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Please find attached the Conference of Radiation Control Program Directors, Inc. comments on Docket ID NRC-2015-0070.

Regards,

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March 17, 2016

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemaking and Adjudications Staff

RE: Docket ID NRC – 2015-0070

On November 19, 2015, the U.S. Nuclear Regulatory Commission (NRC) issued a notice in the Federal Register soliciting public comments on rulemaking for the decommissioning of nuclear reactors. The comment period for this Advanced Notice of Proposed Rulemaking (ANPR) was extended to March 18, 2016.

This letter provides the comments of the Conference of Radiation Control Program Directors, Inc., a nonprofit non-governmental organization dedicated to radiation protection, and whose membership is made up primarily of the directors and staff of state, territorial, and local radiation control programs throughout the United States. The comments on the ANPR and the specific issues contained in the notice are attached.

We appreciate the opportunity to comment on this potential rulemaking. The state radiation control programs are a major stakeholder in this matter, since any rules made for decommissioning nuclear reactors will affect not only NRC licensees, but also the states where reactors are sited, and their public health, environmental protection, emergency management and other agencies.

If you have any questions concerning the comments, do not hesitate to contact me by email at William.irwin@vermont.gov or Ruth McBurney, CRCPD's Executive Director at rmcburney@crcpd.org or by telephone at 502-227-4543.

Sincerely,

William E. Irwin, Sc.D, CHP
Chairperson

Attachment

cc: CRCPD Board of Directors

CONFERENCE OF RADIATION CONTROL PROGRAM DIRECTORS

COMMENTS ON THE ADVANCE NOTICE OF PROPOSED RULEMAKING:

REGULATORY IMPROVEMENTS FOR DECOMMISSIONING POWER REACTORS

DOCKET NUMBER NRC-2015-0070

1. General Comments

Although the Conference of Radiation Control Program Directors (CRCPD) supports the concept of evaluating the suitability of regulatory requirements as the operating reactors are closed and risks are reduced, reducing too many requirements simultaneously has the potential of creating a risk scenario greater than any single change considered independently. For example, the potential impacts of reducing emergency planning requirements, reducing physical security requirements, changing fatigue requirements and reducing liability protection insurance requirements, considered in total, impose a greater risk than any of the requirements considered individually.

As proposed, changes to 50.54, 50.47, 50.72, appendix E to part 50, 73.55, and other sections could encompass most changes needed to reduce the number of exemptions and licensing actions currently needed during decommissioning. Alternatively, less robust and fewer changes to these and other applicable parts of the regulations could be made that reference an entirely new appendix outlining requirements specifically for power reactors that are entering decommissioning.

The CRCPD has read through a number of staff guidance documents concerning the Nuclear Regulatory Commission's (NRC) advance notice of proposed rulemaking (ANPR) on Regulatory Improvements for Decommissioning Power Reactors (Docket Number NRC-2015-0070). One of our conclusions is that a new Appendix outlining the requirements for decommissioning would be a viable option. Past experience has demonstrated that attempting to answer a list of questions and changing different sections throughout current regulations will lead to lengthy discussion and creates the possibility of vital items not being addressed in adequate fashion.

We also realize that each plant decommissioning plan will need to be reviewed on a case by case basis due to any number of issues and that regulatory guides may need to be developed for items such as risk minimization for spent fuel pool incident/accidents, environmental monitoring, etc. These could be developed similar to guidance found in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) and Multi Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME).

2. COMMENTS ON SECTION II. BACKGROUND

PART A. REGULATORY ACTIONS RELATED TO DECOMMISSIONING POWER REACTORS

Spent fuel management in the immediate locality of the closed facility is a particular concern. In addition to environmental monitoring requirements that are pertinent, the extended presence of high-level waste both in liquid and dry cask storage would logically be an issue from both the security and environmental perspective. For example, the federal government has spent billions to clean up the west bank of the Columbia River corridor; closing reactors that were once part of the nation's nuclear defense industry. As such, leaving high-level waste in that location contradicts the federal efforts to date. The federal government should consider the standards for waste fuel storage for commercial reactors similar to defense reactor shutdowns and the submarine reactor decommissioning process. The defense industry does not leave reactor fuel in vulnerable locations; the commercial nuclear industry should meet that same criteria.

The basis document for Spent Fuel Pool (SFP) accidents which are the primary concern for a decommissioned site is NUREG-1738. This document does not provide a convincing argument that the risk of significant offsite public doses from spent fuel pools accidents at decommissioned reactors is negligible. The Sandia National Laboratory Study that the Nuclear Regulatory Commission (NRC) references confirms the effectiveness of mitigative strategies used to maintain spent fuel pool cooling in the event the SFP is drained. However, the analysis contained in that study has been determined to be safeguards information and not available for inspection. Without specific knowledge of the Sandia study, there is no way to confirm the findings and use them as a basis for a risk assessment. Based on the information and analysis of the studies available to stakeholders, there is insufficient technical documentation that provides adequate risk analysis of offsite dose consequences to make the determination that the risk is negligible and emergency preparedness and planning is not necessary.

In Section II, Background, the Nuclear Regulatory Commission (NRC) concludes that mitigating strategies, monitoring of spent fuel pool water level, and placement of spent fuel in a dispersed configuration reduce the likelihood of a release from the spent fuel pool in the event of a loss of cooling water. With this as a basis, the NRC has justified reducing or eliminating emergency preparedness zones around nuclear power reactors during the decommissioning phase. Unfortunately, there is no regulatory requirement for an NRC Licensee to place spent fuel in a dispersed configuration. There may be situations where a plant is unable to disperse spent fuel in the manner the NRC assumes they can. Examples of this would be a plant with a very crowded spent fuel pool, or a plant with parts of a spent fuel pool that are not usable because of Boraflex degradation. The regulation must require the storage of spent fuel in a dispersed configuration in order for licensees to take credit for the risk reduction in their analysis of zirconium fire. The NRC must verify that fuel is stored in this manner prior to considering any reduction in emergency preparedness.

In NUREG-1738, the postulated accidents that are associated with the greatest risk are beyond design basis earthquakes and heavy load drops, either of which could lead to the catastrophic failure of the spent fuel pool structure and prevent mitigative measures to recover water level.

The assessment of the radiological impacts contained within that document compare the number of early fatalities from exposure for sites with early evacuation capabilities (formal offsite emergency response plans and procedures) versus those where there would be a delayed evacuation (all-hazard approach). The study does not discuss or assess the long term impacts from exposures to radiation and the risk of latent cancers. It only evaluates acute radiation exposures and early deaths. It should also be noted that the dose to populations that would lead to early fatalities are well in excess of the Environmental Protection Agency (EPA) Protective Action Guideline (PAG) limits that is discussed in the advance notice of public rulemaking (ANPR). The study needs to include the risk, probability, and release magnitudes of accidents that could lead to offsite dose in excess of the EPA PAG limits and not the early fatality threshold in order to be of value to this process.

Further, many of the discussions within NUREG-1738 revolve around relative risk levels associated with postulated accidents. While the study demonstrates that the risks are of a low probability, the risks are not zero and therefore, the potential for offsite exposures exists and should not be ignored. Some of the postulated accidents have offsite radiation exposures that are considered significant but have been ignored because they are of such a low probability for occurrence. Clearly, the maintenance of an offsite emergency response plan ensures that immediate and effective measures can be implemented to protect the public and reduce or avoid unnecessary exposures. The existence of a plan alone provides the public a baseline assurance that the respective government response agencies and the licensee are prepared for a worst case scenario. If the risk of public exposure exists, then plans should remain in place to address that portion of the population as effectively as possible.

Currently the Emergency Planning Basis is derived from NUREG-0396, Planning Basis for the Development of State and Local Government Radiological Response Plans in Support of Light Water Nuclear Power Plants." The task force concluded that the objective of emergency response plans should be to provide dose savings for a spectrum of accidents that could produce offsite doses in excess of the EPA PAGs. With the publication of NUREG-1935, "State of the Art Reactor Consequence Analysis" (SOARCA) this spectrum of accidents is now known to progress slower and have smaller releases and hence lower consequences than what NUREG-0396 was based on. The NRC has decided to not revisit the Emergency Planning Zone (EPZ) size based on reduced risk. Contrary to this philosophy the NRC in its ANPR on decommissioning is proposing using risk as the basis for relaxation of certain emergency preparedness requirements. For many years Emergency Preparedness has served as a cornerstone in the NRC's Defense in Depth philosophy. Defense in Depth is described in SECY 13-0132, Enclosure 3 as serving the following purposes:

- compensating for uncertainty in probabilistic analyses related to the issue of uncertainty
- the aggregate of provisions made to compensate for uncertainty and incompleteness in the knowledge of accident initiation and progression
- compensation for inadequacies, incompleteness, and omissions of risk analyses
- strategy to ensure public safety given the unquantified uncertainty in risk assessments

The ANPR on decommissioning appears to be straying from the NRC's long standing use of Defense in Depth as compensation for the inherent uncertainty in risk analysis. Even though the

when compared to an operating reactor, the risk is not zero and hence, some form of emergency planning requirements are not only prudent but form the basis of a Defense in Depth strategy for decommissioned reactors as well as operating reactors.

NUREG-2161, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor", states on page 255 under conclusions, "For the hypothetical releases studied, no early fatalities attributable to acute radiation exposure were predicted." Comment #55 on page E-22 of the report states the following, "The conclusion that there are no calculated early fatalities would benefit from further discussion." The NRC response to that comment states, "Staff believes that this [conclusion] is due in part to the efficacy of protective actions such as sheltering, evacuation, and relocation." In section 7.1.4 of the report, "Emergency Response Modeling", there is a discussion of the assumptions used to make the prediction that there would be no early fatalities attributable to acute radiation exposure. In that discussion the NRC states that staff modeled offsite response organization (ORO) decision making based upon the accident sequences, timing, radiological release, and knowledge of response activities and the availability of emergency response technical support. From this discussion the conclusion can be drawn that the reduced risk of early fatalities is, in part, due to the existence of a dedicated offsite emergency response plan specifically in place for radiological incidents at nuclear power plants. There is no supporting evidence that a comprehensive emergency management plan would have the same effect. The report goes on to state that, "For each of the accident sequences, staff determined that a General Emergency would be declared promptly (within 15 minutes) based on the emergency action levels for the operating reactor." The above discussion is meant to show that emergency classification, prompt notification of OROs and protective action decision making are crucial to eliminating early fatalities. Therefore adequate emergency planning is necessary to be maintained as long as there is fuel stored in spent fuel pools.

In the recent NRC decision for an exemption request submitted by Duke Energy for the Kewaunee station, three members of the Commission approved the request. The request was rejected by the former Chairman Allison Macfarlane. She supported relaxing emergency preparedness requirements which were specifically designed for rapidly developing operating reactor accidents; however, she disapproved elements of the requested exemption that removed Kewaunee's requirements for emergency classification and offsite dose projection capabilities. In Macfarlane's view, regardless of the initiating cause (i.e., malevolent or natural events that could result in a loss of all SFP cooling), and the time available for the licensee to take mitigating action, the possibility of significant offsite release still exists for some period of time while the spent fuel continues to decay. Therefore, until adequate analysis is presented warranting that a spent fuel pool zirconium fire resulting in an offsite release is no longer possible, in her opinion, the licensee should retain some limited pre-planned offsite response capabilities. This would necessitate retaining the capability for a licensee to perform dose assessments and provide PARs to offsite officials. At the same time, it would require that offsite response organizations retain their emergency response organization to implement any necessary protective actions for the public. The CRCPD agrees with this assessment and believes that a more detailed analysis is performed for SFP accidents that bounds offsite doses and long term environmental impacts.

PART B. LICENSING ACTIONS RELATED TO DECOMMISSIONING POWER REACTORS

Within the discussion of this section, the NRC regularly uses the word "significant" related to public health and safety risk and concludes that the risk is not "significant" once fuel has cooled for a period of time. NRC states that risk of offsite radiological releases is "significantly lower" and the type of accidents are "significantly fewer" than under operating conditions. While both of those conclusions are accurate, the NRC never states that there is "no risk" and does not define what is meant by "significantly reduced risk" in a quantitative context. Therefore, we question whether or not the conclusion that the "need for rulemaking is not based on safety concern" is accurate. NRC further states that the primary objective of the decommissioning rulemaking is to implement appropriate regulatory changes that reduce the number of licensing actions needed during decommissioning. We disagree and believe that the public health and safety throughout the decommissioning process should be a primary objective as well as continued safety and security of spent nuclear fuel until a long term repository is located.

The specific location of the facility must be taken into account when considering a reduction in regulatory requirements. For example, the Columbia Generating Station is located within the Department of Energy Hanford reservation. As such, any accident occurring in that location could have a broader radiological impact than impacts attributable just to the closed facility itself. An accident, earthquake or terrorist action releasing a westerly plume would impede the ability of the Department of Energy to retain control of several aging radiological facilities located on their facilities.

3. COMMENTS ON SECTION V. SPECIFIC CONSIDERATIONS

The NRC is seeking stakeholders' input on the following specific areas related to power reactor decommissioning regulations. The NRC asks that commenters provide the bases for their comments (i.e., the underlying rationale for the position stated in the comment) to enable the NRC to have a complete understanding of commenters' positions.

A. QUESTIONS RELATED TO EMERGENCY PREPAREDNESS REQUIREMENTS FOR DECOMMISSIONING POWER REACTOR LICENSEES

The EP requirements of 10 CFR 50.47, ''Emergency Plans,'' and appendix E, ''Emergency Planning and Preparedness for Production and Utilization Facilities,'' to 10 CFR part 50 continue to apply to a nuclear power reactor after permanent cessation of operations and removal of fuel from the reactor vessel. Currently, there are no explicit regulatory provisions distinguishing EP requirements for a power reactor that has been shut down from those for an operating power reactor. The NRC is considering several changes to the EP requirements in 10 CFR part 50, ''Domestic Licensing of Production and Utilization Facilities,'' including § 50.47, ''Emergency Plans;'' appendix E to 10 CFR part 50, ''Emergency Planning and Preparedness for Production and Utilization Facilities''; §50.54(s), (q), and (t), and § 50.72(a) and (b). These areas are discussed in more detail in this section.

The questions on EP have been listed in this document using the acronym ‘‘EP’’ and sequential numbers.

The content of the discussion preceding the specific questions related to the section assumes that the process for granting exemptions for license amendment requests in the past is sound. We disagree and present the following discussions to support our position. NRC should bear in mind that the license exemption requests that have been approved are site specific and have not been open to public comment or evaluation in the past. With that in mind, stakeholders in general have been excluded from providing their perspective on the need for emergency preparedness and planning after a licensee ceases operation of the reactor. The review of the proposed rulemaking is the first opportunity for stakeholders to provide input on the process from a national perspective and the NRC should give consideration to comments and concerns related to previous decisions and the basis for license amendment requests related to emergency preparedness and planning.

It is worth noting that many of the recent decisions related to emergency preparedness exemptions have been contested by state and local government agencies as well as other interested stakeholders. For example, the San Onofre Power Station emergency preparedness and planning exemption request met with opposition from offsite organizations. The San Diego County Board of Supervisors successfully negotiated with Southern California Edison a Memorandum of Understanding (MOU) that provided funding to extend the maintenance of the offsite emergency planning functions. The MOU allows the county's Office of Emergency Services to continue receiving offsite planning funds for the facility through 2019. Similarly, the State of Vermont requested that the NRC reconsider the emergency preparedness exemptions for the decommissioning of Vermont Yankee Nuclear Power Plant. That request was denied by the NRC but still demonstrates that the general sense from offsite experts that emergency preparedness is still a necessity even after the site moves toward decommissioning. As long as there is a risk of public exposure from nuclear fuel stored onsite in spent fuel pools there should be some level of offsite response in place to react and respond to the emergency for optimal protection of the public and the environment.

The ANPR identifies the EPA PAGs level for evacuation as the threshold value for whether or not an offsite emergency response plan for nuclear power plants is necessary to protect the health and safety of the public. The CRCPD does not believe that adequate information exists to determine if this is the appropriate action level for the NRC to use for this process.

The EPA PAG level was established as a guideline for emergency planning and was never intended to be enforced as a regulatory threshold for public radiation exposure to radiation emergencies. In addition, the EPA has never stated that the PAG threshold for evacuation is in any way a safe level of public exposure to radiation. In fact, the EPA PAG value is well in excess of 10 CFR 20 release thresholds for public exposure and is only recommended as a guideline for emergencies. The EPA guidance does not preclude decision makers from taking actions to reduce public exposures at levels that are below that limit. In fact, the range of protective actions include Shelter-In-Place which can be implemented at any time decision makers believe it would reduce public exposures. State decision makers also have the prerogative to use evacuation as a protective measure at estimated doses below the EPA PAG limits if the

avoided dose is deemed to be significant and evacuation can be implemented prior to the arrival of any radioactive plume. Therefore, the NRC should not use this value explicitly as a basis for the decision on whether an offsite emergency preparedness program is justified.

The NRCs current exemption process requires licensed operators to demonstrate that offsite impacts from any postulated accident after permanent cessation of operations be below the EPA PAG value for evacuation in order to approve emergency preparedness plan license amendment requests. The CRCPD does not believe that this assessment is sufficient to make the determination whether or not a radiological emergency response plan specific for a nuclear power plant is the optimal strategy to best serve the interests of public health and safety. The NRC should require that all accident studies bound the exposure levels for all postulated accidents in order to determine if an offsite response is necessary. Those studies should include whether or not exposure levels from postulated accidents be reduced more effectively with a dedicated emergency response plan that has been developed, implemented and tested for adequacy on a regular basis and evaluated by the Federal Emergency Management Agency. It would be prudent to relax the requirement for offsite emergency preparedness when the dose savings from having a dedicated emergency response plan for nuclear facilities no longer exceed those that could be realized using the comprehensive emergency management plan. Until such time, it is in the opinion of the CRCPD, prudent to maintain the emergency plan since they are more effective for protecting the public from unnecessary exposure to radiation. The NRC needs to re-evaluate the basis for using the EPA PAG as the decision point for Emergency Preparedness requirements going forward.

By using the EPA PAG threshold, the NRC requires that licensed operators only address the external exposure of populations as a result of an accident at a fixed nuclear facility. None of the basis documents for this ANPR require licensed operators to evaluate and assess the potential environmental impact of a release that may be only a fraction of the EPA PAGs. Following an accident at a fixed nuclear facility and the release of radiation, there will be an extended period of intensive environmental sampling and analysis to evaluate the impact of residual contamination in the environment on food, water and milk and for exposure from continued habitation of the contaminated area by the public. These environmental assessments will occur regardless of the magnitude of the release and require the experience, knowledge and expertise of staff specifically trained for responses to these types of emergency conditions. None of the exemptions granted by NRC to date have asked the licensed operators to assess the long term environmental and public health impacts of a radiological release considering all pathways for exposure. Similarly, there has been no evidence that licensees have evaluated the impact of a catastrophic failure of the spent fuel pool on groundwater and drinking water supplies from the intrusion of tritium from a liquid release of spent fuel pool inventory. These additional assessments are of even greater importance for sites that have large population in very close proximity to the owner controlled area such as at the Oyster Creek Nuclear Generating Station in Forked River. The size and proximity of public populations has not been a factor in recent decisions and should be included as a consideration when evaluating the need for offsite preparedness and planning functions for state and local agencies.

The questions on EP have been listed in this document using the acronym “EP” and sequential numbers.

EP-1.b. What existing NRC EP related guidance and other documents should be revised to address implementation of changes to the EP requirements?

Currently the primary guidance documents for Emergency Planning and Preparedness include, NUREG 0654/FEMA-REP-1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, the Federal Emergency Management Agency's Radiological Emergency Preparedness Manual, and NSIR/DPR-ISG-01, Interim Staff Guidance, Emergency Planning for Nuclear Power Plants. All of these documents are based on the emergency planning regulations. Therefore, as the regulations would be different for decommissioning plants, these guidance documents would need to be revised or replaced with equivalent guidance documents specific to emergency preparedness requirements for decommissioning sites.

EP-1.c. What new guidance would be necessary to support implementation of changes to the EP requirements?

New guidance would not necessarily be required if the existing guidance (see above section) is revised. If NRC decides to develop new guidance then that guidance should be developed similar to the existing guidance documents. Onsite and offsite organizations responsible for emergency preparedness are very comfortable with the format and structure of the current guidance and developing new guidance using that as a template would facilitate the implementation for all users. The new guidance document should only include requirements for emergency preparedness for decommissioning sites and should avoid, whenever possible, any overlapping conditions so that only one regulatory document apply for emergency preparedness. The biggest worry is that there is ambiguity in the requirements or if the applicability is unclear as the site transitions from operating to decommissioning.

EP-2.a. What tiers and associated EP requirements would be appropriate to consider for this approach?

Should the NRC decide to use a tiered approach to emergency preparedness, the first tier should include the time period when there is the potential for a zirconium fire and significant offsite consequences to the public (i.e. in excess of the EPA PAGs) exists. During this time period, the offsite emergency planning and preparedness functions should remain as they are for an operating reactor with appropriate modifications to the EAL classification system. The second tier should include the time period when there is spent nuclear fuel in the spent fuel pool. The offsite emergency response organization and response can be modified at this point but certain functions should be maintained to respond to any radiation releases regardless of magnitude. At a minimum the offsite response should include aspects of notification and communication, dose assessment, environmental monitoring, public protective actions and public information. The third tier would start after the fuel has been removed from the spent fuel pool and transferred to an interim storage facility. For tier three, more limited offsite emergency response functions would be necessary.

EP.2.b. What factors should be considered in establishing each tier?

The factors to be considered in EP-2.a above are based on the location of spent fuel and risk of zirconium fire.

EP.2.c. What type of basis could be established to support each tier or factor?

The basis to support each tier is ultimately based on risk and the potential source term. As stated previously, NRC and licensee need to do more work to determine potential offsite release estimates for all pathways and not just external exposure related to EPA PAG levels.

EP-3.a. What other aspects of onsite EP and response capabilities may be appropriate for licensees at decommissioning sites to maintain once the requirements to maintain formal offsite EP are discontinued?

Some other aspects of onsite EP that need to be maintained once sites are in a decommissioned state include training and drills with offsite response organizations. The scope of the training and drills should be based on the spectrum of possible accidents expected and therefore would change over time as certain accidents were removed from consideration. In addition, staffing requirements, although greatly reduced at a decommissioned facility, should be maintained to adequately address response to the spectrum of design basis accidents expected and include the ability for onsite dose assessment.

EP-3.b. To what extent would it be appropriate for licensees at decommissioning sites to arrange for offsite assistance to supplement onsite response capabilities? For example, licensees at decommissioning sites would maintain agreements with offsite authorities for fire, medical, and law enforcement support.

It may be appropriate for licensees at decommissioned sites to augment their onsite staff with offsite resources to supplement their onsite response capability. While it is not necessary to specify which resources would be acceptable, any offsite resources must be listed in a letter of agreement with their expected response time demonstrating that they can provide an adequate level of response to replace an existing onsite resource.

EP-3.c. What corresponding changes to § 50.54(s)(2)(ii) and 50.54(s)(3) (about U.S. Federal Emergency Management Agency (FEMA) identified offsite EP deficiencies and FEMA offsite EP findings, respectively) may be appropriate when offsite radiological emergency plans would no longer be required?

When offsite radiological emergency plans are no longer required, once fuel has been moved from spent fuel pools to dry cask storage, the requirements in 10 CFR 50.54(s) (2) (ii) and 10 CFR 50.54(s) (3) are not applicable.

EP-4.a. Should § 50.54(q) be modified to recognize that nuclear power reactor licensees, once they certify under § 50.82, ''Termination of License,'' to have permanently ceased operation and permanently removed fuel from the reactor vessel, would no longer be required to meet all standards in § 50.47 and all requirements in appendix E? If so, describe how.

10 CFR 50.54(q) is based on the existing licensee emergency plan. For decommissioning sites 10 CFR 50.54(q) should be deleted as a requirement rather than modified. The proposed regulation should include how modification to the emergency plan should be addressed. However, it is not anticipated that a licensee would have reason to make changes such as the ones operating reactors make routinely.

EP.4.b. Should nuclear power reactor licensees, once they certify under § 50.82 to have permanently ceased operation and permanently removed fuel from the reactor vessel, be allowed to make emergency plan changes based on § 50.59, ''Changes, Tests, and Experiments,'' impacting EP related equipment directly associated with power operations? If so, describe how this might be addressed under § 50.54(q).

As stated above 10 CFR 50.54(q) is designed for operating reactors and as such should not apply to decommissioned reactors. On the other hand 10 CFR 50.59 is the appropriate regulation to allow emergency plan changes in that it provides reasonable assurance that the design basis accidents bound the risk level of the station.

EP-6 At what point(s) in the decommissioning process should ERDS activation, ERDS equipment, and the instrumentation for obtaining ERDS data, no longer be necessary?
The Emergency Response Data System (ERDS) is the primary method for offsite organizations to receive plant specific data for a variety of parameters. For decommissioning reactors, should there be an accident that does involve the potential offsite release of radiation; offsite organizations will still need access to critical plant data that will assist in the assessment and evaluation of the impact of the release to the public. Meteorological data, plant radiation monitors and spent fuel pool level indicators are all critical parameters needed by offsite organizations to assess plant status and make public protective action decisions if required to reduce or avoid unnecessary exposures.

Some licensees have agreements with state and local government agencies that provides access to the plant Safety Parameter Display System (SPDS) or other plant emergency support software such as WebEOC for access to relevant event information that supports crisis management, public safety, and emergency response personnel. We believe that these agreements as well as the requirement for ERDS should remain as long as there is nuclear fuel in the spent fuel pool. Deviations from this should be discussed with state and local response organizations to reach a mutually agreed upon solution for accessing site specific plant information during an event that may require a response.

EP-7. What changes to § 50.72(a)(1)(i) should be considered for decommissioning sites?

Over the years the notification requirements in 10 CFR 50.72 have been revised to be consistent with the notification requirements for EALs and therefore have been revised as certain EALs were deleted. As nuclear power plants enter into decommissioning their Emergency Plans will be amended to remove certain EALs. Rather than change the reporting requirements for certain EALs in 10 CFR 50.72, the EALs themselves should be removed from the Emergency Plan if they no longer meet the threshold for immediate notification requirements.

B. QUESTIONS RELATED TO THE PHYSICAL SECURITY REQUIREMENTS FOR DECOMMISSIONING POWER REACTOR LICENSEES

The questions on physical security requirements (PSR) have been listed in this document using the acronym "PSR" and sequential numbers.

PSR–2: The physical security requirements protecting the spent fuel stored in the SFP from the design basis threat (DBT) for radiological sabotage are contained in 10 CFR part 73 and would remain unchanged by this rulemaking. However:

a. Are there any suggested changes to the physical security requirements in 10 CFR part 73 or its appendices that would be generically applicable to a decommissioning power reactor while spent fuel is stored in the SFP (e.g., are there circumstances where the minimum number of armed responders could be reduced at a decommissioning facility)? If so, describe them.

Relaxation of any security requirements is ill advised until spent fuel is in dry storage in a central secure location. In particular, the assumption in these regulations that a zirconium fire could be controlled by the owner within the 10 hour window is not logical if the fire occurs due to a terrorist attack. It would not be difficult for such an attack to delay such resumption of control due both to deliberate and extensive sabotage that would be difficult to repair within ten hours and through armed resistance to regaining site control.

Certain exemptions have been granted with respect to physical security of the site and plant structures required for safe operation. NRC should use great caution with respect to relaxing or exempting any requirement under Parts 73 and 26 with respect to decommissioning sites. Spent fuel pools, particularly in Mark 1 Boiling Water Reactors such as Oyster Creek, remain vulnerable to hostile actions and release potentials may still be significant. It would be prudent for NRC to consider maintaining robust security measures until all spent fuel is removed from the spent fuel pool and stored in dry casks. At that time, it would be appropriate to reduce the size of the site security footprint and reconsider other security measures that are commensurate with dry cask storage of high level radioactive waste.

c. Should the DBT for radiological sabotage continue to apply to decommissioning reactors? If it should cease to apply in the decommissioning process, when should it end?

The design basis threat should continue as long as there is fuel in the spent fuel pool. With few exceptions, spent fuel pools represent the largest single inventory of radioactive materials in any

state. Those fission products are a diverse mix of radionuclides that have significant half-lives and potential environmental impacts if released to the environment. While time may be a relevant factor for spent fuel cooling and minimizing the risk of zirconium fire, hostile actions, including sabotage, that may lead to damaged fuel and disperse fission products to the environment should remain a consideration until fuel is moved to dry cask storage. No one is able to predict the future and there is no guarantee that future technology will not create a potential threat to spent fuel pools that is not postulated using current knowledge.

C. QUESTIONS RELATED TO FITNESS FOR DUTY (FFD) REQUIREMENTS FOR DECOMMISSIONING POWER REACTOR LICENSEES

The questions on fitness for duty (FFD) have been listed in this document using the acronym "FFD" and sequential numbers.

FFD–2: On March 31, 2008, the NRC published a final rule in the Federal Register (73 FR 16966) adding subpart I, ''Managing Fatigue,'' to 10 CFR part 26. The addition of subpart I in the revised rule provides reasonable assurance that the effects of fatigue and degraded alertness on an individual's ability to safely and competently perform his or her duties are managed commensurate with maintaining public health and safety. The fatigue management provisions also reduce the potential for worker fatigue (e.g., that associated with security officers, maintenance personnel, control room operators, emergency response personnel, etc.) to adversely affect the common defense and security. The 2008 rule established clear and enforceable requirements for operating nuclear power plant licensees and other entities for the management of worker fatigue. Power reactor licensees that had permanently shut down and defueled were not considered within the scope of that rulemaking effort. This is because the scope of activities at a facility undergoing decommissioning is much less likely to create a public health and safety concern due to the significantly reduced risk of a radiological event.
a. Should any of the fatigue management requirements of 10 CFR part 26, subpart I, apply to a permanently shut down and defueled reactor? If so, which ones?

Fatigue requirements particularly as they apply to security officers remain highly pertinent given the increasing threat posed by radicalized groups within the United States. We believe that alert individuals represent the best barrier to incursions and adequate coverage to avoid fatigue is key to ensuring fuel safety.

D. QUESTIONS RELATED TO TRAINING REQUIREMENTS OF CERTIFIED FUEL HANDLERS FOR DECOMMISSIONING POWER REACTOR LICENSEES

The questions on CFH have been listed in this document using the acronym "CFH" and sequential numbers.

CFH–1: Based on the NRC's experience with the review of the CFH training/retraining programs submitted by licensees that have recently permanently shut down, the following questions are focused on areas that may need additional clarity. Specifically:

d. Should the contents of a CFH training/retraining program be standardized throughout the industry? If so, how should this be implemented?

For consistency purposes, the Certified Fuel Handler (CFH) training/retraining program should be standardized. This could be done via regulatory guidance or by regulation.

. QUESTIONS RELATED TO THE CURRENT REGULATORY APPROACH FOR DECOMMISSIONING POWER REACTOR LICENSEES

The questions on regulatory approach (REG) have been listed in this document using the acronym "REG" and sequential numbers:

REG-1: The NRC has evaluated the environmental impacts of three general methods for decommissioning power reactor facilities, DECON, SAFSTOR, or ENTOMB, as described in Section II.A, footnote 1 of this document. The choice of the decommissioning method is left entirely to the licensee, provided that the decommissioning method can be performed in accordance with NRC's regulations. The NRC would require the licensee to re-evaluate its decision on the method of the decommissioning process that it chose if it (1) could not be completed as described, (2) could not be completed within 60 years of the permanent cessation of plant operations, (3) included activities that would endanger the health and safety of the public by being outside of the NRC's health and safety regulations, or (4) would result in a significant impact to the environment. The licensee's choice is communicated to the NRC and the public in the PSDAR. To date, most utilities have used DECON or SAFSTOR to decommission reactors. Several sites have performed some incremental decontamination and dismantlement during the storage period of SAFSTOR, a combination of SAFSTOR and DECON as personnel, money, or other factors become available. No utilities have used the ENTOMB option for a commercial nuclear power reactor.

a. Should the current options for decommissioning—DECON, SAFSTOR, and ENTOMB—be explicitly addressed and defined in the regulations instead of solely in guidance documents, and how so?

They should be defined with reference to the guidance documents.

b. Should other options for decommissioning be explored? If so, what other technical or programmatic options are reasonable and what type of supporting documents would be most effective for providing guidance on these new options or requirements?

THE CRCPD is unaware of other decommissioning options.

REG-2: In support of decommissioning planning for a permanently shut down and defueled power reactor, the licensee submits to the NRC a PSDAR that: (1) Informs the public of the licensee's planned decommissioning activities; (2) assists in the scheduling of NRC resources necessary for the appropriate oversight activities; (3) ensures that the licensee has considered the costs of the planned decommissioning activities and has funding for the decommissioning process; and (4) ensures that the environmental impacts of the

planned decommissioning activities are bounded by those considered in existing environmental impact statements. After receiving a PSDAR, the NRC publishes a notice of receipt, makes the PSDAR available for public review and comment, and holds a public meeting in the vicinity of the plant to discuss the licensee's plans and address the public's comments. Although the NRC will determine if the information is consistent with the

regulations, NRC approval of the PSDAR is not required. However, should the NRC determine that the informational requirements of the regulations are not met in the PSDAR, the NRC will inform the licensee, in writing, of the deficiencies and require that they be addressed before the licensee initiates any major decommissioning activities. Any decommissioning activities that could preclude release of the site for possible unrestricted use, impact a reasonable assurance finding that adequate funds will be available for decommissioning, or potentially result in a significant environmental impact not previously reviewed, must receive prior NRC approval. Specifically, the licensee is required to submit a license amendment request for NRC review and approval, which provides an opportunity for public comment and/or a public hearing. Unless the NRC staff approves the license amendment request, the licensee is not to conduct the requested activity. Consistent with Commission direction, the NRC staff is seeking comment on the appropriate role for the NRC in reviewing and approving the licensee's proposed decommissioning strategy and associated planning activities.

a. Is the content and level of detail currently required for the licensee's PSDAR, adequate? If not, what should be added or removed to enhance the document?

The current PSDAR content and level of detail seems adequate based on our limited knowledge of this issue.

b. Should the regulations be amended to require NRC review and approval of the PSDAR before allowing any "major decommissioning activity," as that term is defined in § 50.2, to commence? What value would this add to the decommissioning process?

Yes, the NRC should review and approve the PSDAR prior to the licensee taking any major decommissioning activity. In addition to the NRC review, the PSDAR should be made publically available for comment. The length of the comment period should be sufficient to review the pertinent documents and guidance and provide input to NRC for consideration prior to their approval. With the pre-approval of the PSDAR the licensee, NRC and stakeholders have been informed and are aware of the process and activities that will occur during decommissioning. The pre-approval will pre-empt any future discrepancies between the regulators, the licensees and stakeholders which could result in excessive delays and additional costs.

Given that the critical activities that would logically require this approval already require approval by the NRC we see no added to benefit to this change.

REG-3: The NRC's regulations currently offer the public opportunities to review and provide comments on the decommissioning process. Specifically, under the NRC's regulations in § 50.82, the NRC is required to publish a notice of the receipt of the licensee's PSDAR, make the PSDAR available for public comment, schedule separate

meetings in the vicinity of the location of the licensed facility to discuss the PSDAR within 60 days of receipt, and publish a notice of the meetings in the Federal Register and another forum readily accessible to individuals in the vicinity of the site. For many years, the NRC has strongly recommended that licensees involved in decommissioning activities form a community committee to obtain local citizen views and concerns regarding the decommissioning process and spent fuel storage issues. It has been the NRC's view that those licensees who actively engage the community maintain better relations with the local citizens. The NRC's guidance related to creating a site-specific community advisory board can be found in NUREG-1757, "Consolidated Decommissioning Guidance," Appendix M, "Overview of the Restricted Use and Alternate Criteria Provisions of 10 CFR part 20, subpart E," Section M.6 (ADAMS Accession No. ML063000243). Appendix M does not require licensees to create a community advisory board, but only provides recommendations for methods of soliciting public advice. Nonetheless, Section M.6 contains useful guidance and suggestions for effective public involvement in the decommissioning process that could be adopted by any licensee.

a. Should the current role of the States, members of the public, or other stakeholders in the decommissioning process be expanded or enhanced, and how so?

We believe that members of the public and other stakeholders should continue to have opportunities to participate in the decommissioning process. State, local, and tribal government agencies will have a role at some point in the decommissioning process and should be included from the beginning. Early engagement of interested stakeholders and government entities promotes a more comprehensive understanding of the process. Stakeholder participation also provides opportunities to provide input to decommissioning planning in order to ensure that the site is proceeding in accordance with NRC regulations and with proper knowledge of state and local laws and statutes for remediation and clean-up of contaminated sites.

The roles of everyone involved should be expanded and enhanced. The closing of a nuclear power plant that has provided jobs and taxes in a community for up to 60 years is a traumatic local event. Also, for the foreseeable future, power plant closures will leave an Independent Spent Fuel Storage Installation (ISFSI) on-site. The community needs reassurance that the utility, State, and Federal governments still have responsibilities and will remain engaged with the ISFSI facility. The local community also needs constant reassurance that the site of the former power plant will be cleaned up, restored, and monitored. There is a great fear of radiation in the communities that will not decrease with decommissioning.

b. Should the current role of the States, members of the public, or other stakeholders in the decommissioning process for non-radiological areas be expanded or enhanced, and how so? Currently, for all non-radiological effluents created during the decommissioning process, licensees are required to comply with EPA or State regulations related to liquid effluent discharges to bodies of water.

The local communities do not make a clear distinction between radiological and non-radiological effluents. To the local community, everything that leaves a nuclear power site is radiological (air or water). The role of the State should be expanded to formally reassure the public that ALL effluents (radiological and non-radiological) are being monitored. Verbal assurance is not

adequate. Sample results should be promptly published in all forms of media and points of contact made available to explain the meaning of the results.

c. For most decommissioning sites, the State and local governments are involved in an advisory capacity, often as part of a Community Engagement Panel or other organization aimed at fostering communication and information exchange between the licensee and the public. Should the NRC's regulations mandate the formation of these advisory panels?

Yes, they should be mandated. The experience at Zion Station has shown the uncertainty of the new decommissioning process creates a great amount of unease in the local communities. Additionally, there will be anti-nuclear groups that will seize the opportunity to further their agendas. The public needs a level of Federal, State and Local governments' involvement where they can feel comfortable they are getting prompt and valid responses to their concerns.

Additionally, at Zion Station, the site was turned over to a completely different company for decommissioning. The local communities and their leaders had to reestablish points of contacts, relationships, and trust with a brand new company, who had no history or commitment to the area or state.

It is felt that the local Zion Community Advisory Panel (ZCAP) mostly functioned as a buffer between the members of the community and Zion Solutions. Many of the questions posed to the ZCAP and Zion Solutions were not theirs to answer, but belonged to Exelon, the NRC, or the State. However, there was no mechanism for the publics' questions to be answered if they did not directly belong to Zion Solutions. There was no central clearing house for responses to questions. There should be some type of mechanism whereby a question posed to the local Citizens Advisory Panel about a subject, say the long term monitoring of the ISFSI facility, could be forwarded to NRC, Exelon, and State for an appropriate and complete response. In many cases it appeared it was left up to the person posing the question to determine who was responsible and to pursue their answers independently. The ZCAP appeared to only have the capability to respond to questions in their narrow jurisdiction and most other questions were just left hanging or dropped.

In a perfect world a Local Advisory Panel would have the authority to take questions and assign them to various agencies (local, utility, State, NRC, decommissioning) to provide answers. This would be a time consuming and detailed job. Realistically, the Local Advisory Panel is a group of local unpaid volunteers with no legal authority and in the current regulatory framework; this is just not going to happen.

The role that offsite organizations and other stakeholders can play in the planning and execution of the decommissioning of a nuclear facility is essential. For many years, the licensee of a nuclear facility has been an active member of the community and involved in many aspects of local business and community services. The relationships between the licensee, the community leaders and state and local government agencies that were formed during operations should continue to exist into decommissioning and the dialogue kept open to facilitate coordination of activities and to ensure that interested stakeholders are informed of progress. Decommissioning activities will continue to impact many aspects of local communities and so active participation

by licensee, regulator, state and local government and local stakeholders should continue to be a regular part of decommissioning. Formation of an advisory panel should be mandatory and the membership of the committee should be discussed and agreed upon by license and identified stakeholders. NRC should define what the minimum participation would be for such a panel.

As a stakeholder, states should have significant input throughout the process, whether or not there is a Community Engagement Panel.

G. QUESTIONS RELATED TO DECOMMISSIONING TRUST FUNDS

The questions on decommissioning trust fund (DTF) have been listed in this document using the acronym "DTF" and sequential numbers.

DTF–1 Should the regulations in §§ 50.75 and 50.82 be revised to clarify the collection, reporting, and accounting of commingled funds in the decommissioning trust fund, that is in excess of the amount required for radiological decommissioning and that has been designated for other purposes, in order to preclude the need to obtain exemptions for access to the excess monies?

Yes, the regulations in §§ 50.75 and 50.82 should be revised as discussed in the ANPR to clarify the collection, reporting, and accounting of commingled funds in the decommissioning trust fund. Clarification would provide better understanding of dedicated funding and the projects that would be covered with that specific funding. It would also ensure that funds dedicated to decommissioning activities are not used for other purposes that could jeopardize long term activities and final decommissioning. Spent fuel management should not be funded by decommissioning funds regardless of any excesses that are reported. Exemptions to trust fund spending to manage spent fuel only exacerbates the lack of progress on siting and establishing a long term repository for spent nuclear fuel. The responsible federal agencies should be held to task to meet the requirements of the Atomic Energy Act and negative financial impacts will assist in moving that process forward.

DTF–2: The regulation at § 50.82(a)(8)(i)(A) states that decommissioning trust funds may only be used by licensees if their withdrawals ''are for expenses for legitimate decommissioning activities consistent with the definition of decommissioning in § 50.2.'' In accordance with § 50.2, decommission means to remove a nuclear facility or site safely from service and reduce residual radioactivity to a level that permits: (1) Release of the property for unrestricted use and termination of the license; or (2) release of the property under restricted conditions and termination of the NRC license. Thus, ''legitimate decommissioning activities'' include only those activities whose expenses are related to removing a nuclear facility or site safely from service and reducing residual radioactivity to a level that permits license termination and release of the property for restricted or unrestricted use. While the regulations are silent with regards to what specific expenses are related to legitimate decommissioning activities, the NRC's guidance documents identify some specific expenses that may or may not be paid from the decommissioning trust fund. For example, Regulatory Guide (RG) 1.184, Revision 1, ''Decommissioning of Nuclear Power Reactors'' (ADAMS Accession No. ML13144A840), states that the amount set aside

for radiological decommissioning as required by § 50.75 ''should not be used for: (1) The maintenance and storage of spent fuel in the spent fuel pool, (2) the design, construction, or decommissioning of spent fuel dry storage facilities directly related to permanent disposal, (3) other activities not directly related to radiological decontamination or dismantlement of the facility or site.'' Similarly, other NRC guidance explain that the NRC's definition of decommissioning does not include other activities related to facility deactivation and site closure, including operation of the spent fuel storage pool, construction and/or operation of an ISFSI, demolition of decontaminated structures, and/or site restoration activities after residual radioactivity has been removed. The NRC also has additional guidance that states that removing uncontaminated material, such as soil or a wall, to gain access to contamination to be removed would be a legitimate decommissioning cost. Finally, guidance also exists that provides examples of activities outside the scope of decommissioning including, ''(1) the maintenance and storage of spent fuel, (2) the design and/or construction of a spent fuel dry storage facility, (3) activities that are not directly related to supporting long-term storage of the facility, or (4) any other activities not directly related to radiological decontamination of the site.''

a. What changes should be considered for §§ 50.2 and 50.82(a)(8) to clarify what constitutes a legitimate decommissioning activity?

The use of decommissioning trust funds for spent fuel management in either pools or dry casks is an unsuitable solution to the federal government's inability to site a high-level waste disposal facility. Decommissioning funds were set aside for the purpose of decommissioning the facility; other resources were provided to the federal government for management and disposal of high-level waste.

H. QUESTIONS RELATED TO OFFSITE LIABILITY PROTECTION INSURANCE REQUIREMENTS FOR DECOMMISSIONING POWER REACTOR LICENSEES

The questions on offsite liability protection insurance (LPI) have been listed in this document using the acronym "LPI" and sequential numbers.

LPI–1: The Price Anderson Act of 1957 (PAA) requires that nuclear power reactor licensees have insurance to compensate the public for damages arising from a nuclear incident, including such expenses as those for personal injury, property damage, or the legal cost associated with lawsuits. Regulations in 10 CFR part 140, ''Amounts of Financial Protection for Certain Reactors,'' set forth the amounts of insurance each power reactor licensee must have. Specifically, § 140.11(a)(4) requires a reactor licensee to maintain $375 million in offsite liability insurance coverage. In addition, the primary insurance is supplemented by a secondary insurance tier. In the event of an accident causing offsite damages in excess of $375 million, each licensee would be assessed a prorated share of the excess damages, up to $121.3 million per reactor, for a total of approximately $13 billion. Regulations in § 140.11(a)(4) do not distinguish between a reactor that is authorized to operate and a reactor that has permanently shut down and defueled. Most of the accident scenarios postulated for operating power reactors involve failures or malfunctions of systems that could affect the fuel in the reactor core, which in the most severe postulated

accidents, would involve the release of large quantities of fission products. With the permanent cessation of reactor operations and the permanent removal of the fuel from the reactor core, such reactor accidents are no longer possible with a decommissioning reactor. The PAA requires licensees of facilities with a rated capacity of 100,000 electrical kilowatts or more to have the primary and secondary insurance coverage described above, which the NRC establishes in 10 CFR part 140. Typically, the NRC will issue a decommissioning licensee a license amendment to remove the rated capacity of the reactor from the license. This has the effect of removing the reactor licensee from the category of licensees that are required to maintain the primary and secondary insurance amounts under the PAA and 10 CFR part 140. Most permanently shut down and defueled power reactor licensees have requested exemptions from § 140.11(a)(4) to reduce the required amount of primary offsite liability insurance coverage from $375 million to $100 million and to withdraw from the secondary insurance pool. As noted above, these licensees are no longer within the category of licensees that are legally required under the PAA to have these amounts of offsite liability insurance. The technical criteria for granting these exemptions are based on the determination that there are no possible design-basis events at a licensee's facility that could result in an offsite radiological release exceeding the limits established by the EPA's early- phase Protective Action Guidelines of 1 rem at the exclusion area boundary. In addition, the exemptions are predicated on the licensee demonstrating that the heat generated by the spent fuel in the SFP has decayed to the point where the possibility of a zirconium fire is highly unlikely. Specifically, if all coolant were drained from the SFP as the result of a highly unlikely beyond design-basis accident, the fuel assemblies would remain below a temperature of incipient cladding oxidation for zirconium based on air-cooling alone. For a postulated situation where the cooling configuration of a highly unlikely beyond design basis accident results in an unknown cooling configuration of the spent fuel, analysis should demonstrate that even with no cooling of any kind (conduction, convection, or radiative heat transfer), the spent fuel stored in the SFP would not reach the zirconium ignition temperature in fewer than 10 hours starting from the time at which the accident was initiated. The NRC has considered 10 hours sufficient time to take mitigative actions to cool the spent fuel. Based on this discussion:

c. The use of $100 million for primary liability insurance level is based on Commission policy and precedent from the early 1990s. The amount established was a qualitative value to bound the claims from the Three Mile Island accident. Should this number be adjusted?

Liability Protection Insurance has been tied to the EPA PAG threshold level. The EPA PAG value used as the basis for liability protection and applied by NRC as in previous analysis does not consider the costs of environmental remediation for releases that might be below that threshold. Small radiological releases above 10 CFR 20 limits but below the EPA PAG threshold can still have significant environmental impact either by direct contamination of property offsite or through contamination of groundwater and drinking water through a liquid release either directly from the spent fuel pool or the rad waste storage tanks located onsite. Until those scenarios are properly evaluated, it is impossible to evaluate whether the proposed levels of liability insurance are sufficient for decommissioning sites. It is also difficult to evaluate the liability without a better understanding of the applicability of Price Anderson for decommissioned sites and the applicability of the funds available under that provision.

I. QUESTIONS RELATED TO ONSITE DAMAGE PROTECTION INSURANCE RREQUIREMENTS FOR DECOMMISSIONING POWER REACTOR LICENSEES

The questions on onsite damage protection insurance (ODI) have been listed in this document using the acronym ‘‘ODI’’ and sequential numbers.

ODI–1: The requirements of § 50.54(w)(1) call for each power reactor licensee to have insurance to provide minimum coverage for each reactor site of $1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. The insurance would be used, in the event of an accident at the licensee's reactor, to provide financial resources to stabilize the reactor and decontaminate the reactor site, if needed. The requirements in § 50.54(w)(1) do not distinguish between a reactor authorized to operate and a reactor that has permanently shut down and defueled. With the permanent cessation of reactor operations and the permanent removal of the fuel from the reactor core, operating reactor accidents are no longer possible. Therefore, the need for onsite insurance at a decommissioning reactor to stabilize accident conditions or decontaminate the site following an accident, should be significantly lower compared to the need for insurance at an operating reactor. Based on NRC policy and precedent, permanently shut down and defueled reactor licensees have requested exemptions from § 50.54(w)(1). The exemption granted to a permanently shut down reactor licensee permits the licensee to reduce the required level of onsite property damage insurance from the amount established in § 50.54(w)(1) to $50 million. The NRC has previously determined that $50 million bounds the worst radioactive waste contamination event (caused by a liquid radioactive waste storage tank rupture) once the heat generated by the spent fuel in the SFP has decayed to the point where the possibility of a zirconium fire in any beyond design-basis accident is highly unlikely, and in any case, there is sufficient time to take mitigative actions. The technical criteria used in assessing the possibility of a zirconium fire, as discussed in question LPI–1 above, is also used for exemptions from § 50.54(w)(1). Based on this discussion:

a. Should the NRC codify the current exemption criteria that have been used in granting decommissioning reactor licensees exemptions from § 50.54(w)(1)? If so, describe why.

In regards to reducing the primary liability insurance levels of $100 million to $50 million; that is a value that should be explained in the context of the Price Anderson Act. Will the full value of the Price Anderson Act remain available during the closure and subsequent dry storage period?

J. GENERAL QUESTIONS RELATED TO DECOMMISSIONING POWER REACTOR REGULATIONS

The general (GEN) questions related to decommissioning power reactor regulations have been listed in this document using the acronym "GEN" and sequential numbers.

GEN-1: Section 50.51, "Continuation of License," states in paragraph (b)(1) that all permanently shut down and defueled reactor licensees shall continue to take actions to

maintain the facility, and the storage and control and maintenance of spent fuel, in a safe condition beyond the license expiration date until the Commission notifies the licensee in writing that the license is terminated. The NRC has recently focused on the licensee's maintenance of long lived, passive structures and components at decommissioning reactors. The NRC expects that many long-lived, passive structures and components may generally not have performance and condition characteristics that can be readily monitored, or could be considered inherently reliable by licensees and do not need to be monitored under § 50.65(a)(1). There may be few, if any, actual maintenance activities (*e.g.,* inspection or condition monitoring) that a licensee conducts for such structures and components. Treatment of long-lived, passive structures and components under the maintenance rule is likely to involve minimal preventive maintenance or monitoring to maintain functionality of such structures and components in the original licensing period. The NRC is interested in the need to provide reasonable assurance that certain long-lived, passive structures and components (*e.g.,* neutron absorbing materials, SFP liner) are maintained and monitored during the decommissioning period while spent fuel is in the SFP.

Based on the discussion above, what regulatory changes should be considered that address the performance or condition of certain long-lived, passive structures and components needed to provide reasonable assurance that they will remain capable of fulfilling their intended functions during the decommissioning period?

Based on the discussion above, what regulatory changes should be considered that address the performance or condition of certain long-lived, passive structures and components needed to provide reasonable assurance that they will remain capable of fulfilling their intended functions during the decommissioning period?

CRCPD agrees that 50 years of SAFSTOR appears excessive and is apt to invoke concerns from the public and others. However, there is a health physics argument to be made – at least for a limited and reasonable period of time. That argument is the reduction of dose for occupational workers performing the decommissioning. A review of radionuclide fingerprints obtained from the nuclear power plant industry indicates the standard short-lived radionuclides (<100 days: Cr-51, Co-58, Zr-95, Nb-95, Sb-124) are usually <1% of the mix per radionuclide. A second division, 100 < T1/2 <500 days, Mn-54 and Zn-65 are often an appreciable percentage of the radionuclide mix. Co-60 (the predominant nuclide by far, and often 60-80% or more) appears to be the nuclide driving any health physics based dose reduction SAFSTOR argument out to 50 years.

It also makes sense that a multi-reactor site that will not shutdown all reactors at the same time could use SAFSTOR until all reactors at the site are ready for DECON. For single reactor sites or where all reactors at a multi-reactor site are shutdown at about the same time, SAFSTOR creates significant opportunity costs for other productive uses of the site. This argues for SAFSTOR to be a minimum period of time. For some nations, there is essentially no SAFSTOR. On March 10, 2016, the French Nuclear Safety Authority (ASN) presented at the 2016 Regulatory Information Conference that its 2009 policy on decommissioning and delicensing requires that "dismantling of the entire facility should start just after its final shutdown, with no transitional period, even if the dismantling operations themselves, owing to their complexity, can last for a very long time" (https://ric.nrc-gateway.gov/docs/abstracts/lachaumej-l-th30-hv.pdf).

The CRCPD believes there may be some middle ground for consideration. The reduction of occupational dose to the worker is of mutual interest to both industry and the regulator. We request each licensee justify the benefits of SAFSTOR and regulators should evaluate those benefits to balance the hazards of real dose to workers and with the potential pitfalls of extended storage. If the state and public concerns can be adequately addressed, some reasonable period of SAFSTOR may serve the overall good. The CRCPD does not possess enough detailed analysis to evaluate what a reasonable/maximum SAFSTOR period would be but we fully recognize the expressed concerns with a 50 year time period of time and suggest the definition of SAFSTOR be changed.

The re-evaluation of SAFSTOR, and subsequent change in definition, may eliminate concerns about the deterioration of structures, systems and components that might release radioactive materials into the environment. There is insufficient evidence that former nuclear reactor facilities in SAFSTOR for up to fifty years or more minimizes the risks to public health and the environment in the broadest definitions of those risks. The CRCPD believes SAFSTOR should be re-evaluated as a decommissioning option. It is our opinion that the values for SAFSTOR may be overstated and of benefit only to the licensees, and the concern created by SAFSTOR is inadequately assessed, especially the concern to all other entities beyond the licensee. A number of licensees have demonstrated that NRC power reactors can be efficiently decommissioned soon after shutdown, rather than waiting 50 years. Big Rock Point, Fort St. Vrain Haddam Neck, Maine Yankee, Rancho Seco, Trojan, and Yankee Rowe have completed DECON well before 50 years. Humboldt Bay 3, LaCrosse, and Zion 1 and 2 are currently in DECON (http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/decommissioning.html). There are also commercial entities currently developing new technology and expertise in completing decommissioning well before 50 years.

The duration of 60 years for decommissioning seems excessive from a perspective of public health justice and environmental trust. After decades of operation and additional decades of SAFSTOR and DECON, a generation of people that did not benefit from the power generated by the reactor may bear the burden of decommissioning and site restoration, and those that profited from its operations which generated revenue may bear very little of that burden. Economic injustice is added when possible reuse of a site for productive purposes is prohibited for 50 years or more due to the current SAFSTOR definition and the NRC license cannot be terminated until after DECON. At many sites, elements of electricity distribution could be used for a new electric generator sooner if an earlier decommissioning time frame was chosen.

Also to be considered from an economic standpoint is the loss of nuclear decommissioning trust funds that could be used for decontamination when they are instead used for decades of SAFSTOR. If nuclear decommissioning trust funds are allowed for spent fuel management costs, and other expenses not related to decontamination of the facility for license termination, there is a greater chance that adequate funds will be available at the DECON phase.

Additional consideration to abbreviate the total time to decommission is that DECON completed prior to 50 years may improve the decommissioning process. This would come about by using part of the current operating staff to plan and/or carry out the decommissioning. Otherwise, after perhaps 100 years of operations and SAFSTOR, many of the people and organizations that built

and operated the power reactor are no longer alive and available to inform the process of decontamination and dismantlement. Only a fraction of their institutional knowledge about the facility may be captured in documents generated decades before those documents are needed. Similarly, waiting decades to decontaminate and dismantle the facility provides more time for material degradation to occur, which may increase the probability of lost containment of radioactive materials stored onsite. Finally, DECON completed prior to 50 years promotes technological advancement to conduct work in radiologically controlled areas with greater efficiency to help save time and dose. This is advantageous to the nation, and more so than simply waiting so less efficient decontamination and dismantling methods may be used.

The CRCPD recommends that the definition of SAFSTOR be revised and SAFSTOR be limited for use with multiple reactor sites only for the reasons described herein. This would help ensure the licensee benefits from the institutional knowledge of the operating staff during DECON planning after the cessation of reactor operations, the local community is not burdened with a site that prevents productive development of the land, and that those who benefitted from electric generation are responsible for the decommissioning real and intangible costs. Furthermore, reactors that are currently in SAFSTOR should be required to transition to DECON in a reasonable time frame, as explained in the new definition. Two years is recommended as it is the time frame provided for developing a Post Shutdown Decommissioning Report and site-specific cost estimate after reactor power cessation.

GEN-2: Section 50.54(m) of the NRC's regulations for operating reactors specifies the minimum licensed operator staffing levels (*e.g.,* minimum staffing per shift for licensed operators and senior operators) for power reactors authorized to operate. 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 requirements in § 50.54(m) concerning licensed operator staffing levels for operating reactors are not applicable to a decommissioning plant. For a decommissioning power reactor, the senior on-shift management representative is a certified fuel handler who, as stated in § 50.2, is a non-licensed operator that has qualified in accordance with a fuel handler training program approved by the Commission. However, there are no regulatory provisions similar to § 50.54(m) concerning operator staffing levels for a power reactor licensee once it has certified that it is permanently shut down and defueled under § 50.82(a)(1). Because the decommissioning regulations are silent regarding staffing levels, licensees have sought amendments in their defueled technical specifications to specify minimum non-licensed operator staffing. Based on precedent used at most previous permanently shut down reactors, and considering the demonstrated safety performance of reactor decommissioning sites over many years, the NRC has found that an operations staff crew complement consisting of one certified fuel handler and one non-certified operator is an acceptable minimum staffing level.

Considering the discussion above, should minimum operations shift staffing at a permanently shut down and defueled reactor be codified by regulation?

The CRCPD is concerned that staffing levels be based on public health, environmental safety, and nuclear security and not the economic concerns of licensees who may see a decommissioned nuclear reactor power plant an unimportant asset in its collection of electricity generating assets. In Post Shutdown Decommissioning Activities Reports reviewed by the CRCPD, staffing estimates provided by planners are vague regarding the skills and duties of staff beyond those of the security staff. It seems prudent the new regulations codify staffing levels. Without better definition, the CRCPD lacks confidence that the licensee staff will be able to meet all of the emergency and environmental surveillance needs of what is essentially an extremely large radioactive waste storage site.

GEN-3: Related to the decommissioning plant operator staffing levels is the requirement for and the use of a control room during decommissioning. Section 50.54(m) specifies the control room staffing requirements for licensed operators at an operating reactor with a fueled reactor vessel. No such requirements exist for the location of operations staff at a permanently shut down and defueled reactor. The control room at an operating reactor contains the controls and instrumentation necessary for complete supervision and response needed to ensure safe operation and shut down of the reactor and support systems during normal, off-normal, and accident conditions and, therefore, is the location of the shift command function. Following permanent shut down and removal of fuel from the reactor, operation of the reactor is no longer permitted and the control room no longer performs all of the functions that were required for an operating reactor. There are no longer any activities at a permanently shut down and defueled reactor that require a quick decision and response by operations staff in the control room. For most decommissioning reactors, the NRC has approved license amendments to the technical specifications that require at least one non-licensed operator to remain in a control room. This technical specification change is primarily based on precedent. However, the NRC has noted in the license amendment safety evaluations that the primary functions of the control room at a permanently shut down reactor are monitoring, response, communications, and coordination. Specifically, the control room at a decommissioning reactor is where many plant systems and equipment parameters are monitored (for operating status and conditions, radiation levels, electrical anomalies, or fire alarms for example). Control room personnel assess plant conditions; evaluate the magnitude and potential consequences of abnormal conditions; determine preventative, mitigating and corrective actions; and perform notifications. The control room provides a central location from where the shift command function can be conveniently performed because of the availability of existing monitoring and assessment instrumentation, communication systems and equipment, office computer equipment, and ready access to reference material. The control room also provides a central location from which emergency response activities are coordinated. When activated, the emergency response organization reports to the control room.

During reactor decommissioning, the control room may be subject to extensive changes, which are evaluated by the licensee for safety implications under the § 50.59 process. There is precedent among some previous decommissioning reactor licensees to design and construct a decommissioning control room that is independent of the original operating control room. Most decommissioning reactors can probably demonstrate that the command, communications, and monitoring functions performed in the control room could be readily performed at an alternate onsite location, based on the site-specific needs of a

licensee during its decommissioning process. Consequently, several decommissioning licensees have questioned the meaning of the control room as it relates to decommissioning nuclear power plants.

Based on the discussion above, what regulatory changes should be considered for a permanently shut down and defueled reactor to prevent ambiguities concerning the meaning of the control room for decommissioning reactors and should minimum staffing levels be specified for the control room?

The CRCPD is concerned that substitution of space for functions currently designated for the control room be based on public health and environmental safety and nuclear security and not the economic concerns of licensees. It seems prudent the new regulations codify requirements of the space for controlling functions required for decommissioning. Without better definition, the CRCPD lacks confidence that the licensee staff will be able to meet all of the emergency and environmental surveillance needs of what is essentially an extremely large radioactive waste storage site outside the control room.

GEN-4: Are there any other changes to 10 CFR Chapter I, "Nuclear Regulatory Commission," that could be clarified or amended to improve the efficiency and effectiveness of the reactor decommissioning process?

The CRCPD has numerous changes that are related to 10 CFR Chapter I. Among the regulatory changes we recommend:

1. Re-evaluation of SAFSTOR and subsequent change in the definition of SAFSTOR to balance the hazards of real dose to workers with the potential pitfalls of extended storage. Long-term storage of radioactive materials at a former power generation site may deprive the community of potentially productive land that can improve the economic standing of the community.
2. Eliminate use of the radiation dose guidance from the EPA Protective Action Guidelines as a threshold for maintaining offsite response organizations. Instead, the NRC might use the 0.1 rem (1 mSv) per year radiation dose from all pathways that is the public dose limit at the site boundary during full power operations. Decommissioned reactors should pose less radiological impacts on the community while awaiting and undergoing decontamination and dismantlement as compared to operating nuclear reactors so maintaining public doses to less than 0.1 rem (1 mSv) per year from all pathways should be readily possible.
3. The steps necessary to verify that contamination levels and doses from incidents at decommissioning reactors are clearly understood should a release occur are not readily accomplished by jurisdictions employing all hazards response plans that do not commonly include radiological capabilities. Offsite response organization radiological assessment scientists must be supported by decommissioning licensees for this purpose, and their capabilities should be periodically evaluated using existing Federal Emergency Management Agency guidance.
4. Grandfather the new regulations on decommissioning for NRC reactors already into decommissioning, to ensure the values added by rulemaking can be shared by the numerous states hosting reactors entering or soon entering decommissioning.

5. Require decommissioning reactors to plan for emergencies using a design basis threat or hostile action event occurring simultaneously with a natural disaster that prevents use of a 10 hour time frame for mitigative actions. Experience with combined incidents, including Fukushima, demonstrate conditions could preclude mitigative actions in the first ten hours.
6. Ensure NRC licensees provide all relevant emergency-related information, especially site-specific weather and on-site and inside building radiation levels, to offsite response organizations throughout decommissioning until license termination. The Plant Display System seems capable of serving this function, but redundant means, for example via telephonic communications, should be required.
7. Ensure staffing levels and emergency notification requirements and facilities are sized for safety, and not simply for economy. Staffing levels and specific staff roles must be better defined by licensees in the PSDAR.
8. Regulate decommissioning on the basis that decommissioned reactor sites have radiological risks equivalent to radioactive waste storage facilities because of the source term that remains in the structures, systems and components that could leak into soils and groundwater, or be consumed in fire, especially a large-scale fire with accelerants initiated by terrorists.
9. Regulate decommissioning on the basis that NRC licensed nuclear reactors remain a high interest target of terrorists.
10. Regulate the decontamination and dismantling activities of DECON on the basis that they will likely be greater than or equivalent to the most hazardous of industrial activities for many local jurisdictions and some states.
11. Incorporate requirements for information sharing, access by state and local officials to key decommissioning staff, and require licensees maintain relevant and reasonable environmental surveillance and emergency preparedness activities as determined by state and local officials in agreements with NRC licensees. This should help build trust, ensure perceptions of public health justice and good environmental stewardship, extending the safety culture throughout the course of decommissioning and thoroughly into the NRC licensee host communities.
12. In Section II, Background, the NRC concludes that mitigating strategies, monitoring of spent fuel pool water level, and placement of spent fuel in a dispersed configuration reduces the likelihood of a release from the spent fuel pool in the event of a loss of cooling water. With this as a basis, the NRC has justified reducing or eliminating emergency preparedness zones around nuclear power plants in the decommissioning phase. Following a permanent shutdown, the NRC inspection program should include verification regarding the three items mentioned above for risk reduction. These are:

    a. Mitigating strategies
    b. Spent fuel pool water level instrumentation
    c. Configuration of spent fuel in the spent fuel pool

13. As long as nuclear fuel remains in the spent fuel pool and there is a risk of an offsite release, regardless of magnitude, the state is responsible to monitor and evaluate impacts to public health and the environment. This rigorous offsite monitoring program must be supported by the licensee.

14. Licensees, or states in their stead, should continue to provide reasonable assurance of adequate protection of the public health and safety from what is introduced from the reactor site by groundwater. The requirements of NEI 07-07, Industry Ground Water Protection Initiative – Final Guidance Document (August 2007) should continue until final NRC license termination.
15. While described in other NRC documents, there is little information included in the ANPR regarding the long term offsite or onsite radiological environmental monitoring for a site undergoing decommissioning. The NRC should include the long term radiological environmental monitoring parameters to be maintained throughout the decommissioning process and for the remaining licensed activities (dry cask storage). Doing so would provide the opportunity to consolidate all of the radiological environmental monitoring and decommissioning requirements that are currently found throughout various rules and regulatory guidance documents.
16. Some state organizations have agreements with NRC to participate in site inspections. The onsite presence of NRC staff is minimal during decommissioning activities and the Resident Inspector will be removed fairly soon after reactor operations cease. States that have these agreements would like to continue to have access to the site and participate in NRC inspections throughout decommissioning. The ANPR should include language that facilitates the continuation of agreements with offsite agencies into decommissioning.

GEN-5: The NRC is attempting to gather information on the costs and benefits of the changes in the regulatory areas discussed in this document as early as possible in the rulemaking process. Given the topics discussed, please provide estimated costs and benefits of potential changes in these areas from either the perspective of a licensee or from the perspective of an external stakeholder.

a. From your perspective, which areas discussed are the most beneficial or detrimental?

The CRCPD believes the exemption process currently in effect impedes the process of cooperative agreements between state and local jurisdictions attempting to maintain environmental surveillance and radiological emergency preparedness capabilities. Were NRC licensees required to engage in constructive dialog to assess what is in the best interests of all parties, reasonable resolution with less litigation might be the result. In fact, the NRC exemption process has thwarted normal compensation methods used by states to ensure generators of hazard pay for the state and local resources determined necessary to respond to and recover from incidents. These methods are routinely used for non-radiological hazardous waste sites that are undergoing remediation, either because of an incident or because the site is being decommissioned. There are no beneficial areas for state and local government and host communities under the current process of exemptions. There are only detriments.

b. From your perspective, assuming you believe changes are needed to the NRC's reactor decommissioning regulatory infrastructure, what are the factors that drive the need for

changes in these regulatory areas? If at all possible, please provide specific examples (*e.g.*, expected savings, expectations for efficiency, anticipated effects on safety, etc.) about how these changes will affect you.

The primary factors that drive the CRCPD's perspectives are:

1. Radioactive contamination of the environment is the issue of concern, not the dose from that contamination. Radioactive contamination of food, water and land can lead to significant economic hardship because consumers will choose to avoid products that are, or are suspected to be, radioactively contaminated. Despite science, people may also choose not to live or work where the environment is or has been radioactively contaminated.
2. The consequences of a transportation or industrial accident at a decommissioning reactor facility, the ramifications of a natural disaster or hostile attack that leads to a release of radioactivity to the public environment from a decommissioning reactor facility cannot be assessed by responders who make up an "all hazards" emergency response unless one of the hazards for which the jurisdiction is prepared is specifically radiological. Without support from the NRC licensee, this capability may likely be absent in many jurisdictions.
3. Where technical capabilities are needed in the local or state emergency responders, as for example, with hazmat teams that can respond to a chemical facility, there are fees to support those responders levied by the state. The NRC exemption of its licensees of this responsibility based on a dose from contamination that most jurisdictions would consider unacceptable (the EPA PAG limits) preempts this funding opportunity leaving the jurisdictions possibly unable to respond adequately. The CRCPD believes that only modest funding is needed to maintain an appropriate level of offsite radiological and nuclear emergency response capability.
4. The accident at Fukushima should teach all of us that calculations and assumptions fail because we cannot predict what may happen with the worst combination of multiple events, especially in an era where the United States is under attack by enemies that work hard to blend in.
5. SAFSTOR should be re-evaluated with a subsequent change in the definition of SAFSTOR to balance the hazards of real dose to workers with the potential pitfalls of extended storage. SAFSTOR exacerbates all of the problems described above by extending the duration of physical risk for immense quantities of radioactive materials onsite. SAFSTOR increases the amount of time for accidents to occur that degrade the socioeconomic status of the area around a plant which may adversely impact the availability of affordable quality health care. SAFSTOR prevents the community from using part of their land resources, and possibly important parts of their electrical transmission system for productive purposes.

c. Are there areas that are of particular interest to you, and for what reason?

Regulations should require a full site characterization, taking representative samples of buildings to be decontaminated and dismantled and obtaining borings of soils that may need to be excavated to reach release criteria, at the time of the site-specific cost estimate and the PSDAR.

To wait until all the staff that operated the reactor have left, at the time of decontamination and dismantling allowable up to fifty years later, neglects the value of institutional knowledge that exists soon after shut down while also inadequately informing critical aspects of planning and budgeting. It has to be done some time; it should be done sooner, rather than later. The best time is at the time the PSDAR and site-specific cost estimate is created.

d. Please provide any suggested changes that would further enhance benefits or reduce risks that may not have been addressed in this ANPR.

This rulemaking is an important step to providing that guidance if the NRC listens to state and local stakeholders as much as it listens to the Nuclear Energy Institute and American Nuclear Society. The regulations, however, should apply to all NRC licensed power reactors currently in decommissioning to be genuinely in the best interests of the nation.