To: George Hubbard (6 copies) for TWG Distribution

Glenn Tracy
Ed Fox
Dave Barss
Dick Rosano
Bob Skelton
Rick Pelton
Ira Dinitz
Melinda Malloy
Barry Zalcman
RJ Auluck
Steve Lewis
Gerry Mizuno

Lynnette Hendricks
DIRECTOR,
PLANT SUPPORT
NUCLEAR GENERATION DIVISION

May 16, 2000

Mr. John Zwolinski
Director
Division of Licensing Project Management
Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: Transmittal of Industry White Paper on Options for Improving Decommissioning Regulations

Dear Mr. Zwolinski:

The purpose of this letter is to transmit a white paper which provides the Nuclear Energy Institute's (NEI) comments on behalf of the nuclear energy industry concerning SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants" (June 30, 1999), and the associated Staff Requirements Memorandum (SRM) for this SECY paper (December 21, 1999).

The Commission's directive to risk-inform the regulations for permanently shutdown nuclear power plants should be the primary consideration in improving decommissioning regulations. Failure to fully risk inform the regulations will forego the bulk of the benefits to be derived from the rulemaking, i.e., applying resources to those areas that pose the highest risk and avoiding application of burdensome, unnecessary regulatory requirements where the risk does not support the need for them.

The attached white paper recommends an approach that we believe will most readily result in risk-informed regulations. Justifications are also provided for elimination or amendment of specific requirements using the "low risk" findings of the staff's technical study of spent fuel pool accident risk.

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The industry is proposing an alternative to the 3 options proposed by the staff in SECY 99-168 for improving the decommissioning regulations. The industry proposal includes an optional provision for licensees to use a risk-informed approach. Licensees choosing to use the risk-informed approach would be able to eliminate or apply amended requirements based on the low risk findings in the staff's risk study for spent fuel pool accidents. The industry option recommends that section 50.82 be amended to cross reference sections of the Commission's regulations that no longer apply, or apply in amended form, for decommissioning plants based on the staff technical report's "low risk" findings.

A separate section could cross reference requirements that no longer apply, or apply as specifically amended, irrespective of whether the risk-informed option is chosen. Other requirements not referenced would continue to apply to decommissioning plants either in entirety or as appropriate considering the scope of the requirement relative to the configuration and activities occurring at the decommissioning plants, e.g., only those requirements in Appendix A that are applicable to storage and handling of spent fuel and radioactive releases would apply to decommissioning plants. Specific recommendations concerning the form and the content of revised sections of the new rule for the decommissioning of nuclear power plants are provided in the attached white paper.

Thank you for considering industry's views on this important issue. If I can be of any assistance to you as you review the industry's white paper please call me at (202 739-8109) or email me at lxh@nei.org.

Sincerely,

Lynnette Hendricks

Attachment

Industry White Paper
Risk-Informing Decommissioning Regulations

Background:

The last major revision of the Nuclear Regulatory Commission's (NRC) regulations dealing with the decommissioning of nuclear power plants occurred in 1996 [61 FR 39301] and was primarily directed toward the procedural process for decommissioning and the conditions for the ultimate termination of a plant's Part 50 license. This rulemaking also dealt with questions concerning the applicability (or, more to the point, the non-applicability) of certain Part 50 regulations to the decommissioning plants, e.g., § 50.44, "Standards for combustible gas control system in light-water-cooled power reactors'" and § 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors." Consideration of whether other regulations dealing with issues such as emergency planning, plant security, financial protection, etc. were appropriate for decommissioning plants was deferred to some unspecified future date.

Because the development of the NRC's regulations has typically focused on operating plant concerns and because it is recognized that a decommissioning plant poses a significantly reduced risk when compared to an operating plant, licensees have sought plant-specific exemptions from a number of regulations which are unnecessary or inappropriate for decommissioning plants. The Commission and the staff recognized the need to increase the efficiency, consistency, and effectiveness of decommissioning regulations and initiated an effort to improve the regulations.

I. Scope of a New Decommissioning Rule

In SECY-99-168 the staff recommended addressing the following topics within an integrated, risk-informed decommissioning rule:

- Emergency planning
- Onsite and offsite insurance (financial indemnity)
- Safeguards
- Operator staffing and training
- Backfit rule applicability

This proposal was subsequently approved by the Commission in the December 21, 1999 SRM.

Concerning the initiative for achieving overall improvements in the decommissioning regulations, the staff recommended "a detailed regulatory review of the requirements for Part 50 license holders to determine their applicability to decommissioning nuclear power plants" followed by a consolidation of the applicable regulations, with any recommended modifications, into a separate part under Title 10. The Commission's SRM approved the first step of the proposed initiative, i.e., the decommissioning regulatory review, but directed the staff to solicit inputs from NRC stakeholders and to present the Commission with a plan of action before moving to the next step.

The overall plan of action proposed by the staff and approved, in part, by the Commission would create a phased approach to amending the existing body of regulations for the decommissioning plants. In an April 3, 2000, letter to Samuel J. Collins, Director of the Office of Nuclear Reactor Regulation, industry proposed that these two rulemakings be combined. Industry would expect this combined or comprehensive decommissioning rulemaking to take about 24 months – the same period anticipated to risk inform Part 50 for operating plants.

Although a single rulemaking would require more industry resources in the short term, the industry would be willing to make a commitment to support such an effort because of the benefits which can be achieved by this approach. Consistency, consolidation of decommissioning issues, and a single, focused NRC management review are some of these anticipated benefits. An additional point for consideration is the benefit that a single rulemaking would have in avoiding confusion on the part of stakeholders, thereby achieving more focused and consistent feedback and comments. NEI also believes that one rulemaking would be more efficient because of the resource savings for the NRC and all stakeholders in developing and providing input to one rulemaking.

II. Regulatory Framework for Decommissioning Regulations

SECY-99-168 discusses three alternative approaches for the restructuring of the current regulatory framework for decommissioning regulations to separate decommissioning plant requirements from operating plant requirements:

Alternative 1: Retain the existing regulatory structure for decommissioning regulations within
10 CFR Part 50 and provide a regulatory guide that identifies and interprets the regulations pertinent to decommissioning nuclear power plants.

The staff's analysis of Alternative 1 notes six major disadvantages of this approach. Although NEI agrees that all of the cited disadvantages are valid, two

of the disadvantages are of such significance that they should virtually rule out consideration of this approach. First, the staff notes "a regulatory guide for this alternative would be primarily an administrative road map on decommissioning requirement applicability and would not be an appropriate way to risk- inform the regulations" and second, "if scope of an existing regulation cannot be interpreted to exclude decommissioning, even if application of the regulation to decommissioning would not serve the underlying purpose of the rule, then a regulatory guide would be insufficient." Any approach that would not account for the reduced risk for decommissioning plants would perpetuate the current situation of requiring decommissioning licensees to request exemptions from regulations which clearly should not apply to the decommissioning plants can not be expected to improve the current situation.

Alternative 2: Create a new part within Title 10 that relocates significant regulations and requirements applicable to decommissioning nuclear power plants.

The staff has indicated that this alternative is its preferred approach. As stated in SECY-99-168: "It is the staff's conclusion that establishing a new part for decommissioning will be the most effective approach, in terms of contributing to the overall clarity of decommissioning requirements. The viability of such an approach has already been established with plant standardization and license renewal regulations in Parts 52 and 54. This effort will be primarily a relocation of the decommissioning regulations into a structural framework afforded by a new part. Because there are no constraints on the new framework, there will be considerable flexibility in the manner in which this goal is accomplished." NEI disagrees with this conclusion. We believe that a new Alternative, as discussed below, affords all of the potential advantages credited to the Alternative 2 approach while at the same time avoiding unnecessary complications which can be anticipated in developing a new Title 10 part for decommissioning, or in placing decommissioning regulations in a subsection in Part 50.

Alternative 3: Relocate all decommissioning requirements of 10 CFR Part 50 under a single subpart within Part 50.

In its analysis of Alternative 2 the staff acknowledges that it would probably be necessary "to duplicate some Part 50 administrative/generally applicable requirements in the new part (e.g., OMB clearance, record retention, deliberate misconduct)." Another example, which can be cited, is 10 CFR 72, Subpart K- General License for Storage of Spent Fuel at Power Reactor Sites. These regulations include references to Part 50 and subsections of Part 50 which would have to be amended to ensure that they would continue to apply to decommissioning plants. Certainly, other existing regulations would also have to be amended to appropriately address the decommissioning plants if the

development of a new Title 10 or a separate section for decommissioning regulations is pursued. Placing all requirements that are applicable to plants in the decommissioning mode in either a new subpart within Part 50 or a new part within Title 10 would be cumbersome because of the bulk of text involved. In addition, taking requirements out of context and restating them elsewhere runs the risk of unintended consequences through novel interpretations of the new standalone requirement. For these reasons, industry endorses a new alternative described below.

New Alternative: Include an option in section 50.82 of the Commission's regulations for a risk-informed approach to decommissioning. Section 50.82 could be amended to reference those sections of the regulations which no longer apply, or apply in amended form, to decommissioning plants choosing to use the risk-informed option. An NRC regulatory guide could describe an approach for implementing the risk-informed option based on the staff's findings in their risk study, including the commitments that were fundamental to the "low risk" findings of the study. 10 CFR 50.71(e) could be used to reflect conforming changes in the FSAR where appropriate.

The regulatory guide could identify certain areas where licensees could perform analyses that would result in amended requirements, e.g., a plant specific heatup analysis could reduce the deterministic aspect of the timing of elimination of financial protection requirements (if the staff determines that the requirements cannot be eliminated solely on the the basis of the low risk posed by decommissioning plants). Alternatively, licensees could propose an entirely different basis for a risk-informed approach.

Cross references would also be included to those regulations that do not apply to decommissioning plants, or apply in reduced scope, irrespective of whether the licensee chooses to use the risk informed approach to decommissioning.

The backfit analysis performed for the rule to amend Part 50 to establish appropriate requirements for decommissioning plants and to permit voluntary use of the risk-based approach for establishing requirements should be fairly straightforward. Since the risk informed approach would be voluntarily implemented, the requirements associated with the addition of the commitments associated with the risk study are not subject to backfit analysis. Likewise, the elimination or reduction of requirements that are candidates for the risk informed approach, e.g., emergency preparedness, would not be subject to backfit analysis. However, as indicated previously the staff must truly risk inform the reduction or elimination of those requirements to fulfill the Commission's directive in proceeding to amend decommissioning regulations.

We believe the industry proposal offers all of the advantages of Alternatives 2 and 3 and yet avoids unnecessary complications which would otherwise have to be addressed in developing a new part for Title 10 or a new section for all decommissioning regulations within Part 50. Those regulations that need to be amended to clarify how they apply to decommissioning plants are best addressed by amending the existing sections of the regulations to clarify the scope of applicability for decommissioning plants.

III. Role of Risk Informing in Implementation of the New Alternative

To meet the intent of the Commission, the decommissioning rulemaking must be risk-informed. The staff has developed a rigorous technical basis that should form the framework for successfully risk informing regulations.[1]
The staff concluded:

> "In summary, the risk assessment shows low numerical risk results in combination with satisfaction of the safety principles as described in R.G. 1.174, such as defense-in-depth, maintaining safety margins, and performance monitoring. The staff concludes that under the assumptions of this study there is a low level of public risk from SFP accidents at decommissioning plants."

Industry believes that the staff's findings of low risk suggest that an optimal thought process for risk-informing decommissioning regulations may be to start with an assumptions that no requirements apply to plants in this "low risk" mode. Then those requirements essential to preserve the low risk findings would be applied to decommissioning plants as needed. We believe using this approach vs. the approach of determining which regulations applicable to operating plants should continue to apply to decommissioning plants, will better ensure risk informed regulations and will simplify the process of amending rules where necessary for decommissioning plants.

Preserving the assumptions leading to the low risk conclusions of the staff's technical study is largely done through two mechanisms:

1. Incorporating into the license basis those critical commitments identified by industry and reflected in the technical risk study by adding a new section to 50.82 to permit voluntary establishment of risk informed decommissioning requirements. The commitments would be captured

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[1] NEI submitted detailed comments on the staff's technical study of the risk of permanently shutdown plants.

by a regulatory guide that endorses the study including the commitments that led to the low risk conclusion, and

2. Ensuring continued applicability of 10CFR50 Appendix B to a reduced set of structures, systems and components (SSCs) using the graded approach afforded by the rules today, i.e., appropriately ranking relevant SSCs according to their risk significance (see section on quality assurance) and then applying commensurate controls.

Starting from a "clean slate", Appendix B is a good example of a regulation which must be added back in for a decommissioning rulemaking. Some mechanism is assumed in the staff's technical risk study to establish the pedigree with which activities are conducted and structures, systems and components are designed and maintained. Through Appendix B the license basis in the FSAR is preserved and through Appendix B and its procedural controls the license basis is implemented. In fact, since Appendix B is already written to allow "graded quality assurance", no additional changes are needed to reflect the transition to decommissioning. Similarly, the staff's risk study presumes a location for key licensee commitments and 10CFR50.71(e) provides mechanism for incorporating those commitments into the licensing basis as appropriate.

IV. Regulations that Continue to Apply to Plants in the Permanently Shutdown Mode

Although the scope of applicability will change, there will be a large number of 10CFR50 regulations that will continue to apply to decommissioning facilities without need of amendment in the new rulemaking. It is important to understand why scope can change without the need to amend the regulations.

When a facility begins decommissioning, one of the first efforts usually undertaken is to revise the license basis. Once fuel is permanently removed from the reactor vessel, the safety classification of numerous structures, systems, components, procedures and programs may be significantly altered through licensee evaluation under such regulations as 10CFR50.59 and 10CFR50.54. These licensee-initiated changes are then reflected in the license basis (the FSAR and programmatic documents such as the quality assurance program) pursuant to regulations such as 10CFR50.71(e).

The net effect of a fairly drastic change to the license basis is to reduce the scope of applicability of many existing regulations. For instance, if the reactor coolant system (which will never again support nuclear fuel) is declassified from safety-related to non-safety-related, then the requirements of 10CFR50 Appendix B no longer apply to the RCS.

Similarly, many other regulations continue to be applied verbatim at a decommissioning facility, but are applied to an increasingly reduced set of components or procedures. Some of the regulations that fall into this category include 10CFR50 Appendix A (the GDCs), codes and standards requirements (10CFR50.55a), report and recordkeeping requirements, and the like.

In this way, much of the regulatory framework for a decommissioning facility can be identical to an operating facility (albeit applied against a condensed license basis). As a consequence, the new decommissioning rule need not concern itself with trying to amend most of 10CFR50. Instead, the rule can address just those sections for which applicability is questionable. This is also another reason to not prepare a new stand alone Part in the regulations, since to do so would require duplicating (without change) a significant fraction of the existing Part 50 regulations. The remainder of this document provides specific recommendations for those sections of the regulations for which clarification is needed as to applicability to decommissioning plants.

V. Emergency Planning

In view of the "low risk" findings of the staff's technical study of spent fuel pool accidents and the insensitivity of consequences of spent fuel pool accidents to early evacuation, the industry proposes that the emergency planning requirements for a decommissioning plant be modeled on the emergency planning requirements specified for an independent spent fuel storage installation (ISFSI) in 10 CFR 72.32. These requirements would supercede all Part 50 emergency planning requirements currently applying to operating nuclear plants. This change could be accomplished by including references to Part 50 and Part emergency planning requirements in the section of 50.82 which lists requirements that are no longer applicable if the licensee uses the risk informed approach. A section would be added to 50.82 to indicate 72.32 would apply to decommissioning plants using the risk-informed approach.

The staff's risk study initiating event probability of 3E-6, for spent fuel pool accidents with the potential for significant offsite consequences is quite low. Further the majority of that risk is from a seismic initiator which we believe is considerably lower than the bounding value used by the staff to arrive at the 3E-6 initiating event probability. Further, as discussed below, off-site emergency preparedness (e.g., evacuation) does not contribute significantly to public health and safety for the spent fuel pool accident. This is true even without factoring in the unfeasibility of evacuation following an earthquake of sufficient magnitude to compromise the very robust designs of spent fuel pools.

An analysis of the staff's risk study demonstrates that the probability and consequences of a spent fuel pool accident are insensitive to evacuation.[2] Operator recovery times for initiating events are very long and relatively insensitive to the time period after final plant shutdown.[3] Continuing the period for required evacuation capability to one year, as the staff has modeled it in their risk study, provides no significant benefit to public health and safety.[4] Therefore, Part 50 emergency preparedness requirements are not necessary to either add significant benefit to public health and safety or to preserve the "low risk" results of the risk study for any portion of the brief time period during which spent fuel pool accidents could occur.

The design basis accidents requiring evaluation for a defueled facility are best addressed by emergency planning requirements in 72.32. In addition, some of the industry commitments provide more detail on the nature of 72.32 requirements as they would be specifically applied to the spent fuel pool. The

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[2] As additional justification for this position:

NUREG-0396, "Planning Basis for Development of State and Local Government Radiological Emergency Response Plans In Support of Light Water Nuclear Power Plants" (December 1978) provided recommendations on emergency planning zones and a range of time values in which emergency response officials should be prepared to implement protective actions. The NUREG also presented the chemical and physical characteristics of those radionuclides, which contribute most significantly to human exposure. These radionuclides primarily consist of short-lived isotopes in the form of noble gases and volatiles such as iodine. In a policy statement concerning the planning basis for emergency response (44 FR 61123), the Commission stated in reference to NUREG-0396: "In endorsing this guidance, the Commission recognizes that it is appropriate and prudent for emergency planning guidance to take into consideration the principal characteristic (such as nuclides released and distance likely to be involved) of a spectrum of design basis and core melt accidents. Thus, one of the principal considerations which formed the underlying basis of the emergency planning rule was the radionuclide distribution associated with the design basis and core melt (beyond design basis) accidents.

After a permanently shutdown plant has undergone a modest level of decay (60 to 90 days), the nuclide distribution is significantly different than that upon which the emergency planning rule was based. Many of the requirements of the emergency planning rule were based upon a spectrum of accidents that may result in early fatalities and early injury due to the presence of shorter-lived isotopes. The consequences of beyond design basis events for permanently shutdown plants are dominated by long-lived isotopes. Thus, the health consequences are dominated by the risk of latent cancer fatalities due to long-term exposures; there are no early fatalities and the risk of early injury is negligible. As such, many of the requirements of the emergency planning rule no longer apply to permanently shutdown plants which have undergone a modest level of decay. These requirements include the ten mile radius emergency planning zone and protective action recommendations.

[3] According to Section 3.3 of the risk study, the time an operator has to restore makeup prior to bulk boiling is 90 hours one year after shutdown. At six months after shutdown, the time to bulk boiling is still 82 hours.

[4] See Case 1, Appendix A.

following accidents are relevant to spent fuel pools or independent spent fuel storage facilities:

(1) a fuel handling incident
(2) a spent fuel cask drop
(3) accidents associated with radioactive waste storage or processing

The only possible addition to this list would be a design basis accident in the licensee's licensing basis for the operating plant, which remains valid for the plant in the defueled condition.

VI. Insurance

Industry proposes amending the financial protection requirements specified in 10CFR 50.54(w) and 10 CFR 140.11 to provide more realistic requirements for permanently shutdown and defueled plants. It is recommended that the existing sections of the regulations be modified and a cross reference be included in 50.82 for amended requirements reflecting the minimal risk posed by decommissioning plants, contingent upon the licensee using the risk informed approach.

The underlying purpose of Section 50.54(w) is to provide sufficient property damage insurance coverage to ensure funding for onsite post-accident recovery stabilization and decontamination costs in the unlikely event of a nuclear power plant accident. The underlying purpose of Section 140.11 is to provide sufficient liability insurance to ensure funding for claims resulting from a nuclear incident or precautionary evacuation. More specifically, the financial protection limits of 10 CFR 50.54(w) and 10 CFR 140.11 were established to require a licensee to maintain sufficient insurance to cover the costs of a nuclear accident at an operating reactor. Those costs were derived from the consequences of release of radioactive material from the reactor. In the permanently defueled condition, the risk associated with the plant has been significantly reduced.

In an operating plant, the high temperature and pressure of the reactor coolant system, as well as inventory of relatively short-lived radionuclides, contribute to both the risks and consequences of an accident. In a permanently shutdown and defueled reactor facility, the reactor will never be operated thereby eliminating the possibility of reactor accidents. A further reduction in risk occurs because decay heat from the spent fuel decreases exponentially upon reactor shutdown, which commensurately reduces the amount of cooling required to prevent the spent fuel from heating up to a temperatures that could compromise the ability of the fuel cladding to retain fission products.

As noted in the staff's risk study, it has been the practice of the staff to grant licensees exemptions from financial protection requirements on the basis of

deterministic analyses that indicate that a zirconium fire could not occur in a plant's spent fuel pool. The draft report recommends continuing this practice or, possibly permitting the withdrawal of secondary insurance coverage five years after the last fuel is removed from the reactor core, provided that certain unstated constraints are met. Industry believes that this position is unduly conservative. Even if the postulated consequences of a zirconium fire are high, industry continues to believe that the probability of any event that could initiate a zirconium fire is low enough to eliminate this event from further consideration. Further, the time period during which the event could conceivably occur is of such limited duration, i.e., a number of months if non-bounding assumptions are used for the heat up analysis, that consideration of financial protection for this event in the same context as financial protection for reactor accidents is unwarranted.

Industry recommends the following bolded text be included in 10 CFR 50.54(w) to read as follows:

(w) Each power reactor licensee under this part for a production or utilization facility of the type described in §§50.21(b) or 50.22 shall take reasonable steps to obtain insurance available at reasonable costs and on reasonable terms from private sources or to demonstrate to the satisfaction of the NRC that it possesses an equivalent amount of protection covering the licensee's obligation, in the event of an accident at the licensee's site , to stabilize and decontaminate the reactor or other affected facilities, and the reactor station site at which the accident is located, provided that:

(1) (i) The insurance required by paragraph (w) of this section must have a minimum coverage limit for each operating reactor station site of either $1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. The required insurance must clearly state that, as and to the extent provided in paragraph (w)(4) of this section, any proceeds must be payable first for stabilization of the reactor and next for decontamination of the reactor and the reactor station site.

(ii) Each power reactor licensee which has filed certification of permanent cessation of operations and removal of fuel from the reactor vessel in accordance with 10 CFR 50.82(a)(1) shall have a minimum coverage limit of $25 million. This coverage shall continue until all nuclear fuel is either transferred off-site or to dry cask storage on-site and until the site has less than 1000 gallons of liquid contaminated material in any single tank on-site at which time the coverage may be reduced to zero.

(iii) If a licensee's coverage falls below the required minimum, the licensee shall within 60 days take all reasonable steps to restore its coverage to the required minimum. The required insurance may, at the option of the licensee, be included within policies that also provide

coverage for other risks, including, but not limited to, the risk of direct physical damage.

(The proposed coverage limit of $25 million for the permanently defueled plant is based on the assumption that a licensee might have to deal with a spill of slightly contaminated liquid from a storage tank of 100,000 gallons capacity.)

In like manner, 10 CFR 140.11 would be amended as follows:

> **§ 140.11 (5) In the amount of $10,000,000 for each nuclear reactor other than a testing reactor or a reactor licensed under Section 104b of the Act which has filed certification of permanent cessation of operation and removal of fuel from the reactor vessel in accordance with 10 CFR § 50.82(a)(1). Participation in a secondary insurance pool is waived. All requirements for off-site property insurance are waived after the nuclear fuel has been transferred either off-site or to dry cask storage on-site.**

If it is determined that participation in the secondary financial protection will be required during the short time that decommissioning plants pose a non-zero risk, then the level of participation should be in proportion to a best estimate of the risk posed relative to the risk posed by operating plants. If any participation is required it should only be for the short period that clad surface temperatures greater than 570 degrees C (based on the spent fuel failure criteria of the thermal limit used under accident conditions for licensing of spent fuel dry storage casks) can occur in a loss of water configuration. The calculation of this temperature should be by approved methodology. However, in the absence of any calculation, the obligations should end after a period which is indicative of when there is reasonable assurance that the last core placed in a pool is incapable of attaining clad surface temperatures greater than 570 degrees C. Realistic assumptions regarding burnup histories and storage array details will lead to a time period much shorter than the 5 years proposed in the report. For example, the most recent exemption issued by the staff was issued within 18 months of shutdown.

Likewise, if some consideration is required for the negligible potential for events with significant offsite consequences, the primary coverage required should be reduced in proportion to the reduced risk, i.e., in the same manner discussed above for proportional reduction in participation in secondary financial protection, and for the same time period.

VII. Safeguards

Security for the permanently shutdown plants should reflect the fact that no vital areas exist for permanently shut down plants. Under current regulations this eliminates the need for a protected area and isolation zones. Furthermore, the security requirements specified in 10 CFR 73.55 should be substantially modified to a level commensurate with the substantially reduced risks associated with protecting a permanently shutdown reactor site and that those amended sections in 73.55 be cross referenced in 50.82 for licensee use, irrespective of whether the licensee chooses to use the risk-informed approach to decommissioning.

Industry recommends that particular attention be directed to eliminating the requirement for armed guards. The significant reduction in risk to the public health and safety from reactor sabotage realized by removing the fuel from the reactor and rendering the reactor inoperable justifies such an action.

Previously, the staff discussed its plan for relaxing the physical security/safeguards requirements for permanently shutdown power reactors in SECY-99-008. The SECY paper provided the following discussion of how rulemaking would address this question:

> "This proposed rulemaking would provide regulations that specifically apply to power reactor sites that have permanently ceased operations. The new rulemaking will codify and consolidate current regulations to a level commensurate with the reduced risks associated with protecting a permanently shutdown site. To accomplish this, the staff reviewed existing regulations in 10 CFR 73.55 and has determined what requirements are necessary for a permanently shutdown reactor. By analyzing the security areas that need to be protected, the staff has eliminated those requirements that are beyond the protection strategy needed for a permanently shutdown power reactor site and its capability to preclude a radiological release that could impact public health and safety."

Appropriate security requirements should be established for decommissioning plants which have eliminated all vital areas and continue to store spent fuel in the spent fuel pool. These regulations should explicitly state that protected areas, isolation zones and external intruder detection systems are unnecessary to protect the fuel in storage. The current practice of granting security exemptions for decommissioning reactor plants has become somewhat standardized. The staff's current practice should be reflected in the amended rule.

The SECY paper did raise the question of the ongoing need for a vehicle barrier

system (VBS) and the staff stated its preference for "rulemaking with vehicle bomb protection" as follows:

> "Under this proposed rule, sites could maintain their existing plans based on 10 CFR 73.55, or they could choose the new regulations designed specifically for permanently shutdown reactor sites. If a licensee chooses the elements detailed in the new regulation, prior NRC review and approval would not be necessary. As part of this process, a licensee could choose to use the existing VBS that was in place when the reactor was still operating or could relocate or even remove the VBS pursuant to the proposed regulation, provided the licensee meets certain performance criteria, similar to language in the original VBS regulation for operating reactors. The technical basis for a redesigned VBS would have to meet Commission design goals already established in 10 CFR 73.55(c)(8) to protect equipment, systems, devices, or material, the failure of which could directly or indirectly endanger public health and safety by exposure to radiation and criteria for protection against a land vehicle bomb. Documentation justifying modification of the VBS would have to be available to the Commission for its inspection."

Industry endorses this statement as a reasonable starting point for the development of physical security regulations for the permanently shutdown/decommissioning plants.

VIII. Operator Staffing and Training

In the statement of consideration accompanying the 1996 decommissioning rulemaking it was noted that the staff had received a comment concerning the proposed rule suggesting that the requirements for licensed operators in paragraphs (k), (l), and (m) of §50.54 should be eliminated for permanently shutdown and defueled plants. The response in the Statement of Consideration was "Consideration of these issues are ongoing and may result in future rulemaking." Industry recommends that 50.82 note that the cited regulations and, in addition, §50.54(i) do not apply to permanently shutdown and defueled plants, irrespective of whether the licensee chooses to use the risk-informed approach to decommissioning. A description of the Certified Fuel Handler (CFH) position, the responsibilities of the position, and the training requirements for the position could be described in a regulatory guidance document.

Concerning 10 CFR 50.120, "Training and qualification of nuclear power plant personnel," NEI recommends that the new decommissioning rulemaking explicitly acknowledge that this rule does not apply to the permanently shutdown and defueled plants, irrespective of whether the licensee chooses to

use the risk informed approach. This action would have the effect of codifying the staff's previous actions taken in response to plant-specific exemption requests. For example, Maine Yankee submitted an exemption request to § 50.120, in its entirety, on August 28, 1997. In November 1997, the NRC, after reviewing Maine Yankee's Certified Fuel Handler Training Program and a related technical specification change, determined that an exemption to § 50.120 was not required. Similarly, GPU Nuclear's position that applicable training requirements are specified in the TMI-2 Technical Specifications was never challenged by the NRC.

IX. Applicability of the Backfit Rule

The continued applicability of the backfit rule to nuclear power plants in the decommissioning mode will be confirmed by not listing section 50.109 in 50.82 as a requirement that is either eliminated or amended for plants operating in the decommissioning mode.

The basic purpose of the Nuclear Regulatory Commission's (NRC) backfit rule, 10 CFR 50.109, is to provide a rational and systematic decision-making process to assess the appropriateness of new or amended regulatory requirements or the imposition of regulatory staff positions which are either new or different from previously applicable staff positions. The requirements of the rule are intended to insure order, discipline, and predictability and to enhance optimal use of NRC staff and licensee resources.

NEI believes that the provisions of the backfit rule, 10 CFR 50.109, should apply to plants that have submitted the certifications under 10 CFR 50.82(a)(1) and whose Part 50 license no longer authorizes plant operation pursuant to 10 CFR 50.82(a)(2). Furthermore, NEI fully agrees with the view previously stated by the Commission and reflected in the NRC staff position in SECY-98-253:

> "The staff .... believes that sound regulatory policy dictates that there be a process and appropriate standards for ensuring that changes to requirements or commitments imposed on the decommissioning licensee are technically justified and whose costs are justified in view of the perceived safety benefits of the changes. In short, the staff believes that the backfit rule, suitably modified to accommodate the non-operating permanently defueled condition, should be applied to plants in decommissioning."

SECY-99-168 states that the staff is already performing backfit analyses for decommissioning plants. It is anticipated that specific guidance would be useful and could be developed for detailed implementation of the backfit rule for decommissioning plants in NRC Manual Chapter 0514 (Management Directive 8.4), "NRC Program for Management of Plant-Specific Backfitting of

Nuclear Power Plants," Office of Nuclear Reactor Regulation (NRR) Office Letter No. 901, "Procedures for Managing Plant-Specific Backfits and 10 CFR 50.54(f) Information Requests," NRR Office Letter No. 500, "Procedures for Controlling the Development of New and Revised Generic Requirements for Power Reactor Licensees", or any other internal NRC staff procedures deemed appropriate. The most important point is this guidance should emphasize the need to give appropriate consideration to the substantial reduction in risk from final shutdown of power operations through license termination when evaluating the appropriateness of any proposed backfit for a decommissioning plant.

Both SECY-98-253 and the Commission's February 12, 1999 Staff Requirements Memorandum responding to the SECY express concerns about the availability of resources to implement a rulemaking to explicitly include decommissioning plants within the scope of 10 CFR 50.109 protections. NEI believes that these concerns are overstated and that an appropriate amendment can be promulgated with minimum expenditure of resources. For example, in SECY-98-258 the staff proposes "to conduct a series of workshops to solicit input from stakeholders" as one element of its rulemaking activities." Industry believes such workshops are unnecessary and, if the staff believes that such direct interactions with stakeholders would be particularly beneficial, we believe that amending the backfit rule could be raised as one agenda item in a broader scoped public meeting addressing the overall amendment of the rules affecting decommissioning facilities. Industry further believes that the continued applicability of the backfit rule to plants in the decommissioning mode can be affirmed in the preamble to the proposed rule and that no amendment to 50.109 is needed.

X. Quality Assurance

The operational quality assurance program requirements imposed by 10 CFR 50.34 and Appendix B of 10 CFR 50 are clearly designed to address design, fabrication, construction, testing, and operation of those structures, systems, and components *of an operating nuclear power plant* that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. Furthermore, Appendix B of 10 CFR 50 notes that "as used in this appendix, 'quality assurance' comprises all those planned and systematic actions necessary to provide adequate confidence that that a structure, system, or component will perform satisfactorily in service."

For a decommissioning nuclear power plant, the scope of any ongoing , formal quality assurance requirements should be limited from a risk-informed perspective to those activities necessary for the safe storage of the plant's spent fuel. There are essentially three spent fuel storage options available to decommissioning licensees: (1) continued operation of the plant's spent fuel

pool; (2) storage in an independent spent fuel storage installation (ISFSI) licensed under the provisions of 10 CFR 72, or (3) a dry cask storage installation licensed under the provisions of 10 CFR 72.210, i.e., the "general license" approach available to holders of a Part 50 license.

For the options of continued operation of the spent fuel pool under the licensee's Part 50 license or dry cask storage under the provisions of 10 CFR 72.210, not only should the scope of any on-going quality assurance program be clearly limited to storage of the spent fuel, the detailed requirements for an acceptable program should be commensurate with a realistic assessment of the safety concerns and risks involved.

Concerning the option of storage of the fuel in an ISFSI, the quality assurance requirements are mandated by 10 CFR 72, Subpart G. However, for the balance of the decommissioning plant, the freedom from undue risks to the health and safety of the public would warrant termination of any formally mandated 10 CFR 50 Appendix B program.

XI. Fitness for Duty

Industry recommends that the new decommissioning rule explicitly acknowledge that 10 CFR 26, "Fitness for Duty Programs," does not apply to a permanently shutdown and defueled facility. This can be accomplished by listing Part 26 in the section of 50.82 which cross references those sections of the regulations that no longer apply, of apply in amended form, irrespective of whether the licensee chooses to use the risk-informed approach.

When the Part 26 rulemaking was originally promulgated (54 FR 24468), the NRC repeatedly stated that the regulations of this part were applicable to licensees authorized to operate or construct a nuclear power reactor and this scope of applicability was reaffirmed in the statements of consideration for subsequent amendments of Part 26 (58 FR 31467 and 59 FR 502). Given that 10 CFR 50.82(a)(2) specifically states that "upon docketing of the certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel, or when a final legally effective order to permanently cease operations has come into effect, the 10 CFR part 50 license no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel", the fact that part 26 is not intended to apply to a decommissioning plant seemed clear. However, when a commenter on the 1996 decommissioning rulemaking suggested that this point should be confirmed, the response in the statement of consideration (61 FR 39301) was "Consideration of this issue is ongoing and may result in future rulemaking. However, until a decision is made, part 26 continues to be applicable."

The apparent contradictions in the cited statements of consideration were resolved in subsequent correspondence between Maine Yankee and the NRC. In a letter dated November 6, 1997, Maine Yankee argued that, based on the permanently shutdown status of Maine Yankee, there was no longer a requirement to comply with part 26. In a letter dated January 12, 1998, the NRC responded as follows: "the staff concurs with your conclusion that 10 CFR Part 26 no longer applies to Maine Yankee because 10 CFR Part 26 pertains to licensees authorized to operate a nuclear power reactor." This same interpretation was also subsequently acknowledged for other decommissioning licensees, e.g., Yankee Atomic Electric Company (NRC letter dated August 27, 1999.)

NRC management has taken the position in issuing recent security exemptions for permanently shutdown plants that there are no vital areas and hence no protected areas or isolation zones for permanently shutdown plants. The lack of protected areas in permanently shutdown plants further supports the proposition that fitness for duty is not an appropriate requirement for permanently shutdown plants.

XII. Inspections

NEI recommends that 10 CFR 50.70 be appropriately modified to reflect the expectation that a decommissioning plant will not have an inspector in residence full-time. Specifically, 10 CFR50.70(b) should be modified to eliminate the formal requirement for a full-time, dedicated NRC office large enough "to accommodate a full-time inspector, a part-time secretary, and transient NRC personnel". It is clear that when inspectors are on-site they should be promptly afforded adequate office space "generally commensurate with other office facilities at the site" and provided with "both visual and acoustic privacy." Likewise, it is recognized that for certain activities such as the movement of spent fuel from the spent fuel pool to dry cask storage there will be a large inspection presence on site. However, it is also anticipated that there will be extended periods when there are no inspectors on site. The rule should be modified to be sufficiently flexible to accommodate all of these situations and to relieve the licensee of the burden of having to dedicate space for the full-time, exclusive use of the inspectors.

XIII. Fire Protection

Licensees of permanently defueled plants should be given the option of complying with the requirements of § 50.48 (f) by adopting the risk-informed, performance-based consensus standard, National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light

Water Reactor Electric Generating Plants" as applied to protection of those remaining site facilities, systems, and equipment which could result in a radiological hazard.

XIV. Maintenance

NEI recommends that the new decommissioning rule indicate that the provisions of 10 CFR 50.65 do not apply for those licensees choosing to use the risk informed approach to decommissioning by listing 50.65 in the appropriate cross reference section of 50.82. The risk of an accident for the decommissioning facility that could result in a potential offsite exposure comparable to 10 CFR Part 100 guidelines is acceptably low. If continuance of the rule into decommissioning were mandated, it could only be applied to the structures, systems, and components necessary to support safe fuel storage in a spent fuel pool. There are more than sufficient performance requirements that will continue to apply to the decommissioning plants, e.g., the plant's Technical Specification, and the commitments associated with the staff's risk study, to render the continued application of this specific rule unnecessary and unduly burdensome.

XV. Station Blackout

NEI recommends that 50.82 include a cross reference to 50.63 to indicate that this requirement no longer applies to decommissioning for licensees irrespective of the approach to decommissioning. The significantly reduced safety concerns of a decommissioning plant argue strongly for clear confirmation that this rule does not apply to decommissioning plants. The rule was published in the June 21, 1988 issue of the Federal Register (53FR23203) and the statement of consideration accompanying the rule indicated that the purpose of the rule is to require nuclear power plants to be designed to insure that core (emphasis added) cooling can be maintained for a specific duration (coping period) without onsite or offsite alternating current power. The coping period can range from two to sixteen hours depending on the specifics of a plant's design and the site characteristics.

The only on-going site activity at a decommissioning plant that could conceivably have an effect on the public health and safety in the event of the loss of all alternating current power would be the storage of the plant's spent fuel in a spent fuel pool. (Clearly there is no issue for those decommissioning plants utilizing dry casks for fuel storage.) However, even with the potential heat-up which could result from a loss of ability to cool the pool by forced circulation, analyses have invariably shown that the time required to boil off sufficient coolant to expose any spent fuel is well in excess of the maximum

coping period required by the rule. (NUREG/CR-1353 indicates that a total loss of spent fuel cooling could be sustained for more than 40 hours before any spent fuel would be exposed. Also, two years after the permanent cessation of operations at Yankee Nuclear Power Station, more than four weeks would have had to elapse without reestablishing forced cooling or adding make-up water before the water remaining in the pool would not provide sufficient shielding for the safe entry of personnel into the spent fuel pool building.) The long period before fuel damage could occur allows ample time for offsite power recovery or fuel pool makeup.

XVII. Rules Language to be Inserted in (10 CFR 50.82)

New section 50.82(a)(1)(iv) is added to read:

For those power reactor licensees that have submitted the certifications in (a) (i) – (ii) or (iii), the following sections of the regulations were amended to indicate that the referenced requirements no longer apply:
10 CFR Part 26; 50.44 (a); 50.54(i); 50.54(k) – (m);50.46 (a)(1)(i); 50.49(a); 50.54 (o); 50.60(a); 50.61(b)(1); 50.62(a); 50.63; 50.120.

New section 50.82 (a)(1)(v) is added to read:

Those power reactor licensees that have submitted the certifications in (a) (i) – (ii), or (iii), may choose to use a risk-informed approach to decommissioning. If the risk informed approach is chosen the requirements listed in section (a)(1)(iv) no longer apply and in addition, the following requirements no longer apply: 50.47; 50.54(q)and (t); and appendix E to Part 50; 50.65; 10 CFR 170, 10 CFR 171; 44 CFR 354.

In addition, the licensee may take advantage of amended requirements in : 10 CFR 72 for security and 10 CFR 73 for Safeguards; and in sections 50.54(w) and 10 CFR 140.
The requirements in Part 72.32 for emergency planning will apply.

XVIII. Voluntary or Mandatory Compliance With a Revised Rule

The Commission's SRM for SECY-99-168 directed the staff to solicit comments from decommissioning stakeholders concerning whether compliance with a revised decommissioning rule should be voluntary or mandatory. The industry is recommending that the option to use a risk based approach for establishing applicable requirements for decommissioning plants be voluntary, similar to the use of the risk informed option for containment leakage testing, Appendix J. In practice we doubt any licensee would not take advantage of this option.

CONCLUSIONS:

The industry views this letter and the recommendations offered herein to be part of the nuclear energy industry's ongoing efforts to assist the staff and the Commission in the development of an appropriate risk-informed and, to the greatest extent possible, performance-based rule for the decommissioning of our plants. The recently issued "Draft Final Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Plants" identifies at least eleven different public meetings concerning that study which took place in 1999 and notes that "the early stakeholder input has improved the overall quality of the report." As representatives of the nuclear energy industry we very much appreciate the many opportunities afforded by the staff and the Commission to voice our positions and concerns and we believe that all parties have benefited from these interactions.

This white paper discusses a very broad range of issues and NEI would welcome the opportunity to continue our dialogue concerning the scope, the structure, and specific details of decommissioning rulemaking.