RULEMAKING ISSUE
NOTATION VOTE

June 28, 2000 SECY-00-145

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: INTEGRATED RULEMAKING PLAN FOR NUCLEAR POWER PLANT DECOMMISSIONING

PURPOSE:

To request Commission approval to proceed with developing an integrated rulemaking for nuclear power plant decommissioning in accordance with the recommendations detailed in the attached rulemaking plan. The regulatory areas addressed by this rulemaking plan are emergency planning (EP), insurance, safeguards, staffing and training, and backfit.

BACKGROUND:

Since the early 1990s, the staff has been involved in an effort to improve regulations for nuclear power plants that are permanently shutdown and in the process of decommissioning. Nonetheless, decommissioning regulatory improvements in certain areas such as EP, insurance, and safeguards have proven difficult to implement because of an incomplete technical understanding of the dominant risk associated with decommissioning plants — a beyond-design-basis zirconium fire event in the spent fuel pool (SFP). A zirconium fire is a very low probability event associated with uncovery of spent fuel within several years after the spent fuel has been moved to the SFP. Uncovery of the spent fuel is postulated to occur when a significant amount of water is lost from the SFP and can be initiated by various unlikely events such as a severe earthquake or heavy cask drop. Under certain circumstances when the spent fuel decay heat level is high, uncovery may result in cladding heatup to the point where rapid oxidation could create an exothermic zirconium reaction (commonly referred to as a zirconium fire) with the potential to propagate to a large number of fuel assemblies in the SFP. The offsite consequences of a zirconium fire would be severe. Although zirconium fires can be postulated for spent fuel storage in operating reactor SFPs, it has been concluded in the resolution of Generic Issue 82, “Beyond Design Basis Accidents in Spent Fuel Pools,” and other studies that existing requirements for operating reactor SFPs (which include full-scope emergency planning, safeguards, and insurance) are sufficient to minimize any concerns. However, in an effort to maintain safety at decommissioning plants while reducing unnecessary regulatory burden, the zirconium fire scenario becomes a primary consideration. Because EP and insurance

CONTACT: Bill Huffman, NRR/DLPM
(301) 415-1141

Phillip Ray, NRR/DLPM
(301) 415-2972

regulations are intended to provide some protection and compensation, respectively, to the public for beyond-design-basis events, the staff needed to carefully examine the technical issues associated with zirconium fires before recommending reductions in the requirements of these regulatory areas for decommissioning plants. Since sabotage is another event initiator that could result in uncovery of spent fuel in the SFP, safeguards regulations for decommissioning plants could also be impacted by zirconium fire considerations. The staff believed that consideration of zirconium fires could also have some bearing on adequate staffing levels and training requirements for decommissioning plants. There is no direct link between backfit regulations and zirconium fire considerations.

Initially, the staff focused on developing an analytical capability to determine when spent fuel in the SFP had sufficiently cooled such that a zirconium fire was no longer possible. However, there are uncertainties in the thermal-hydraulic behavior following uncovery of spent fuel in a SFP leading to a zirconium fire. In addition, there are also uncertainties in the assumptions related to the physical condition of the spent fuel and SFP following a beyond-design-basis SFP drainage accident (such as fuel spacing and building cooling air flows). Consequently, the staff has been unable to develop a standard calculational methodology that could be used to predict plant-specific SFP heatup scenarios. As a result, the staff lacked an analytical method for determining when decommissioning regulations could be relaxed on a generic basis.

During a Commission meeting on March 17, 1999, the staff suggested that decommissioning rulemaking activities in the areas of EP, insurance, and safeguards could benefit from a risk assessment of SFP accidents. Subsequently, the staff issued SECY-99-168, dated June 30, 1999, which committed to provide a detailed technical assessment of risk of SFP accidents at decommissioning nuclear power plants. The SECY paper also recommended that staffing and training and backfit regulations be included with EP, insurance, and safeguards for developing an integrated, risk-informed decommissioning rule. Regulatory decisionmaking for the integrated rulemaking plan would be based on risk-informed principles to be defined in the detailed technical study of decommissioning plant SFP risk. Preparing the rulemaking plan as an integrated package would ensure that the regulatory decisionmaking was made in a unified manner using a consistent technical basis to the maximum extent possible. A staff requirements memorandum (SRM) dated December 21, 1999, approved the SECY-99-168 recommendation to develop a single, integrated, risk-informed decommissioning rulemaking plan.

The technical study on SFP risk at decommissioning nuclear power plants has now been completed through the final draft stage and provides sufficient information to allow rulemaking activities to progress. The report concluded that approximately 1 year after permanent cessation of operations, the dominant scenario leading to zirconium fires is a beyond-design-basis earthquake with a generic frequency of less than 3E-6 per year at a decommissioning plant. This frequency is contingent on the implementation of certain SFP design, operational, and administrative features assumed by the staff or committed to by the industry that are documented in the study. Zirconium fire probabilities could be much higher for facilities that have not implemented these industry commitments or staff assumptions. However, the overall frequency of a fuel uncovery event leading to a zirconium fire compares favorably with the large early release frequency (LERF) baseline guideline of 1E-5 per year in Regulatory Guide 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis.” The staff recognizes that the guide was developed for different types of accidents and regulatory decisions but this general comparison is

reasonable for the following reasons: (1) the LERF guideline was developed from the Commission's Safety Goals, which are intended to broadly cover accident risks; (2) while the amounts of fuel involved and mix of radionuclides available for release differ, SFP accidents and those considered in developing the guide's LERF guideline are estimated to have a generally comparable integrated dose to the public. Finally, the SFP risk study concludes that after 5 years of spent fuel decay time, a zirconium fire is no longer reasonably conceivable. This conclusion is based on conservative thermal-hydraulic calculations and the low probability of the event. The staff notes that the technical study results do not apply to high burnup or mixed-oxide fuels and the decommissioning regulations proposed by this rulemaking plan may be impacted and need future modification for SFPs containing such fuel.

The Advisory Committee on Reactor Safeguards (ACRS) reviewed the staff's technical study on SFP accident risk at decommissioning nuclear power plants and provided comments in a letter dated April 13, 2000. The staff responded to the ACRS letter on May 26, 2000, and committed to address the ACRS concerns in the final report. The staff believes that the ACRS comments will not impact the overall conclusions of the staff's risk study. The time available between a spent fuel uncovery accident and the initiation of a zirconium fire after 1 year of spent fuel decay, as well as the 5 year bounding time after which there is no further vulnerability to zirconium fires, may be slightly affected. Any revision to these times could be easily incorporated into the proposed decommissioning rule.

Based on the above information, the staff has developed a risk-informed rulemaking plan that recommends an approach for proceeding with rulemaking in the regulatory areas of EP, insurance, safeguards, backfit, and staffing and training for decommissioning nuclear power plants. The proposed plan is consistent with the technical study on SFP accident risk, takes into account past licensing practices and previous efforts in developing rulemaking in these areas, and reflects the NRC's goals of maintaining safety, reducing unnecessary regulatory burden, increasing public confidence, and improving efficiency and effectiveness.

DISCUSSION:

The attached rulemaking plan would amend regulations in the areas of EP, insurance, safeguards, staffing and training, and backfit for licensees who certified, pursuant to 10 CFR 50.82(a), that they have permanently ceased facility operation(s) and have permanently removed fuel from the reactor vessel. The rulemaking plan is consistent with previous decommissioning rulemaking activities in these areas and will subsume or supersede all earlier efforts.

In addition, the rulemaking plan has considered applicable stakeholder comments received during the development of the SFP accident risk study, including those provided during a Commission meeting dated November 8, 1999. All stakeholder comments and staff responses will be included in the final report on SFP accident risk at decommissioning plants. One specific concern expressed in the Commission's SRM was that the rulemaking effort should address realistic decommissioning accident scenarios (besides the zirconium fire) that may have offsite consequences. The staff's proposed rulemaking plan recommends that in conjunction with reductions in EP or insurance for decommissioning plants, that licensees assess and evaluate if radiological hazards exist onsite that could cause offsite doses from a reasonably conceivable

accident (other than a postulated zirconium fire) to exceed the Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs) at the site boundary. This standard cannot be met for a postulated zirconium fire scenario since offsite doses could exceed the EPA PAGs under certain conditions if spent fuel in the SFP has less than 5 years of decay time. However, after approximately 1 year of spent fuel decay time, the staff believes an exception to the offsite EPA PAG standard is justified for a zirconium fire scenario considering the low likelihood of this event together with time available to take mitigative or protective actions between the initiating event and before the onset of a postulated fire.

On April 24, 2000, the staff informed the Commission via memorandum that the Nuclear Energy Institute (NEI) had proposed a new approach for decommissioning regulatory improvement. On May 17, 2000, NEI submitted a “white paper” providing additional details on its decommissioning regulatory improvement recommendations. The white paper provided comments on behalf of the nuclear energy industry concerning SECY-99-168 and recommended that the integrated rulemaking plan be combined with a broader based decommissioning regulatory improvement initiative. NEI also recommended a new approach to the regulatory improvement initiative not previously considered by the staff. The staff is studying the NEI recommendation as well as other recent staff considerations concerning the broader scope initiative for improving decommissioning regulations. The staff plans to meet with NEI to discuss and understand the details of the NEI proposal. The staff is currently scheduled to address the broader scope decommissioning regulatory improvement initiative in a separate SECY by September 15, 2000. However, the staff considers that the attached rulemaking plan provides a timely resolution to the subject decommissioning regulatory areas as directed by the Commission in the SRM for SECY-99-168. Because the NEI white paper included many comments related directly to the regulatory areas addressed in the attached rulemaking plan, the staff believes it is important to acknowledge the NEI positions and the corresponding staff responses as information for the Commission’s consideration when evaluating the recommendations in this rulemaking plan. The specific NEI comments and staff responses are presented in Attachment 2.

The proposed rulemaking plan has involved principles of good regulation and complements the NRC’s outcome based performance goals of the strategic plan. However, the potential value of this decommissioning rulemaking plan could be diminished since there are no near-term plant decommissionings expected and there is time to continue to explore other decommissioning regulatory options. In assessing this rulemaking plan relative to the NRC performance goals, the staff considered maintaining safety as the most important outcome. The regulatory proposals in this rulemaking plan maintain safety by being consistent with the results of the technical study conducted by the staff on spent fuel pool accident risk at decommissioning plants. The next performance goal captured by this plan is increasing public confidence. The staff has endeavored to increase public confidence by conducting numerous stakeholder meetings in developing the risk study for decommissioning SFPs. Although this rulemaking plan is primarily based on the best available technical information on SFP risk, the staff has tried to factor into the plan considerations and issues raised by both public and industry stakeholders while maintaining an independence from either side. The staff will continue to work with stakeholders throughout the rulemaking process. The rulemaking plan also recommends coherent, logical, practical, and predictable regulations in areas of nuclear power plant decommissioning where none currently exist. By clearly stating the agency’s goals and objectives in the decommissioning regulations, public confidence is also enhanced. The third performance goal which the rulemaking plan accomplishes is reducing unnecessary regulatory

burden. The staff believes that it has utilized the information in the technical study on SFP accident risk to develop regulatory strategies that reduce requirements for decommissioning licensees while maintaining safety. For example, under the proposed rulemaking plan, licensees should be able to reduce EP and safeguards regulatory requirements sooner after permanently shutting down than presently permitted. Finally, the rulemaking plan meets the fourth performance goal of improving staff efficiency, effectiveness, and realism by removing the NRC from the approval process. Specifically, the staff recommends that decommissioning licensees be permitted to implement reduced EP or safeguards requirements without NRC review or approval of the detailed plans. Thus, it is the staff's conclusion that the attached rulemaking plan supports the strategic goals of the NRC.

The staff believes that the proposed rulemaking would not have any backfit implications and therefore does not require a backfit analysis under 10 CFR 50.109. The recommended regulatory changes in this rulemaking plan could be viewed as a voluntary relaxation, since the rule will be written such that licensees could either continue to maintain their existing EP, insurance, physical security, staffing requirements, and backfit policy or adopt the proposed new regulations in each area. Since licensees would not be compelled to change their existing programs, there would be no "imposed change" constituting a backfit as defined in Section 50.109(a)(1).

Development of nuclear power plant decommissioning regulations based on the recommendations in this rulemaking plan would not result in any inconsistencies in the exemptions or amendments processed for plants already permanently shutdown.

The following paragraphs summarize the recommended regulatory changes proposed in the rulemaking plan.

Emergency Planning

This part of the integrated rulemaking recommends that new regulations be developed and included in 10 CFR 50.47 and 10 CFR 50.54 to specify appropriate levels of EP requirements for decommissioning nuclear power plants. The approach would allow a significant reduction in the level of EP when at least 1 year of spent fuel decay time has elapsed after a nuclear power plant has permanently shutdown, if the licensee implements industry and staff risk reduction measures described in the SFP risk study. After at least 1 year of spent fuel decay time, the decommissioning licensee would be able to reduce its EP program to one similar to that required for a monitored retrievable storage installation under 10 CFR 72.32(b). This could be done without NRC approval and there would no longer be a requirement for detailed offsite radiological emergency response plans. There would be additional EP reductions when (1) 5 years of spent fuel decay time has elapsed or (2) a licensee has demonstrated that the decay heat level of spent fuel in the pool is low enough that the fuel would not be susceptible to a zirconium fire if all coolant were drained from the SFP. The EP program would be similar to that required for an independent spent fuel storage installation (ISFSI) under 10 CFR 72.32(a) when fuel stored in the SFP has more than 5 years of decay time and would not change substantially when all the fuel is transferred from the SFP to an onsite ISFSI. EP under Part 50 or Part 72 would no longer be required when there is no spent fuel onsite and no other radiological hazards exist onsite that could cause offsite doses in the event of a radiological accident to exceed the EPA PAGs at the site boundary. However, a licensee would still be required under 10 CFR 30.32(i) and 10 CFR 30.72 to determine if other radioactive materials onsite require EP.

The staff has kept the Federal Emergency Management Agency (FEMA) informed of the development and recommendations of this rulemaking plan. FEMA has not at this time endorsed the plan or the recommended option the staff has proposed for EP. The staff is continuing to work with FEMA to obtain a consensus on the proposed timing and level of EP required for a nuclear power plant that has entered decommissioning. The staff will obtain FEMA's view on the proposed rule before submitting it to the Commission for approval.

Insurance

The staff proposes amendments to 10 CFR 50.54(w) and 10 CFR 140.11 to allow phased reductions in the required level of onsite and offsite insurance coverage either when (1) a decommissioning licensee has demonstrated that the decay heat level of spent fuel in the pool is low enough that the fuel would not be susceptible to a zirconium fire if all coolant were drained from the SFP or (2) 5 years of spent fuel decay time has elapsed. When either of these criteria are met, licensees would be permitted to reduce onsite property damage insurance coverage from $1.06 billion to $25 million. No onsite insurance would be required after spent fuel is removed from the pool. Offsite liability insurance would drop, with primary coverage reduced from $200 million to $100 million and licensees no longer required to participate in the secondary retrospective rating pool. Offsite coverage would be further reduced to $25 million when spent fuel is removed from the pool.

Safeguards

The staff proposes using 10 CFR 73.55, "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage," as a starting point to develop a new rule that addresses the threat of sabotage at decommissioning plants. This new rule would contain the critical elements of Section 73.55 (e.g., physical barriers, armed security personnel, and vehicle control measures), but would reduce the requirements where appropriate to adequately safeguard and establish a protected area around the main security concern at a decommissioning plant — the SFP.

The new rule would also be consistent with the safeguards requirements for ISFSIs and would not lead to a result where ISFSI regulations were more stringent than those proposed for decommissioning nuclear power plants. When all spent fuel is transferred to a dry storage ISFSI, existing safeguards regulations specified in Section 73.51 would apply. When all spent fuel is removed from the site, safeguards would no longer be required consistent with the current scope of Part 73.

Staffing and Training

This part of the integrated rulemaking would amend 10 CFR 50.54(m), 10 CFR 50.120, and the definitions section of 10 CFR Part 50 to specify appropriate levels of training and qualifications for operations and support staff at decommissioning nuclear power plants. The recommended changes would establish the regulatory requirements for the licensee's certified fuel handler

program and codify appropriate staff levels at permanently shutdown and defueled reactor facilities consistent with current exemption practices. By codifying the regulations in this area, consistent, predictable requirements would be established and unnecessary regulatory burden could be eliminated. The proposed changes define the minimum staffing and training levels and should help provide assurance that permanently shutdown facilities are properly maintained, systems are safely operated, radiological activities are safely performed, and emergency response capability is preserved.

Backfit

The staff proposes dividing 10 CFR 50.109, “Backfitting,” into two parts. One part of the new Section 50.109 will apply to operating reactors, and one part will apply to decommissioning reactors. The operating reactor part will remain virtually the same as the current Section 50.109 with minor changes to accommodate the addition of a section that pertains to decommissioning reactors. The new decommissioning reactor section will resemble the current backfit regulations for operating reactors, except that language that does not apply to decommissioning reactors would be removed or changed.

AGREEMENT STATE IMPLEMENTATION ISSUES:

Because the proposed rulemaking plan concerns nuclear power plant decommissioning, it would not result in compatibility or implementation issues for Agreement States.

COORDINATION:

The Office of Nuclear Regulatory Research contributed to the development and coordination of the technical basis for the rulemaking plan. The Office of General Counsel (OGC) has no legal objection to the rulemaking plan. However, OGC has not reviewed the draft regulatory language in the appendices of the rulemaking plan in detail, and expresses no legal opinion on the acceptability of the draft language. OGC will review the regulatory language at the proposed rule stage. The Office of the Chief Financial Officer has reviewed this Commission Paper for resource implications and concurs. The Office of State and Tribal Programs has no objections to the rulemaking plan and concurs. The Office of the Chief Information Officer has reviewed the rulemaking plan for information technology and information management implications and concurs. The plan suggests changes in information collection requirements that may require submission to the Office of Management and Budget when the rule is forwarded to the Office of the Federal Register for publication.

RESOURCES:

The resource estimate for the staff to complete this rulemaking is approximately 6 FTE (1.5 FTE in FY 2000, 2.5 FTE in FY 2001, and 2 FTE in FY 2002). These resources are available within the current budget since this rulemaking was explicitly included in NRR’s FY 2000 budget and proposed budgets for FY 2001 and FY 2002. Contractor support is estimated in FY 2001 at $250K, of which $170K is budgeted and $80K will be reprogrammed from within the NRR FY 2001 budget.

OPTIONS:

Based on the current status of the nuclear power industry and the information the staff has developed for this rulemaking plan, the staff proposes two options:

1. In the absence of any anticipated nuclear power plant decommissionings in the near term, there is no immediate need for moving forward with the attached rulemaking plan. Approval of this rulemaking plan could be placed on hold until the staff has provided the Commission a more comprehensive assessment of decommissioning regulatory improvements, due to the Commission on September 15, 2000. It should be noted that upon completion of this detailed assessment of the regulatory improvement initiative for decommissioning, the staff may only endorse proceeding with Option 2 below. The broader-scope regulatory improvements for decommissioning may not be of sufficient priority in the near term given an apparent lack of future licensees that would benefit from such an extensive restructuring of the regulations.

2. Approve the initiation of rulemaking for decommissioning nuclear power plants in accordance with the recommendations in the attached rulemaking plan.

RECOMMENDATION:

The staff recommends Option 1. The staff has the resources and technical information available to implement Option 2 at this time but would prefer to delay moving forward on this rulemaking until the staff reassesses whether a more comprehensive, broader-scope, decommissioning regulatory improvement rulemaking plan is still justified. The staff will address any additional decommissioning regulatory improvements beyond Option 2 in a paper to be provided to the Commission by September 15, 2000.

In addition, to facilitate continued stakeholder interaction in development of the decommissioning regulatory improvements, the staff intends to make this SECY publicly available within 10 days of the date of this paper unless otherwise directed by the Commission.

/RA by Frank J. Miraglia Acting For/

William D. Travers
Executive Director
for Operations

Attachments: 1. Rulemaking Plan
2. Staff Responses to NEI White Paper Comments

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INTEGRATED RULEMAKING PLAN
FOR
EMERGENCY PLANNING, INSURANCE, SAFEGUARDS,
STAFFING AND TRAINING, AND BACKFIT
AT DECOMMISSIONING NUCLEAR POWER PLANTS

Lead Office: **Office of Nuclear Reactor Regulation**

Staff Contact: **William Huffman**
(415-1141)

Phillip Ray
(415-2972)

Concurrences:

W. Kane	5/24/00
W. Kane, NMSS	Date
A. Thadani	5/19/00
A. Thadani, RES	Date
James Luehman for	5/11/00
R. Borchardt, OE	Date
P. Lohaus	5/18/00
P. Lohaus, OSP	Date
S. Treby for	5/26/00
J. Gray, OGC	Date
D. Meyer	5/17/00
D. Meyer, ADM	Date
B. Shelton via Memo	5/10/00
B. Shelton, OCIO	Date
T. Pulliam for	5/19/00
J. Funches, CFO	Date
C. Grimes for	5/19/00
D. Matthews, DRPM/NRR	Date
J. Silber	5/19/00
J. Silber, PMAS/NRR	Date

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INTEGRATED RULEMAKING PLAN
FOR
EMERGENCY PLANNING, INSURANCE, SAFEGUARDS, STAFFING AND TRAINING, AND BACKFIT AT DECOMMISSIONING NUCLEAR POWER PLANTS

INTRODUCTION:

In accordance with Commission direction in the staff requirements memorandum (SRM) for SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," the staff has developed a rulemaking plan that recommends an approach for proceeding with rulemaking in the regulatory areas of emergency planning (EP), insurance, safeguards, staffing and training, and backfit for decommissioning[1] nuclear power plants. The staff's proposed plan takes into account the risk posed by decommissioning nuclear power plants, past licensing practices, and previous efforts in developing rulemaking in these areas, and it reflects NRC's goals of maintaining safety, reducing unnecessary regulatory burden, increasing public confidence, and improving efficiency and effectiveness.

BACKGROUND:

Current Nuclear Regulatory Commission (NRC) regulations pertaining to nuclear power reactors are primarily directed toward the safety of facilities that are licensed to operate. As reactors are permanently shut down and enter decommissioning, the NRC has been faced with establishing changes to requirements and regulatory oversight appropriate to maintaining public health and safety and protection of the environment. Although applying the existing operating reactor regulatory requirements to decommissioning facilities ensures safety, many requirements are excessive and result in unnecessary regulatory burden. In some areas, amending decommissioning regulations has been relatively straightforward and appropriate rulemaking has been readily developed. In July 1996, the Commission issued a major rule on decommissioning nuclear power reactors in its ongoing effort to enhance decommissioning regulations. The 1996 decommissioning rule made fundamental changes to power reactor decommissioning by streamlining the process and reducing both licensee and NRC resource expenditures while maintaining safety, protecting the environment, and encouraging public involvement. Since the early 1990s, the NRC has been aware that other decommissioning regulations should be revised to eliminate unnecessary regulatory burden. These regulations include emergency preparedness, onsite and offsite insurance, and safeguards. These regulations were not modified in 1996 because the NRC had not yet resolved technical issues associated with risk at decommissioning plants for which the design-basis events and traditional accident sequences that dominate operating reactor risk are not applicable.

Risk to the public from decommissioning nuclear power plants is dominated by the potential for accidents that could result in uncovery of the spent fuel stored in the spent fuel pool (SFP). Uncovery of the spent fuel (in conjunction with other exacerbating conditions such as high

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[1]Throughout this rulemaking plan, "decommissioning" refers to any phase of nuclear power plant decommissioning from the time a plant submits its certifications of permanently shutdown and defueled status until license termination.

decay heat levels, close-packed geometry, and low air cooling flow rates) could lead to cladding heatup to a point of rapid oxidation — resulting in a so-called zirconium fire. A zirconium fire event is beyond the design basis of operating reactors. Nevertheless, the NRC had to carefully investigate the technical issues associated with this accident since the regulations in question (insurance and emergency preparedness) were intended as another level of protection for the public in beyond-design-basis event scenarios. The staff had previously examined the risk of SFP zirconium fires at operating reactors during resolution of Generic Issue 82, "Beyond Design Basis Accidents in Spent Fuel Pools." Although the risk associated with a zirconium fire did not pass the backfit test for modifying designs, procedures, or regulations for operating reactors, the Commission has repeatedly endorsed the nonvulnerability to a zirconium fire as part of the basis for determining when certain regulations can be relaxed for decommissioning facilities [see Staff Requirements Memorandum (SRM) on SECY-93-127 for insurance; SRM on SECY-97-120 for EP]. In 1998, Maine Yankee challenged the staff's position on using a zirconium fire accident as one of the criteria for evaluating decommissioning EP exemptions. Maine Yankee claimed that requiring a licensee to provide a thermal-hydraulic (T-H) analysis demonstrating that the spent fuel is no longer vulnerable to a zirconium fire constituted a backfit since a zirconium fire is beyond-design-basis and not part of the original licensing basis of the SFP. The staff established that EP is provided, in part, to mitigate the consequences of beyond-design-basis accidents (such as a zirconium fire). The staff concluded that requesting a licensee to demonstrate the nonvulnerability of the spent fuel stored in the SFP to a zirconium fire for the purpose of evaluating an exemption request to reduce EP does not constitute the imposition of a new or different interpretation of previously applicable regulatory staff positions. Consequently, the backfit claim was denied and assessment of vulnerability to zirconium fires remained one of the considerations for processing decommissioning EP exemptions. Consistent with existing regulatory requirements for all licensees, EP would continue to be required during decommissioning when an evaluation showed that the dose to a person offsite due to a release of radioactive material would exceed the Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs), or there is spent fuel on the site.

The staff has previously initiated rulemaking efforts in the areas of EP and insurance for decommissioning nuclear power plants. One aspect of these rulemakings was to identify a generic spent fuel decay time after which a zirconium fire is no longer possible. Because the staff lacked comprehensive analyses supporting a bounding spent fuel decay time value for vulnerability to zirconium fires, regulatory proposals for EP and insurance based on decay times were not technically defensible. A rulemaking plan was also approved by the Commission for decommissioning safeguards but did not consider how zirconium fire vulnerability might impact the recommended SFP security requirements. Because of the uncertainties associated with the risk and time frame for zirconium fire vulnerability, the staff suspended its decommissioning rulemaking efforts until the associated technical issues could be satisfactorily resolved.

During a Commission meeting on March 17, 1999, the staff suggested that decommissioning rulemaking activities in the areas of EP, insurance, and safeguards could benefit from a risk assessment of SFP accidents. Subsequently, the staff issued SECY-99-168, dated June 30, 1999, which recommended that staffing and training and backfit regulations be included with EP, insurance, and safeguards for developing an integrated, risk-informed decommissioning rule. The staff stated that regulatory decisionmaking for the integrated rulemaking plan would be based on risk-informed principles to be defined in a detailed technical study of decommissioning plant SFP risk. Preparing the rulemaking plan as an integrated package would ensure that regulatory decisionmaking is made in a unified manner with a

consistent technical basis. An SRM dated December 21, 1999, approved the SECY-99-168 recommendation for a single, integrated, risk-informed decommissioning rule.

The technical study on SFP risk at decommissioning nuclear power plants has now been completed through the final draft stage. Additional work continues on the technical study to resolve concerns that have been identified through the final review process. Nevertheless, the staff has determined that the technical study provides sufficient conclusions to allow rulemaking activities to progress. Development of the proposed rule will factor in any changes necessitated by revision of the final technical study when it is completed. Accordingly, the staff has subsumed previous decommissioning rulemakings efforts into this integrated, risk-informed decommissioning rulemaking plan and seeks Commission approval to develop the plan into a proposed rule.

The staff's recommendations for developing rulemaking in each regulatory area covered by this integrated decommissioning rulemaking plan are discussed in the respective sections of this plan. Included in the discussion is an overview of the impact of the technical risk study on the rulemaking options and any changes to related rulemaking plans previously approved by the Commission (i.e., rulemaking plans for EP, insurance, and safeguards). Attached to this rulemaking plan are draft changes to the regulations that show how the staff's recommendations could be implemented. The draft changes are provided as examples to clarify the staff's objectives but may not reflect the exact content or format of the proposed rule to be subsequently developed and submitted for Commission approval.

REGULATORY ASSESSMENTS

C. Emergency Planning

REGULATORY ISSUE

The purpose of rulemaking in this regulatory area is to establish an appropriate level of emergency planning (EP) and preparedness for a nuclear power plant site at which all reactors have been permanently shut down and defueled. Currently, EP is reduced at decommissioning plants by processing exemptions on a case-by-case basis. This rulemaking plan provides options for developing decommissioning plant regulations that reduce onsite EP program requirements and eliminate the requirements for offsite EP after the spent fuel has decayed a sufficient time. The proposed rulemaking would define the level of EP appropriate for a decommissioning nuclear power plant site from the time of permanent shutdown until no EP would be required, thereby reducing the need for regulation by exemption.

EXISTING REGULATORY FRAMEWORK

The regulations governing EP for nuclear power reactors are set forth in 10 CFR 50.47, 10 CFR 50.54(q), (s), and (t), and Appendix E to 10 CFR Part 50. The regulations require that each nuclear power reactor licensee establish and maintain emergency plans and preparedness in accordance with the above regulations. The regulations include standards for both onsite and offsite emergency response plans. The regulations do not take into account that at a

decommissioning plant the spectrum of severe accidents that can have significant offsite consequences is greatly reduced and dominated by the concern of a zirconium fire in the SFP. The regulations also fail to recognize that considerably more time is available to respond to postulated zirconium fire accident scenarios than is available for many postulated operating reactor accidents. The regulations also do not contain any provisions for reducing EP requirements when the spent fuel stored in the SFP is no longer vulnerable to a zirconium fire. Exemptions are typically requested and granted on a case-by-case basis from many of these EP requirements during the early phase (2 to 3 years after permanent shutdown) of decommissioning a nuclear power plant.

DISCUSSION

The overall objective of EP is to provide dose savings (and in some cases immediate life saving) for a spectrum of accidents that could produce offsite doses in excess of the EPA PAGs. The planning basis for EP is established in NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.” This basis includes the stipulation that no single specific accident sequence should be isolated as the one for which to plan because each accident could have different consequences, both in nature and degree. Planning should be based upon knowledge of the potential consequences, timing, and release characteristics of a spectrum of accidents.

Information on the time frames of accidents is particularly important. The time between the initial recognition that a serious accident is in progress and the beginning of the radioactive release to the surrounding environment is critical. Judgment is also necessary to determine the extent of detailed planning necessary to assure an adequate response. For a worst possible accident, with an extremely low likelihood, and a long lead time before a release, it is feasible to take protective actions without extensive preplanning.

During decommissioning, the principal public safety concerns (from the standpoint of offsite exposure to the public) involve spent fuel storage. Spent fuel removed from the permanently shutdown and defueled reactor is stored in the SFP until it is either transferred to an onsite independent spent fuel storage installation (ISFSI) or moved offsite for long-term storage or disposal. For a period of time after fuel has been irradiated in a power reactor and is being stored in an SFP, the possibility exists for an accident where a loss of water in the SFP could result in a significant heatup of the spent fuel, culminating in a zirconium fire. The consequences of a zirconium fire in the SFP at a permanently shutdown reactor are in some ways comparable to a large early release from postulated reactor accidents at an operating reactor; however, the release occurs much later after initiation of the accident. Analyses indicate that unlike operating reactor accident sequences leading to a large early release, accident scenarios at decommissioning plant SFPs evolve slowly and leave adequate time to initiate mitigative or protective actions, including public evacuation if necessary. In addition, the frequency of an SFP accident at a decommissioning plant with offsite consequences is very low (assuming certain administrative controls and design features are in place, as discussed in the staff’s draft final technical study on SFP accident risk).

Although the technical report on SFP accident risk at decommissioning reactors establishes that the frequency of accidents leading to a zirconium fire condition is very low, the staff has

determined that some level of EP is necessary and would provide meaningful public health and safety benefit for zirconium fire scenarios. Therefore, the staff has retained consideration of the zirconium fire as part of the regulatory decisionmaking process in developing a new EP rule for decommissioning licensees. The report noted that based on certain assumptions and licensee commitments, the frequency of a zirconium fire event at a decommissioning reactor is on the order of the large early release frequency (LERF) for operating plants. However, what distinguishes the zirconium fire accident from a large early release core damage accident at an operating reactor is its slow progression and the long time period available to deal with both the accident and the associated offsite emergency response. Based on this consideration, the report made the following recommendations:

> Because of the considerable time available to initiate and implement protective actions, there does not appear to be a need for formal emergency plans for rapid initiation and implementation of protective actions [after 1 year decay time].
>
> The principal aspects of emergency planning which are needed for SFP events [after 1 year decay time] are the means for identification of the event and for notification of State and local emergency response officials.

The report concludes that, from a risk perspective, reduction in the level of EP maintained at a decommissioning plant could occur as early as 1 year after shutdown. Accordingly, it is the staff's judgment that when the spent fuel stored in the SFP has at least 1 year of decay time and the licensee implements the risk reduction commitments assumed in the technical study, there is a basis for relaxing EP requirements due to the low likelihood of zirconium fires and the long time frames available for initiating mitigative and protective actions, if necessary. In addition, the report indicates that 5 years of spent fuel decay can be used as a bounding value for zirconium fire vulnerability at all SFPs. Therefore, the staff also concludes that further reductions in EP can be justified at 5 years without requiring a plant-specific T-H analysis or review.

The staff previously submitted SECY-97-120 recommending a rulemaking plan for decommissioning plant EP. The Commission approved the rulemaking plan in an SRM dated July 10, 1997. The rulemaking options in this plan are consistent with the previous plan approved by the Commission. In addition, the plan is consistent with existing EP requirements for a monitored retrievable storage installation (MRS) under 10 CFR 72.32(b), an ISFSI under 10 CFR 72.32(a) , and requirements for licensees who possess byproduct material.

RULEMAKING OPTIONS

The following discussion provides a preliminary qualitative regulatory assessment of several possible EP rulemaking alternatives for decommissioning plants:

OPTION 1: Revise regulations to provide a tiered approach to EP for permanently shutdown reactors based primarily on the EP requirements for spent fuel storage facilities .

The proposed rule would maintain EP as now required by 10 CFR 50.54(q) for 1 year after shutdown.

Then from 1 to 5 years after shutdown, while there is fuel stored in the SFP, the proposed rule would require EP similar to that for an MRS identified in 10 CFR 72.32(b), with the addition of a classification for accidents to include the “general emergency” level. The licensee would need to document in the decommissioning final safety analysis report (FSAR) how SFP accident risk reduction measures will be implemented for the site.

After being shut down 5 years, and as long as there is fuel stored in the SFP, the proposed rule would require EP similar to that for ISFSIs under 10 CFR 72.32(a) and would not change substantially when all the fuel is transferred from the SFP to an onsite ISFSI. Part 50 or Part 72 EP requirements would be eliminated when spent fuel is no longer stored onsite. However, a licensee would still be required under 10 CFR 30.32(i) and 10 CFR 30.72, “Schedule C - Quantities of Radioactive Material Requiring Consideration of the Need for an Emergency Plan for Responding to a Release,” to determine if other radioactive materials stored onsite require EP.

ASSESSMENT OF OPTION 1

This option would require a licensee to continue to meet the EP requirements for an operating reactor for 12 months after the reactor is shut down.

This 12-month period allows sufficient time for the SFP heat load to decay to a level that would permit adequate human response time for anticipated transients. This is also the decay time that would result in a 10-12 hour delay from fuel uncovery to initiation of a postulated zirconium fire, even for very improbable severe seismic events or heavy load drop events causing total loss of pool inventory. As more time elapses after permanent shutdown, the more spent fuel heat load decays and the more time is available between any fuel uncovery event and any potential radiological release due to a zirconium fire.

Because of the considerable time available to initiate and implement mitigative actions, or if necessary, protective actions, there is no longer a need for formal emergency plans for rapid initiation and implementation of protective actions. The principal aspect of EP that is needed for SFP events at this time is the means for identification of the event and for notification of offsite emergency response officials. With 10-12 hours available from the time of an initiating event to the point where conditions would be such that a significant offsite release may be initiated, sufficient time is available to implement offsite protective actions, if necessary, without extensive site-specific offsite radiological emergency response planning.

For this reason, detailed and complex offsite radiological emergency plans would no longer be required. The level of community emergency services available in contiguous communities would be adequate to develop and implement protective actions, such as an evacuation if called for, much the same as would be needed for other events, like a chemical release from an industrial site or a transportation accident, which would call for similar protective actions. In previous licensing actions to grant exemptions from offsite EP requirements, particularly for the Maine Yankee and Big Rock Point sites, the staff relied partly on the position that in view of the low likelihood of the bounding scenarios, and with sufficient lead time, offsite protective measures could be taken, if called for, without preplanning. The amount of time needed to develop and implement offsite protective actions without extensive site-specific offsite radiological emergency response plans is subject to further discussion between NRC and the Federal Emergency Management Agency (FEMA). However, the staff believes that 10 to 12

hours is reasonable. The rulemaking process may continue while a consensus is being established between NRC and FEMA to support the proposed rule before submitting it to the Commission for approval. Other stakeholders will have the opportunity for comment on this position during the rulemaking process.

However, since it is still theoretically though remotely possible to have an event that could lead to a release resulting in doses offsite exceeding the EPA PAGs, it is prudent to maintain the capability to classify events up to and including the general emergency level. This would also necessitate retaining the capability for licensees to perform dose assessments and provide protective action recommendations to offsite officials. Therefore, this option would require a licensee to maintain EP similar to that required for an MRS as identified in 10 CFR 72.32(b), with the addition of a classification for accidents to include the “general emergency” level. This level of EP would be needed for the period of 12 to 60 months after shutdown. This option would require a licensee to document in the decommissioning FSAR how SFP accident risk reduction measures will be implemented for the site.

After 60 months, and when there is no longer a possibility of an accident involving radioactive material that would result in exceeding EPA PAGs at the site boundary, there would no longer be a need to classify events above the alert level. At this point, an emergency plan similar to that required for an ISFSI as identified in 10 CFR 72.32(a) would be adequate.

There would be no need for Part 50 EP requirements when spent fuel is no longer stored onsite. However, the licensee would still have to determine if radioactive materials stored onsite in excess of those quantities specified in 10 CFR 30.72 would require EP in accordance with 10 CFR 30.32(i).

Alternatively, a licensee could conduct a site-specific T-H analysis to demonstrate that the spent fuel decay heat has decayed to a level such that the possibility of a zirconium fire no longer exists. At that point in time the needed EP requirements would be the same as stated above for after 60 months. A site-specific T-H analysis could significantly shorten the period of time necessary to wait before a commensurate reduction in EP.

The licensee would also have the option to not make changes to the existing plan and procedures. It is unlikely but possible that the licensee would keep existing plans and not make substantial changes for some time after shutdown.

OPTION 2: No action.

This option would keep the current EP regulations in effect. Relief from regulatory requirements during permanent reactor shutdown would continue to be granted on a case-by-case basis through the exemption process.

ASSESSMENT OF OPTION 2

The no-action option would retain the EP provisions of the current regulations. Because operating reactor EP requirements are considered burdensome by decommissioning licensees, EP exemptions are generally requested at some point after permanent shutdown. Uncertainty in the interpretation of EP requirements during exemption processing could create inconsistency in determining when nuclear power plants could reduce or eliminate emergency

plans. Licensees could also interpret the applicable regulations to permit some reductions in EP requirements after certification of permanent shutdown under 10 CFR 50.82(a). This could result in further inconsistencies. This was not the intent of the NRC staff. The NRC would be concerned that emergency planning and preparedness may be reduced or eliminated when still necessary. In addition, exemption to offsite EP is currently given only after the licensee has demonstrated that a zirconium fire is no longer possible or established that there is sufficient lead time to take offsite protective measures without preplanning. This could require extensive analysis by the licensee and review by the NRC and is also subject to inconsistencies. This option would be more expensive to both licensees and the NRC because of inefficiencies in dealing with these issues on an individual plant basis.

OPTION 3: Revise regulations to provide a tiered approach to EP for permanently shutdown reactors based on a combination of EP requirements for operating plants and ISFSIs.

The proposed rule would maintain EP as now required by 10 CFR 50.54(q) for 1 year after shutdown.

From 1 to 5 years after shutdown, the operating reactor regulations for EP would be modified to implement some of the technical risk study recommendations for decommissioning plants. The modifications would eliminate the need for communication systems currently required to provide for the early notification of the public and would eliminate the need for licensees to demonstrate that offsite officials have the capability to make prompt notification decisions because of the extended time available to take protective actions. The proposed amendment would also change the requirement for biennial participation in exercises by offsite agencies to a one-time-only decommissioning exercise. However, these regulatory reductions would be contingent upon the licensee documenting the implementation of specific SFP accident risk reduction measures in its decommissioning FSAR.

When fuel stored in the SFP has decayed more than 5 years, the proposed rule would invoke the ISFSI requirements for EP found in 10 CFR 72.32(a). This is conditioned on the licensee performing a site-specific evaluation showing that for radioactive materials stored onsite in quantities of greater than those specified in 10 CFR 30.72, “Schedule C — Quantities of Radioactive Material Requiring Consideration of the Need for an Emergency Plan for Responding to a Release,” the maximum dose to a person offsite due to a postulated accident would not exceed the EPA PAGs at the site boundary.

There would be no need for Part 50 EP requirements when spent fuel is no longer stored onsite. However, a licensee would still be required under 10 CFR 30.32(i) and 10 CFR 30.72 to determine if other radioactive materials onsite require EP.

ASSESSMENT OF OPTION 3

The EP regulations for decommissioning plants would not change much during the first 60 months following reactor shutdown. The licensee would retain the need to classify events up to and including the General Emergency level and make protective action recommendations to the offsite officials. However, the more time passes after shutdown, the later any postulated release could occur after the initiating event. Moreover, planning for the zirconium fire event is

much simpler than planning for the numerous operating reactor events that could lead to substantial offsite releases. Accordingly, the emergency response program and staffing needed for a decommissioning plant can be substantially smaller than that required for an operating reactor and still carry out an effective emergency response. Although the EP requirements may not be changed significantly in the first 5 years, the emergency response program can be simplified and the size of the needed emergency response organization (ERO) can be significantly reduced and the requirements of the regulations still be met. Since a general emergency at decommissioned sites could only be due to a zirconium fire event, there is a reduction in the basis for decommissioning EP when compared with operating reactor EP. Because of the reduced basis, the changes made to the ERO should not decrease the effectiveness of the plan. Therefore, a licensee could make these changes without NRC approval.

After the first 12 months, the requirement for possessing a notification system capable of communicating early warning of an event to the public could be eliminated. This would eliminate the need for a siren system, or other communication systems such as tone alert radios or National Weather Service radios.

Relaxation of the requirement for an onsite technical support center (TSC), operational support center (OSC), and emergency operations facility (EOF) will allow the licensee to consolidate emergency response activities in one facility and reduce the ERO staff needed for facilities' manning.

The requirement for a biennial mandatory offsite participation EP exercise will be reduced to a one-time-only offsite exercise which would be required when the licensee transitions to a reduced offsite EP program. Offsite agencies will still have the opportunity to participate in onsite drills and exercises. However, evaluation by FEMA will not be called for after the first exercise of reduced plans. Ingestion pathway exercises would no longer be required.

The licensee would also have the option to not make changes to the existing plan, procedures, and ERO. It is unlikely, though possible, that the licensee would keep existing plans and not make substantial changes for some time after shutdown.

OPTION 4: Require all EP reductions to be based on deterministic T-H analysis of spent fuel.

A licensee would be required to do a site-specific T-H analysis to demonstrate that the decay heat from spent fuel is unlikely to result in a zirconium fire should the SFP be drained. At that point, the required EP would be similar to that for ISFSIs as prescribed in 10 CFR 72.32(a). After spent fuel is no longer stored onsite, no offsite EP would be required by Part 50. However, a licensee would still be required under 10 CFR 30.32(i) and 10 CFR 30.72 to determine if other radioactive materials onsite require EP.

ASSESSMENT OF OPTION 4

This option would require licensees to perform a costly and complex plant-specific T-H analysis which would need to be reviewed by the NRC staff. More than likely the analysis would result in a determination that offsite EP requirements could be eliminated at a time shorter than the proposed 5 years in Option 3.

OPTION 5: Combine Options 3 and 4.

ASSESSMENT OF OPTION 5

This option would allow licensees to obtain orderly relief from current EP requirements after permanent shutdown through a clear regulatory process established by Option 3. Option 5 differs from Option 3 by affording the licensee the alternative of conducting a site-specific T-H analysis to demonstrate that the spent fuel has cooled to the point that a zirconium fire is no longer possible. This site-specific analysis could significantly shorten the 5-year period that would be required under Option 3 for offsite EP requirements.

RECOMMENDED APPROACH

Based on the desire to maintain safety, reduce unnecessary regulatory burden, increase public confidence (by establishing regulatory uniformity and predictability), and improve efficiency and effectiveness in the regulatory process for decommissioning nuclear power plants, the staff recommends Option 1.

Specifically, the following changes are recommended for EP at decommissioning nuclear power plants.

- After 1 year of spent fuel decay a licensee could reduce the EP program at a decommissioning nuclear power plant to one similar to the EP program requirements for an MRS under 10 CFR 72.32(b). To improve regulatory efficiency and effectiveness, this could be done without NRC approval. To maintain safety, the licensee would be required by rule to implement 10 industry decommissioning commitments and 4 staff decommissioning assumptions described in the SFP risk study.

- That 5 years of spent fuel decay time be used as the regulatory cutoff time for zirconium fire vulnerability analysis. After 5 years a licensee could reduce the EP program at a decommissioning nuclear power plant to a program similar to that required for an ISFSI under 10 CFR 72.32(a). To improve regulatory efficiency and effectiveness, this could also be done without NRC approval or preparation of a T-H analysis.

- No EP program would be required once fuel is no longer stored onsite.

It should be noted that licensees would be subject to the requirements of 10 CFR 30.32(i) throughout the decommissioning process and may be required to have EP even after fuel is no longer stored onsite if other radioactive materials are stored onsite in quantities in excess of those specified in 10 CFR 30.72, “Schedule C - Quantities of Radioactive Material Requiring Consideration of the Need for an Emergency Plan for Responding to a Release.”

The Option 1 regulatory approach for decommissioning EP recommended by this rulemaking plan is summarized below.

PERIOD 1 0 - 1 year of spent fuel decay time	Must meet the EP regulatory requirements for operating plants.
PERIOD 2 1 to 5 years of spent fuel decay time	EP requirements will be similar to those for an MRS with the addition of the requirement to classify events up to and including a General Emergency level (based on a postulated zirconium fire) and make protective action recommendations (PARs) to offsite officials. Offsite EP would no longer be required. NOTE: During Periods 1 and 2, the licensee may choose to do a site-specific analysis to determine a time shorter than 5 years after which a zirconium fire would no longer be possible.
PERIOD 3 * After 5 years of spent fuel decay time (or until analysis demonstrates that a zirconium fire is not possible)	EP requirements will be similar to those for an ISFSI.
PERIOD 4 * No fuel onsite	No EP is required.

* EP may still be required for other radioactive materials stored onsite in accordance with the requirements for byproduct materials as specified in 10 CFR 30.32(i)

The item of most significance to stakeholders will be the degree of reduction in EP after 1 year. The staff determined that offsite emergency plans should no longer be required after 1 year in consideration of the slow progression of postulated events and the length of time for taking mitigative actions. The staff affirms that with sufficient lead time, contiguous communities would be able to assess conditions and formulate appropriate protective action decisions without the need for extensive site-specific offsite radiological emergency response plans. However, because of the potential consequences, though low likelihood, of a zirconium fire event, the staff believes that a licensee should maintain a General Emergency classification level.

The staff believes that the onsite EP program needed to respond to postulated accident scenarios during decommissioning, including a zirconium fire event, could be significantly reduced and still maintain public safety by providing reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Even during the first year of spent fuel decay time after final shutdown when the regulatory requirements are not changed, the size of the onsite ERO can be reduced and associated emergency plans simplified and the requirements of the current regulations still met.

The staff proposes that the offsite emergency plans be maintained unchanged during the first year of spent fuel decay time after final shutdown. Maintaining existing plans and programs

eliminates the need for extensive revision, retraining, and the potential confusion that short term revisions to plans may cause. After the 1-year decay time, offsite radiological EP would no longer be required. State and local communities may maintain radiological emergency response capabilities at their own discretion. However, radiological EP may no longer predominate the EP needs of the community. Adequate protective actions could be implemented utilizing more generic all hazards EP without the need for specific detailed radiological EP. The staff believes that the residual knowledge and capability built into offsite emergency response programs would continue for some time after the requirements for radiological EP are removed.

Changes to the emergency plan, procedures, and ERO when transitioning from an operating EP program to decommissioning EP would not be considered a decrease in the effectiveness of the plans because the basis for the plans has changed. Since the basis for the emergency plan has changed, the staff believes that a licensee should be permitted to make these changes by rule without NRC approval. This will improve the efficiency and effectiveness of the rulemaking plan proposal. In addition, existing regulatory conditions in 10 CFR 50.54(q) that allow licensees to make changes to EP without NRC approval, provided the changes do not decrease the effectiveness of the plans, will also apply to decommissioning EP provided the plans, as changed, will meet the EP regulatory standards and requirements to be established for decommissioning.

As noted previously, the conclusion from the technical risk study on SFP accidents at decommissioning plants that EP regulations could be relaxed at 1 year was conditioned on the implementation of 10 industry commitments and 4 staff assumptions (which are discussed in detail in the risk study). The staff envisions that high-level risk reduction measures would be specified in the integrated decommissioning rule. The licensees would be required to document how these plant-specific design attributes and administrative measures that minimize the risk of SFP accidents would be implemented at their facilities. The licensee would document its risk reduction measures in the decommissioning FSAR. The staff would expect the details of the risk reduction measures documentation to explicitly address the commitments and assumptions in the SFP technical study. To improve the efficiency and effectiveness of this rulemaking plan proposal, the decommissioning FSAR description would not have to be approved by the NRC. In addition, documentation of the risk reduction measures would not be necessary if the licensee maintains an EP program consistent with existing regulations for operating reactors until its spent fuel is no longer susceptible to a zirconium fire. Since the EP reduction at 1 year and associated additional regulatory commitments would be voluntary, this aspect of the rulemaking is not a backfit.

Based on current spent fuel maximum allowable burnups and SFP rack designs and densities, the technical report estimated 5 years after shutdown as a conservative decay time after which the zirconium fire can be dismissed for all spent fuel configurations. However, the staff believes that many licensees may seek a reduction in EP requirements before the 5-year spent fuel decay time period if T-H conditions at their facilities indicate that the zirconium fire vulnerability time is much less than 5 years. The EP rulemaking plan will permit a site-specific analysis demonstrating that the spent fuel is no longer susceptible to a zirconium fire. To support a deterministic analysis of SFP vulnerability to a zirconium fire, the staff may need to develop a regulatory guide to define a consistently acceptable T-H approach as part of the rulemaking process.

The staff concludes that amending the EP regulations as detailed in this integrated rulemaking plan for decommissioning will provide reasonable assurance of adequate protection of public health and safety commensurate with the documented risk of SFP accidents during decommissioning, while reducing existing regulatory burden. By utilizing an integrated approach, the rulemaking plan is consistent with the other decommissioning rulemaking areas being amended and consistent with existing EP requirements for the storage of spent fuel in an MRS, an ISFSI, and EP for the possession of byproduct materials.

An example of draft regulatory language that would implement this option is provided at the end of this package.

B. Insurance

REGULATORY ISSUE

The purpose of rulemaking in this regulatory area is to establish appropriate reductions in the levels of insurance required for permanently shutdown and defueled nuclear power plants.

EXISTING REGULATORY FRAMEWORK

The current requirement in 10 CFR 50.54(w) for onsite property damage liability insurance is that each power reactor licensee have a minimum of $1.06 billion or the maximum amount of coverage generally available from private sources. The insurance levels have been set to assure that there are sufficient funds to stabilize and decontaminate the reactor and reactor station site after an accident. There are no provisions to reduce this coverage after a reactor shuts down permanently and begins decommissioning.

The current regulations for offsite liability coverage under 10 CFR 140.11 are that licensees of each nuclear reactor that is licensed to operate and designed for the production of electrical energy and has a rated capacity of 100,000 kWe or more carry primary insurance coverage of $200,000,000 from private sources and maintain secondary financial protection in the form of private liability insurance available under an industry retrospective rating plan. Currently, the maximum obligation for secondary financial protection is $83,900,000 for a single nuclear incident for each licensed reactor. Thus, the total financial protection available for offsite liability for any incident would be the primary layer of $200,000,000 plus the secondary layer of $83.9 million multiplied by the number of licensed power reactors with a rated capacity of 100,000 kWe or higher. If claims for a single incident exceeded this total, Federal government indemnity could be implemented.

The existing regulations do not take into consideration the risk reduction over time for permanently shutdown nuclear power plants. To date, insurance requirements for permanently shutdown plants have been established on a case-by-case basis by NRC reviews of exemption requests submitted by licensees.

DISCUSSION

The current regulations governing insurance coverage for nuclear power plants do not address decommissioning plants. Consideration of whether insurance coverage should be reduced for

decommissioning plants must take into account the preservation of the solvency of the organization responsible for maintaining and decommissioning these facilities in the unlikely event of a nuclear incident. In addition, consideration must be given to timely payment for valid damage claims by members of the public and minimization of the likelihood that Federal Government indemnity would be exercised for satisfaction of claims for damages.

On October 30, 1997, the Commission published a proposed rule to amend regulations governing liability coverage for permanently shutdown nuclear plants. The proposed amendments were linked to generic spent fuel decay times after which a zirconium fire could not occur. Numerous public comments were received on the proposed rule, most of which were favorable. Some of the comments suggested alternative liability limits. After completing its evaluation of the comments on the proposed rule, the staff was preparing to repropose the rule with a modified set of requirements for onsite and offsite liability coverage limits. These efforts were halted when it was realized that no staff-approved technical basis existed for generic decay times after which a zirconium fire concern could be eliminated. In March 1999 the staff recommended including insurance requirements in the risk-informed, integrated rulemaking for decommissioning nuclear power plants.

RULEMAKING OPTIONS

The following discussion provides a preliminary qualitative regulatory assessment of the proposed rulemaking and several possible alternatives:

OPTION 1: Change the onsite and offsite insurance regulations to specify reduced requirements based on reduced risk over time after shutdown at permanently shutdown reactors.

The proposed rulemaking would codify specific onsite and offsite insurance requirements for nuclear reactor licensees that have permanently ceased operation and permanently removed fuel from the reactor vessel. The insurance requirements would vary depending on the configuration of the facility and the time since shutdown. The requirements would be based on the proposed decommissioning insurance rule issued on October 30, 1997, modified as appropriate to address the public comments received in response to that proposal. The proposal would maintain a minimum offsite financial protection requirement of $25 million per site even after no fuel is left in the SFP. This amount should account for the continuing potential for claims based on asserted offsite consequences. It is the staff's judgment that $25 million in coverage would minimize the possibility that Federal Government indemnification would be required and would be consistent with the requirements of Section 170 of the Atomic Energy Act which states that power reactor licensees maintain some level of public liability financial protection. The changes would also clarify the definition of "rated capacity" for permanently shutdown plants. The regulatory changes would be generally consistent with current licensee insurance coverages that have been approved by the NRC staff on a case-by-case basis via the exemption process for permanently shutdown and defueled reactors.

ASSESSMENT OF OPTION 1

This rulemaking option would reduce resources expended by both the licensee and the NRC on processing exemption requests involving insurance requirements at permanently shutdown

reactors. Providing a regulation that clearly specifies the minimum indemnity requirements to be maintained at a permanently shutdown and defueled nuclear power plant would avoid licensing delays due to misinterpretation of or confusion about the existing regulations. Since the purpose of this rulemaking option is to codify current exemption practices, no burden or increased cost is anticipated beyond what is currently required at permanently shutdown reactors. In order to avoid any backfit issues, licensees who, before the effective date of this rule, have certified to the NRC that they have permanently ceased operations and permanently removed fuel from the reactor vessel as specified in §50.82(a)(1) and have received NRC approval of exemption requests regarding onsite and offsite insurance requirements would not be required to comply with this rule but could voluntarily elect to comply with the rule in lieu of the specific requirements associated with their approved exemptions.

OPTION 2: No action.

This option would keep the current wording of the regulations in effect. Plant-specific reductions in insurance requirements after permanent cessation of operation and permanent removal of fuel from the reactor would continue to be handled on a case-by-case basis by NRC review and approval of exemption requests submitted by licensees.

ASSESSMENT OF OPTION 2

The no-action option would continue to require licensees to submit and the NRC to review and approve indemnity requirement exemption requests for all future permanently shutdown power reactors. This alternative would not result in a predictable regulatory environment since variability in exemption requests might result in differing requirements at different reactor facilities. This alternative also results in significant burdens on licensees to submit and the NRC to review and approve the exemption requests.

OPTION 3: Eliminate all insurance requirements (both onsite and offsite) at permanently shutdown and defueled facilities.

This approach would eliminate all insurance requirements for permanently shutdown reactors. Licensees could make business decisions on the level of insurance coverage desired.

ASSESSMENT OF OPTION 3

This option would eliminate NRC involvement in onsite and offsite insurance. Licenses would make their own decisions about how much and what type of insurance to purchase. Although this option would impose the least burden on licensees, it could result in some increased risk to the public if a severe accident (such as a zirconium fire) occurred at a permanently shutdown plant and resulted in damages that exceeded either the onsite or the offsite insurance coverage carried by that licensee. This option would also require Congressional action to revise the Price-Anderson Act, which currently requires that Part 50 licensees maintain some level of offsite liability insurance throughout the life of the license.

RECOMMENDED APPROACH

Based on the desire to reduce unnecessary regulatory burden, increase public confidence (by establishing regulatory uniformity and predictability), and improve efficiency and effectiveness in the regulatory process for decommissioning nuclear power plants, the staff recommends Option 1. The technical study of SFP accident risk at decommissioning nuclear power plants

did not conclude that a zirconium fire is strictly hypothetical as defined previously in SECY-93-127 on decommissioning insurance dated March 10, 1993. The staff believes that the previous Commission position on decommissioning nuclear power plant insurance, as directed in the SRM for SECY-93-127, remains applicable. Specifically, a reduction in insurance requirements cannot be justified at decommissioning plants while vulnerability to a zirconium fire exists. Consequently, the recommendations in this integrated rulemaking plan for insurance are not significantly different from a proposed decommissioning insurance rule issued by the Commission on October 30, 1997. Some changes have been made to address specific liability coverage amounts. In addition, based on the technical study finding that zirconium fire vulnerability can be dismissed after 5 years of spent fuel decay time, the attached rulemaking plan also recommends that insurance regulations be reduced at 5 years without requiring NRC approval or supporting T-H analysis which should improve regulatory efficiency and effectiveness.

The regulatory approach recommended by this rulemaking plan for insurance during decommissioning is summarized in the following table.

	Onsite accident recovery & cleanup insurance (10 CFR 50.54(w))	Offsite accident liability insurance under Price-Anderson (10 CFR 140.11)
Operating plant	$1.06 x 10^9$	Primary - $200,000,000 Secondary -full participant in secondary pool (potential $83.9 million liability per reactor)
Decommissioning plant: 0 – 5 years or Prior to plant-specific T-H analysis*	Same as operating plant	Same as operating plant
Decommissioning plant: Longer than 5 years with spent fuel in SFP	$25,000,000	Primary - $100,000,000 Secondary - Not Required
Decommissioning Plant: No Spent Fuel in SFP	$0 - No Requirement	Primary - $25,000,000 Secondary - Not Required

*A plant-specific analysis to demonstrate that the SFP in no longer thermal-hydraulically capable of sustaining a zirconium fire

The anticipated rulemaking for insurance will allow decommissioning nuclear power plant licensees to reduce onsite and offsite liability coverage when sufficient spent fuel decay time has elapsed. The recommended rulemaking approach would reduce the level of insurance coverage commensurate with the risk reduction. The proposed changes are also consistent with regulatory requirements for storage of spent fuel in ISFSIs for which insurance is not required. The proposed rulemaking plan would not impose any additional requirements on decommissioning licensees; rather it would reduce unnecessary regulatory burden by permiting a voluntary regulatory reduction of insurance coverage, and so does not involve any backfit concerns.

An example of draft regulatory language that would implement this option is provided at the end of this package.

C. Safeguards

REGULATORY ISSUE

The purpose of this rulemaking is to determine the physical security requirements for a permanently shutdown nuclear power plant while spent fuel is stored in the SFP.

EXISTING REGULATORY FRAMEWORK

Licensees of permanently shutdown nuclear power plants who store spent fuel in the facility's SFP are required to meet the security requirements of 10 CFR 73.55 for protecting the site against the design-basis threat defined in 10 CFR 73.1(a)(1). This level of security would require a site with a permanently shutdown nuclear power plant to provide the same level of protection as an operating reactor site. There are no regulations that specifically address the physical security requirements at power reactor licensees that have certified permanent cessation of operations and permanent fuel removal from the reactor core in accordance with 10 CFR 50.82. During the reactor site decommissioning process, licensees typically submit requests for exemptions from specific regulations in 10 CFR 73.55 on the basis of the reduced risk to public health and safety because of elimination of the risks associated with reactor operation and from relocating spent fuel from the reactor to the SFP. The NRC has addressed this in the past by processing these exemption requests on a case-by-case basis. However, a decommissioning safeguards regulation would provide predictable physical security requirements during the decommissioning process, minimize regulation by exemption, and make implementation of security regulations more consistent.

The requirements in 10 CFR 73.51, "Requirements for the physical protection for spent nuclear fuel and high-level radioactive waste," addresses safeguards requirements for spent fuel stored in an ISFSI. This rule provides performance-based regulations specifically designed for spent fuel storage in dry cask containers or other storage formats. Although the ISFSI requirements are not applicable to fuel stored at decommissioning nuclear power plant SFPs, the fundamental safeguards concerns that apply to ISFSIs are very similar to those considered for safeguarding an SFP. The objective of the 10 CFR 73.51 rule was to reduce the security requirements without reducing the level of protection of the public health and safety for spent fuel storage. The staff has the same objectives in developing a security rule for spent fuel storage at decommissioning nuclear power plants.

DISCUSSION

Security regulations for nuclear power plant licensees are primarily designed to assure that the reactor and its vital support systems are adequately safeguarded from radiological sabotage. There is currently no distinction between the regulations addressing physical security requirements for operating nuclear power plant licensees and plants undergoing decommissioning. It has been recognized by the staff in many exemptions and related licensing actions for decommissioning plants that the scope of the physical security program for decommissioning plants, including the design and arrangement of physical barriers and detection aids, can be significantly reduced as a result of the reduction of risk to the public. For decommissioning plants, the structures, systems, and components (target sets) subject to radiological sabotage, and therefore the focus of safeguards protection, are those important to

maintaining the integrity of the spent fuel in the SFP. Reasonable reductions in the safeguards requirements for a decommissioning plant (relative to the requirements for a fully operational reactor) should be achievable without impacting the overall effectiveness of the safeguards program in protecting the spent fuel from radiological sabotage.

SECY-99-008, dated January 20, 1999, which was approved by the Commission in an SRM dated June 29, 1999, proposed a rulemaking plan that would develop specific safeguards regulations for decommissioning nuclear power plants. The SECY paper recommended that the new regulations codify security practices that have been established for previously decommissioned plants via the exemption process. In addition, the SECY paper also recommended that vehicle barrier systems be maintained against vehicle-borne bombs while fuel is stored in the SFP. The safeguards rulemaking effort was suspended until the technical study of SFP risk was completed and the impact of zirconium fire risk on SFP security could be assessed. It was also decided that safeguards be included as part of an integrated, risk-informed decommissioning rulemaking effort.

The final draft technical study does not reach any conclusions about the overall risk of radiological sabotage of spent fuel stored in the SFP at a decommissioning plant since no established method exists for estimating the likelihood of a sabotage event. The technical study does confirm that the consequences of events resulting in the drainage of an SFP can be very severe when a zirconium fire is possible. Clearly, any radiological sabotage that threatens to drain the SFP must be prevented while the fuel is vulnerable to a zirconium fire. This includes vehicle-borne bombs, which could conceivably puncture a hole in the SFP at some sites.

The SFP risk study did not assess the consequences of SFP drainage after the possibility of a zirconium fire has ceased. It is presumed that the consequence of SFP drainage without a zirconium fire would be limited to the radiological shine from the unshielded spent fuel. However, a vehicle-borne bomb driven into the SFP could cause destruction of the spent fuel assemblies and dispersal of radioactive material causing indeterminate risk to public health and safety. Such an act of radiological sabotage affecting the integrity of the spent fuel is considered unacceptable. The options in this decommissioning safeguards rulemaking plan are intended to prevent radiological sabotage of the spent fuel from the time it is offloaded from the reactor to the time it is placed into an ISFSI.

RULEMAKING OPTIONS

OPTION 1: Make no modifications to the existing safeguards rules to include decommissioning plants.

An alternative to modifying the existing regulations for permanently shutdown reactor sites is to continue to process licensee requests for exemptions to the existing security regulations in 10 CFR 73.55. The headquarters staff would continue to deal with each licensee that ceases operation of a power reactor on a site-specific basis. The current process of handling these cases through exemptions involves licensee security plan revisions and staff review of the revisions.

ASSESSMENT OF OPTION 1

This proposed option achieves operational savings for a licensee by a reduction in the existing security only after NRC review and approval. This proposed option would continue to use licensee and staff resources to prepare and review each exemption on a case-by-case basis. Also, this proposed option would not provide predictable requirements for operating reactor licensees as they plan for permanent shutdown, decommissioning, and spent fuel storage.

OPTION 2: Modify 10 CFR 73.51 to include security for SFPs.

Under this option, decommissioning nuclear power plants that have permanently removed all fuel from the reactor vessel to the SFP would be required to meet the requirements of 10 CFR 73.51, "Requirements for the physical protection of stored spent nuclear fuel and high-level radioactive waste," with certain additional modifications to be specified in the proposed rule. The most significant modification would be establishing requirements for a vehicle barrier system (VBS) at SFPs for decommissioning plants. The VBS is needed for SFPs to protect against incidents involving the use of an explosives-laden vehicle which could conceivably cause a radiological release by destruction of the spent fuel or removal of shielding from around the fuel. The staff would codify those specific concerns for decommissioning plants in 10 CFR 73.51 and reference the requirements of 10 CFR 73.55 as appropriate.

ASSESSMENT OF OPTION 2

This proposed option achieves a burden reduction for the licensee while maintaining overall safeguards effectiveness by prescribing an intermediate level of security, more than for an ISFSI and less than for an operating reactor. This proposed option would provide predictable requirements for operating reactor licensees as they plan for permanent shutdown, decommissioning, and spent fuel storage. However, many ISFSI safeguards requirements may be difficult to implement at a preexisting SFP because of the design differences and as-built configuration of the SFP and could require a significant alteration to the existing Section 73.55 security plan already established for the decommissioning plant.

OPTION 3: Develop a new regulation, 10 CFR 73.XX, for security at permanently shutdown nuclear power plant sites.

This regulatory option for security involves developing a new regulation to address the appropriate level of security at permanently shutdown power reactor sites. Under this proposed rule, licensees who have certified that they are permanently shutdown and defueled under 10 CFR 50.82 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. This new regulation would include many aspects of the ISFSI security regulation (10 CFR 73.51), modified to suit spent fuel storage in a fuel pool. If a licensee chooses to use the new security regulations, implementation could commence after certifying permanent shutdown and fuel removal from the reactor vessel. Prior NRC review and approval of the revised safeguards arrangements would not be necessary.

ASSESSMENT OF OPTION 3

This option would require that fuel be stored in a protected area. The protected area would be monitored by periodic patrols and have intrusion detection systems. The licensee would also need to have a VBS for the SFP. As part of this option, a licensee could choose to use the

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 those in the original VBS regulation for operating power 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 would also have to meet criteria for protection against a land vehicle bomb. Documentation justifying modification of the VBS would have to be available to the Commission for inspection. Even though offsite consequences may diminish as a function of spent fuel decay time, this option would maintain a VBS as long as fuel is stored in the SFP.

With this option, licensees who are in the process of decommissioning already have a security program in place and could, therefore, simply reconfigure and/or relocate the security equipment and systems to accommodate the SFP building protected area. The security program would continue to provide protection for the spent fuel; however, the program and the security areas to be protected on a continuing basis could be reduced. The cost of these changes depends on the location and relocation of existing security equipment in relation to areas of the plant that will be dismantled during decommissioning.

A new rule specifically written for permanently shutdown reactor sites would benefit the licensee in several ways. By reducing the size of the protected area from that required for an operating reactor to the SFP and immediate vicinity, the licensee would realize a savings in the number of security force members needed to protect the site. In addition, some of the original security equipment and systems would no longer need to be maintained and could be removed. The smaller protected area would allow easier dismantling of buildings and structures formerly needed for the operating reactor.

This proposed option will provide predictable requirements for operating reactor licensees as they plan for permanent shutdown, decommissioning, and fuel storage.

RECOMMENDED APPROACH

Based on the desire to maintain safety, reduce unnecessary regulatory burden, increase public confidence (by establishing regulatory uniformity and predictability), and improve efficiency and effectiveness, the staff recommends Option 3: a new rule addressing the security requirements for plants that have permanently shutdown and removed fuel from the reactor vessel to the SFP. The rule would apply until the time fuel is completely removed from the SFP and either transported offsite or placed in an onsite ISFSI. The new rule would allow reduced security commensurate with the lower risk of decommissioning nuclear power plants but would require vehicle bomb protection. Under this option, power reactor sites with permanently shutdown reactors would have a set of regulations specifically addressing the standards for safeguarding spent fuel at these sites. The recommended rulemaking approach would maintain safety by focusing safeguards protection on the SFP and would permit a reduction in the unnecessary regulatory burden of operating reactor safeguards requirements as soon as all spent fuel has been offloaded from the permanently shutdown reactor to the SFP. The new decommissioning safeguards regulations would then be kept in effect without further change until all the spent fuel is placed into an ISFSI. The decommissioning safeguards regulations would be implemented via the provisions of 10 CFR 50.54(p) and NRC approval of the changes would not be required — thereby improving regulatory efficiency and effectiveness. This option is consistent with the initial recommendations in the SECY-99-008 rulemaking plan previously

approved by the Commission. An example of draft regulatory language that would implement this option is provided at the end of this package.

D. Staffing and Training

REGULATORY ISSUE

The purpose of this rulemaking is to establish the appropriate level of staffing and training requirements for permanently shutdown and defueled nuclear reactors. In addition, the rulemaking would allow a decommissioning plant to establish an alternative to a control room.

EXISTING REGULATORY FRAMEWORK

The operator staffing regulations in 10 CFR 50.54(m) specify the minimum licensed operator staffing levels for operating reactors (e.g., minimum staff per shift for licensed operators and senior operators) but do not provide any alternatives for licensees that have certified that they are permanently shutdown and defueled under 10 CFR 50.82(a)(1). For decommissioning plants, the NRC has been approving license amendments that discontinue the requirements for licensed operators and allow shift staffing consisting of a certified fuel handler (certified by an NRC-approved training program) and an additional nonlicensed operator. However, there are no regulatory requirements that mandate these staff-approved staffing levels. Similarly, 10 CFR 50.54(i), (i-1), (k), and (l) all contain licensed operator requirements that do not apply to decommissioning plants and should be amended.

In August 1996, a major decommissioning rule became effective that made a number of changes to 10 CFR Part 50 to simplify the decommissioning regulations. One of the changes involved the adoption of a definition of “certified fuel handler” in 10 CFR 50.2. The certified fuel handler is intended to be the onshift licensee representative who is not only responsible for safe fuel handling operations at a decommissioning plant, but is always present on shift to ensure the safe maintenance and storage of spent fuel and the overall safety of any decommissioning-related activities at the facility. However, there are no regulations that specify substantive requirements for the presence and regulatory responsibilities of a certified fuel handler during decommissioning.

In addition, the certified fuel handler must be qualified in accordance with a certified fuel handler training program approved by the Commission. However, there are no regulations besides the definition that specifies the training requirements for the certified fuel handler. Training and qualification requirements for nonlicensed reactor personnel are addressed in 10 CFR 50.120, "Training and qualification of nuclear power plant personnel." This section is known as the training rule. The applicability of these training regulations for decommissioning plants is unclear (the statutory basis for the rule appears to be limited to operating reactors). In addition, 10 CFR 50.120 does not address the need for a training program for certified fuel handlers as required by the definition in 10 CFR 50.2. The regulation at 10 CFR 50.120 should be revised to address the general applicability of 10 CFR 50.120 to decommissioning nuclear power plants and to clarify that a Commission-approved certified fuel handler training must be established at decommissioning plants.

During decommissioning, the control room is subject to extensive changes which are evaluated by the licensee for safety implications under the 10 CFR 50.59 process. In fact, it is current practice among some licensees to design and construct a decommissioning control station that is independent of the original operating control room. For most decommissioning plants, it can probably be demonstrated that the control room does not have a safety-significant function related to decommissioning process safety, nor does it function to prevent or mitigate design-basis accidents (such as radiological releases during decontaminations or dismantlement activities or spent fuel handling and storage accidents). However, several decommissioning licensees have questioned the meaning of control room as it relates to decommissioning nuclear power plants. In order to clarify the control room concept for decommissioning plants, the staff believes a new definition for the control room should be considered.

DISCUSSION

Nuclear power plant regulations do not address minimum staffing levels or training requirements for a facility undergoing decommissioning. The absence of requirements or guidance on operator staffing levels has the potential to create uncertainty as to what constitutes an acceptable minimum shift complement during any phase of decommissioning. Since most decommissioning licensees have elected to develop technical specification amendments with prescribed minimum staffing levels, lack of regulation in this area imposes a burden on both licensees and the NRC when preparing, justifying, reviewing, and evaluating operator staffing amendments or exemption requests, a burden that could be avoided if appropriate regulations existed. Codifying current regulatory practice at decommissioning plants would enhance the efficiency and uniformity of the regulatory process for future decommissioning.

During decommissioning, the principal safety concern is the storage of spent fuel in the SFP. The skills needed for maintaining safe storage of spent fuel are not typically comparable to the skills needed for operating a nuclear power plant. Overall safety at decommissioning reactors is primarily dependent on the procedural and configuration controls exercised by the licensee over often varied and unique dismantlement and decontamination activities. The staff's technical study on SFP risk at decommissioning nuclear power plants did not recommend any minimum staffing levels or training requirements inherent in supporting the risk conclusions. However, it did show that the frequency of events that could lead to a spent fuel uncovery and potential zirconium fire is significantly impacted by human error probabilities. It is the staff's judgment that this is a sufficient basis for establishing a baseline staffing and training level at decommissioning nuclear power plants while spent fuel is stored in the SFP.

The current regulations for operating reactors require specific staffing levels for licensed operators for each shift, as well as control room staffing requirements and commensurate training requirements for licensed operators. The regulations define the duties of licensed operators as either the manipulation of controls or supervising the manipulation of controls that directly affect the reactor reactivity or power level of the reactor. A decommissioning plant is clearly not "operating" and no manipulation of controls that affect reactor reactivity or power can occur at a permanently defueled reactor. Therefore, the regulations that require specified licensed operator staffing for operating reactors are not applicable to a decommissioning plant.

Because the decommissioning regulations are silent regarding staffing, licensees have been amending their defueled technical specifications to eliminate the need to maintain licensed operators on the staff. Furthermore, the associated licensed operator training programs are

being discontinued for decommissioning plants (which has in some cases resulted in the licensee seeking an exemption request). In place of the licensed operators, decommissioning plant licensees have required the presence of a certified fuel handler and a nonlicensed operator as the minimum staffing for each shift. The certified fuel handler is a new staffing position specified in the decommissioning rulemaking changes to 10 CFR Part 50 that were issued in 1996. It was the intent of that rulemaking to establish the certified fuel handler as the principal onshift operational staff position for decommissioning plants. The onshift certified fuel handler is expected to be cognizant of the onsite decommissioning activities and would assume the safety responsibilities for these activities and for spent fuel-related activities. The certified fuel handler is a non-NRC-licensed operator, replacing the licensed operators (i.e., SROs and ROs) of an operating reactor. Although the certified fuel handler is not licensed, the training program is reviewed and approved by the NRC. The 1996 rulemaking did not establish requirements with respect to the certified fuel handler's functions and responsibilities or directly associate the position with decommissioning activities. As a result, the regulations must be modified to add substantive requirements for the position of certified fuel handler. In addition, the title "certified fuel handler" implies a work scope limited to fuel handling. It is the opinion of the NRC staff that the position title certified fuel handler is a misnomer that can diminish the perception of this operator's responsibilities and duties (which involve much more than fuel handling). The staff-proposed rulemaking options would clarify the responsibilities of a certified fuel handler and rename the position.

Another staffing position required for operating reactors is the shift technical advisor (STA). The STA provides engineering expertise on shift for assisting in the diagnosis of complex structure, system, and component problems during reactor operation. This staffing requirement is not relevant to a decommissioning plant and is typically removed via license amendment from the decommissioning plant technical specifications. However, the acceptability of discontinuing the STA training program is not addressed in the current regulations and needs to be clarified.

Related to the decommissioning plant operator staffing levels is the requirement for and the use of a control room during decommissioning. A current practice of some decommissioning plant licensees that is not addressed by the regulations is the use of an alternative to the conventional control room for monitoring SFP status. The control room at decommissioning plants may also function as a short-term command and coordination center for responding to events (such as fires or radiological spills); and communicating with outside organizations (emergency response). It should not be incumbent upon a licensee to use the operating plant control room as the control room for decommissioning if an acceptable alternative can be demonstrated (via the 10 CFR 50.59 process). To prevent ambiguities about the meaning of control room for decommissioning plants when specifying operator staffing levels, this rulemaking plan provides an option for establishing a definition of, and substantive requirements for use of a decommissioning control room.

In order to ensure that an integrated approach was employed in developing this rulemaking plan, other regulations with requirements having potential relevance to decommissioning staffing and training were considered. For example, while the minimum staffing level is explicitly defined, the proposed regulation would still require the licensee to have the necessary staff to be able to respond to facility emergencies and is therefore consistent with EP. After the spent fuel is removed from the SFP and transferred to an ISFSI, there would be no prescribed minimum staffing level. This is consistent with ISFSI requirements.

RULEMAKING OPTIONS

The following discussions provide a qualitative preliminary regulatory assessment of the staff's recommended rulemaking approach and the several alternatives considered.

OPTION 1: Change the regulations for staffing and training for permanently shutdown and defueled reactors and clarify related definitions.

This rulemaking option would establish the responsibilities of the certified fuel handler, specify the minimum staffing requirements for a decommissioning nuclear reactor licensee that has submitted the certifications required by Section 50.82(a)(1), and set forth the training requirements for the certified fuel handler and decommissioning plant support staff. The rulemaking would also specify that the training program for the STA be discontinued for decommissioning plants. Finally, the regulations would be modified to require either a control room or an alternative capability to be specified in the rule. The regulatory changes would be consistent with current licensee practices that have been approved by the NRC staff on a case-by-case basis via licensing amendments for permanently shutdown and defueled reactors.

ASSESSMENT OF OPTION 1

This rulemaking option would reduce resources expended by both the licensee and the NRC on licensing amendments involving staffing and training at decommissioning plants. Providing rulemaking that clearly specifies the minimal operator staffing requirements that must be maintained at a permanently shutdown and defueled nuclear power reactor would prevent licensing delays due to misinterpretation of or confusion about the existing regulations. Since the purpose of this rulemaking option is to codify current licensing practices, no burden or increased cost is anticipated beyond what is currently expected for decommissioning plants. In order to avoid any backfit issues, licensees who, before the effective date of this rule, have certified to the NRC that they have permanently ceased operations and permanently removed fuel from the reactor vessel, as specified in §50.82(a)(1), would not be subject to this rule.

OPTION 2: No action.

This option would retain the current wording of the regulations. Discontinuing the training and use of licensed operators after permanent cessation of operation and removal of fuel from the reactor could be justified by a liberal interpretation of the operator staffing and training requirements of 10 CFR 50.54(i), (k), (l), and (m) as not being applicable to decommissioning plants (consistent with current practice).

Revising the training requirements in 10 CFR 50.120 to remove the requirement for a STA training program may also be unnecessary if the regulation is liberally interpreted. The regulation states that "[t]he training program must be periodically evaluated and revised as appropriate to reflect...changes to the facility, procedures, regulations...." This language is probably sufficiently broad to allow changes to the training program (when a nuclear power plant has permanently shut down and defueled) without requiring an exemption to the regulations.

ASSESSMENT OF OPTION 2

The no-action option would likely not result in any significant additional cost or burden if decommissioning technical specifications were kept for staffing requirements consistent with current practice. However, because the regulations do not require a licensee to commit to specific operator staffing levels for permanently shutdown and defueled reactors, there is certainly the possibility that future license amendments related to operator staffing could propose more relaxed operator staffing requirements than those established by current practice or, in the extreme case, propose the total elimination of any licensing commitment for operator staffing and argue that staffing for decommissioning is beyond the purview of the NRC. This would present an unreviewed safety concern since the staff has no basis to judge if staffing less than proposed in the current rulemaking plan can adequately control decommissioning activities and safely maintain storage of spent fuel in the SFP. Therefore, this option could increase risk to public health and safety should a licensee deviate in a nonconservative manner from current practice.

RECOMMENDED APPROACH

Based on the desire to maintain safety, reduce unnecessary regulatory burden, increase public confidence (by establishing regulatory uniformity and predictability), and improve efficiency and effectiveness in the regulatory process for decommissioning nuclear power plants, the staff recommends Option 1. In summary, this rulemaking plan option would define appropriate levels of staffing, training, and qualifications for operators at decommissioning nuclear power plants, consistent with exemptions previously granted to decommissioning plants. The recommended minimum staffing levels and training requirements in the rulemaking plan should help ensure that decommissioning facilities are properly maintained, systems are safely operated, and radiological activities are safely performed.

Specifically, it is recommended that a decommissioning rule be developed for staffing and training that would —

- Clarify that licensed operators are not required for permanently shutdown and defueled reactors.
- Clarify that a shift technical advisor (STA) training program is not required for permanently shutdown and defueled reactors.
- Clarify the responsibilities and provide a new title for the certified fuel handler .
- Specify the minimum staffing level of certified operators and other nonlicensed operators and training requirements for staff at permanently shutdown and defueled reactors.
- Define the control room for permanently shutdown and defueled reactors.

An example of draft regulatory language that would implement this option is provided at the end of this package.

E. Backfit

REGULATORY ISSUE

The purpose of this rulemaking is to develop appropriate criteria for assessing proposed backfits as detailed in 10 CFR 50.109, which can be applied to nuclear power plants undergoing decommissioning.

EXISTING REGULATORY FRAMEWORK

The backfit rule, 10 CFR 50.109, was first adopted by the Atomic Energy Commission in 1970 (35 FR 5317, March 31, 1970). Because of complaints by nuclear power plant licensees that the backfit rule was ineffective, in 1983 the Commission issued a policy statement on backfitting (48 FR 44173, September 28, 1983) and began rulemaking to revise the rule. The Commission adopted a final backfit rule in 1985 (50 FR 38097, September 1985), but on appeal the U.S. Court of Appeals remanded the rule to the Commission because it failed to distinguish between "adequate protection" backfits for which costs of the backfit could not be considered under the Atomic Energy Act (AEA) and other backfits which increased safety more than required for adequate protection. *Union of Concerned Scientists* v. *NRC*, 824 F.2d 103 (D.C. Cir. 1987). The Commission subsequently adopted a revised backfit rule in 1988 (53 FR 20603, June 6, 1988), which is substantially the same rule in effect today.

Section 50.109(a)(1) defines a "backfit" as

> the modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position....

The backfit rule provides that, unless a backfit falls into one of three "exceptions" (listed in Section 50.109(a)(4)(i) through (iii)), the NRC may not impose a backfit on a licensee without preparing a backfit analysis which finds that there is:

> a substantial increase in the overall protection of the public health and safety...to be derived from the backfit and that the direct and indirect costs of implementation for that facility are justified in view of this increased protection (10 CFR 50.109(a)(3)).

Section 50.109(c)(1) through (9) are a list of factors that must be considered, as appropriate, in determining whether a backfit represents a substantial increase in protection to public health and safety or common defense and security, and whether the costs of the backfit are justified in light of this increased protection.

NRC Manual Chapter 0514 (Management Directive 8.4), "NRC Program for Management of Plant-Specific Backfitting of Nuclear Power Plants," and Office of Nuclear Reactor Regulation (NRR) Office Letter No. 901, "Procedures for Managing Plant-Specific Backfits and

10 CFR 50.54(f) Information Requests," define the objectives, authorities, and responsibilities and establish basic requirements for actions to be taken in instances in which the NRC imposes new plant-specific requirements on a nuclear power plant licensee. NRR Office Letter No. 500, "Procedures for Controlling the Development of New and Revised Generic Requirements for Power Reactor Licensees," establishes procedures to develop, among other things, new or revised generic staff positions or requirements for power reactor licensees without placing unnecessary burdens on licensees.

DISCUSSION

The intent of the backfit rule is to protect licensees from unwarranted, costly, NRC-imposed operational and design changes and modifications that would not result in a substantial increase in the overall protection of the public health and safety or the common defense and security. The current backfit rule in Section 50.109 can be read as excluding plants undergoing decommissioning. Because of the decommissioning backfit claims involving Maine Yankee, the staff concluded that, as a matter of policy, a backfit process and protection should apply to decommissioning facilities. The staff recommended in SECY-98-253, dated November 4, 1998, that the backfit rule apply to plants undergoing decommissioning. The Commission issued an SRM dated February 12, 1999, that accepted the staff's recommendation and directed the development of a rulemaking plan to address backfit at decommissioning plants.

In this integrated rulemaking plan, the staff has recommended changes to the backfit rule to eliminate ambiguity and clearly indicate that the rule applies to plants undergoing decommissioning. As part of this, the backfit rule would be amended to specify the point in time that would be deemed the "baseline" for purposes of determining whether a change constitutes a backfit for a decommissioning plant. In addition, the staff recommended that consideration be given to revising the factors in Section 50.109(c)(1) - (9) inasmuch as some of the factors are not applicable to decommissioning nuclear power plants. The plan also recognizes that NRC administrative procedures will need to be modified to implement the regulatory guidance associated with including decommissioning plants into the backfit rule.

One criterion used in performing a backfit analysis is the potential change in risk. The staff's SFP risk study does propose risk criteria for SFP accidents which can be used for the backfit test. The staff does not consider the recommended changes to the backfit rule as a backfit because it appears to comport with the exception criteria for defining or redefining an adequate level of protection of public health and safety and common defense and security.

Since the staff believes that a regulatory requirement analogous to the current backfit rule is necessary for plants undergoing decommissioning, an interim action is prudent until a new rule can be developed. This interim action will protect the plants undergoing decommissioning from unwarranted NRC-imposed changes in requirements while the new rule is being developed. The staff will apply the current backfit rule to plants undergoing decommissioning to the extent practical, which includes a cost-benefit analysis as appropriate for any NRC-imposed changes to the license requirements.

RULEMAKING OPTIONS

The following discussions provide a qualitative preliminary regulatory assessment of the staff's recommended rulemaking approach and the alternative considered.

OPTION 1: Status quo.

Make no modifications to the existing rule to include plants undergoing decommissioning. Apply the current rule as a matter of policy to plants undergoing decommissioning to the extent practical.

ASSESSMENT OF OPTION 1

This option would not require any additional staff effort and is the current Commission policy, but it would not clarify the current regulation regarding the applicability of backfit to decommissioning plants. Since the current rule may be interpreted as not being applicable to decommissioning nuclear power plants, selection of this option could result in criticism of the NRC for taking a position unsupported by regulations.

OPTION 2: Modify existing rules to include plants undergoing decommissioning.

ASSESSMENT OF OPTION 2

This modification would divide the current rule into two parts, operating reactors and reactors undergoing decommissioning. The operating reactor section would be changed only to accommodate the addition of the section for reactors undergoing decommissioning. The section for reactors undergoing decommissioning would have wording similar to the operating reactor section but would specifically address reactors undergoing decommissioning. The current rules would be written with a section fully devoted to operating reactors and a section devoted to decommissioning reactors. This would require the duplication of some paragraphs that apply to both, but would be less confusing about what requirements apply to decommissioning reactors. In conjunction with this effort, appropriate changes to NRC administrative procedures would be made to provide additional guidance to the staff on the application of backfit screening and analysis to decommissioning plants.

RECOMMENDED APPROACH

To improve regulatory efficiency and effectiveness, the staff recommends Option 2, the development of a two-section backfit rule; one section will apply to nuclear power plants undergoing decommissioning and the other section will apply to operating reactors. The backfit rule for decommissioning plants will be applied in the same way the current backfit rule is applied to operating reactors. In the interim, the staff will continue to apply the current backfit rule to the extent practical for NRC-imposed changes in license requirements.

An example of draft regulatory language that would implement this option is provided at the end of this package.

OGC ANALYSIS

The Staff proposes to undertake rulemaking to establish regulatory requirements for decommissioning nuclear power plants (*i.e.*, nuclear power plants whose licensees have submitted the certifications under 10 CFR § 50.82(a)(1)) in five different areas: emergency planning and preparedness (EP), insurance, safeguards and physical security, staffing and training, and backfitting. In the area of EP, the Staff proposes to adopt a four-tier regulatory approach that would reduce Part 50 regulatory requirements for EP depending upon: (i) spent fuel decay time and (ii) whether spent fuel has been completely transported offsite or placed in an onsite ISFSI. With respect to insurance, the Staff recommends establishment of a three-tier system for reducing the level of onsite and offsite insurance for decommissioning plants, with no onsite insurance required after all spent fuel has been transported offsite or placed in an onsite ISFSI. For the area of physical security, the Staff recommends that decommissioning plants be required to protect the SFP from sabotage, including placement of a vehicular barrier, until all spent fuel has been transported offsite or placed in an onsite ISFSI. For staffing and training, the Staff proposes that requirements be adopted specifying: (i) the substantive requirements for, and the functions and responsibilities of a certified fuel handler (and perhaps renaming this position to better reflect the responsibilities and functions of this person); (ii) the training requirements for the certified fuel handler; and (iii) a definition of control room for a decommissioning plant. Finally, for backfitting the Staff recommends developing separate provisions for backfitting decommissioning plants that would be contained in a new paragraph of the Backfit Rule, 10 CFR 50.109.

Licensees of decommissioning plants believe that current requirements in the four substantive areas (*i.e.*, everything except backfitting) are not justified in view of the decreased risk of offsite exposures to the public, and have sought to reduce the regulatory burden in a variety of ways. Many licensees have sought and obtained exemptions from specific regulatory requirements. However, the nature of the exemption has varied depending upon the scope of each licensee's request, and the Staff has not always utilized a consistent basis for evaluating and granting the exemptions. Other licensees have argued that current regulations, *e.g.*, 10 CFR § 50.54(p), permit them to unilaterally reduce their regulatory commitments. Because of the recurring nature of these issues and the potential for inconsistency if these issues are addressed by the Staff on an *ad hoc* basis, the Staff proposes to initiate an integrated rulemaking to develop requirements in these five areas.

We have not identified any bases for legal objection to the contemplated rulemaking. However, we have identified a number of significant legal and policy issues that must be addressed during rulemaking. These issues are discussed below. In addition, in light of the regulatory objective of preparing a rulemaking plan, we have not reviewed in any great detail the draft regulatory language prepared by the Staff (Appendices A through E to the Rulemaking Plan). Accordingly, we express no views regarding the acceptability of that language. The legal and policy issues that must be addressed in the statement of considerations for the rulemaking include:

a. EP reductions

As described in the rulemaking plan, the third and fourth tiers of the Staff's proposed regulatory approach for reducing EP requirements includes a provision that EP cannot be reduced if a licensee stores radioactive materials onsite in quantities which exceed

the levels specified in 10 CFR § 30.72, Schedule C. We do not believe that it is necessary for Part 50 to repeat the provisions of 10 CFR 30.72, nor should the rulemaking suggest that the Commission is reconsidering the need for EP under the provisions of Part 30. For these reasons, we recommend that only a cross-reference to Section 30.72 be included in the relevant language of Part 50.

We are not aware of any statutory requirement that FEMA concur in the proposed reductions in EP requirements for decommissioning plants. Nor do we believe that the memorandum of understanding between FEMA and the NRC requires the preparation of joint FEMA/NRC guidance on requirements for offsite emergency preparedness for decommissioning nuclear power plants. However, we recommend that the Staff continue their interactions with FEMA so that any concerns expressed by FEMA will be addressed as part of the proposed rulemaking. In addition, we note that in the interest of intergovernmental comity, the Staff may wish to keep interested state and local officials appraised of the potential changes and obtain their preliminary views during the development of the EP aspects of the rulemaking.

b. Risk-informed changes to physical security/safeguards requirements

The Staff is currently considering developing risk-informed, performance-based physical security and safeguards requirements applicable to operating nuclear power plants, but has decided not to pursue such an approach for decommissioning reactors at this time. While there is no legal impediment to adopting a risk-informed, performance-based regulatory approach for operation, and maintaining a deterministic, prescriptive regulatory approach for decommissioning, there may be practical considerations that counsel against the adoption of a bifurcated regulatory scheme. This should be addressed in the proposed rulemaking package.

The discussion with respect to threats to the SFP focus on preventing SFP draindown. The proposed rule must provide the bases for the Staff's determination that potential threats to those which can result in SFP draindown represent the bounding event in terms of offsite radiation exposures to the public (as opposed to considering, for example, threats that could lead to destruction of the spent fuel assemblies that are being stored in the pool).

c. Staffing and training requirements for decommissioning requirements; control room alternative.

The Staff proposes that the training requirements for certified fuel handlers be specified in 10 CFR 50.120. While the location of these requirements in that section presents no legal issue *per se,* we note that Section 120 was adopted pursuant to Section 306(b) of the Nuclear Waste Policy Act of 1982, which directs the Commission to establish training requirements for "power plant operators, supervisors, technicians and other appropriate *operating* personnel (emphasis added)." Since it is unclear whether Section 306(b) provides authority for the NRC to adopt training requirements for decommissioning plants, we suggest that the authorities citation for this amendment reference the general rulemaking authority of the Commission under Section 161 of the Atomic Energy Act of 1954, as amended.

> With respect to the Staff's proposal that the regulations be modified to permit the decommissioning plant to designate an alternative to a control room, we note that implicit in this regulatory issue is a broader question-whether there are a set of features that must be provided in a decommissioning plant (perhaps linked to various stages of decommissioning) which would be specified in substantive regulations. We also note that the Staff's proposed language does not actually include a substantive regulatory requirement for a control room alternative; it merely establishes a regulatory definition. There are two legal issues that flow from the Staff's proposed language: (i) a definition cannot impose a substantive requirement[2] for the licensee to have a control room alternative; and (ii) the criteria for an acceptable control room alternative must ordinarily be set forth in the substantive regulation, as opposed to the definition. Such regulatory language must be developed for the proposed rule in order to avoid a legal objection.

The proposed rule will require preparation of an environmental assessment (EA), as it appears that there are no categorical exclusions in 10 CFR § 50.51(c) that would apply to this rulemaking.

We do not believe that the proposed rulemaking will require preparation of a backfit analysis under 10 CFR § 50.109. The proposed rule could be viewed as a voluntary relaxation, since it appears that licensees could continue to maintain their existing EP, insurance, physical security, staffing and training requirements and backfit policy and be in compliance with the proposed changes recommended in this rulemaking plan. As such, if licensees are not compelled to change their existing programs, there is no "imposed change" constituting a backfit as defined in Section 50.109(a)(1)[3]. Alternatively, the proposed rule changes would appear to fall within the exception in Section 50.109(a)(4)(iii) with respect to "defining or redefining what level of protection to public health and safety and common defense and security should be regarded as adequate."

It is unclear whether the proposed rule is a "major rule" under the Small Business Regulatory Enforcement Fairness Act, in part because NRC does not know whether the Office of Management and Budget (OMB) will require the potential impacts attributable to each of the five separate areas to be addressed in this integrated rulemaking to be aggregated in determining whether the rulemaking has a $100 million impact on nuclear power plant licensees. The rulemaking proposal will be submitted to OMB for a determination at the earliest point that sufficient information is available on which OMB can render its decision. If the rule is a major rule, then there must be a 60-day waiting period before the rule can become effective.

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[2]The issue is analogous to the current regulatory situation with respect to the certified fuel handler, wherein a definition for certified fuel handler exists in 10 CFR 50.2 but there is no substantive requirement in Part 50 with respect to the regulatory responsibilities of the certified fuel handler.

[3]Current regulations addressing the five areas which are the subject of this rulemaking plan make no distinction between operating power plants, versus those power plants whose licensees have submitted the certifications under Section 50.82(a)(1). Accordingly, it is OGC's view that licensees who have submitted the Section 50.82(a)(1) certifications must continue to comply with current regulations in the areas that are the subject of this rulemaking.

The proposed rule will likely result in changed information collection and reporting requirements in each of the five areas being addressed by this rulemaking. Accordingly, it is likely that the change will require OMB review for purposes of the Paperwork Reduction Act.

In accordance with the National Technology Transfer and Advancement Act of 1995, P.L. 104-113, the Staff should determine whether there are any consensus on codes and standards that exist with respect to emergency preparedness, safeguards, and staffing and training that could be adopted as an alternative to the NRC-developed requirements represented by the language in Appendices A through E to the Rulemaking Plan.

BACKFIT ANALYSIS

The proposed rule to be developed based on this rulemaking plan should not require a backfit analysis under 10 CFR 50.109. The proposed rule changes could be viewed as a voluntary relaxation, since licensees could continue to maintain their existing EP, insurance, physical security, staffing requirements and backfit policy and be in compliance with the proposed changes recommended in this rulemaking plan. Thus, if licensees are not compelled to change their existing programs, there is no “imposed change” constituting a backfit as defined in Section 50.109(a)(1). Alternatively, the proposed rulemaking should not require a backfit analysis because it falls within the exception in 10 CFR 50.109(a)(4)(iii) for “defining or redefining what level of protection to the public health and safety or common defense and security should be regarded as adequate.” The staff will prepare a documented evaluation justifying this conclusion.

COMPATIBILITY OF AGREEMENT STATE REGULATIONS

Under the “Policy Statement on Adequacy and Compatibility of Agreement State Programs” approved by the Commission on June 30, 1997, and published in the *Federal Register* September 3, 1997 (62 FR 46517), Sections 50.54, 50.47, and Appendix E to Part 50 (for EP), Section 140.11 (Insurance), Part 73 (Safeguards), Section 50.120 (Staffing and Training), and Section 50.109 (Backfit) are classified as compatibility category “NRC.” The NRC program elements in this category are those that relate directly to areas of regulation reserved to the NRC by the AEA or provisions of Title 10 of the Code of Federal Regulations.

SUPPORTING DOCUMENTS

The rulemaking to be developed from the recommended approaches in this plan would require a detailed regulatory analysis. The staff believes such an analysis would show a benefit to licensees with no significant impact on the environment or public health and safety. No backfit analysis is anticipated, but a documented evaluation will be prepared justifying this conclusion. The plan involves changes in information collection requirements and will be submitted to OMB for a full review. A clearance package will be forwarded to OMB no later than the date the proposed rule is submitted to the Office of the Federal Register for publication. An environmental assessment would be necessary to demonstrate that there are no significant impacts on the environment and public health and safety.

The staff may need to develop a regulatory guide for performing T-H analyses to establish that spent fuel stored in an SFP is no longer vulnerable to a zirconium fire. In addition, the staff may

need to develop a regulatory guide on ways to minimize the risk of SFP accidents at decommissioning nuclear power plants, as well as guidance on performing a seismic robustness evaluation of an SFP.

NRC Manual Chapter 0514, NRR Office Letter No. 901, and NRR Office Letter No. 500 would need to be revised to provide additional guidance on implementing the backfit rule for decommissioning plants.

SMALL BUSINESS REGULATORY ENFORCEMENT FAIRNESS ACT

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the NRC believes that this action is not a "major rule" and, prior to issuing the proposed rule, will verify this with the Office of Information and Regulatory Affairs, Office of Management and Budget.

RESOURCES

The resource estimate for the staff to complete this rulemaking is approximately 6 FTE (1.5 FTE in FY 2000, 2.5 FTE in FY 2001, and 2 FTE in FY 2002). These resources are available within the current budget since this rulemaking was explicitly included in NRR's FY 2000 budget and proposed budgets for FY 2001 and FY 2002. Contractor support is estimated in FY 2001 at $250K, of which $170K is budgeted and $80K will be reprogrammed from within the NRR FY 2001 budget.

LEAD OFFICE STAFF AND STAFF FROM SUPPORTING OFFICES

Lead Office - Project Management

NRR - Bill Huffman
Richard Dudley
Phil Ray

Support Offices

NRR - Robert Skelton
NRR - Daniel Barss
NRR - Richard Pelton
NRR - Ira Dinitz
NRR - Raj Auluck
OGC - Geary Mizuno
ADM - David Meyer

STEERING GROUP

None. This rulemaking effort would not be expected to benefit from a steering group.

ENHANCED PUBLIC PARTICIPATION

This rulemaking plan and any subsequent published proposed rule will be placed in the NRC's rulemaking Web site. This Web site allows users to submit comments electronically and review comments submitted by others.

EDO OR COMMISSION ISSUANCE

This rulemaking will be issued by the Commission.

SCHEDULE

TAC No. MA7146 Lead Division: DLPM (RM#547)
WITS #199900072

MILESTONE	DATE (T/C)	MILESTONE	DATE(T/C)
1. New Rulemaking Plan for Commission/EDO Approval	6/30/00T	9. Public Comment	8/15/01T
2. Proposed Rulemaking Package	12/30/00T	10. Revise Rulemaking Package	11/1/01T
3. Office Concurrences [NRR/NMSS/OGC/ADM]	1/30/01T	11. Office Concurrences [NRR/NMSS/OGC/ADM]	12/15/01T
4. ACRS Comments	2/15/01T	12. ACRS Comments	1/30/02T
5. CRGR Concurrence	2/30/01T	13. CRGR Concurrence	2/30/02T
6. EDO Concurrence	3/15/01T	14. EDO Concurrence	3/30/02T
7. Commission Approval	4/30/01T	15. Commission Approval	5/15/02T
8. Publish Proposed Rule	5/15/01T	16. Publish Final Rule	6/1/02T

Note: OMB review is required and a clearance package will be forwarded to OMB no later than the date the proposed rule is submitted to the Office of the Federal Register for publication.

APPENDICES

Draft regulatory language which illustrates how the staff's recommendations in the rulemaking plan could be implemented

A Sample Regulatory Language for EP at Decommissioning Plants

PART 50–DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. In § 50.47, paragraph (e) and (f) are added to read as follows:

§ 50.47 Emergency plans.

(d) * * *

(e) For a nuclear power reactor that is permanently shutdown in accordance with 10 CFR 50.82(a), and is not located on the site of a nuclear power reactor having an operating licensee, and meets the Conditions of License found in 10 CFR 50.54(gg)(ii), the onsite and offsite emergency response plans must meet the following standards:

(1) Facility description. A brief description of the licensee's facility and area near the site.

(2) Types of accidents. An identification of each type of radioactive materials accident.

(3) Classification of accidents. A classification system for classifying accidents as ``alerts'', “site area emergencies”, or “general emergencies.”

(4) Detection of accidents. Identification of the means of detecting an accident condition.

(5) Mitigation of consequences. A brief description of the means of mitigating the consequences of each type of accident, including those provided to protect workers onsite, and a description of the program for maintaining the equipment.

(6) Assessment of releases. A brief description of the methods and equipment to assess releases of radioactive materials.

(7) Responsibilities. A brief description of the responsibilities of licensee personnel should an accident occur, including identification of personnel responsible for promptly notifying offsite response organizations and the NRC; also responsibilities for developing, maintaining, and updating the plan.

(8) Notification and coordination. A commitment to and a brief description of the means to promptly notify offsite response organizations and request offsite assistance, including medical assistance for the treatment of contaminated injured onsite workers when appropriate. A control point must be established. The notification and coordination must be planned so that unavailability of some personnel, parts of the facility, and some equipment will not prevent the notification and coordination. The licensee shall also commit to notify the NRC operations center immediately after notifications of the appropriate offsite response organizations and not later than one hour after the licensee declares an emergency. These reporting requirements do

not supersede or release licensees of complying with the requirements under the Emergency Planning and Community Right-To-Know Act of 1986, Title III, Pub. L. 99-499 or other State or Federal reporting requirements.

(9) Information to be communicated. A brief description of the types of information on facility status; radioactive releases; and recommended protective actions, if necessary, to be given to offsite response organizations and to the NRC.

(10) Training. A brief description of the training the licensee will provide workers on how to respond to an emergency and any special instructions and orientation tours the licensee would offer to fire, police, medical and other emergency personnel.

(11) Safe condition. A brief description of the means of restoring the facility to a safe condition after an accident.

(12) Exercises. (i) Provisions for conducting quarterly communications checks with offsite response organizations and biennial onsite exercises to test response to simulated emergencies. Radiological/Health Physics, Medical, and Fire drills shall be conducted semi-annually. Quarterly communications checks with offsite response organizations must include the check and update of all necessary telephone numbers. The licensee shall invite offsite response organizations to participate in the biennial exercise.

(ii) Participation of offsite response organizations in biennial exercises, although recommended, is not required. Exercises must use scenarios not known to most exercise participants. The licensee shall critique each exercise using individuals not having direct implementation responsibility for conducting the exercise. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques must be corrected.

(13) Hazardous chemicals. A certification that the licensee has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Pub. L. 99-499, with respect to hazardous materials at the facility.

(14) Comments on Plan. The licensee shall allow the offsite response organizations expected to respond in case of an accident 60 days to comment on the initial submittal of the licensee's emergency plan before submitting it to NRC. Subsequent plan changes need not have the offsite comment period unless the plan changes affect the offsite response organizations. The licensee shall provide any comments received within the 60 days to the NRC with the emergency plan.

(15) Offsite assistance. The licensee’s emergency plans shall include the following:

(i) A brief description of the arrangements made for requesting and effectively using offsite assistance on site and provisions that exist for using other organizations capable of augmenting the planned onsite response.

(ii) Provisions that exist for prompt communications among principal response organizations to offsite emergency personnel who would be responding onsite.

(iii) Adequate emergency facilities and equipment to support the emergency response onsite are provided and maintained.

(iv) Adequate methods, systems, and equipment for assessing and monitoring actual or potential consequences of radiological emergency condition are available.

(v) Arrangements are made for medical services for contaminated and injured onsite individuals.

(vi) Radiological Emergency Response Training has been made available to those offsite who may be called to assist in an emergency onsite.

(16) Arrangements made for providing information to the public.

(f) For a nuclear power reactor that is permanently shutdown in accordance with 10 CFR 50.82(a), and is not located on the site of a nuclear power reactor having an operating licensee, and meets the Conditions of License found in 10 CFR 50.54(gg)(iii) or (vi), the onsite emergency plan must include the following information:

(1) Facility description. A brief description of the licensee's facility and area near the site.

(2) Types of accidents. An identification of each type of radioactive materials accident.

(3) Classification of accidents. A classification system for classifying accidents as ``alerts.''

(4) Detection of accidents. Identification of the means of detecting an accident condition.

(5) Mitigation of consequences. A brief description of the means of mitigating the consequences of each type of accident, including those provided to protect workers onsite, and a description of the program for maintaining the equipment.

(6) Assessment of releases. A brief description of the methods and equipment to assess releases of radioactive materials.

(7) Responsibilities. A brief description of the responsibilities of licensee personnel should an accident occur, including identification of personnel responsible for promptly notifying offsite response organizations and the NRC; also responsibilities for developing, maintaining, and updating the plan.

(8) Notification and coordination. A commitment to and a brief description of the means to promptly notify offsite response organizations and request offsite assistance, including medical assistance for the treatment of contaminated injured onsite workers when appropriate. A control point must be established. The notification and coordination must be planned so that unavailability of some personnel, parts of the facility, and some equipment will not prevent the notification and coordination. The licensee shall also commit to notify the NRC operations center immediately after notifications of the appropriate offsite response organizations and not later than one hour after the licensee declares an emergency. These reporting requirements do not supersede or release licensees of complying with the requirements under the Emergency

Planning and Community Right-To-Know Act of 1986, Title III, Pub. L. 99-499 or other State or Federal reporting requirements.

(9) Information to be communicated. A brief description of the types of information on facility status; radioactive releases; and recommended protective actions, if necessary, to be given to offsite response organizations and to the NRC.

(10) Training. A brief description of the training the licensee will provide workers on how to respond to an emergency and any special instructions and orientation tours the licensee would offer to fire, police, medical and other emergency personnel.

(11) Safe condition. A brief description of the means of restoring the facility to a safe condition after an accident.

(12) Exercises. (i) Provisions for conducting semiannual communications checks with offsite response organizations and biennial onsite exercises to test response to simulated emergencies. Radiological/Health Physics, Medical, and Fire drills shall be conducted annually. Semiannual communications checks with offsite response organizations must include the check and update of all necessary telephone numbers. The licensee shall invite offsite response organizations to participate in the biennial exercise.

(ii) Participation of offsite response organizations in biennial exercises, although recommended, is not required. Exercises must use scenarios not known to most exercise participants. The licensee shall critique each exercise using individuals not having direct implementation responsibility for conducting the exercise. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques must be corrected.

(13) Hazardous chemicals. A certification that the licensee has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Pub. L. 99-499, with respect to hazardous materials at the facility.

(14) Comments on Plan. The licensee shall allow the offsite response organizations expected to respond in case of an accident 60 days to comment on the initial submittal of the licensee's emergency plan before submitting it to NRC. Subsequent plan changes need not have the offsite comment period unless the plan changes affect the offsite response organizations. The licensee shall provide any comments received within the 60 days to the NRC with the emergency plan.

(15) Offsite assistance. The applicant's emergency plans shall include a brief description of the arrangements made for requesting and effectively using offsite assistance on site and provisions that exist for using other organizations capable of augmenting the planned onsite response.

(16) Arrangements made for providing information to the public.

2. In § 50.54, paragraph (q) is revised to read as follows:

§ 50.54 Conditions of licenses.

* * * * *

(q) A licensee authorized to possess and operate a nuclear power reactor shall follow and maintain in effect emergency plans that meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E of this part. A licensee authorized to possess and/or operate a research reactor or a fuel facility shall follow and maintain in effect emergency plans that meet the requirements in Appendix E to this part. However, if all nuclear power reactors on a site are permanently shutdown and the licensee has certified, in accordance with §50.82(a) of this part, that it has permanently ceased facility operation(s), the permanently shutdown and defueled nuclear power reactor site may elect to comply with the emergency planning requirements as specified in 10 CFR 50.54(gg) when the specific conditions are met. The licensee shall retain the emergency plan and each change that decreases the effectiveness of the plan as a record until the Commission terminates the license for the nuclear power reactor. The nuclear power reactor licensee may make changes to these plans without Commission approval only if the changes do not decrease the effectiveness of the plans and the plans, as changed, continue to meet the standards of 10 CFR 50.47(b), and the requirements of Appendix E to this part, or 10 CFR 50.47(e), or 10 CFR 50.47(f), as applicable. The research reactor and/or the fuel facility licensee may make changes to these plans without Commission approval only if these changes do not decrease the effectiveness of the plans and the plans, as changed, continue to meet the requirements of Appendix E to this part. A nuclear power reactor, including a permanently shutdown reactor, research reactor, or fuel facility licensee shall retain a record of each change to the emergency plan made without prior Commission approval for a period of three years from the date of the change. Proposed changes that decrease the effectiveness of the approved emergency plans may not be implemented without application to and approval by the Commission. However, when applicable, the permanently shutdown and defueled nuclear power reactor licensee may make a change in the emergency plans from the requirements of 10 CFR 50.47(b) and Appendix E to the requirements as specified in 10 CFR 50.54(gg) without prior approval from the Commission. The licensee shall submit, as specified in §50.4, a report of each proposed change for approval. If a change is made without approval, the licensee shall submit, as specified in §50.4, a report of each change within 30 days after the change is made.

3. In § 50.54, paragraph (gg) is added to read as follows:

§ 50.54 Conditions of licenses.

* * * * *

(ff) * * *

(gg) A decommissioning nuclear power reactor licensee that has docketed certifications of permanent cessation of operation and permanent removal of fuel from the

reactor vessel in accordance with the requirements of 10 CFR 50.82(a) may elect to follow the emergency planning requirements for an operating reactor as specified in paragraph (q) above, or may elect to maintain the following applicable emergency planning requirements:

(i) For decommissioning nuclear power reactors where spent fuel stored in the spent fuel pool has less than 12 months decay time, the licensee shall follow and maintain in effect emergency plans that meet the standards in 10 CFR 50.47(b) and the applicable requirements in Appendix E of this part as specified in paragraph (q) for a licensee authorized to possess and operate a nuclear power reactor. However, after certification of permanent cessation of operation in accordance with 10 CFR 50.82(a), the requirements of 10 CFR 50, Appendix E, IV.F.2.c and IV.F.2.d for a biennial exercise of offsite plans and six year ingestion pathway exercise are suspended. Participation of offsite response organizations in biennial exercises, although recommended, is not required.

(ii) For decommissioning nuclear power reactors where spent fuel stored in the spent fuel pool has more than 12 months and less than 60 months decay time, the licensee may follow and maintain in effect emergency plans that meet the requirements of 10 CFR 50.47(e). The licensee may make a change in the emergency plans from the requirements of 10 CFR 50.47(b), to the requirements in 10 CFR 50.47(e) without prior approval from the Commission provided the following risk reduction measures are addressed in the final safety analysis report for decommissioning:

(a) Either a load drop consequence analyses will be performed and associated mitigative actions implemented to preclude rapid draining of the pool or single failure proof cranes will be in use for handling of heavy loads

(b) Procedures and training to ensure that onsite and offsite resources can be brought to bear during an event.

(c) Communication between onsite and offsite organizations during severe weather and seismic events.

(d) An offsite resource plan which includes access to portable pumps and emergency power to supplement on site resources.

(e) Direct indication readouts and alarms in the decommissioning control station for spent fuel pool temperature, water level, and area radiation levels.

(f) Assessment of spent fuel pool seals to demonstrate that seal leakage that could lead to fuel uncovery is precluded.

(g) Controls to reduce the likelihood of rapid drain down events including (1) prohibitions on the use of pumps that lack adequate siphon protection, (2) controls for pump suction and discharge points, and (3) surveillance of the functionality of anti-siphon devices.

(h) An onsite restoration plan for spent fuel pool cooling system repair and remote access for make-up water to the spent fuel pool.

(i) Procedures on capability of, availability of, and time available for spent fuel pool inventory makeup options.

(j) Controls for spent fuel pool operations or area activities that have the potential to rapidly decrease spent fuel pool inventory.

(k) Routine testing and availability controls for alternative fuel pool make-up systems.

(l) Direct visual surveillance of SFP and support systems once per shift.

(m) Verification of SFP seismic robustness.

(n) Surveillance and monitoring program of Boraflex in high density spent fuel racks.

(iii) For decommissioning nuclear power reactors where spent fuel stored in the spent fuel pool has more than 60 months decay time, and/or while there is radioactive material on site, other than the spent fuel, in excess of the quantities in 10 CFR 30.72, “Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Response to a Release,” the licensee shall do a site specific evaluation showing that the maximum dose to a person offsite due to a release of radioactive material would not exceed 1 rem total effective dose equivalent or 5 rems committed dose equivalent to the thyroid. When the site specific evaluation result in doses that are less than 1 rem total effective dose equivalent and 5 rems committed dose equivalent to the thyroid at the site boundary, the emergency planning requirements at the site are as specified in 10 CFR 50.47(f). The licensee may make a change in the emergency plans from the requirements of 10 CFR 50.47(b), or 10 CFR 50.47(e), as applicable, to the requirements in 10 CFR 50.47(f) without prior approval from the Commission.

One or more of the following factors may be used to support an evaluation submitted under paragraph (iii) of this section:

a. The radioactive material is physically separated so that only a portion could be involved in an accident;
b. All or part of the radioactive material is not subject to release during an accident because of the way it is stored or packaged;
c. The release fraction in the respirable size range would be lower than the release fraction shown in 10 CFR 30.72 due to the chemical or physical form of the material;
d. The solubility of the radioactive material would reduce the dose received;
e. Facility design or engineered safety features in the facility would cause the release fraction to be lower than shown in 10 CFR 30.72;
f. Operating restrictions or procedures would prevent a release fraction as large as that shown in 10 CFR 30.72; or
g. Other factors appropriate for the specific facility.

(iv) If all fuel has been stored in a dry independent spent fuel storage installation (ISFSI), located on or adjacent to the reactor site, that is licensed in accordance with 10 CFR 72 and a site specific analysis of the radioactive material onsite other than the spent fuel results in doses that are less than 1 rem total effective dose equivalent or 5 rems committed dose equivalent to the thyroid at the site boundary, the emergency plan required by 10 CFR 72.32 shall be deemed to satisfy the requirements of this section.

(v) For decommissioning nuclear power reactors, if there is no spent fuel stored on the site and radioactive material is stored onsite but off-site doses in the event of a radiological accident would not exceed 1 rem total effective dose equivalent or 5 rems committed dose equivalent to the thyroid, or the site inventory of radioactive material is below the quantities specified in 10 CFR 30.72 "Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Response to a Release," no emergency planning is required.

(vi) At the licensee's discretion, when spent fuel is stored in the spent fuel pool, instead of waiting the required 12 or 60 months of decay time to elapse, as specified in paragraphs (i), (ii), and (iii) above, a site specific T-H analysis may be performed to determine the decay time needed to ensure that in the event of an accidental loss of cooling, including draining, of the spent fuel pool and the failure to restore cooling, doses at the site boundary are less than 1 rem total effective dose equivalent and 5 rems committed dose equivalent to the thyroid. Such an analysis shall be approved by the Commission. After this site specific decay time has passed and no other accidents involving the release of radioactive material are postulated that could result in doses exceeding 1 rem total effective dose equivalent or 5 rems committed dose equivalent to the thyroid at the site boundary, the emergency planning requirements at the site are as specified in 10 CFR 50.47(f).

B. Sample Regulatory Language for Insurance at Decommissioning Plants

(Changes from existing language are indicated by redlines and strikeouts)

PART 50–DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

In § 50.54(w), paragraph (5) is added to read as follows:

§ 50.54 Conditions of licenses.

* * * * *

(w) * * *

(5) Notwithstanding paragraph (w)(1) above, a nuclear power reactor licensee who has permanently ceased operation and permanently removed fuel from the reactor vessel and has made the certifications in accordance with the requirements of 10 CFR 50.82(a)(1), may reduce its insurance coverage as specified below when the following conditions are met:

(i) For nuclear power reactors, while fuel is stored in the spent fuel pool, if the reactor has been shut down less than 60 months, or there is radioactive material other than spent fuel in excess of the quantities in 10 CFR 30.72, “Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Response to a Release,” on site which, due to a reasonably conceivable accident, could cause a maximum dose to a person offsite to exceed a total effective dose equivalent (TEDE) of 1 rem or a committed dose equivalent (CDE) to the thyroid of 5 rems, insurance coverage must remain as specified in paragraph (w)(1).

(ii) For nuclear power reactors, while fuel is stored in the spent fuel pool, and after the reactor has been shut down 60 months or more or while there is radioactive material other than spent fuel in excess of the quantities in 10 CFR 30.72, “Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Response to a Release,” on site, the licensee may perform a site specific evaluation intended to show that the maximum dose to a person offsite due to a reasonably conceivable accidental release of radioactive material other than the spent fuel would not exceed a TEDE of 1 rem or a CDE to the thyroid of 5 rems. When the site specific evaluation results in doses that are less than the 1 rem and 5 rem values at the site boundary, insurance requirements at the site may be reduced to a minimum insurance coverage of $25 million. At the licensee's discretion, instead of waiting the required 60 months, a site specific thermal-hydraulic analysis may be performed to determine whether accidental draining of the spent fuel pool and the failure to restore coolant would result in doses to a person at the site boundary that are less than a TEDE of 1 rem and a CDE to the thyroid of 5 rems. When the site specific thermal-hydraulic analysis and the analysis of other reasonably conceivable accidents involving the release of non-fuel radioactive material result in doses that do not exceed the 1 rem or 5 rem values at the site boundary, site insurance coverage may be reduced to $25 million.

One or more of the following factors may be used to support an evaluation of non-fuel radioactive material release accidents performed under this section:

a. The radioactive material is physically separated so that only a portion could be involved in an accident;

b. All or part of the radioactive material is not subject to release during an accident because of the way it is stored or packaged;

c. The release fraction in the respirable size range would be lower than the release fraction shown in 10 CFR 30.72 due to the chemical or physical form of the material;

d. The solubility of the radioactive material would reduce the dose received;

e. Facility design or engineered safety features in the facility would cause the release fraction to be lower than shown in 10 CFR 30.72;

f. Operating restrictions or procedures would prevent a release fraction as large as that shown in 10 CFR 30.72; or

g. Other factors appropriate for the specific facility.

(iii) For nuclear power reactors, if there is no spent fuel stored on the site (other than in an independent spent fuel storage installation) and radioactive material is stored onsite but offsite doses in the event of a reasonably conceivable radiological accident would not exceed a TEDE of 1 rem or a CDE to the thyroid of 5 rems, or the site inventory of radioactive material is below the quantities specified in 10 CFR 30.72 "Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Response to a Release," no onsite insurance coverage is required.

(Iv) The licensee of a permanently shutdown nuclear power reactor who has requested an exemption from §50.54 (w) prior to *[insert effective date of this rule]* , may comply with either the conditions of the exemption as approved by the NRC or the requirements §50.54 (w) (5) above.

* * * * *

PART 140--FINANCIAL PROTECTION REQUIREMENTS AND INDEMNITY AGREEMENTS

In § 140.11(a), remove "and" at the end of paragraph (3), change "." at end of paragraph (4) to "; and" and add paragraph (5) to read as follows:

§ 140.11 Amounts of financial protection for certain reactors.

(a) * * *

(5) The licensee of a nuclear power reactor that has permanently ceased operation and from which fuel has been permanently removed from the reactor vessel in accordance with the requirements of 10 CFR 50.82(a), (such reactors are classified in this section as having zero (0) rated capacity for electric power), may reduce its financial protection notwithstanding paragraph (a)(4) of this section when the following conditions are met, to maintain the following applicable financial protection requirements:

(i) For nuclear power reactors, while fuel is stored in the spent fuel pool, if the reactor has been shut down less than 60 months or there is radioactive material on site other than spent fuel in excess of the quantities in 10 CFR 30.72, “Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Response to a Release,” that could cause the maximum dose to a person offsite due to a reasonably conceivable accident to exceed a total effective dose equivalent (TEDE) of 1 rem or a committed dose equivalent (CDE) to the thyroid of 5 rems, financial protection requirements remain as specified in paragraph (a)(4).

(ii) For nuclear power reactors, while fuel is stored in the spent fuel pool, and after the reactor has been shut down 60 months or more or while there is radioactive material on site, other than the spent fuel, in excess of the quantities in 10 CFR 30.72, “Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Response to a Release,” the licensee may do a site specific evaluation to show that the maximum dose to a person offsite due to a reasonably conceivable accidental release of radioactive material other than the spent fuel would not exceed a TEDE of 1 rem or a CDE to

the thyroid of 5 rems. When the site specific evaluation results in doses that are less than the 1 rem and 5 rem values at the site boundary, the financial protection requirements at the site may be reduced to $100 million per site and the licensee is no longer required to participate in secondary financial protection under an industry retrospective rating plan. At the licensee's discretion, instead of waiting the required 60 months, a site specific thermal-hydraulic analysis may be performed to determine whether accidental draining of the spent fuel pool and the failure to restore coolant would result in doses to a person at the site boundary that are less than a TEDE of 1 rem and a CDE to the thyroid of 5 rems. When the site specific thermal-hydraulic analysis and the analysis of other reasonably conceivable accidents involving the release of non-fuel radioactive material result in doses that do not exceed the 1 rem or 5 rem values at the site boundary, financial protection at the site may be reduced to the amount of $100 million per site and the licensee is not required to participate in secondary financial protection under an industry retrospective rating plan.

One or more of the following factors may be used to support an evaluation of non-fuel radioactive material release accidents performed under this section:

a. The radioactive material is physically separated so that only a portion could be involved in an accident;

b. All or part of the radioactive material is not subject to release during an accident because of the way it is stored or packaged;

c. The release fraction in the respirable size range would be lower than the release fraction shown in 10 CFR 30.72 due to the chemical or physical form of the material;

d. The solubility of the radioactive material would reduce the dose received;

e. Facility design or engineered safety features in the facility would cause the release fraction to be lower than shown in 10 CFR 30.72;

f. Operating restrictions or procedures would prevent a release fraction as large as that shown in 10 CFR 30.72; or

g. Other factors appropriate for the specific facility.

(iii) For nuclear power reactors, where there is no spent fuel stored on the site (other than in an independent spent fuel storage installation) and radioactive material is stored onsite but offsite doses in the event of a reasonably conceivable radiological accident would not exceed a TEDE of 1 rem or a CDE to the thyroid of 5 rems, or the site inventory of radioactive material is below the quantities specified in 10 CFR 30.72 "Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Response to a Release," financial protection at the site may be reduced to the amount of $25 million per site and the licensee is not required to participate in secondary financial protection under an industry retrospective rating plan.

(Iv) The licensee of a permanently shutdown nuclear power reactor who has requested an exemption from §140.11 prior to *[insert effective date of this rule]* , may comply with either the conditions of the exemption as approved by the NRC or the requirements §140.11 (5) above.

C. Sample Regulatory Language for Security at Decommissioning Plants

(Changes from existing language in 10 CFR 73.55 are indicated by redlines and strikeouts)

§73.XX Requirements for physical protection of licensed activities at permanently shutdown and defueled power reactor sites for protection of spent fuel stored in spent fuel pools against radiological sabotage.

As of the effective date of this rule, any power reactor site complying with 10 CFR 50.82(a) regarding cessation of operations may elect to modify the safeguards requirements for the site by complying with the regulation of this section in lieu of Section 73.55. This modification may be performed without prior Commission approval. Any power reactor sites implementing this section shall submit proposed revisions to its operating power reactor security plan 120 days prior to implementation. Submissions may be made under the provisions of 10 CFR 50.54(p). The safeguards requirements of the security plan must be inspectable by the Commission 30 days prior to implementation.

~~By Dec. 2, 1986 each licensee, as appropriate, shall submit proposed amendments to its security plan which define how the amended requirements of paragraphs (a), (d)(7), (d)(9), and (e)(1) will be met. Each submittal must include a proposed implementation schedule for Commission approval. The amended safeguards requirements of these paragraphs must be implemented by the licensee within 180 days after Commission approval of the proposed security plan in accordance with the approved schedule~~.

(a) General performance objective and requirements. The licensee shall establish and maintain an onsite physical protection system and security organization which will have as its objective to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. The physical protection system shall be designed to protect against the design basis threat of radiological sabotage as stated in §73.1(a). To achieve this general performance objective, the onsite physical protection system and security organization must include, but not necessarily be limited to, the capabilities to meet the specific requirements contained in paragraphs (b) through (h) of this section. The Commission may authorize a licensee to provide measures for protection against radiological sabotage other than those required by this section if the licensee demonstrates that the measures have the same high assurance objective as specified in this paragraph and that the overall level of system performance provides protection against radiological sabotage equivalent to that which would be provided by paragraphs (b) through (h) of this section and meets the general performance requirements of this section. Specifically, in the special cases of licensed operating reactors with an adjacent defueled reactor power plant ~~under construction~~, the licensee shall provide and maintain a level of physical protection of the operating reactor against radiological sabotage ~~equivalent to the requirements of this section~~ such that the requirements of this section do not negatively impact the operating reactor site. In accordance with Section 50.54(x) and (y) of Part 50, the licensee may suspend any safeguards measures pursuant to §73.55 in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with license conditions and technical specification that can provide adequate or equivalent protection is immediately apparent. This suspension must be approved as a minimum by a certified fuel handler ~~licensed senior operator~~ prior to taking the action. The suspension of safeguards measures must be reported in accordance with the provisions of 10 CFR 73.71. ~~Reports made under §50.72 need not be duplicated under §73.71~~

(b) Physical Security Organization. (1) The licensee shall establish a security organization, including guards, to protect ~~his~~ the facility against radiological sabotage. If a contract guard force is utilized for site security, the licensee's written agreement with the contractor must be retained by the licensee as a record for the duration of the contract to clearly show that:

(i) The licensee is responsible to the Commission for maintaining safeguards in accordance with Commission regulations and the licensee's security plan,

(ii) The NRC may inspect, copy, and take away copies of all reports and documents required to be kept by Commission regulations, orders, or applicable license conditions whether the reports and documents are kept by the licensee or the contractor,

(iii) The requirement in paragraph (b)(4) of this section that the licensee demonstrate the ability of physical security personnel to perform their assigned duties and responsibilities, includes demonstration of the ability of the contractor's physical security personnel to perform their assigned duties and responsibilities in carrying out the provisions of the security plan and these regulations, and

(iv) The contractor will not assign any personnel to the site who have not first been made aware of these responsibilities.

(2) At least one full time member of the security organization who has the authority to direct the physical protection activities of the security organization shall be onsite at all times.

(3) The licensee shall have a management system to provide for the development, revision, implementation, and enforcement of security procedures. The system shall include:

(i) Written security procedures that document the structure of the security organization and detail the duties of guards or watchmen. Other individuals may be assigned specific security duties if they meet the requirements of paragraph (b)(4). The licensee shall maintain a copy of the current procedures as a record until the Commission terminates each license for which the procedures were developed and, if any portion of the procedure is superseded, retain the superseded material for three years after each change.

(ii) Provision for written license management approval of these procedures and any revisions to the procedures by the individual with overall responsibility for the security functions. The licensee shall retain each written approval as a record for three years from the date of the approval.

(4)(i) The licensee may not permit an individual to act as a guard or watchman, ~~armed response person,~~ unless the individual has been trained, equipped, and qualified to perform each assigned security job duty in accordance with Appendix B, ``General Criteria for Security Personnel,'' to this part. Upon the request of an authorized representative of the Commission, the licensee shall demonstrate the ability of the physical security personnel to carry out their assigned duties and responsibilities. Each guard or watchman, ~~armed response person~~, shall requalify in accordance with Appendix B to this part at least every 12 months. This requalification must be documented. The licensee shall retain the documentation of each requalification as a record for three years after the requalification.

(ii) Each licensee shall establish, maintain, and follow an NRC-approved training and qualifications plan outlining the processes by which guards or watchmen, ~~armed response persons,~~ will be selected, trained, equipped, tested, and qualified to ensure that these individuals meet the requirements of this paragraph. The licensee shall maintain the current training and qualifications plan as a record until the Commission terminates the license for which the plan was developed and, if any portion of the plan is superseded, retain that superseded portion for 3 years after the effective date of the change. ~~The training and qualification plan must include a schedule to show how all security personnel will be qualified 2 years after the submitted plan is approved. The training and qualifications plan must be followed by the licensee 60 days after the submitted plan is approved by the NRC.~~

(c) Physical barriers. (1) The licensee shall establish a protected area. (~~1) The licensee shall locate vital equipment only within a vital area, which in turn, shall be located within a protected area such that access to vital equipment requires passage through at least two physical barriers of sufficient strength to meet the performance requirements of paragraph (a) of this section. More than one vital area may be located within a single protected area.~~

(2) The licensee shall provide a continuous physical barrier which is a protected area barrier (e.g., the buildings) of sufficient strength to meet the performance requirements of paragraph (a) of this section. The spent fuel storage building could be considered of sufficient strength to meet the requirement for the protected area barrier.

~~(2) The physical barriers at the perimeter of the protected area shall be separated from any other barrier designated as a physical barrier for a vital area within the protected area.~~

(3) Isolation zones shall be maintained ~~in outdoor areas~~ adjacent to the physical barrier at the perimeter of the interior of the protected area barrier and adjacent to the spent fuel pool and shall be of sufficient size to permit observation of the activities of ~~people on either side of that~~ individuals adjacent to the barrier in the event of its penetration~~. If parking facilities are provided for employees or visitors, they shall be located outside the isolation zone and exterior to the protected area barrier.~~ No employee or visitor parking of personal vehicles will be permitted inside the vehicle barrier system.

(4) Detection of penetration or attempted penetration of the ~~protected area or the isolation zone adjacent to the~~ protected area barrier shall assure that adequate response can be requested (e.g. of local law enforcement agency) by the security organization~~. can be initiated.~~ All ~~exterior~~ areas ~~within~~ adjacent to the protected area shall be periodically checked to detect the presence of unauthorized persons, vehicles, or materials. Periodic patrols of the exterior PA barrier shall be preformed at least once every 8 hours.

(5) Isolation zones and the interior ~~all exterior areas within the~~ protected area shall be provided with illumination sufficient for the monitoring and observation requirements ~~of paragraphs (c)(3), (c)(4), and (h)(4)~~ of this section. ~~but not less than 0.2 footcandle measured horizontally at ground level.~~

(6) ~~The walls, doors, ceiling, floor, and any windows in the walls and in the doors of the reactor control room shall be bullet-resisting.~~ All equipment necessary to support safe operations of the fuel pool will be located in the protected area or secured in a manner specified in the plan. A periodic patrol of the interior or the spent fuel pool building shall be performed at least once every 8 hours.

(7) Vehicle control measures, including vehicle barrier systems, must be established to protect against use of a land vehicle, as specified by the Commission, as a means of transportation to gain unauthorized proximity to the protected area and spent fuel pool.

(8) Each licensee shall compare the vehicle control measures established in accordance with 10 CFR 73.xx (c)(7) to the Commission's design goals (i.e., 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. Each licensee shall either:

(i) Confirm to the Commission that the vehicle control measures meet the design goals and criteria specified; or

(ii) Propose alternative measures, in addition to the measures established in accordance with 10 CFR 73.xx (c)(7), describe the level of protection that these alternative measures would provide against a land vehicle bomb. Each site that intends to move or remove the existing vehicle barrier system must make available the technical documentation for that determination. Any event, while fuel is being stored in the spent fuel pool, that would drain down the spent fuel pool, would be considered an unacceptable consequence regarding barrier movement. ~~and~~

~~compare the costs of the alternative measures with the costs of measures necessary to fully meet the design goals and criteria. The Commission will approve the proposed alternative measures if they provide substantial protection against a land vehicle bomb, and it is determined by an analysis, using the essential elements of 10 CFR 50.109, that the costs of fully meeting the design goals and criteria are not justified by the added protection that would be provided.~~

(9) Each ~~licensee authorized to operate~~ power reactor site certified under 10 CFR 50.82 shall: ~~nuclear power reactor shall:~~

(i) Comply with the same vehicle control measures to protect against the design basis vehicle threat previously defined by the Commission ~~By February 28, 1995 submit to the Commission a summary description of the proposed vehicle control measures as required by 10CFR 73.55 (c)(7) and the results of the vehicle bomb comparison as required by 10 CFR 73.55 (c)(8). For licensees who choose to propose alternative measures as provided for in 10 CFR 73.55 (c)(8), the proposal must be submitted in accordance with 10 CFR 50.90 and include the analysis and justification for the proposed alternatives.~~

~~(ii) By February 29, 1996 fully implement the required vehicle control measures, including site-specific alternative measures as approved by the Commission.~~

(ii)~~(iii)~~ Protect as Safeguards Information, information required by the Commission pursuant to 10 CFR 73.xx (c) (8) and (9).

(iii)~~(iv)~~ Retain, in accordance with 10 CFR 73.70, all comparisons and analyses prepared pursuant to 10 CFR 73.xx (c) (7) and (8).

(10) ~~Each applicant for a license to operate a nuclear power reactor pursuant to 10 CFR 50.21(b) or 10 CFR 50.22, whose application was submitted prior to August 31, 1994, shall incorporate the required vehicle control program into the site Physical Security Plan and implement it by the date of receipt of the operating license.~~

(d) Access Requirements. (1) The licensee shall control all points of personnel and vehicle access into the protected area by a guard. Identification and search of all individuals unless otherwise provided in this section must be made and authorization must be checked at these points. The search function for detection of firearms, explosives, and incendiary devices must be accomplished through the use of both firearms and explosive detection equipment capable of detecting those devices. The licensee shall subject all persons except bona fide Federal, State, and local law enforcement personnel on official duty to these equipment searches upon entry to a protected area. ~~Armed security~~ Guards who are on duty and have exited the protected area may reenter the protected area without being searched for firearms. When the licensee has cause to suspect that an individual is attempting to introduce firearms, explosives, or incendiary devices into protected areas, the licensee shall conduct a physical pat-down search of that individual. Whenever firearms or explosives detection equipment ~~at a portal~~ is out of service or not operating satisfactorily, the licensee shall conduct a physical pat-down search of all persons who would otherwise have been subject to equipment searches~~. The individual responsible for the last access control function (controlling admission to the protected area) must be isolated within a bullet-resisting structure as described in paragraph (c)(6) of this section to assure his or her ability to respond or to summon assistance.~~

(2) At the point of personnel and vehicle access into a protected area, all hand-carried packages shall be searched for devices such as firearms, explosives, and incendiary devices, or other items which could be used for radiological sabotage.

(3) All packages and material for delivery into the protected area shall be checked for proper identification and authorization and searched for devices such as firearms, explosives and incendiary devices or other items which could be used for radiological sabotage, prior to admittance into the protected area, except those Commission approved delivery and inspection

activities specifically designated by the licensee to be carried out within the protected area for reasons of safety, security or operational necessity.

(4) All vehicles, except under emergency conditions, must be searched for items which could be used for sabotage purposes prior to entry through the VBS. ~~into the protected area~~. Vehicle areas to be searched must include the cab, engine compartment, undercarriage, and cargo area. ~~All vehicles, except as indicated in this paragraph, requiring entry into the protected area must be escorted by an armed member of the security organization while within the protected area. and, to the extent practicable, must be off loaded in the protected area at a specific designated material receiving area that is not adjacent to a vital area. Escort is not required for designated licensee vehicles or licensee- owned or leased vehicles entering the protected area and driven by personnel having unescorted access. Designated licensee vehicles shall be limited in their use to onsite plant functions and shall remain in the protected area except for operational, maintenance, repair, security, and emergency purposes. The licensee shall exercise positive control over all such designated vehicles to assure that they are used only by authorized persons and for authorized purposes.~~

(5)(i) a numbered picture badge identification system must be used for all individuals who are authorized access to protected areas without escort. An individual not employed by the licensee but who requires frequent and extended access to the protected area may be authorized access to this area without escort provided that he or she displays a licensee-issued picture badge upon entrance into the protected area which indicates:

(A) Non-employee no escort required;

~~(B) Areas to which access is authorized; and~~

(B) The period for which access has been authorized.

(ii) Badges shall be displayed by all individuals while inside the protected area. Badges may be removed from the protected area when measures are in place to confirm the true identity and authorization for access of the badge holder upon entry to the protected area.

(6) Individuals not authorized by the licensee to enter the protected area without escort shall be escorted by a watchman or other individual designated by the licensee while in the protected area and shall be badged to indicate that an escort is required. In addition, the licensee shall require that each individual register his or her name, date, time, purpose of visit, employment affiliation, citizenship, and name of the individual to be visited. The licensee shall retain the register of information for three years after the last entry in the register.

(7) The licensee shall:

(i) Establish an access authorization system to limit unescorted access to the protected area during non-emergency conditions to individuals who require access in order to perform their duties. To achieve this, the licensee shall:

(A) Establish a current authorization access list for the protected area. The access list must be updated by the cognizant licensee manager or supervisor at least once every 31 days ~~and must be reapproved at least quarterly~~. The licensee shall include on the access list only individuals whose specific duties require access to the protected area during non-emergency conditions.

(B) Positively control, in accordance with the access list established pursuant to paragraph (d)(7)(I) of this section, all points of personnel and vehicle access to the protected area ~~vital areas~~.

(C) Revoke, in the case of an individual's involuntary termination for cause, the individual's unescorted facility access and retrieve his or her identification badge and other entry devices, as applicable, prior to or simultaneously with notifying this individual of his or her termination.

(D) Lock and protect by an activated intrusion alarm system all entry and exit points to the protected area ~~unoccupied vital areas~~.

(ii) Design the access authorization system to accommodate the potential need for rapid ingress or egress of individuals during emergency conditions or situations that could lead to emergency conditions. To help assure this, the licensee shall

~~(a) Ensure prompt access to vital equipment.~~

~~(B)~~ periodically review physical security plans and contingency plans and procedures to evaluate their potential impact on plant and personnel safety.

(8) All keys, locks, combinations, and related access control devices used to control access to the protected area must be controlled to reduce the probability of compromise. Whenever there is evidence or suspicion that any key, lock, combination, or related access control devices may have been compromised, it must be changed or rotated. The licensee shall issue keys, locks, combinations and other access control devices to the protected area ~~and vital areas~~ only to persons granted unescorted facility access. Whenever an individual's unescorted access is revoked due to his or her lack of trustworthiness, reliability, or inadequate work performance, keys, locks, combinations, and related access control devices to which that person had access, must be changed or rotated.

(e) Detection aids. (1) All alarms required pursuant to this part must annunciate in a continuously manned ~~central~~ alarm station. ~~located within the protected area and in at least one other continuously manned station not necessarily onsite, so that a single act cannot remove the capability of calling for assistance or otherwise responding to an alarm.~~ The ~~onsite central~~ alarm station ~~must be considered a vital area and its~~ walls, doors, ceiling, floor, and any windows in the walls and in the doors must be bullet-resisting. The ~~onsite central~~ alarm station must be located within a building in such a manner that the interior of the ~~central~~ alarm station is not visible from the perimeter of the protected area. This station must not contain any operational activities that would interfere with the execution of the alarm response function. ~~Onsite~~ Secondary power supply systems for alarm ~~annunciator~~ equipment and non-portable communications equipment must be located in the protected area~~. as required in paragraph (f) of this section must be located within vital areas.~~

(2) Provide a intrusion detection system for the perimeter of the protected area barrier and the spent fuel pool.

(3)~~(2)~~ All alarm devices including transmission lines to annunciators shall be tamper indicating and self-checking e.g., an automatic indication is provided when failure of the alarm system or a component occurs, or when the system is on standby power. The annunciation of an alarm at the alarm station shall indicate the type of alarm (e.g., intrusion alarms, emergency exit alarm, etc.) and location.

~~(3) All emergency exits in each protected area and each vital area shall be alarmed.~~

(f) Communication requirements. (1) Each guard or watchman ~~or armed response individual~~ on duty shall be capable of maintaining continuous communication with an individual in the ~~each~~ continuously manned alarm station required by paragraph (e)(1) of this section, who shall be capable of calling for assistance ~~from other guards, watchmen, and armed response personnel and~~ from local law enforcement authorities.

(2) The alarm station~~s~~ required by paragraph (e)(1) of this section shall have conventional telephone service, radio (to include cellular communication), or microwave transmitted two-way voice communication for redundant continuous communication with the law enforcement authorities as described in paragraph (f)(1) of this section.

~~(3) To provide the capability of continuous communication, radio or microwave transmitted two-way voice communication, either directly or through an intermediary, shall be established, in addition to conventional telephone service, between local law enforcement authorities and~~

~~the facility and shall terminate in each continuously manned alarm station required by paragraph (e)(1) of this section.~~

(3)~~(4)~~ Non-portable communications equipment controlled by the licensee and required by this section shall remain operable from independent power sources in the event of the loss of normal power.

(g) Testing and maintenance. Each licensee shall test and maintain in operable conditions intrusion alarms, emergency alarms, communications equipment, physical barriers, and other security related devices or equipment utilized pursuant to this section as follows:

(1) All alarms, communication equipment, physical barriers, and other security related devices or equipment shall be maintained in operable condition. The licensee shall develop and employ compensatory measures including equipment, additional security personnel and specific procedures to assure that the effectiveness of the security system is not reduced by failures. ~~or other contingencies affecting the operation of the security related equipment or structures.~~

(2) Each intrusion alarm shall be tested for performance at the beginning and end of any period that it is used for security ~~If the period of continuous use is longer than seven days, the intrusion alarm shall~~ and also be tested at least once every seven (7) days.

(3) Communications equipment required for communications onsite shall be tested for performance not less frequently than once at the beginning of each security personnel work shift. Communications equipment required for communications offsite shall be tested for performance not less than once a day.

(4) The security program must be reviewed at least every 24 ~~12~~ months by individuals independent of both security program management and personnel who have direct responsibility for implementation of the security program. The ~~security program~~ review must include all aspects of the security program. ~~include an audit of security procedures and practices, an evaluation of the effectiveness of the physical protection system, an audit of the physical protection system testing and maintenance program, and an audit of commitments established for response by local law enforcement authorities.~~ The results and recommendations of the security program review ~~management's findings on whether the security program is currently effective, and any actions taken as a result of recommendations from prior program reviews~~ must be documented in a report to the licensee's plant manager and to corporate management at least one level higher than that having responsibility for the day-to-day plant operation. These reports must be maintained in an auditable form, available for inspection, for a period of 3 years.

(h) Response requirement. (1) The licensee shall establish, maintain, and follow an NRC-approved safeguards contingency plan in accordance with Appendix C of this Part. ~~for responding to threats, thefts, and radiological sabotage. related to the nuclear facilities subject to the provisions of this section. Safeguards contingency plans must be in accordance with the criteria in appendix C to this part, ``Licensee Safeguards Contingency Plans.''~~

(2) The licensee shall establish and document liaison with local law enforcement authorities. The licensee shall retain documentation of the current liaison as a record until the Commission terminates each license for which the liaison was developed and, if any portion of the liaison documentation is superseded, retain the superseded material for three years after each change.

(3) The total number of guards and watchman ~~armed, trained personnel immediately~~ available must include sufficient personnel per shift to implement security program commitments, ~~at the facility to fulfill these response requirements shall nominally be ten (10), unless specifically required otherwise on a case by case basis by the Commission~~; however, this number may not be reduced to less than two (2) ~~five (5)~~ guards.

(4) Upon detection of abnormal presence or activity of persons or vehicles within an isolation zone, the protected area, ~~material access area,~~ ~~a vital area~~ spent fuel pool or upon evidence or indication of intrusion into the protected area~~, a material access area,~~ or ~~a vital area~~ spent fuel pool, the licensee security organization shall:

(i) Determine whether or not a threat exists,

(ii) Assess the extent of the threat, if any,

~~(iii) Take immediate concurrent measures to neutralize the threat by:~~

~~(a) Requiring responding guards or other armed response personnel to interpose themselves between vital areas and material access areas and any adversary attempting entry for the purpose of radiological sabotage or theft of special nuclear material and to intercept any person exiting with special nuclear material, and,~~

(iii)~~(B)~~ Inform~~ing~~ local law enforcement agencies (LLEA) of the threat and request~~ing~~ assistance.

(iv) ~~Guards and watchmen will~~ Monitor the threat situation and inform the LLEA of the status upon arrival

~~(5) The licensee shall instruct every guard and all armed response personnel to prevent or impede attempted acts of theft or radiological sabotage by using force sufficient to counter the force directed at him including the use of deadly force when the guard or other armed response person has a reasonable belief it is necessary in self-defense or in the defense of others~~.

(5)~~(6)~~ To facilitate ~~initial response to~~ detection of penetration of the protected area or spent fuel pool and assessment of the existence of a threat, a capability of observing the isolation zones and the physical barrier at the perimeter of the protected area shall be provided, preferably by means of closed circuit television or by other suitable means which limit exposure of guards or watchmen ~~responding personnel~~ to possible attack.

D. Sample Regulatory Language for Staffing and Training at Decommissioning Plants

(Changes from existing language is indicated by redlines and strikeouts)

50.54 Conditions of licenses.

(m)(1) A senior operator licensed pursuant to part 55 of this chapter shall be present at the facility or readily available on call at all times during its operation, and shall be present at the facility during initial start-up and approach to power, recovery from an unplanned or unscheduled shut-down or significant reduction in power, and refueling, or as otherwise prescribed in the facility license **except for nuclear reactors that have docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel as specified in §50.82(a)(1) or §50.82(b)(1).**

(m)(2) Notwithstanding any other provisions of this section, by January 1, 1984, licensees of nuclear power units shall meet the following requirements **except for nuclear power units that have docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel as specified in §50.82(a)(1)and implemented the operator staffing requirements of §50.54(m)(4)** :

(i) Each licensee shall meet the minimum licensed operator staffing requirements in the following table :

Minimum Requirements(1) Per Shift for On-Site Staffing of Nuclear Power Units by Operators and Senior Operators Licensed Under 10 CFR Part 55

Number of nuclear power units operating(2)	Position	One Unit	Two units		Three units	
		One control room	One control room	Two control rooms	Two control rooms	Three control rooms
None.....	Senior Operator.....	1	1	1	1	1
	Operator.....	1	2	2	3	3
One.....	Senior Operator.....	2	2	2	2	2
	Operator.....	2	3	3	4	4
Two.....	Senior Operator.....	.....	2	3	(3)3	3
	Operator.....	.....	3	4	(3)5	5
Three.....	Senior Operator.....	.....	.....	.....	3	4
	Operator.....	.....	.....	.....	5	6

(1) Temporary deviations from the numbers required by this table shall be in accordance with criteria established in the unit's technical specifications.
(2) For the purpose of this table, a nuclear power unit is considered to be operating when it is in a mode other than cold shutdown or refueling as defined by the unit's technical specifications.
(3) The number of required licensed personnel when the operating nuclear power units are

controlled from a common control room are two senior operators and four operators.

(ii) Each licensee shall have at its site a person holding a senior operator license for all fueled units at the site who is assigned responsibility for overall plant operation at all times there is fuel in any unit. If a single senior operator does not hold a senior operator license on all fueled units at the site, then the licensee must have at the site two or more senior operators, who in combination are licensed as senior operators on all fueled units.

(iii) When a nuclear power unit is in an operational mode other than cold shutdown or refueling, as defined by the unit's technical specifications, each licensee shall have a person holding a senior operator license for the nuclear power unit in the control room at all times. In addition to this senior operator, for each fueled nuclear power unit, a licensed operator or senior operator shall be present at the controls at all times.

(iv) Each licensee shall have present, during alteration of the core of a nuclear power unit (including fuel loading or transfer), a person holding a senior operator license or a senior operator license limited to fuel handling to directly supervise the activity and, during this time, the licensee shall not assign other duties to this person.

(m)(3) Licensees who cannot meet the January 1, 1984 deadline must submit by October 1, 1983 a request for an extension to the Director of the Office of Nuclear Regulation and demonstrate good cause for the request.

(m)(4) A licensee that has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1), shall maintain staff with the qualifications and capabilities to safely conduct decommissioning activities along with safe handling and storage of spent fuel and respond to plant emergencies. In lieu of meeting the requirements of paragraphs (m)(2) (i)-(iv) above, a permanently shutdown and defueled nuclear power unit shall meet the following minimum operator staffing requirements until all nuclear fuel is removed from the spent fuel pool:

(i) Each licensee shall meet the minimum operator staffing requirements in the following table :

Minimum Requirements(1) Per Shift for On-Site Operator Staffing of Permanently Shutdown and Defueled Nuclear Power Units

Number of Physically Separated Spent Fuel Pools Associated with Permanently Shutdown and Defueled Nuclear Power Units Onsite	One Decommissioning Control Station	Two Decommissioning Control Stations	Three Decommissioning Control Stations
One.....	1 Certified Decommissioning Operator 1 Non-Licensed Operator		
Two.....	1 Certified Decommissioning Operator 2 Non-Licensed Operators	2 Certified Decommissioning Operators 2 Non-Licensed Operators	
Three.....	1 Certified Decommissioning Operator 3 Non-Licensed Operators	2 Certified Decommissioning Operators 3 Non-Licensed Operators	3 Certified Decommissioning Operators 3 Non-Licensed Operators

(1) Temporary deviations from the numbers required by this table shall be in accordance with criteria established in the unit's technical specifications.

(ii) A certified decommissioning operator or non-licensed operator shall be present at all times within the decommissioning control station.

(iii) A certified decommissioning operator shall directly supervise all fuel handling operations and, during this time, the licensee shall not assign other duties to this person.

(iv) For sites that have both operating and permanently shutdown units, the on-shift certified decommissioning operator shall have no assigned responsibility or duties associated with the operating unit.

(m)(5) When all nuclear fuel is removed from the spent fuel pool of a permanently shutdown and defueled nuclear power unit, the operator staffing requirements of paragraph m(4) of this section are no longer applicable. However, procedural administrative controls shall be maintained by the licensee to ensure that sufficient qualified operator staff are assigned to operate and maintain the facility in a safe manner while conducting any remaining decommissioning-related activities or respond to plant emergencies.

(m)(6) A licensee that has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1) issued before [the effective date of this rule] is not required to propose to modify its operator staffing to satisfy the requirements of paragraph (m)(4) of this section.

To be consistent with the changes above, §50.54(i),(i-1), (k), and (l) also should be modified to note that these sections do not apply to permanently shutdown and defueled reactors.

(i) Except as provided in §55.13 of this chapter, the licensee may not permit the manipulation of the controls of any facility by anyone who is not a licensed operator or senior operator as provided in part 55 of this chapter. **This requirement is not applicable for a nuclear unit for which the licensee has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1) or §50.82(b)(1).**

(i - 1) Within three months after issuance of an operating license, the licensee shall have in effect an operator requalification program which must as a minimum, meet the requirements of §55.59(c) of this chapter. Notwithstanding the provisions of §50.59, the licensee may not, except as specifically authorized by the Commission decrease the scope of an approved operator requalification program. **This requirement is not applicable for a nuclear unit for which the licensee has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1) or §50.82(b)(1).**

(k) An operator or senior operator licensed pursuant to part 55 of this chapter shall be present at the controls at all times during the operation of the facility. **This requirement is not applicable for a nuclear unit for which the licensee has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1) or §50.82(b)(1).**

(l) The licensee shall designate individuals to be responsible for directing the licensed activities of licensed operators. These individuals shall be licensed as senior operators pursuant to part 55 of this chapter. **This requirement is not applicable for a nuclear unit for which the licensee has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1) or §50.82(b)(1).**

<u>50.120 Training and qualification of nuclear power plant personnel</u>.

(a) Applicability. The requirements of this section apply to each applicant for (applicant) and each holder of an operating license (licensee) for a nuclear power plant of the type specified in §50.21(b) or §50.22.

(b) Requirements. (1) Each nuclear power plant applicant, by November 22, 1993 or 18 months prior to fuel load, whichever is later, and each nuclear power plant licensee, by November 22, 1993 shall establish, implement, and maintain a training program derived from a systems approach to training as defined in §55.4. The training program must provide for the training and qualification of the following categories of nuclear power plant personnel:

(i) Non-licensed operator.
(ii) Shift supervisor.
(iii) Shift technical advisor.
(iv) Instrument and control technician.
(v) Electrical maintenance personnel.

(vi) Mechanical maintenance personnel.
(vii) Radiological protection technician.
(viii) Chemistry technician.
(ix) Engineering support personnel.

(2) The training program must incorporate the instructional requirements necessary to provide qualified personnel to operate and maintain the facility in a safe manner in all modes of operation. The training program must be developed so as to be in compliance with the facility license, including all technical specifications and applicable regulations. The training program must be periodically evaluated and revised as appropriate to reflect industry experience as well as changes to the facility, procedures, regulations, and quality assurance requirements. The training program must be periodically reviewed by licensee management for effectiveness. Sufficient records must be maintained by the licensee to maintain program integrity and kept available for NRC inspection to verify the adequacy of the program. **A nuclear power unit that has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1), shall implement and maintain a training program that incorporates the instructional requirements necessary to provide qualified personnel to operate and maintain the facility in a safe manner associated with long-term spent fuel storage and decommissioning-related activities.**

(3) The requirement to establish a training program for the shift technical advisor per item §50.120(b)(1)(iii) does not apply to a nuclear power unit for which the licensee has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1).

(4) A training and qualification program for a certified decommissioning operator shall be established and approved by the Commission prior to implementing staffing changes permitted by Section §50.54(m)(4).

(5) A licensee that has docketed certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel, as specified in §50.82(a)(1) issued before [the effective date of this rule] is not required to propose to modify its training program to satisfy the requirements of paragraphs (b)(2), (b)(3), and (b)(4) of this section.

50.2 Definitions

Certified decommissioning operator **(formerly known as a** certified fuel handler) means, for a nuclear ~~power~~ reactor facility **which has permanently ceased operation and permanently removed fuel from the reactor,** a non-licensed operator who ~~has~~ **is** qualified **to operate, maintain, and conduct activities at the facility in a safe manner** in accordance with a ~~fuel handler~~ training program **(which includes fuel handling training)** approved by the Commission.

Decommissioning Control Station **means, for a nuclear power reactor which has permanently ceased operation and permanently removed fuel from the reactor, a centralized control location that has spent fuel pool monitoring and alarm capability, as well as providing communications, command, and coordination functions for responding to radiological events or other emergencies during decommissioning.**

E. Sample Regulatory Language for Applying the Backfit Rule to Decommissioning Plants

(Changes from existing language are indicated by redlines and strikeouts)

§50.109 Backfitting.

(a) Utilization facilities authorized to operate. (1)(i) ~~(a)(1)~~Backfitting is defined as...

(b) Utilization facilities undergoing decommissioning. (1)(i) Backfitting is defined for utilization facilities undergoing decommissioning as the modification of or addition to systems, structures, components, or design of a facility; ~~or the design approval or manufacturing license for a facility;~~ or the procedures or organization required to maintain or decommission ~~design, construct or operate~~ a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position after~~:~~ the date of issuance of this rule.
~~(i) The date of issuance of the construction permit for the facility for facilities having construction permits issued after October 21, 1985; or~~
~~(ii) Six months before the date of docketing of the operating license application for the facility for facilities having construction permits issued before October 21, 1985; or~~
~~(iii) The date of issuance of the operating license for the facility for facilities having operating licenses; or~~
~~(iv) The date of issuance of the design approval under appendix M, N, or O of part 52.~~
(ii) ~~(2)~~ Except as provided in paragraph (b)(1)(iv) ~~(a)(4)~~ of this section, the Commission shall require a systematic and documented analysis pursuant to paragraph (b)(3) ~~(C)~~ of this section for backfits which it seeks to impose.
(iii) ~~(3)~~ Except as provided in paragraph (b)(1)(iv) ~~(a)(4)~~ of this section, the Commission shall require the backfitting of a facility only when it determines, based on the analysis described in paragraph (b)(3) ~~(C)~~ of this section, that there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit and that the direct and indirect costs of implementation for that facility are justified in view of this increased protection.
(iv) ~~(4)~~ The provisions of paragraphs (b)(1)(ii) ~~(a)(2)~~ and (b)(1)(iii) ~~(a)(3)~~ of this section are inapplicable and, therefore, backfit analysis is not required and the standards in paragraph (b)(1)(iii) ~~(a)(3)~~ of this section do not apply where the Commission or staff, as appropriate, finds and declares, with appropriated documented evaluation for its finding, either:
(A) ~~(i)~~ That a modification is necessary to bring a facility into compliance with a license or the rules or orders of the Commission, or into conformance with written commitments by the licensee; or
(B) ~~(ii)~~ That regulatory action is necessary to ensure that the facility provides adequate protection to the health and safety of the public and is in accord with the common defense and security; or
(C) ~~(iii)~~ That the regulatory action involves defining or redefining what level of protection to the public health and safety or common defense and security should be regarded as adequate.

(v) ~~(5)~~ The Commission shall always require the backfitting of a facility if it determines that such regulatory action is necessary to ensure that the facility provides adequate protection to the health and safety of the public and is in accord with the common defense and security.
(vi) ~~(6)~~ The documented evaluation required by paragraph (b)(1)(iv) ~~(a)(4)~~ of this section shall include a statement of the objectives of and reasons for the modification and the basis for invoking the exception. If immediately effective regulatory action is required, then the documented evaluation may follow rather than precede the regulatory action.
(vii) ~~(7)~~ If there are two or more ways to achieve compliance with a license or the rules or orders of the Commission, or with written licensee commitments, or there are two or more ways to reach a level of protection which is adequate, then ordinarily the applicant or licensee is free to choose the way which best suits its purposes. However, should it be necessary or appropriate for the Commission to prescribe a specific way to comply with its requirements or to achieve adequate protection, then cost may be a factor in selecting the way, provided that the objective of compliance or adequate protection is met.
(2) ~~(b)~~ Paragraph (b)(1)(iii) ~~(a)(3)~~ of this section shall not apply to backfits imposed prior to October 21, 1985.
(3) ~~(c)~~ In reaching the determination required by paragraph (b)(1)(iii) ~~(a)(3)~~ of this section, the Commission will consider how the backfit should be scheduled in light of other ongoing regulatory activities at the facility and, in addition, will consider information available concerning any of the following factors as may be appropriate and any other information relevant and material to the proposed backfit:
(i) ~~(1)~~ Statement of the specific objectives that the proposed backfit is designed to achieve;
(ii) ~~(2)~~ General description of the activity that would be required by the licensee ~~or applicant~~ in order to complete the backfit;
(iii) ~~(3)~~ Potential change in the risk to the public from the accidental off-site release of radioactive material;
(iv) ~~(4)~~ Potential impact on radiological exposure of facility employees;
(v) ~~(5)~~ Installation and continuing costs associated with the backfit, including the cost of facility ~~downtime or the cost of construction~~ decommissioning delay;
(vi) ~~(6)~~ The potential safety impact of changes in plant major decommissioning activities ~~or operational complexity,~~ including the relationship to proposed and existing regulatory requirements;
(vii) ~~(7)~~ The estimated resource burden on the NRC associated with the proposed backfit and the availability of such resources;
(viii) ~~(8)~~ The potential impact of ~~differences in~~ facility type~~,~~ and the percentage of decommissioning completed ~~design or age~~ on the relevancy and practicality of the proposed backfit;
(ix) ~~(9)~~ Whether the proposed backfit is interim or final and, if interim, the justification for imposing the proposed backfit on an interim basis.
(4) ~~(d)~~ No licensing action will be withheld during the pendency of backfit analyses required by the Commission's rules.
(5) ~~(e)~~ The Executive Director for Operations shall be responsible for implementation of this section, and all analyses required by this section shall be approved by the Executive Director for Operations or his designee.

Staff Responses to
NEI White Paper Comments on
Improving Decommissioning Regulations

On May 17, 2000, the Nuclear Energy Institute (NEI) transmitted a white paper that provided comments on behalf of the nuclear energy industry concerning the staff's SECY on improving decommissioning regulations for nuclear power plants (SECY-99-169 dated June 30, 1999) and recommended that the integrated rulemaking plan be combined with a broader based decommissioning regulatory improvement initiative. NEI also recommended a new approach to the regulatory improvement initiative not previously considered by the staff. Although the NEI white paper primarily addresses a new approach for the decommissioning regulatory improvement initiative, it also addresses specific recommendations for the regulatory areas covered by this rulemaking plan. The staff is studying the NEI recommendation as well as other recent staff considerations concerning the broader scope initiative for improving decommissioning regulations. The staff plans to meet with NEI to discuss and understand the details of the NEI proposal. The staff is currently scheduled to address the broader scope decommissioning regulatory improvement initiative in a separate SECY by September 15, 2000. However, because the NEI white paper included many comments related directly to the regulatory areas addressed in the attached rulemaking plan, the staff believes it is important to acknowledge the NEI positions and the corresponding staff responses as information for the Commission's consideration when evaluating the recommendations in this rulemaking plan. The specific NEI comments and staff responses are presented as follows.

Emergency Planning

(NEI Comments Related to Decommissioning EP Rulemaking)

1) NEI states that the spent fuel pool zirconium fire accident consequence is insensitive to early evacuation.

Staff Response:

The staff performed a consequence assessment of the zirconium fire accident in its risk study that indicates early evacuation can reduce early fatalities by a factor of 100.

Long-term consequences (cancer fatalities and societal dose) are less affected by additional decay and early evacuation.

2) NEI states that offsite EP does not contribute significantly to public health and safety for the SFP accident.

Staff Response:

As discussed in the response to item (1) above, there is clearly a benefit from an early evacuation. During the first year of spent fuel decay at a decommissioning plant spent fuel pool, it is the staff's judgment that there is justification for keeping an offsite EP program because of the uncertainties in time available to conduct an early evacuation in the event of a

zirconium fire event. After 1 year of spent fuel decay, there should be at least 10 hours to implement protective actions for impacted communities assuming an instantaneous draining of the spent fuel pool. The staff has concluded that with 10 hours available from the initiation of an event that could lead to a zirconium fire, there is sufficient time to implement offsite protective actions, if necessary, without extensive site-specific offsite radiological emergency response preplanning.

3) NEI suggested that EP for a decommissioning spent fuel pool should be modeled after the regulations for an ISFSI under 10 CFR 72.32.

Staff Response:

The staff has recommended that for the first year of spent fuel decay, full EP be maintained in effect as for an operating reactor. Between 1 and 5 years of spent fuel decay, the staff recommends that EP be modeled after the regulations for a monitored retrievable storage installation (MRS) which is also addressed under 10 CFR 72.32. The staff finds the MRS regulations more appropriate because of the remote, but possible, chance of an offsite release due a zirconium fire accident for up to 5 years of spent fuel decay. After 5 years, the staff agrees with NEI that EP regulations modeled after those for an ISFSI would be appropriate.

4) NEI states that an evacuation is unfeasible following an earthquake of sufficient magnitude to compromise the very robust designs of SFPs.

Staff Response:

The staff cannot predict the conditions or status of a community's infrastructure following an earthquake of sufficient magnitude to compromise the robust spent fuel pool design but it could be assumed that the consequences would be severe. Within the first year of final shutdown and spent fuel decay, the staff is recommending that the EP program at the decommissioning site be maintained at the same level as that for an operating reactor and is, therefore, best suited for dealing with all emergencies — including severe earthquakes. After 1 year of spent fuel decay time, the staff is recommending the decommissioning licensees be allowed to discontinue their offsite EP. Even so, the staff believes that residual knowledge and capability built into the offsite emergency response programs would continue to be effective for some time after the requirements for offsite radiological EP are removed. In addition, the response to such an earthquake would likely be *ad hoc* in nature and result in the mobilization of numerous local, state, and federal resources that would have the capability to work around impediments caused by the random and unpredictable destruction.

5) NEI states that an analysis of the staff's risk study demonstrates that the probability and consequence of a SFP accident are insensitive to evacuations.

Staff Response:

The probability of a SFP accident is not related to whether or not evacuations are effective. The sensitivity of consequences to EP are discussed in the response to item (1).

6) NEI states that 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.

Staff Response:

NEI implies that after 90 days, the iodine and noble gases present in the spent fuel have decayed to levels below that assumed when developing the emergency planning rule for operating reactors and it is, therefore, justifiable to discontinue EP. The staff notes that other radionuclides can have short-term consequences well beyond 90 days, such as cesium and ruthenium, may be released by a zirconium fire and may cause early fatalities.

7) NEI states that the consequences of a [zirconium fire] event for permanently shutdown plants are dominated by long-lived isotopes.

Staff Response:

The staff agrees that the consequences of a zirconium fire event (i.e., the overall population dose) are dominated by long-lived isotopes. However, the staff does not believe this has any bearing on the also significant short-term consequences that can result from a zirconium fire event.

8) NEI states that the health consequences of a [zirconium fire] 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.

Staff Response:

The staff disagrees that there is no possibility of early fatalities from a zirconium fire event. The short-term consequences from a zirconium fire are somewhat assumption driven and are very dependent on such factors as population density, release fractions, and accident timing. Tables A4-8, A4-9, and A4-16 of the spent fuel pool risk study document scenarios where early fatalities occur.

9) NEI states that the requirements for a ten mile radius EPZ and protective action recommendations should not apply to decommissioning plants that have spent fuel which has undergone a modest level of decay.

Staff Response:

NEI does not define modest level of decay. The staff has recommended in its rulemaking plan that at least 1 year of spent fuel decay has elapsed before offsite EP be discontinued as supported by the conclusions of the staff's technical risk study.

10) NEI states that operator recovery times for initiating events are very long and relatively insensitive to the time period after final plant shutdown. e.g., according to the risk study, an operator has 90 hours to makeup water prior to bulk boiling one year after shutdown; six months after shutdown, the time to bulk boiling is still 82 hours.

Staff Response:

NEI is correct for slow evolving SFP accidents. If a licensee institutes the NEI commitments and staff assumptions discussed in the decommissioning SFP risk assessment, then the operator error rates will be effectively insensitive to the assumed decay time. If the commitments and assumptions are not implemented, the probability of a zirconium fire for slow evolving SFP accidents could be much higher and spent fuel decay time might become more of a factor in estimating recovery times. However, decay time, which affects the time available for evacuation once the fuel is uncovered, is more important for large seismic events and heavy load drops where it is assumed that no recovery of SFP water level is possible. These accident scenarios result in rapid draining of the spent fuel pool and could result in a zirconium fire within 10 hours of accident initiation, even after 1 year of spent fuel decay time.

11) NEI believes that continuing the period of required evacuation capability to one year provides no significant benefit to public health and safety. 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.

Staff Response:

The staff's rulemaking plan supports the technical risk study recommendation that offsite EP not be reduced before 1 year of spent fuel decay for a decommissioning plant. There are a variety of factors and uncertainties that make 1 year a prudent minimum time to wait before reducing offsite EP.

12) The design basis accidents requiring evaluation for a defueled facility are best addressed by emergency planning requirements in 72.32. The following accidents are relevant to spent fuel pools or ISFSIs:
    - a fuel handling accident
    - a spent fuel cask drop
    - accidents associated with radioactive waste storage or processing

Staff Response:

The staff does not agree that these are the only accidents that need to be considered at a decommissioning facility. The decommissioning SFP risk study addressed a number of accident initiators that are not represented in the above list. As the staff has stated in the proposed decommissioning rulemaking plan and in previous discussions on emergency planning and preparedness, EP is not only for design-basis accidents; it includes consideration

of mitigating the consequences of beyond-design-basis accidents. The spent fuel pool risk study showed that the frequency of a spent fuel zirconium fire event is low but not insignificant and is, therefore, relevant to regulatory decision-making. In addition, as long as there are significant quantities of radioactive materials stored onsite, the licensee will have to ensure that offsite releases from postulated accidents will not exceed environmental protection agency protective action guidelines.

INSURANCE

(NEI Comments Related to Decommissioning Insurance Rulemaking)

1) NEI stated "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."

Staff Response:

In SECY-93-127, the NRC established that the level or amount of insurance coverage necessary for reactor licensees should be determined by the worst "reasonably conceivable" accident possible. Reasonably conceivable accidents may exceed design basis accidents but are less severe than remotely possible hypothetical accidents which are often termed "incredible." The TWG risk study concluded that the probability of a zirconium fire at a permanently shutdown plant is low but did not conclude that its probability is low enough to be considered "incredible" such that a zirconium fire can be dismissed. Thus insurance coverage must consider the possibility of a zirconium fire. Note also that although the level of insurance coverage would be based upon a zirconium fire, the premium charged by insurers may possibly be significantly reduced to account for the low probability of significant releases at decommissioning reactors.

2) NEI proposed that onsite property damage insurance be reduced to $25 million as soon as a shutdown licensee submits its certifications of permanent shutdown and defueling, and then eliminated when fewer that 1000 gallons of contaminated liquids remained onsite.

Staff Response:

Since the zirconium fire scenario would be possible for up to several years following shutdown, and since the consequences of such a fire are severe in terms of property damage and land contamination, the staff position is that full onsite liability coverage must be retained for five years or until analysis has indicated that a zirconium fire is no longer possible.

3) NEI stated that the time period during which the zirconium fire could occur is of such limited duration (a number of months) that consideration of financial protection for this event in the same context as financial protection for reactor accidents is unwarranted.

Staff Response:

The staff's analysis indicates that a zirconium fire is possible for a period of about 1 to 5 years after permanent shutdown, far longer that the "number of months" that NEI asserts. As discussed above, the staff believes that full insurance coverage must be maintained for 5 years or until a licensee can show by analysis that its spent fuel pool is no longer vulnerable to such a fire.

4) NEI proposed that offsite liability insurance be reduced to $10 million per year without required participation in the secondary retrospective rating pool as soon as a shutdown licensee submits its certifications of permanent shutdown and defueling. NEI stated that offsite coverage should be eliminated when all spent nuclear fuel has been transferred offsite or to a dry-cask storage system onsite.

Staff Response:

Since the zirconium fire scenario would be possible for up to several years following shutdown, and since the consequences of such a fire could be severe in terms of offsite health consequences, property damage, and land contamination, the staff position is that full offsite liability coverage (both primary and secondary levels) must be retained for five years or until analysis has indicated that a zirconium fire is no longer possible. At that point, primary coverage would be reduced from $200 million to $100 million and participation in the secondary retrospective rating pool would no longer be required. When all fuel was moved offsite or to an onsite dry cask storage system, the primary coverage would be reduced to $25 million. Primary coverage could not be eliminated as NEI has suggested because the Price-Anderson Act requires that offsite liability insurance be in effect as long as there is a Part 50 license.

5) NEI stated that if participation in secondary financial protection is required for decommissioning facilities, 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.

Staff Response:

The staff cannot alter the level of secondary financial protection. Such action would require an amendment to the Price-Anderson Act.

6) NEI stated that if participation in the secondary pool is required, it should only be for a period when surface temperature can exceed 570°C. The calculation of this temperature should be by an approved methodology. In the absence of any calculation, the obligation should end after a period which is indicative of when there is reasonable assurance that the last core placed in the pool is incapable of attaining clad surface temperatures greater than 570°C.

Staff Response:

For those licensees who choose to analytically demonstrate the non-viability of a zirconium fire, the staff is now analyzing comments provided by the Advisory Committee for Reactor Safeguards to determine the threshold temperature for rapid oxidation. The staff will also evaluate the need for preparing regulatory guidance for such analytical calculations during the rulemaking process.

7) NEI stated that primary insurance coverage required should be in proportion to the reduced risk in the same manner that industry proposed for secondary coverage.

Staff Response:

As stated in Response 1 above, the NRC believes that the amount of primary financial protection required should be determined by the consequences and not the probability of the worst “reasonably conceivable” accident. The low probability of such an accident is considered by insurers who may reduce the premiums for the required coverage to account for the reduced risk at decommissioning plants.

SAFEGUARDS

(NEI Comments Related to Decommissioning Safeguards Rulemaking)

1) NEI states that security for permanently shutdown plants should reflect the fact that no vital areas exist for permanently shutdown plants. Under current regulations, this eliminates the need for protected areas and isolation zones.

Staff Response:

While the new regulation does not require that the spent fuel pool be a vital area, it will correct the existing problem in the 10 CFR 73.55 regarding the implementation of protected areas and isolations zones. The new rule will have a protected area and limited use of isolation zones.

2) NEI states that 10 CFR 73.55 should be substantially modified to a level commensurate with the substantially reduced risk associated with protecting a permanently shutdown reactor site.

Staff Response:

The staff agrees that 10 CFR 73.55 should be modified to a level commensurate with the risk associated with safeguarding permanently shutdown plants, but not to a level less than that provided for an ISFSI as described in 10 CFR 73.51.

3) NEI states that Industry recommends particular attention be directed to eliminating the requirement for armed guards.

Staff Response:

The staff believes that guards are essential in safeguarding permanently shutdown plant spent fuel pools. It is critical that guards survive the initial attack to make the requests for offsite law enforcement assistance. Arming these individuals is an additional tool to aid in their survivability.

4) NEI states that appropriate security requirements should be established for decommissioning plants that eliminate all vital areas. These regulations should explicitly state that protected areas, isolations zones, and external intruder detection systems are unnecessary to protect fuel in storage.

Staff Response:

The staff believes that eliminating all requirements that provide barriers between potential saboteurs and the spent fuel and spent fuel pool would be inconsistent with the safeguards regulations for ISFSIs in 10 CFR 73.51.

5) NEI states that the current practice of granting security exemptions for decommissioning plants has become somewhat standardized. The staff's current practice should be reflected in the amended rule.

Staff Response:

The staff agrees that current practices should be reflected in the new rule, with some exceptions to protected area barriers and isolation zones.

6) NEI states that the industry endorses the vehicle barrier approach proposed in SECY-99-008.

Staff Response:

The vehicle barrier approach proposed in the current rulemaking plan is consistent with the approach originally recommended in SECY-99-008.

STAFFING AND TRAINING

(NEI Comments Related to Decommissioning Staffing and Training Rulemaking)

1) NEI states that the requirements in paragraphs 10 CFR 50.54(i), (k), (l), and (m) should not apply for permanently shutdown and defueled plants.

Staff Response:

The staff partially agrees with NEI. The proposed rulemaking plan recommends that the requirements in 10 CFR 50.54(i), (k), (l) be amended to not apply to permanently shutdown and defueled plants. In addition, the staff also agrees that parts of 10 CFR 50.54(m) should no longer apply. However, the staff believes that minimum operator staffing levels should be specified for decommissioning plants and has recommended that 10 CFR 50.54(m) be amended to reflect the appropriate levels.

2) NEI states that a description of the certified fuel handler position, responsibilities, and training requirements could be described in a regulatory guide.

Staff Response:

Regulatory guides cannot be used to establish requirements. The current decommissioning regulations need to be improved to establish the responsibilities and training requirements of the certified fuel handler.

3) NEI states that new decommissioning rulemaking should explicitly acknowledge that 10 CFR 120, "Training and qualification of nuclear power plant personnel," does not apply to permanently shutdown and defueled plants. [This is consistent with NRC actions on previous decommissioning facilities]

Staff Response:

The staff disagrees with NEI. The staff believes that decommissioning nuclear power plants should have a licensee established training and qualification program for the staffing categories in 10 CFR 120. This position is consistent with past practice and is also consistent with ensuring the human reliability assumptions used in the staff's spent fuel pool risk study.

BACKFIT

NEI Comments Related to Decommissioning Backfit Rulemaking

1) NEI states that specific guidance for implementing the backfit rule for decommissioning plants should be provided in
-NRC Manual Chapter 0514
-NRR Office Letter 901
-NRR Office Letter 500

Staff Response:

The staff agrees that specific guidance should be contained in appropriate NRC guidance documents and has been addressed in the staff's proposed rulemaking plan.

2) NEI states that the most important point is this guidance should emphasize the need to give appropriate consideration to the substantial risk reduction from final shutdown through license termination.

Staff Response:

The staff agrees that appropriate consideration should be given to risk when evaluating backfit issues.

3) NEI states that the Industry believes that applicability of the backfit rule to decommissioning can be affirmed in the preamble to the new proposed decommissioning rule and that no amendment to 50.109 is needed.

Staff Response:

The staff believes that the current rule needs to be revised to amend the factors of consideration that do not specifically apply to permanently shutdown plants.