



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

WASHINGTON, D.C. 20555-0001

October 20, 1999

MEMORANDUM TO: John T. Larkins, Executive Director
Advisory Committee on Reactor Safeguards

FROM: Gary M. Holahan, Director
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

TEC Collin /fa

SUBJECT: BACKGROUND INFORMATION FOR ADVISORY COMMITTEE ON
REACTOR SAFEGUARDS PRESENTATION ON SPENT FUEL POOL
ACCIDENT RISK AT DECOMMISSIONING PLANTS

The Office of Nuclear Reactor Regulation (NRR) has undertaken a technical study of spent fuel pool accident risk at decommissioning plants in response to a lack of specific technical information to support rulemaking for decommissioning plants. The draft technical study, issued in June 1999, was based on a 2 month preliminary review of existing studies and limited original analysis using both deterministic and probabilistic analysis. An independent review of the draft study is currently in progress and is scheduled to be completed at the end of November. Additional technical work is being performed at national laboratories to supplement some of the staff's work. The majority of the additional technical work will be completed by the end of November; the remainder of the work will be completed in January. The staff is in the process of assessing new information to improve or refine the draft study. We are also reviewing comments and information provided by the public that will be incorporated into our final assessment. The final assessment is scheduled to be issued in early January. Our output will be a technical assessment of spent fuel pool accidents that can be utilized to support rulemaking for decommissioning plants and will provide recommendations for interim exemption criteria for certain regulations.

Please find attached the following documents to assist the Advisory Committee on Reactor Safeguards (ACRS) in preparation for the requested presentation on spent fuel pool accident risk at decommissioning plants:

Main NRC Document:

1. Memorandum to John Zwolinski, NRR, from Gary Holahan, NRR, dated June 16, 1999, with attachment, NRR Technical Working Group, "Preliminary Draft Technical Study of Spent Fuel Pool Accidents for Decommissioning Plants," June 1999.

Summary of Current Status:

2. Drop-in visit briefing paper for Commissioner Merrifield's visit with the Nuclear Energy Institute (NEI) on October 8, 1999, with attached memorandum to Brian Sheron, NRR, from John Zwolinski, NRR, dated September 17, 1999, "Summary and Status of Ongoing Staff Efforts to Develop a Risk-Informed Technical Basis for Improving Reactor Decommissioning Regulations."

CONTACT: D. Jackson, SPLB/DSSA/NRR
301 415-8548

Q1105

3. Briefing slides for Commissioner Technical Assistants, "Regulatory Improvement and Spent Fuel Pool Accident Risk for Decommissioning Plants," September 29, 1999.

Meetings and communication with the public:

4. Transcript from Commission Briefing/Public Meeting on Part 50 Decommissioning Issues on March 17, 1999, in Rockville, Maryland.
5. Transcript (electronic file) from NRR public meeting on Spent Fuel Pool Accident Risk at Decommissioning Plants held on April 13, 1999, in Rockville, Maryland, 1 disk.
6. Transcript (electronic file) from NRR public meeting on Spent Fuel Pool Accident Risk at Decommissioning Plants held on June 7, 1999, in Rockville, Maryland, 1 disk.
7. SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," June 30, 1999.
8. Summary of meeting on June 21, 1999, "Summary of Meeting with the Nuclear Energy Institute and Public Stakeholders," dated July 9, 1999, including Draft EPRI Technical Report by Duke Engineering & Services, "Evaluation of Spent Fuel Pool Seismic Failure Frequency in Support of Risk Informed Decommissioning Emergency Planning, undated.
9. Transcript (electronic file) from NRR workshop on Spent Fuel Pool Accident Risk at Decommissioning Plants held on July 15 -16, 1999, in Gaithersburg, Maryland, 2 disks.
10. Letter to Richard Dudley, NRR, from Alan Nelson, NEI, letter undated, envelope dated August 18, 1999, regarding NEI action item to submit a proposed seismic checklist from the July 15-16, 1999, workshop on spent fuel pool accident at decommissioning plants.
11. Memorandum to Stuart Richards, NRR, from William Huffman, NRR, dated August 19, 1999, "Human Reliability Analysis for the Study of Risks from Spent Fuel Pool Accidents at Decommissioning Plants."
12. Letter from Lynnette Hendricks, NEI, to Richard Dudley, NRR, dated August 30, 1999, with attachment, "A Review of Draft NRC Staff Report, *Draft Technical Study of Spent Fuel Pool Accidents for Decommissioning Plants.*"
13. Letter from the Union of Concerned Scientists to Chairman Dicus and Commissioners Diaz, McGaffigan, and Merrifield, dated September 3, 1999, "Inadequately Monitored Spent Fuel Pool Temperature and Operator Response Times at Permanently Closed Plants."
14. Letter from Institute for Resource and Security Studies to Richard Dudley, NRR, dated September 30, 1999, "Spent Fuel Pool Accidents."

Information regarding an event at a decommissioning plant:

10. NRC Bulletin 94-01, "Potential Fuel Pool Draindown Caused by Inadequate Maintenance Practices at Dresden Unit 1," April 14, 1994.
11. NRC Information Notice 94-38, "Results of a Special NRC Inspection at Dresden Nuclear Power Station Unit 1 Following a Rupture of Service Water Inside Containment," May 27, 1994.

The following is a list of previous studies, mainly performed for operating plants, regarding spent fuel pool accidents that provides additional background information:

1. U.S. Nuclear Regulatory Commission, "Regulatory Analysis for the Resolution of Generic Safety Issue 82, "Beyond Design Basis Accidents in Spent Fuel Pools," NUREG-1353, April 1989.
2. Benjamin, A.S., McCloskey, D.J., Powers, D.A., and Dupree, S.A, "Spent Fuel Heatup Following Loss of Water During Storage," NUREG/CR-0649 (SAND77-1371), March 1979.
3. Sailor, et. al., "Severe Accidents in Spent Fuel Pools in Support of Generic Safety Issue 82," NUREG/CR-4982 (BNL-NUREG-52093), July 1987.
4. Jo, J.H., et al., "Value/Impact Analysis of Accident Preventive and Mitigative Options for Spent Fuel Pools," NUREG/CR-5281 (BNL-NUREG-52180), March 1989.
5. Prassinios, P.G., et. al., "Seismic Failure and Cask Drop Anaylsis of the Spent Fuel Pools at Two Representative Nuclear Power Plants," NUREG/CR-5176 (UCID-21425), January 1989.
6. Ibarra, J. G., et. al., "Operating Experience Feedback Report, Assessment of Spent Fuel Cooling," NUREG-1275, Vol. 12, February 1997.
7. U.S. Nuclear Regulatory Commission, "Control of Heavy Loads at Nuclear Power Plants, Resolution to Generic Technical Activity A-36," NUREG-0612, July 1980.
8. Travis, R.J., et.al., "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," NUREG/CR-6451 (BNL-NUREG-52498), August 1997.
9. Pisano, et.al., "The Potential for Propagation of a Self-Sustaining Zirconium Oxidation Following Loss of Water in a Spent Fuel Pool", Sandia National Laboratory draft report prepared for the U.S. Nuclear Regulatory Commission, January 1984.

Attachments:
As stated (16)

DISTRIBUTION ON NEXT PAGE

DOCUMENT NAME: G:\SPLB\SECTIONA\JACKSON\ACRSMEMO.WPD

*SEE PREVIOUS CONCURRENCE

OFFICIAL RECORD COPY

* SPLB:DSSA
DJackson
10/14/99

*SPLB:DSSA
GTHubbard
10/14/99

*SPLB:DSSA *SPSB:DSSA
JHannon RJBarrett
10/15/99 10/18/99

D:DSSA 
GMHolahan
10/20/99

DISTRIBUTION w/o attch:

Central File

SPLB R/F

DJackson

GHubbard

JHannon

RJBarrett

GMHolahan

JZwolinski

SBlack

RDudley

SRichards

MMasnik

TEaton