

3.16 POWER REACTOR DECOMMISSIONING (DSI 24)

COMSEC Y-98-068

3.16.1 The Direction-Setting Issue and the Options

What should the NRC's strategy be for regulating decommissioning activities at power reactor sites?

Option 1: Continue Current Direction and Approaches

Option 2: Pursue Current Direction and Approaches More Aggressively

Option 3: Proceed More Slowly Implementing Current Direction and Approaches

3.16.2 Commission's Preliminary Views

From the options presented, Option 1: Continue the current direction and approach is the recommended option. Implementation guidance in pursuing this option should be expanded to explore more innovative approaches in line with the current Commission strategy in this area.

The paper does provide a good discussion of rulemaking currently underway that outline the current Commission strategy in the power reactor decommissioning area: 1) that there should be assurance that decommissioning will be conducted in a safe and timely manner, 2) that adequate licensee funds will be available for this purpose, and 3) recognition that risks associated with decommissioning reactor facilities are not the same as for operating reactor facilities.

In pursuing the current pace of rulemaking, the staff, as stated above, should consider new and innovative regulatory approaches. Examples of possible approaches that might be considered are:

1. Transfer of nuclear power plants to Agreement State control after fuel has been put into dry storage or has been removed from the Part 50 site.
2. Placing a resident site inspector during all phases of decommissioning, only during specific phases of decommissioning, or not at all.
3. Having NRC take an enhanced performance-oriented approach by reducing oversight and performing a radiological assessment of the site when it is ready to be released.

3.16.3 Summary of Comments

A. Significant/Important Comments Directly Affecting the Preliminary Views or the Direction-Setting Issue

In both written comments and comments provided at the stockholders' meetings, most of the commenters did not support the Commission's preliminary view of adopting Option 1. Rather, they strongly encouraged the Commission to adopt Option 2, Pursue Current Direction and Approaches More Aggressively because they would like to see the decommissioning issues resolved as quickly as possible. Thus, both cutting down the costs of decommissioning for licensees

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and saving some NRC resources related to reviewing the licensing actions. Commenters supported predictability and stability in the regulatory process for decommissioning. However, with respect to the single issue of radiological criteria for decommissioning, the Organization of Agreement States (OAS) recommended that NRC select Option 3 and that the NRC move more slowly in implementing its current rulemaking approach for the site release criteria. This approach received endorsement from the States of New Hampshire, Mississippi, South Carolina, Texas, Illinois, and Utah, and ABB Combustion Engineering Nuclear Systems (ABB-CE).

The Commission's preliminary views regarding consideration of new and innovative regulatory approaches received overwhelming support from the commenters. However, a possible approach, transfer of nuclear power plants to Agreement State control after fuel has been put into dry storage or has been removed from the Part 50 site and assigning a resident site inspector during all phases of decommissioning or not at all was rejected. The presence of a site inspector during specific phases of decommissioning was supported by the Nuclear Energy Institute (NEI) and other nuclear industry participants. The concept of NRC's taking an enhanced performance-oriented approach by reducing oversight and performing a radiological assessment of the site when it is ready to be released was supported by the large majority of the commenters (regulatory bodies and the industry, including NEI).

Option 1

Most commenters did not support the Commission's preliminary view of adopting Option 1. The commenters would like the NRC to make the final decommissioning requirements known to the public and the industry as soon as possible. The commenters like to see the Commission give high priority to the rulemaking effort to eliminate the uncertainties in the decommissioning area because decommissioning cost recovery mechanisms have to be built into rate-base structure. Therefore, NRC should combine all the decommissioning-related rulemakings into one package instead of three to five separate rulemakings. The industry and the commenters generally did not want to see the status quo. As the State of Georgia pointed out, "the examples of innovative regulatory approaches that the Commission suggests could change the direction dramatically," are not consistent with the status quo. Yankee Atomic Electric Company (YAEC) agreed with NEI that the Commission's preliminary views (to continue the current direction and approach) fail to respond to the current dynamic environment of decommissioning and the need to afford licensees every opportunity to use their finite decommissioning monies wisely. ABB-CE supported Option 1 with a caveat that additional attention must be given to seeking innovative and less burdensome regulatory approaches and suggested the NRC consider adopting a risk-based approach that would impose a level of regulation commensurate with the degree of risk to the health and safety of the general public.

B. Comments on Other Options

Option 2

Most commenters supported this option. Public Service Company of Colorado (PSC), endorsed the idea of NRC's moving more aggressively to solve the rulemaking issues in order to both cut down the costs of decommissioning for licensees and save the NRC's resources used to conduct technical reviews. PSC stated that dual regulation (Environmental Protection Agency [EPA], NRC)

uncertainty must be eliminated in an expeditious manner. Commonwealth Edison suggested that rulemaking efforts in progress affecting the direction-setting issue (DSI) should be brought to closure as soon as possible so that all decommissioning requirements are known and stable. NEI supported this option in handling the rulemaking activities. NEI suggested that the NRC should apply the same performance-based regulatory approaches that were applied to the maintenance rule. This new approach to decommissioning may result in a "win-win" paradigm for both the NRC and the licensee. NEI also suggested that resources needed for these activities be made available from the curtailment of other NRC activities. NEI comments were endorsed by South Carolina Electric and Gas Company (SCE&G). Detroit Edison (DE) recommended that the NRC should plan for more than 3-5 power reactors to be shut down in the next 5 years and should allocate resources accordingly. YAEF endorsed this option and noted that all initiatives should carefully consider their impact on the economic viability of operating plants and on current decommissioning facilities so as to complete decommissioning safely and efficiently.

Mr. Floyd supported Option 2 and stated that as industry moves toward a deregulated embarkment, it must soon have a good understanding of what the final set of requirements are going to be and what the final set of implementation costs for those requirements is going to be. These requirements and costs will greatly influence the recovery mechanisms for decommissioning costs which will be a part of the rate structure ultimately. He recommended that the NRC consider combining all the rulemaking efforts related to decommissioning. The State of Oregon Office of Energy also supported Option 2 in the area of rulemaking activities related to decommissioning.

DE believes the NRC should more aggressively pursue establishing radiological release criteria and more realistic guidance for final surveys. This uncertainty created difficulty in decision-making and increased costs for decommissioning. Furthermore, costs associated with a final survey have become significantly more than NRC-sponsored and other cost studies predict.

Option 3

Most of the commenters did not support this option. OAS recommended this option only for the site release criteria rulemaking. The OAS recommended that the NRC move slowly in finalizing the current proposed rule and that it conduct a study of this issue independent of the EPA. This OAS comment was endorsed by the States of New Hampshire, Mississippi, Illinois, Utah, and Texas. Several other commenters supported this idea. The Illinois Department of Nuclear Safety was against the EPA standard and requested NRC to provide flexibility in decommissioning; it also stated that overly restrictive standards may bankrupt the licensee. A private citizen stated that there is no technical basis for selective 15-millirem-per-year as a site release criterion for decommissioning. This 'statement' was endorsed by the States of Texas and Illinois. Commenters (Halmes, Tipton, and Floyd) also indicated that it is essential to make completed decommissioning actions final actions so that licensees are not forced to remediate sites in accordance with future, more restrictive criteria. The Environmental Coalition on Nuclear Power supported the option but at the same time recommended that NRC move rapidly enough so that a restructured utility industry will not be allowed to walk away from its obligations.

Mr. Holmes made a point that Shoreham and Fort St. Vrain were both relatively clean plants to begin with, and both of the plants are spending somewhere in the neighborhood of \$10 to 20 million to confirm that the radiological criteria they had to meet were, in fact, met. NRC cost estimates prepared by the Pacific Northwest National Laboratory (PNL) project estimate this cost to be \$1 to 2 million and that estimate is in the wrong order of magnitude as far as reality versus the regulatory anticipation is concerned. The questions are, "What is a reasonable amount of inspection; what is the final acceptance criteria?" He also stated that licensees are trying to find 5 micro-R per hour, in a setting in which that naturally occurring background varies between 5 and 30 micro-R per hour; it is not realistic.

C. Comments on Important Omissions

Dade Moeller & Associates, Inc., recommended that the Commission implement the "open-market trading rule" for the cleanup of various nuclear facilities. He expressed his thoughts in a paper, "Innovative Policies for Radioactive Waste Management and the Cleanup of Contaminated Nuclear Facilities." Marvin Lewis recommended that NRC develop a DSI on shutting down the expensive and counter productive nuclear fuel cycle, in plain English. He also recommended that NRC use productive methods to build public trust. Mr. Crites suggested combining DSI 9 and DSI 24 and retitling it. Otherwise, Options 2, 3, and 5 from DSI 9 should be made part of DSI 24. He also pointed out that non-power reactors are not addressed in DSI 9 or DSI 24.

NEI stated that economic problems associated with the outdated generic funding formula found in 10 CFR 50.75(c) requires utilities to fund decommissioning funds at unrealistic levels to ensure compliance. NEI recommended that site-specific funding should be addressed. NEI recommended that rulemakings be considered for dry storage of greater-than-class C waste on site. The licensee for the Trojan plant endorsed NEI's comment on Class C waste. NEI also recommended that NRC increase its dialogue with the Federal Energy Regulatory Commission (FERC) regarding proposed stranded cost recovery mechanisms included in FERC Orders 888 and 889.

An anonymous commenter recommended that the Commission focus on an organizational structure that distributes functional responsibility among the program offices and the regions to ensure the success of the decommissioning program and DSI 24. Anonymous commenter recommended the centralization of the decommissioning function at NRC headquarters under the Office of Nuclear Reactor Regulation (NRR) to improve the effectiveness of the decommissioning program. This individual also recommended the separation of functional responsibility for overseeing the decommissioning activities between the Office of Nuclear Material Safety and Safeguards (NMSS) and NRR be properly stated so that NRR would be responsible for reactors and related activities and NMSS responsible for material facilities, as designed by the Commission. The anonymous commenter recommended that NRC request the Congress to pass legislation that exempts the nuclear facilities regulated by the NRC from the EPA regulation in the area of radiation standards. This approach should eliminate the uncertainty of dual regulations.

YAEC challenged the NRC's estimate "that three to five power reactors will cease operation in next 5 years" and that "resources for this increased workload should be offset by the decrease in the operating reactors' workload caused by the plants that shut down." YAEC states that NRC's estimate could be unduly optimistic, given existing issues for decommissioning facilities and

increasing NRC initiatives imposed on operating plants. These activities have created such a significant operating reactor workload for the NRC (and licensees) that even if three to five plants were to shut down, the commenters do not see how any of the resources assigned to those plants could be made available for decommissioning of the same plants. Commenters pointed out that it is important that NRC dedicate sufficient resources to ensure that definite decommissioning funds can be focused on important issues, that is, remediating the site safely and efficiently. ABB-CE stated that assuming that three to five reactors will cease operation in the next 5 years and have to be decommissioned probably underestimates the potential size of the problem.

Florida Power Corporation recommended that entombment or long term assured storage beyond 60 years be allowed as a decommissioning option. The licensee for the Trojan plant commented on 10 CFR Part 71 interpretation of the current regulations was overly restrictive in the area of packaging and transportation of large reactor component Type B packages. Clear guidance by the NRC should ensure lower exposure, conserve decommissioning funds, and improve public safety.

DE recommended that decommissioning rulemaking needs to take into account that all shut down reactors are not large, recently shut down plants. There are power reactors that have shut down for more than 20 years and that last operated in a different regulatory climate. Recent rulemaking attempts to standardize the requirements for future shutdowns are helpful, but the impact on previously shut down plants is not recognized or addressed; staffing is an example.

D. Comments on Internal/External Factors

Janice Stevens, an independent consultant suggested that NRC can certainly learn a lot from the experience of European countries in developing a realistic approach to estimating costs and technical approaches for decommissioning power reactors. She indicated that the NRC should look into international experience in developing this decommissioning strategy. Jane Fleming commented on the issue of deregulation with two questions: (1) whether the decommissioning funds follow the facility and (2) whether the operating cost to care for the spent fuel collected by the Department of Energy (DOE) will be refunded to the original owners or to the new owners since the title of the fuel will be transferred to the new owners. It was indicated that the NRC should address decommissioning funding costs in terms of the deregulation of industry.

NEI stated that an important external factor not considered is how State Public Utility Commissions handle decommissioning costs in the transition to competition. The treatment of these costs could have a dramatic effect on the timing of a decision to cease operations permanently. Jill Lipoti stated that if there are more plants that are shut down prematurely as a result of deregulation, States are particularly concerned about a shortfall of decommissioning funds. ABB-CE commented that deregulation will potentially compromise the ability of some utilities to set aside funding for decommissioning.

DE commented that decommissioning funding is becoming extremely complex, with requirements being imposed by State Public Utility Commissions, FERC, Securities and Exchange Commission (SEC), and Financial Accounting Studies

Board (FASB), as well as the NRC. It was indicated that the NRC should be careful to not add further complexity without achieving a true benefit.

E. Comments on Staff Requirements Memorandum Questions

In its preliminary view, the Commission requested specific comments on three issues. Those issues and the comments provided are listed below:

1. Transfer of nuclear power plants to Agreement State control after fuel has been put into dry storage or has been removed from the Part 50 site.

In general, this issue did not receive any endorsement from the States. The Illinois Department of Nuclear Safety did not support the idea of transferring nuclear power plants to Agreement State control and also stated that the plant was sited, constructed, licensed, and operated without the regulatory involvement of an Agreement State and it should be decommissioned without State regulatory involvement. The OAS endorsed the State of Illinois comments and stated that NRC should have States involved in the process of rulemaking much earlier than issuance of the draft rule. The State of Ohio also endorsed the State of Illinois comments and stated that the NRC should transfer reactors and facilities to the EPA instead of to the States. Tom Hill stated that transferring reactors to the States for regulating decommissioning is a bad idea, "don't do it." This thought was shared by the State of New Hampshire.

The State of Louisiana, an Agreement State, did not find this approach acceptable because of the additional resources that would be required if this approach could be viewed as an unfunded mandate. The State of Georgia, NEI, J. Lipoti, the State of Texas, and the Conference of Radiation Control Program Directors, Inc., did not approve the idea of transferring decommissioning power reactors to the Agreement States. There was general agreement among the states that if the Commission selects this approach, the States should be invited to take part in the rulemaking discussions before the regulations are developed.

The State of Florida's Bureau of Radiation Control commented that under certain circumstances they would support this approach. However, they stated that this should not be a regulatory requirement that is mandated to the states, but rather, it should be an option that should be available if it is determined that it would be beneficial in the decommissioning of a power reactor.

2. Placing a resident site inspector during all phases of decommissioning, only during specific phases of decommissioning, or not at all.

Commenters generally rejected the idea of placing resident site inspectors on site during all phases of decommissioning and endorsed the idea of having a resident site inspector on an as-needed basis for specific phases of decommissioning.

Mr. Huston stated that decommissioning activities at reactor sites are not high technology nor are they high risk, especially in comparison with reactor operations; therefore, it is not appropriate to devote resources to decommissioning in terms of a full-time resident inspector. It was also stated that the NRC should have general oversight of the decommissioning process and implement a performance-oriented approach that observes an

established standard for releasing the site. Certainly communication is needed, whether there is a resident inspector or not.

NEI stated that appropriate oversight has been provided by the NRC, and that resident inspectors would be an unnecessary added cost that is currently not budgeted in decommissioning cost estimates.

3. Having NRC take an enhanced performance-oriented approach by reducing oversight and performing a radiological assessment of the site when it is ready to be released.

This idea elicited significant comments and was generally supported. Kristin Erickson, Michigan State University, supported the idea of performance-based regulations and risk-based criteria. She believes that the industry is overregulated in this area by the NRC/EPA. Mr. Holmes suggested that non-reactor facilities should follow the reactor facility decommissioning rule. Steve Collins, commenting as a private citizen, recommended that materials facilities and reactor facilities be treated in a similar manner. It was indicated that the NRC should not review the decommissioning plan and still require the licensee to make final surveys to demonstrate that it meets the site release criteria. It was also indicated that confirmatory surveys may or may not be performed by the NRC, depending on the situation. Henry Morton, a technical consultant, supported the idea of no decommissioning plan reviews by the NRC, just the final survey. Mr. Tipton asked what threshold would the licensee use to go back and reopen the issue? Oregon State, Office of Energy, expressed its concern regarding NRC's overregulation of transport of reactor vessels and other large components. It was indicated that licensees should not be subject to review as if they were transporting casks used to ship discrete sources. It was also indicated that these new approaches are supported by recent industry experience and should be implemented without undue delay. DOE comments were endorsed by the State of Oregon and the licensee for the Trojan plant. Ms. Erickson, Michigan State University, stated that licensees are overregulated by the NRC, performance-based/risk-based regulations should be developed and the licensees should be freed from the tedious reviews and approvals by the NRC.

NEI stated that an enhanced performance-oriented approach would be in the best interests of both the NRC and licensees. NEI recommended that NRC explore one integrated rulemaking with a scope commensurate with the reduced risk from decommissioning relative to power operation. NEI also stated that several of the issues related to plant decommissioning are intertwined and their resolution through rulemaking should proceed concurrently rather than in series. It was indicated that the decommissioning issues are changing rapidly and the time restraints of the rulemaking process utilized by the NRC can fall behind the industry's changing economic environment.

YAEC stated that the Commission's proposed new and innovative performance-based, risk-informed regulatory approach to decommissioning required detailed analysis. It was indicated that decommissioning funds are limited, and, therefore, it is critical that NRC use a performance-based, risk-informed approach to decommissioning. Commonwealth Edison supported enhanced performance-oriented approach.

3.16.4 List of Commenters

WRITTEN COMMENTS

1. October 18, 1996, Dade Moeller & Associates, Inc. (Dade W. Moeller)
2. October 29, 1996, NRC, Project Engineer, Region 1 (Richard S. Barkley)
3. November 3, 1996, Member of the Public (Marvin Lewis)
4. November 4, 1996, State of New Hampshire, Bureau of Radiological Health Administration (Diane E. Tafft)
5. November 5, 1996, State of Michigan, Department of Environmental Quality (Flint C. Watt)
6. November 7, 1996, Mississippi State Department of Health (Robert W. Goff)
7. November 7, 1996, Organization of Agreement States (Robert M. Quillin)
8. November 13, 1996, Oregon Office of Energy (David Stewart-Smith)
9. November 14, 1996, Oregon Department of Human Resources (Ray D. Paris)
10. November 14, 1996, South Carolina, Department of Health and Environmental Control (M. K. Batavia)
11. November 20, 1996, Florida Department of Health & Rehabilitative Services (William A. Passetti)
12. November 21, 1996, State of Louisiana, Department of Environmental Quality (Ronald Wascom)
13. November 21, 1996, Georgia Department of Natural Resources (Thomas E. Hill)
14. November 21, 1996, State of Utah, Department of Environmental Quality (William J. Sinclair)
15. November 22, 1996, South Carolina Electric & Gas Company (Gary J. Taylor)
16. November 25, 1996, Westinghouse Electric Corporation, Energy Systems (N. J. Liparulo)
17. November 27, 1996, Nuclear Energy Institute (Thomas P. Ryan)
18. November 27, 1996, Texas Department of Health (Richard A. Railiff)
19. November 27, 1996, Conference of Radiation Control Program Directors Inc. (William P. Dornsife)
20. November 27, 1996, Trojan Nuclear Plant (Stephen M. Quennoz)

21. November 27, 1996, Detroit Edison (Douglas R. Gipson)
22. December 1, 1996, Environmental Coalition on Nuclear Power (Judith H. Johnsrud)
23. December 2, 1996, Florida Power Corporation (Steven M. Garry)
24. December 2, 1996, Individual from New Jersey (Jill Lipoti)
25. December 2, 1996, Yankee Atomic Electric Company (Jane M. Grant)
26. December 2, 1996, ABB Combustion Engineering Nuclear Systems (Charles B. Brinkman)
27. December 2, 1996, State of Illinois, Department of Nuclear Safety (Thomas W. Ortziger)
28. December 3, 1996, No Name

ORAL COMMENTS

Washington, DC (October 24-25, 1996) pages 70 - 92

1. Tom Crites, Gaithersburg, MD (LLNL)
2. Janice Stevens, Independent Consultant
3. Jane Fleming, Member of the Public (NNSN D.N.A.C.)
4. Alan Nelson, NEI
5. Tom Hill, Georgia Department of Natural Resources, Radioactive Material Program
6. Steve Collins, Member of the Public
7. Henry Morton, Technical Consultant

Colorado Springs, CO (October 31-November 1, 1996) pages 323 - 340

1. Mike Holmes, Public Service Company of Colorado
2. Tom Tipton (NEI)
3. Steve Floyd, (NEI)
4. Ken Weaver

Chicago, IL (November 7-8, 1996) pages 68 - 89

1. Gordon Appel, Illinois Department of Nuclear Safety
2. Steve Collins, Organization of Agreement States
3. Steve Crockett, U.S. NRC

4. Jim Williams, State of Ohio
5. Dave Swank, Washington Public Power
6. Kristin Erickson, Michigan State University
7. Ken Anger, Commonwealth Edison
8. Roger Huston, NEI