independent spent fuel storage installations. Cask suppliers are aware of the industry needs. They have transportation and storage casks designed for high burnup fuels and higher heat loads. A large number of new independent spent fuel storage installations and cask design revisions should be expected in the next few years. Progress by the DOE in the U.S. repository program is constrained by funding. The vacated EPA standard was seen by most presenters as likely to cause additional delays in the repository program.

**PROBLEMS ENCOUNTERED:**

Hard copies of some presentations were not available.

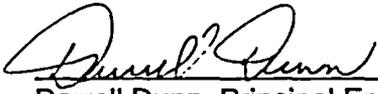
**PENDING ACTIONS:**

None.

**RECOMMENDATIONS:**

Information presented at the Spent Fuel Management Seminar provides worthwhile insight into the problems and needs of the nuclear power industry. Future participation in this meeting is recommended.

**SIGNATURES:**

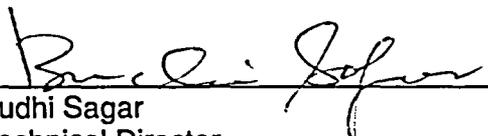
  
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# Spent Fuel Management Seminar XXII

January 26-28, 2005

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January 26-28, 2005  
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