NSIR/DPR-ISG-02

INTERIM STAFF GUIDANCE

EMERGENCY PLANNING EXEMPTION REQUESTS

FOR DECOMMISSIONING NUCLEAR POWER PLANTS

TABLE OF CONTENTS

1.0 PURPOSE

The purpose of this interim staff guidance (ISG) is to provide guidance to U.S. Nuclear Regulatory Commission (NRC) staff in processing exemptions from the emergency preparedness (EP) requirements for nuclear power reactors that are undergoing the process of decommissioning. Licensees must follow the process outlined in 10 CFR 50.12 when applying for exemptions from EP regulations. Attachment 1 of this ISG should be used by the staff for reviewing the adequacy of the defueled onsite emergency plan submitted by a licensee. The staff should use this ISG until it is superceded or incorporated into other guidance or rulemaking.

The NRC issues guidance to describe and make available to the public methods that the NRC staff considers acceptable for use in implementing specific parts of the agency's regulations. The guidance is not a substitute for regulations, and compliance with it is not required. Methods that differ from those set forth in guidance may also be deemed acceptable if they conform to the regulations and provide the basis for licensing decisions.

2.0 SCOPE

This ISG reflects the changes made to sections 50.47(b) and 50.54(q) of Title 10 of the *Code of Federal Regulations* (10 CFR) and Appendix E to 10 CFR Part 50 issued on November 23, 2011 (76 *Federal Register* (FR) 72560). This guidance is only applicable to a nuclear power reactor that has notified the NRC that it has permanently ceased operation in accordance with 10 CFR 50.82(a)(1)(i), has certified permanent removal of fuel from the reactor vessel under 10 CFR 50.82(a)(1)(ii), is storing spent fuel in a spent fuel pool (SFP) and is not located on the site of an operating nuclear power reactor. The Office of Nuclear Materials Safeguards and Security Spent Fuel Project Office Interim Staff Guidance – 16, "Emergency Planning," provides the appropriate guidance for fuel stored in a dry cask storage facility.

3.0 BACKGROUND

The EP requirements in 10 CFR Part 50 that apply to licensees of operating nuclear power reactors also apply to decommissioning power reactor licensees because these licensees retain their part 50 operating licenses or part 52 combined licenses after permanent cessation of operations and removal of fuel from the reactor vessel. The staff recognizes that the risk of a large offsite radiological release at a decommissioning power reactor storing irradiated fuel in the SFP is lower than the risk of a large offsite radiological release from an operating power reactor and its SFP, based on the consideration of initiating reactor events associated with normal and abnormal operations, design-basis accidents, and certain beyond design-basis accidents applicable to a decommissioning site. For example, in NUREG-1738, "The Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," the NRC determined for spent fuel aged one year, a risk factor of a zirconium fire initiated by a seismic event at 2×10^{-7} to 2×10^{-6} for the plants studied. In contrast, at operating reactors additional risk-significant accidents for which EP is expected to provide dose savings are on the order of 1×10^{-5} per year. Because of the lower comparative risk from a decommissioning power reactor, licensees typically make a case for an exemption on the basis that the application of the regulation in the particular circumstance decommissioning plants is not necessary to achieve the underlying purpose of the rule.

In the 1990s, the staff developed a thermal-hydraulic criterion for determining when reductions in EP requirements at decommissioning plants could be permitted. The criterion was used on a

case-by-case basis to grant exemptions from certain EP requirements. The criterion was based on demonstrating that spent fuel stored in the SFP would sufficiently air-cool and would not reach the zirconium ignition temperature if the water in the pool were to be fully drained or there was at least ten hours to take action to recover SFP inventory and take ad hoc actions to protect the public. NUREG/CR-4982, "Severe Accidents in Spent Fuel Pools in Support of Generic Safety Issue 82", and NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR [boiling water reactor] and PWR [pressurized water reactor] Permanently Shutdown Nuclear Power Plants", provides temperatures associated with the self-initiation and propagation of zirconium fires.

In SECY-97-120, "Rulemaking Plan for Emergency Planning Requirements for Permanently Shutdown Nuclear Power Plant Sites 10 CFR Part 50.54(q) and (t); 10 CFR 50.47; and Appendix E to 10 CFR Part 50," the staff presented the Commission with a rulemaking plan to amend the EP requirements for permanently shutdown nuclear power plant (NPP) sites. SECY-00-0145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning," subsequently included sample rule language for EP at decommissioning plants. Because of the uncertainties associated with the risk and time frame for zirconium fire vulnerability as stated in SECY-00-0145, the staff suspended its decommissioning rulemaking efforts until the associated technical issues could be satisfactorily resolved.

In January 2001, the NRC published NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," providing a technical basis for the decommissioning rulemaking for permanently shutdown nuclear power plants proposed in SECY-00-0145. NUREG-1738 contained the results of the staff's evaluation of the potential accident risk for a SFP at a decommissioning power reactor in the United States. Specifically, NUREG-1738 stated that fuel assembly geometry and rack configuration are plant specific, and both are subject to unpredictable changes after an earthquake or cask drop that drains the pool. Therefore, because a non-negligible decay heat source lasts many years and configurations ensuring sufficient air flow for cooling cannot be assured, the possibility of reaching the zirconium ignition temperature cannot be precluded on a generic basis.

In SECY-01-0100, "Policy Issues Related to Safeguards, Insurance, and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools," the staff concluded that there was no immediate safety concern or need for immediate regulatory action for existing decommissioning power reactor licensees that had been previously granted EP exemptions. These conclusions were based on a review of the site-specific conditions at each existing decommissioning plant's power reactor and the low probability of the beyond-design-basis conditions occurring that would be necessary to initiate a zirconium fire.

In a memorandum dated August 16, 2002, the staff notified the Commission that it had discontinued the integrated rulemaking for decommissioning power reactors and generic regulatory activities because of the apparent lack of future licensees that would benefit from such regulations at that time and the need to devote resources to security related issues due to the events of September 11, 2001. Additionally, the staff provided that if any operating power reactors were to shutdown permanently, decommissioning regulatory issues would continue to be addressed on an ad hoc basis through the exemption process in a manner based on the then-current practice.

Attachment 2 provides a listing of decommissioning power reactors and bases provided in support of reducing EP requirements, specifically the elimination of formal offsite EP requirements.

4.0 OVERVIEW OF EXISTING GUIDANCE

The NRC published NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," in August 1997, providing recommendations on operationally-based regulations that could be partially or totally removed for decommissioning power reactor licensees without impacting public health and safety. It recommended that licensees apply for exemptions from the following offsite emergency planning requirements, after the fuel is no longer susceptible to substantial zircaloy oxidation and the fuel cladding will remain intact given the SFP is drained:

- The early public notification requirements (§50.47(b)(5) and Appendix E, section IV.D.3);
- The periodic dissemination of emergency planning information to the public (§50.47(b)(7) and Appendix E, section IV.E.8);
- Offsite emergency facilities and equipment such as the EOF, and the emergency news center (§50.47(b)(8), Appendix E, section IV.E.8);
- Offsite radiological assessment and monitoring capability, including field teams (§50.47(b)(9));
- Periodic offsite drills and exercises (§50.47(b)(14), Appendix E, section IV.F.3); and
- Licensee headquarters support personnel training (§50.47(b)(15), Appendix E, section IV.F.b.h).

NUREG-1738 identified a zirconium fire resulting from a substantial loss of water from the SFP as the only postulated scenario at a decommissioning plant that could result in a significant release. The scenarios that lead to this condition have very low probabilities of occurrence and are considered beyond design-basis accidents; however, the consequences of such accidents could lead to an offsite dose in excess of the U.S. Environmental Protection Agency's (EPA) protective action guidelines (PAGs). The risk associated with zirconium fire events decreases as decay time increases and decay heat decreases. In SECY-01-0100, the staff proposed maintaining a level of offsite EP consistent with the Commission's defense-in-depth philosophy while utilizing the risk insights of NUREG-1738.

As the spent fuel ages, the generation of decay heat decreases. After a certain amount of time, the overall risk of a zirconium fire becomes insignificant due to two factors: 1) the amount of time available for preventative and mitigating actions, and, 2) the increased probability that the fuel is air coolable. This lower risk supports the reduction of EP requirements as described in Table 1.

In SECY-01-0100, the staff proposed regulations for maintaining a level of offsite EP consistent with the Commission's defense-in-depth philosophy while utilizing the risk insights of NUREG-1738. The risk associated with a zirconium fire event is directly related to decay heat from the fuel (and therefore, the time since shutdown). NUREG-1738 conservatively estimated that greater than 100 hours would be available before SFPs lowered to within 3 feet of the top of the fuel for loss of cooling events when PWR fuel has decayed at least 60 days.

In June 2013, a draft study, entitled "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark 1 Boiling Water Reactor," was published for public

comment. The purpose of the consequence study was to determine if accelerated transfer of older, colder spent fuel from the SFP at a reference plant to dry cask storage significantly reduces risks to public health and safety. The specific reference plant used for the study was a General Electric Type 4 BWR with a Mark I containment.

The study states: "Past risk studies have shown that storage of spent fuel in a high-density configuration is safe and risk of a large release due to an accident is very low. This study's results are consistent with earlier research conclusions that spent fuel pools are robust structures that are likely to withstand severe earthquakes without leaking. The NRC continues to believe, based on this study and previous studies that spent fuel pools protect public health and safety."

The study also estimated that the likelihood of a radiological release from the SFP resulting from the selected severe seismic event analyzed in the study was on the order of one time in 10 million years or lower. The study analyzed two cases for each scenario: one where mitigation measures of 10 CFR 50.54(hh)(2) were credited, and one where they were not used or were unsuccessful. It showed that successful mitigation reduces the likelihood of a release and that the likelihood of a release was equally low for both high- and low-density loading in the SFP. The study did not consider the post-Fukushima mitigation measures required by Orders EA-12-049 (Mitigating Strategies Order) and EA-12-051 (Reliable Hardened Containment Vents Order)

Additionally, the NRC conducted research to assess the risk to the public and identify the dominant contributors to that risk for moving spent fuel to dry cask storage. NUREG-1864, "A Pilot Probabilistic Risk Assessment [PRA] of a Dry Cask Storage System at a Nuclear Power Plant," was published in March 2007. The staff analyzed risk by selecting a specific cask system at a specific BWR site, developed a comprehensive list of initiating events, and evaluated the risk associated with each initiating event. Initiating events considered included the dropping of the cask inside the secondary containment building during transfer operations, as well as external events during onsite storage (such as earthquakes, floods, high winds, lightning strikes, accidental aircraft crashes, and pipeline explosions). Potential cask failures from mechanical and thermal loads, including thermal loads caused by mis-loading events, were also modeled. In the event of a cask failure/breach, the fuel inventory available for release was based on 10 year old fuel. Weather conditions and the population distribution in the vicinity of the selected site were also considered.

The results of PRA studies are normally presented in measures such as the probability of a prompt fatality and the probability of a latent cancer fatality. The results of this study indicated that no prompt fatalities would be expected. The resulting calculated risk for a latent cancer fatality was extremely small (i.e., less than one in a trillion years). Due to the exceedingly low risk numbers calculated, the conclusion that should be reached is that cask storage systems provide a safe means to store spent nuclear fuel**.**

5.0 EVALUATION OF EXEMPTIONS TO EP REGULATIONS

Consistent with previous exemption requests informed by the most recent SFP studies, the NRC should not grant approval for the exemption of EP requirements for decommissioning power reactor licensees until site-specific analyses provide sufficient assurance that an offsite radiological release is not postulated to exceed the EPA PAGs at the site boundary, or that there is sufficient time to initiate appropriate mitigating actions by offsite agencies on an ad hoc basis to protect the health and safety of the public. The expected analysis will include the

amount of time that lapses from when the SFP drains and air flow passages are blocked to when the hottest fuel assembly reaches 900 degrees Celsius. The staff concluded in SECY-00-0145 that, because of the considerable time available to initiate and implement mitigative actions, or if necessary, protective actions, formal emergency plans for rapid initiation and implementation of protective actions are no longer needed. For SFPs, after one year of decay time, in the case of an event that could lead to a zirconium fire, licensees would have 10 to 12 hours, which can be considered by NRC staff to be a sufficient amount of time to implement appropriate mitigative measures, as well as, offsite protective actions, if necessary, without preplanning.

In addition to the SFP analysis, any accident analyses in the FSAR that is still applicable in the defueled condition of the plant, such as a fuel handling accident, should be reviewed and any accidents no longer bounded by previous analyses should be analyzed. Historically, exemption requests have included analyses of expended resin fires and direct radiation exposure due to a drained SFP.

The analyses and conclusions described in NUREG-1738 are predicated on the risk reduction measures identified in the study as Industry Decommissioning Commitments (IDC) and Staff Decommissioning Assumptions (SDA), listed in Attachment 2. The staff should ensure that the licensee has addressed these IDCs and SDAs in the final safety analysis report for the decommissioning site if they are storing fuel in a SFP. The staff should verify the licensee presents a determination that there is sufficient time, resources and personnel available to initiate mitigative actions that will prevent an offsite release that exceeds EPA PAGs. The determination must also include a spent fuel heat up analysis for a loss of inventory event leading to fuel uncoverery with obstructed air flow (adiabatic heat-up).

Table 1 depicts the potential exemption requests, based on the staff's experience, for the time period beginning approximately 12 months after the final reactor shutdown, when the only event that could lead to an offsite dose exceeding EPA PAGs is a zirconium fire and the licensee has sufficient time to initiate mitigating actions for the event. The licensee must provide an analysis which indicates that fuel in the SFP meets these conditions. Differences or deviations from Table 1, "Exemptions for Consideration," will be reviewed on a case-by-case basis.

Table 1
EXEMPTIONS FOR CONSIDERATION

~~Strikethrough~~ text indicates requested exemptions to rule language.	
10 CFR 50.47 Emergency Plans	**Basis for Change**
(b) The onsite ~~and, except as provided in paragraph (d) of this section, offsite~~ emergency response plans for nuclear power reactors must meet the following standards:	In the Statement of Considerations for the Final Rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430; June 22, 1995), the Commission responded to comments concerning offsite emergency planning for ISFSIs or an MRS and concluded that, "the offsite consequences of potential accidents at an ISFSI or a MRS [monitor retrievable storage installation] would not warrant establishing Emergency Planning Zones." In a nuclear power reactor's permanently defueled state, the accident risks are more similar to an ISFSI or MRS than an operating nuclear power plant. The draft proposed rulemaking in SECY-00-0145 suggested that after at least one year of spent fuel decay time, the decommissioning licensee would be able to reduce its EP program to one similar to that required for an MRS under 10 CFR 72.32(b) and additional EP reductions would occur when: (1) approximately five years of spent fuel decay time has elapsed; or (2) a licensee has demonstrated that the decay heat level of spent fuel in the pool is low enough that the fuel would not be susceptible to a zirconium fire for all spent fuel configurations. The EP program would be similar to that required for an ISFSI under 10 CFR 72.32(a) when fuel stored in the SFP has more than five years of decay time and would not change substantially when all the fuel is transferred from the SFP to an onsite ISFSI. Exemptions from offsite EP requirements have been approved when the specific site analyses show that at least ten hours is available from a partial drain down event where cooling of the spent fuel is not effective until the hottest fuel assembly reaches 900°C. Because ten hours allows sufficient time to initiate mitigative actions to prevent a zirconium fire in the SFP or to initiate ad hoc offsite protective actions, offsite EP plans are not necessary for these permanently defueled nuclear power plant licensees.
(1) Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations ~~within the Emergency Planning Zones~~ have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.	See basis for 50.47(b).
(3) Arrangements for requesting and effectively using assistance resources have	Decommissioning power reactors present a low likelihood of any credible accident resulting in

Table 1
EXEMPTIONS FOR CONSIDERATION

been made, ~~arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility have been made,~~ and other organizations capable of augmenting the planned response have been identified.	radiological releases requiring offsite protective measures because of the permanently shut down and defueled status of the reactor. An emergency operations facility would not be required. The "nuclear island" or "control room" or other location can provide for the communication and coordination with offsite organizations for the level of support required. Also see basis for 50.47(b).
(4) A standard emergency classification and action level scheme, the basis of which include facility system and effluent parameters, is in use by the nuclear facility licensee~~, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures~~.	EALs are to be consistent with Section 8 (if applicable) and Appendix C of NEI 99-01 Revision 6 endorsed by the NRC in a letter dated March 28, 2013. No offsite protective actions are anticipated to be necessary, so classification above the Alert level is no longer required. Also see basis for 50.47(b).
(5) Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow up messages to response organizations ~~and the public~~ has been established~~; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established~~.	Per SECY-00-0145, after approximately 1 year of spent fuel decay time [and as supported by the licensee's SFP analysis], the staff believes an exception to the offsite EPA PAG standard is justified for a zirconium fire scenario considering the low likelihood of this event together with time available to take mitigative or protective actions between the initiating event and before the onset of a postulated fire. The spent fuel scoping study provides that depending on the size of the pool liner leak, releases could start anywhere from eight hours to several days after the leak starts, assuming that mitigation measures are unsuccessful. If 10 CFR 50.54(hh)(2) type of mitigation measures are successful, releases could only occur during the first several days after the fuel came out of the reactor. Therefore, offsite EP plans are not necessary for these permanently defueled nuclear power plant licensees. Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor, June, 2013
(6) Provisions exist for prompt communications among principal response organizations to emergency personnel ~~and to the public~~.	See basis for 50.47(b).
(7) ~~Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors),~~ [T]he principal points of contact with the news media for dissemination of information during an	See basis for 50.47(b).

Table 1
EXEMPTIONS FOR CONSIDERATION

emergency ~~(including the physical location or locations)~~ are established in advance, and procedures for coordinated dissemination of information to the public are established.	
(9) Adequate methods, systems, and equipment for assessing and monitoring actual or potential ~~offsite~~ consequences of a radiological emergency condition are in use.	See basis for 50.47(b)
(10) ~~A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.~~	In the unlikely event of a SFP accident, the iodine isotopes which contribute to an off-site dose from an operating reactor accident are not present, so potassium iodide (KI) distribution off-site would no longer serve as an effective or necessary supplemental protective action. The Commission responded to comments in its Statement of Considerations for the Final Rule for emergency planning requirements for ISFSIs and MRS facilities (60 FR 32435), and concluded that, "the offsite consequences of potential accidents at an ISFSI or a MRS would not warrant establishing Emergency Planning Zones." Additionally, in the Statement of Considerations for the Final Rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430), the Commission responded to comments concerning site-specific emergency planning that includes evacuation of surrounding population for an ISFSI not at a reactor site, and concluded that, "The Commission does not agree that as a general matter emergency plans for an ISFSI must include evacuation planning." Also see basis for 50.47(b).
(c)(2) ~~Generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries.~~ The size of the EPZs ~~also~~ may be determined on a case-by-case basis for gas-cooled nuclear reactors and for reactors with an authorized power level less than 250 MW thermal. ~~The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway.~~	See basis for 50.47(b).

Table 1
EXEMPTIONS FOR CONSIDERATION

10 CFR Part 50, Appendix E, section IV	**Basis for Change**
1. The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiological emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, and recovery~~, and onsite protective actions during hostile action~~. In addition, the emergency response plans submitted by an applicant for a nuclear power reactor operating license under this Part, or for an early site permit (as applicable) or combined license under 10 CFR Part 52, shall contain information needed to demonstrate compliance with the standards described in § 50.47(b), and they will be evaluated against those standards.	The EP Final Rule published in the Federal Register (76 FR 72560; November 23, 2011) amended certain requirements in 10 CFR Part 50. Among the changes, the definition of “hostile action” was added as an act directed toward an NPP or its personnel. This definition is based on the definition of "hostile action" provided in NRC Bulletin 2005-02. NRC Bulletin 2005-02 was not applicable to nuclear power reactors that have permanently ceased operations and have certified that fuel has been removed from the reactor vessel. The NRC excluded non-power reactors (NPR) from the definition of "hostile action" at that time because an NPR is not a nuclear power plant and a regulatory basis had not been developed to support the inclusion of non-power reactors in that definition. Likewise, an SFP and an ISFSI are not nuclear power plants as defined in the NRC’s regulations. The staff also considered the similarities between a decommissioning NPP and a non-power reactor to determine whether they should be included within the definition of “hostile action.” NPRs pose lower radiological risks to the public from accidents than do power reactors because: (1) the core radionuclide inventories are lower as a result of their lower power levels and often shorter operating cycle lengths; and (2) NPRs have lower decay heat associated with a lower risk of core melt and fission product release in a loss-of-coolant accident. A decommissioning power reactor also has a low likelihood of a credible accident resulting in radiological releases requiring offsite protective measures. For all of these reasons, the staff concludes that a decommissioning power reactor is not a facility that falls within the definition of “hostile action.”
2.~~ This nuclear power reactor license applicant shall also provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the date the applicant submits its application to the NRC.~~	See basis for 50.47(b)(10).
3.~~ Nuclear power reactor licensees shall use NRC approved evacuation time estimates (ETEs) and updates to the ETEs in the formulation of protective action recommendations and shall provide the ETEs and ETE updates to State and local~~	See basis for IV.2.

Table 1
EXEMPTIONS FOR CONSIDERATION

~~governmental authorities for use in developing offsite protective action strategies.~~	
4. ~~Within 365 days of the later of the date of the availability of the most recent decennial census data from the U.S. Census Bureau or December 23, 2011, nuclear power reactor licensees shall develop an ETE analysis using this decennial data and submit it under § 50.4 to the NRC. These licensees shall submit this ETE analysis to the NRC at least 180 days before using it to form protective action recommendations and providing it to State and local governmental authorities for use in developing offsite protective action strategies~~	See basis for IV.2.
5. ~~During the years between decennial censuses, nuclear power reactor licensees shall estimate EPZ permanent resident population changes once a year, but no later than 365 days from the date of the previous estimate, using the most recent U.S. Census Bureau annual resident population estimate and State/local government population data, if available. These licensees shall maintain these estimates so that they are available for NRC inspection during the period between decennial censuses and shall submit these estimates to the NRC with any updated ETE analysis.~~	See basis for IV.2.
6. ~~If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the nuclear power reactor licensee's currently NRC approved or updated ETE, the licensee shall update the ETE analysis to reflect the impact of that population increase. The licensee shall submit the updated ETE analysis to the NRC under § 50.4 no later than 365 days after the licensee's determination that the criteria for updating the ETE have been met and at least 180 days before using it to form protective action recommendations and providing it to State and local governmental authorities for use in developing offsite protective action strategies.~~	See basis for IV.2.

Table 1
EXEMPTIONS FOR CONSIDERATION

10 CFR Part 50, Appendix E, section IV.A	**Basis for Change**
A.1. A description of the normal plant ~~operating~~ organization.	Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," states in part: "… there may be water-cooled nuclear power units for which fulfillment of some of the General Design Criteria may not be necessary or appropriate. For plants such as these, departures from the General Design Criteria must be identified and justified." In Appendix A, a nuclear power unit is defined as a nuclear power reactor and associated equipment necessary for electric power generation and includes those structures, systems, and components required to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. Based on the permanently shut down and defueled status of the reactor, a decommissioning reactor is not a facility that can be operated to generate electrical power. Therefore, it does not have a "plant operating organization."
A.3. ~~A description, by position and function to be performed, of the licensee's headquarters personnel who will be sent to the plant site to augment the onsite emergency organization.~~	The number of staff at decommissioning sites is generally small but is commensurate with the need to safely store spent fuel at the facility in a manner that is protective of public health and safety. Decommissioning sites typically have a level of emergency response that does not require response by headquarters personnel.
A. 4. Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making ~~offsite~~ dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities.	Although, the likelihood of events that would result in doses in excess of the EPA PAGs to the public beyond the owner controlled area boundary based on the permanently shut down and defueled status of the reactor is extremely low, the licensee still must be able to determine if a radiological release is occurring. If a release is occurring, then the licensee staff should promptly communicate that information to offsite authorities for their consideration. The offsite organizations are responsible for deciding what, if any, protective actions should be taken.
A. 5. ~~Identification, by position and function to be performed, of other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employees of the licensee and who may be called upon for assistance for emergencies shall also be identified. The special qualifications of these persons shall be described.~~	The number of staff at decommissioning sites is generally small but should be commensurate with the need to operate the facility in a manner that is protective of public health and safety.
A.7. ~~By June 23, 2014,~~ identification of~~, and a description of the~~ assistance expected from, appropriate State, local, and Federal agencies	Requiring a licensee for a decommissioning site to provide a description of the assistance expected from appropriate State, local, and Federal agencies with

Table 1
EXEMPTIONS FOR CONSIDERATION

with responsibilities for coping with emergencies, ~~including hostile action at the site. For purposes of this appendix, "hostile action" is defined as an act directed toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force.~~	responsibilities for coping with emergencies is an unnecessary burden on the licensee, in light of the low risk of an emergency necessitating offsite assistance. Requiring a licensee to identify and describe the assistance expected from appropriate State, local, and Federal agencies with responsibilities for coping with hostile action at the site is unnecessary because, as explained in section IV.1, a decommissioning power reactor licensee is exempt from requirements in Appendix E related to a "hostile action."
A.8. ~~Identification of the State and/or local officials responsible for planning for, ordering and controlling appropriate protective actions, including evacuations when necessary.~~	Offsite emergency measures are limited to support provided by local police, fire departments, and ambulance and hospital services as appropriate. Since EPA PAGs are not expected to be exceeded offsite, protective actions such as evacuation should not be required. Also see basis for 50.47(b)(10)
A.9. ~~By December 24, 2012, for nuclear power reactor licensees, a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.~~	The number of staff at decommissioning sites is generally small but should be commensurate with the need to operate the facility in a manner that is protective of public health and safety. Responsibilities should be well defined in the emergency plan and procedures, regularly tested through drills and exercises audited and inspected by the licensee and the NRC. The duties of the onshift personnel at a decommissioning reactor facility are not as complicated and diverse as those for an operating reactor. The staff considered the similarity between the staffing levels at a permanently shutdown and defueled reactor and staffing levels at NPRs. The minimal systems and equipment needed to maintain the spent nuclear fuel in the spent fuel pool or in a dry cask storage system in a safe condition requires minimal personnel and is governed by Technical Specifications. In the EP Final Rule, the NRC agreed that the staffing analysis requirement was not necessary for non-power reactor licensees due to the small staffing levels required to operate the facility. For all of these reasons, the staff concludes that a decommissioning NPP is exempt from the requirement of 10 CFR Part 50, Appendix E, Section IV.A.9.
10 CFR Part 50, Appendix E, section IV.B	**Basis for Change**
1. The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as	EALs are to be consistent with Appendix 1 (if applicable) and Appendix C of NEI 99-01, Revision 6, "Methodology for Development of Emergency Action Levels." Also see basis for section IV.1.

Table 1
EXEMPTIONS FOR CONSIDERATION

criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within ~~and outside~~ the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite ~~and offsite~~ monitoring. ~~By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant~~. The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and State and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.	
10 CFR Part 50, Appendix E, section IV.C	
1. The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described. Emergency action levels (based not only on onsite ~~and offsite~~ radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, ~~such as the pressure in containment and the response of the Emergency Core Cooling System~~) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) notification of unusual events, (2) alert, ~~(3) site area emergency, and (4) general emergency~~ of 10 CFR Part 50, Appendix E, IV.C.1. These classes are further discussed in NUREG-0654/FEMA-REP-1.	Containment parameters do not provide an indication of the conditions at a defueled facility and emergency core cooling systems are no longer required. Other indications such as SFP level or temperature can be used at sites where there is spent fuel in the SFPs. In the Statement of Considerations for the Final Rule for EP requirements for ISFSIs and for MRS facilities (60 FR 32430), the Commission responded to comments concerning a general emergency at an ISFSI and MRS, and concluded that, "…an essential element of a General Emergency is that a release can be reasonably expected to exceed EPA Protective Action Guidelines exposure levels off site for more than the immediate site area." The probability of a condition reaching the level above an emergency classification of alert is very low. In the event of an accident at a defueled facility that meets the conditions for relaxation of EP requirements, there will be time to take ad hoc measures to protect the public." As stated in NUREG-1738, for instances of small SFP leaks or loss of cooling scenarios, these events evolve very slowly and generally leave many days for recovery efforts. Offsite radiation monitoring will be performed as the need arises. Due to the decreased risks associated with defueled plants, offsite radiation monitoring systems are not required.

Table 1
EXEMPTIONS FOR CONSIDERATION

	EALs should to be developed with the guidance provided in NEI 99-01, Revision 6.
2. ~~By June 20, 2012, nuclear power reactor~~ licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition ~~within 15 minutes~~ after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary ~~to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.~~	In the Proposed Rule (74 FR 23254) to amend certain emergency planning requirements for 10 CFR Part 50, the NRC asked for public comment on whether the NRC should add requirements for non-power reactor licensees to assess, classify, and declare an emergency condition within 15 minutes and promptly declare an emergency condition. The NRC received several comments on these issues. The NRC believes there may be a need for the NRC to be aware of security related events early on so that an assessment can be made to consider the likelihood that the event is part of a larger coordinated attack. However, the NRC determined that further analysis and stakeholder interactions are needed prior to changing the requirements for non-power reactor licensees. Therefore, the NRC did not include requirements in the 2011 EP Final Rule for non-power reactor licensees to assess, classify, and declare an emergency condition within 15 minutes and promptly declare an emergency condition. The staff considered the similarity between a permanently defueled reactor and a non-power reactor for the low likelihood of any credible accident resulting in radiological releases requiring offsite protective measures.
10 CFR Part 50, Appendix E, section IV.D	**Basis for Change**
1. Administrative and physical means for notifying local, State, and Federal officials and agencies ~~and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary,~~ shall be described. This description shall include identification ~~of the appropriate officials, by title and agency,~~ of the State and local government agencies ~~within the EPZs.~~	See basis for 50.47(b) and 50.47(b)(10).
2. ~~Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall~~	See basis for section IV.D.1.

Table 1
EXEMPTIONS FOR CONSIDERATION

~~also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.~~	
3. A licensee shall have the capability to notify responsible State and local governmental agencies within ~~15~~ minutes after declaring an emergency. ~~The licensee shall demonstrate that the appropriate governmental authorities have the capability to make a public alerting and notification decision promptly on being informed by the licensee of an emergency condition. Prior to initial operation greater than 5 percent of rated thermal power of the first reactor at the site, each nuclear power reactor licensee shall demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public with the plume exposure pathway EPZ. The design objective of the prompt public alert and notification system shall be to have the capability to essentially complete the initial alerting and notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this alerting and notification capability will range from immediate alerting and notification of the public (within 15 minutes of the time that State and local officials are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the appropriate governmental authorities to make a judgment whether or not to activate the public alert and notification system. The alerting and notification capability shall additionally include administrative and physical means for a backup method of public alerting and notification capable of being used in the event the primary method of alerting and notification is unavailable during an emergency to alert or notify all or portions of the plume exposure pathway EPZ population. The backup method shall have the capability to alert and notify the public within the plume exposure pathway EPZ, but does not need to meet the 15 minute design objective for the primary prompt public alert and notification system. When there is a decision to activate the alert and notification system, the appropriate governmental authorities will~~	While the capability needs to exist for the notification of offsite government agencies within a specified time period, previous exemptions have allowed for extending the State and local government agencies' notification time up to 60 minutes based on the site-specific justification provided. A specific notification time should be provided and justified, as part of the exemption request. Also see basis for 50.47(b) and 50.47(b)(10).

Table 1
EXEMPTIONS FOR CONSIDERATION

~~determine whether to activate the entire alert and notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public alert and notification system shall remain with the appropriate governmental authorities.~~	
4. ~~If FEMA has approved a nuclear power reactor site's alert and notification design report, including the backup alert and notification capability, as of December 23, 2011, then the backup alert and notification capability requirements in Section IV.D.3 must be implemented by December 24, 2012. If the alert and notification design report does not include a backup alert and notification capability or needs revision to ensure adequate backup alert and notification capability, then a revision of the alert and notification design report must be submitted to FEMA for review by June 24, 2013, and the FEMA-approved backup alert and notification means must be implemented within 365 days after FEMA approval. However, the total time period to implement a FEMA-approved backup alert and notification means must not exceed June 22, 2015.~~	See basis for section IV D.3. regarding the alert and notification system requirements.
10 CFR Part 50, Appendix E, section IV.E	**Basis for Change**
8.a.(i) A licensee ~~onsite technical support center and an emergency operations~~ facility from which effective direction can be given and effective control can be exercised during an emergency;	Due to the low probability of design-basis accidents or other credible events to exceed the EPA PAGs, the significantly reduced staff and the minimal expected offsite response required, offsite agency response will not be required at an emergency operations facility (EOF) and onsite actions may be directed from the control room or other location, without the requirements imposed on a Technical Support Center (TSC).
(ii) ~~For nuclear power reactor licensees, a licensee onsite operational support center;~~	NUREG-0696, "Functional Criteria for Emergency Response Facilities," provides that the operational support center (OSC) is an onsite area separate from the control room and the TSC where licensee operations support personnel will assemble in an emergency. For a defueled power plant, an OSC is no longer required to meet its original purpose of an assembly area for plant logistical support during an emergency. The OSC function can be incorporated into another facility.
b. ~~For a nuclear power reactor licensee's emergency operations facility required by paragraph 8.a of this section, either a facility located between 10 miles and 25 miles of the nuclear power reactor site(s), or a primary facility located less than 10 miles from the~~	See basis for 50.47(b)(3).

Table 1
EXEMPTIONS FOR CONSIDERATION

~~nuclear power reactor site(s) and a backup facility located between 10 miles and 25 miles of the nuclear power reactor site(s). An emergency operations facility may serve more than one nuclear power reactor site. A licensee desiring to locate an emergency operations facility more than 25 miles from a nuclear power reactor site shall request prior Commission approval by submitting an application for an amendment to its license. For an emergency operations facility located more than 25 miles from a nuclear power reactor site, provisions must be made for locating NRC and offsite responders closer to the nuclear power reactor site so that NRC and offsite responders can interact face-to-face with emergency response personnel entering and leaving the nuclear power reactor site. Provisions for locating NRC and offsite responders closer to a nuclear power reactor site that is more than 25 miles from the emergency operations facility must include the following:~~ (1) ~~Space for members of an NRC site team and Federal, State, and local responders;~~ (2) ~~Additional space for conducting briefings with emergency response personnel;~~ (3) ~~Communication with other licensee and offsite emergency response facilities;~~ (4) ~~Access to plant data and radiological information; and~~ (5) ~~Access to copying equipment and office supplies;~~	
c. ~~By June 20, 2012, for a nuclear power reactor licensee's emergency operations facility required by paragraph 8.a of this section, a facility having the following capabilities:~~ (1) ~~The capability for obtaining and displaying plant data and radiological information for each reactor at a nuclear power reactor site and for each nuclear power reactor site that~~	See basis for 50.47(b)(3).

Table 1
EXEMPTIONS FOR CONSIDERATION

~~the facility serves;~~ (2) ~~The capability to analyze plant technical information and provide technical briefings on event conditions and prognosis to licensee and offsite response organizations for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves; and~~ (3) ~~The capability to support response to events occurring simultaneously at more than one nuclear power reactor site if the emergency operations facility serves more than one site; and~~	
d. ~~For nuclear power reactor licensees, an alternative facility (or facilities) that would be accessible even if the site is under threat of or experiencing hostile action, to function as a staging area for augmentation of emergency response staff and collectively having the following characteristics: the capability for communication with the emergency operations facility, control room, and plant security; the capability to perform offsite notifications; and the capability for engineering assessment activities, including damage control team planning and preparation, for use when onsite emergency facilities cannot be safely accessed during hostile action. The requirements in this paragraph 8.d must be implemented no later than December 23, 2014, with the exception of the capability for staging emergency response organization personnel at the alternative facility (or facilities) and the capability for communications with the emergency operations facility, control room, and plant security, which must be implemented no later than June 20, 2012.~~	See basis for section IV.1. regarding hostile action.
e. ~~A licensee shall not be subject to the requirements of paragraph 8.b of this section for an existing emergency operations facility approved as of December 23, 2011;~~	See basis for 50.47(b)(3).
9.a. Provisions for communications with contiguous State/local governments ~~within the plume exposure pathway EPZ~~. Such communication shall be tested monthly.	See basis for 50.47(b) and (b)(10). The State and the local governments in which the nuclear facility is located need to be informed of events and emergencies, so lines of communication must be maintained.

Table 1
EXEMPTIONS FOR CONSIDERATION

9.c. Provision for communications among the ~~nuclear power reactor control room, the onsite technical support center, and the emergency operations facility; and among the~~ nuclear facility, the principal State and local emergency operations centers, ~~and the field assessment teams~~. Such communications systems shall be tested annually.	Because of the low probability of design-basis accidents or other credible events that would be expected exceed the EPA PAGs and the available time for event mitigation, there is no need for the TSC, EOF or field assessment teams. Also see justification for 50.47(b)(3). Communication with State and local EOCs is maintained to coordinate assistance on site if required.
9.d. Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the ~~nuclear power reactor control room, the onsite technical support center, and the emergency operations~~ facility. Such communications shall be tested monthly.	The functions of the control room, EOF, TSC and OSC may be combined into one or more locations due to the smaller facility staff and the greatly reduced required interaction with State and local emergency response facilities. Also see basis for 50.47(b).
10 CFR Part 50, Appendix E, section IV.F	**Basis for Change**
1. The program to provide for: (a) The training of employees and exercising, by periodic drills, of radiation emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiation emergency shall be described. This shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel: i. Directors and/or coordinators of the plant emergency organization; ii. Personnel responsible for accident assessment, including control room shift personnel; iii. Radiological monitoring teams; iv. Fire control teams (fire brigades); v. Repair and damage control teams; vi. First aid and rescue teams; vii. Medical support personnel; viii. ~~Licensee's headquarters support~~	The number of staff at decommissioning sites is generally small but is commensurate with the need to safely store spent fuel at the facility in a manner that is protective of public health and safety. Decommissioning sites typically have a level of emergency response that does not require additional response by headquarters personnel. Therefore, the staff considers exempting licensee's headquarters personnel from training requirements reasonable.

Table 1
EXEMPTIONS FOR CONSIDERATION

~~personnel;~~ ix. Security personnel. In addition, a radiological orientation training program shall be made available to local services personnel; e.g., local emergency services~~/Civil Defense~~, local law enforcement personnel~~, local news media persons~~.	
2. The plan shall describe provisions for the conduct of emergency preparedness exercises as follows: Exercises shall test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, ~~test the public alert and notification system,~~ and ensure that emergency organization personnel are familiar with their duties.	Because of the low probability of design-basis accidents or other credible events that would be expected to exceed the limits of EPA PAGs and the available time for event mitigation, the public alert and notification system will not be used and therefore requires no testing. Also see basis for 50.47(b)
a.~~ A full participation exercise which tests as much of the licensee, State, and local emergency plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located. Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in a full participation exercise required by this paragraph 2.a.~~ F.2.a.(i), (ii), and (iii) are not applicable.	Since the need for off-site emergency planning is relaxed due to the low probability of design-basis accidents or other credible events that would be expected to exceed the limits of EPA PAGs and the available time for event mitigation, no off-site emergency plans are in place to test. The intent of submitting exercise scenarios at power reactors is to check that licensees utilize different scenarios in order to prevent the preconditioning of responders at power reactors. For defueled sites, there are limited events that could occur and the previously routine progression to General Emergency in power reactor site scenarios is not applicable to a decommissioning site. The licensee is exempt from F.2.a.(i)-(iii) because the licensee is exempt from the umbrella provision of F.2.a.
b. Each licensee at each site shall conduct a subsequent exercise of its onsite emergency plan every 2 years. ~~Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in an exercise required by this paragraph 2.b. The exercise may be included in the full participation biennial exercise required by paragraph 2.c. of this section.~~ In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional	See basis for section IV.F.2.a. The low probability of design-basis accidents or other credible events that would exceed the EPA PAGs and the available time for event mitigation at a decommissioning site render TSCs, OSCs and EOFs unnecessary. The principal functions required by regulation can be performed at an onsite location that does not meet the requirements of the TSC, OSC or EOF.

Table 1
EXEMPTIONS FOR CONSIDERATION

areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, event classification, notification of offsite authorities, and assessment of the onsite ~~and offsite~~ impact of radiological releases~~, protective action recommendation development, protective action decision making, plant~~ system repair and mitigative action implementation. During these drills, activation of all of the licensee's emergency response facilities ~~(Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF))~~ would not be necessary, licensees would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff in all participating facilities would have the opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills may focus on the onsite exercise training objectives.	
c.~~ Offsite plans for each site shall be exercised biennially with full participation by each offsite authority having a role under the radiological response plan. Where the offsite authority has a role under a radiological response plan for more than one site, it shall fully participate in one exercise every two years and shall, at least, partially participate in other offsite plan exercises in this period. If two different licensees each have licensed facilities located either on the same site or on adjacent, contiguous sites, and share most of the elements defining co-located licensees, then each licensee shall:~~ (1)~~ Conduct an exercise biennially of its onsite emergency plan;~~ (2)~~ Participate quadrennially in an offsite biennial full or partial participation exercise;~~ (3)~~ Conduct emergency preparedness activities and interactions in the years between its participation in the offsite full or partial participation exercise with offsite authorities, to~~	See basis for section IV.F.2a.

Table 1
EXEMPTIONS FOR CONSIDERATION

~~test and maintain interface among the affected State and local authorities and the licensee. Co-located licensees shall also participate in emergency preparedness activities and interaction with offsite authorities for the period between exercises;~~ (4) ~~Conduct a hostile action exercise of its onsite emergency plan in each exercise cycle; and~~ (5) ~~Participate in an offsite biennial full or partial participation hostile action exercise in alternating exercise cycles.~~	
d. ~~Each State with responsibility for nuclear power reactor emergency preparedness should fully participate in the ingestion pathway portion of exercises at least once every exercise cycle. In States with more than one nuclear power reactor plume exposure pathway EPZ, the State should rotate this participation from site to site. Each State with responsibility for nuclear power reactor emergency preparedness should fully participate in a hostile action exercise at least once every cycle and should fully participate in one hostile action exercise by December 31, 2015. States with more than one nuclear power reactor plume exposure pathway EPZ should rotate this participation from site to site.~~	See basis for section IV.2.
e. Licensees shall enable any State or local Government ~~located within the plume exposure pathway EPZ~~ to participate in the licensee's drills when requested by such State or local Government.	See basis for section IV.2.
f. Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC~~, in consultation with FEMA,~~ cannot (1) find reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency or (2) determine that the Emergency Response Organization (ERO) has maintained key skills specific to emergency response. ~~The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.~~	The U.S. Federal Emergency Management Agency (FEMA) is responsible for the evaluation of an offsite response exercise. No action is expected from State or local government organizations in response to an event at a decommissioning site other than firefighting, law enforcement and ambulance/medical services. Memoranda of understanding should be in place for those services. Offsite response organizations will continue to take ad hoc actions to protect the health and safety of the public as they would at any other industrial site.

Table 1
EXEMPTIONS FOR CONSIDERATION

i. Licensees shall use drill and exercise scenarios that provide reasonable assurance that anticipatory responses will not result from preconditioning of participants. ~~Such scenarios for nuclear power reactor licensees must include a wide spectrum of radiological releases and events, including hostile action.~~ Exercise and drill scenarios as appropriate must emphasize coordination among onsite and offsite response organizations.	For defueled sites, there are limited events that could occur and the previously routine progression to General Emergency in power reactor site scenarios is not applicable to a decommissioning site. Therefore the licensee is not expected to demonstrate response to a wide spectrum of events. Also see basis for section IV.1 regarding hostile action.
j.~~ The exercises conducted under paragraph 2 of this section by nuclear power reactor licensees must provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to implement the principal functional areas of emergency response identified in paragraph 2.b of this section. Each exercise must provide the opportunity for the ERO to demonstrate key skills specific to emergency response duties in the control room, TSC, OSC, EOF, and joint information center. Additionally, in each eight calendar year exercise cycle, nuclear power reactor licensees shall vary the content of scenarios during exercises conducted under paragraph 2 of this section to provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to respond to the following scenario elements: hostile action directed at the plant site, no radiological release or an unplanned minimal radiological release that does not require public protective actions, an initial classification of or rapid escalation to a Site Area Emergency or General Emergency, implementation of strategies, procedures, and guidance developed under § 50.54(hh)(2), and integration of offsite resources with onsite~~ justification~~. The licensee shall maintain a record of exercises conducted during each eight year exercise cycle that documents the content of scenarios used to comply with the requirements of this paragraph. Each licensee shall conduct a hostile action exercise for each of its sites no later than December 31, 2015. The first eight-year exercise cycle for a site will begin in the calendar year in which the first hostile action exercise is conducted. For a site licensed under Part 52, the first eight-year exercise cycle begins in the calendar year of the initial exercise required by Section	See basis for section IV.F.2.

Table 1
EXEMPTIONS FOR CONSIDERATION

~~IV.F.2.a.~~	
10 CFR Part 50, Appendix E, section IV.I	**Basis for Change**
~~By June 20, 2012, for nuclear power reactor licensees, a range of protective actions to protect onsite personnel during hostile action must be developed to ensure the continued ability of the licensee to safely shut down the reactor and perform the functions of the licensee's emergency plan.~~	See basis for section IV.E.d.

References

1) 10 CFR 50.47, “Emergency Plans.”

2) 10 CFR 50.54, “Conditions of Licenses.”

3) 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities.”

4) 10 CFR Part 72.32, “Emergency Plan”

5) U.S. Nuclear Regulatory Commission, “Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning,” Commission Paper SECY-00-0145, June 28, 2000 Agencywide Document Access and Management System (ADAMS) Accession No. ML003721626.

6) U.S. Nuclear Regulatory Commission, “Policy Issues Related to Safeguards, Insurance, and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools” Commission Paper SECY-01-0100, ADAMS Accession No. ML011450420.

7) U.S. Nuclear Regulatory Commission, “Technical Study of Spent Fuel Accident Risk at Decommissioning Nuclear Power Plants” NUREG-1738 February 2001 ADAMS Accession No. ML010430066.

8) Memorandum from William Travers to Commission re: Status of Regulatory Exemptions for Decommissioning Plants”, August, 2002 ADAMS Accession No. ML030550706.

9) U.S. Nuclear Regulatory Commission, “Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor” (Draft Report for Comment) June 2013, ADAMS Accession No. ML13133A132.

10) U.S. Nuclear Regulatory Commission, “A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants” NUREG/CR-6451 August 1997, ADAMS Accession No. ML082260098.

11) U.S. Nuclear Regulatory Commission, NUREG-1864, “A Pilot Probabilistic Risk Assessment of a Dry Cask Storage System at a Nuclear Power Plant” ADAMS Accession No. ML071340012.

12) U.S. Nuclear Regulatory Commission, Commission Paper SECY-97-120,“Rulemaking Plan for Emergency Planning Requirements for Permanently Shutdown Nuclear Power Plant Sites”, July 1997, ADAMS Accession No. ML003752513.

13) NEI 99-01, Revision 6 (Draft) “Methodology for the Development of Emergency Action Levels for Non-Passive Reactors”, November 2012, ADAMS Accession No. ML12326A805.

Attachment 1
GUIDANCE FOR EVALUATION OF DECOMMISSIONING EMERGENCY PLANS

The following guidance should be used for the review of Defueled Emergency Plans for sites undergoing decommissioning:

1.0 Emergency Response Equipment and Facilities

Applicable Requlation(s): 10 CFR 50.47(b)(8) and (9), Appendix E to 10 CFR Part 50, Section IV.E

1.1. Back ground and Discussion

Operating power reactor sites require separate facilities for functions of evaluation and coordination of activities associated with the emergency, technical support, plant operation, assembly of logistical support personnel, and dissemination of information. When a site enters decommissioning, most of the plant systems are no longer required for operation or for mitigation of an accident. Most of the design basis accidents are no longer credible. The staff required to support the site is also much smaller. Facility functions may also be combined, and therefore, physical locations may be eliminated.

1.2. Guidance

The emergency plan should describe the onsite equipment and facilities designated for use during emergencies. The plan should describe the principal and alternate locations from which emergency control and assessment activities will occur. At least one location should be habitable during any emergency.

The emergency plan should include the means for identifying a command center to be used in an emergency. The criteria for evacuating a command center and re-establishing control from an alternate location should also be described. The plan should identify one or more locations from which licensee emergency workers would be dispatched to perform radiation surveys, damage assessment, emergency repair, or other mitigating tasks.

The protective equipment and supplies available to emergency response personnel should be described. Types of equipment and supplies may include:

- individual respiratory equipment, including self-contained breathing apparatus
- protective clothing
- firefighting equipment and gear
- supplemental lighting
- medical supplies
- contamination control and decontamination equipment
- communications equipment
- radiation detection equipment, including radiation meters, air samplers, dosimeters
- hazardous material detection equipment
- potassium iodide

The emergency plan should include criteria for issuing respiratory equipment, locations of emergency equipment and supplies, means for distributing these items and criteria for dispensing potassium iodide, if required.

The emergency plan should also include inventory lists indicating the emergency equipment and supplies provided at specified locations. The plan should describe the primary and alternate onsite and offsite communication systems that would be used to transmit and receive information throughout the emergency. A backup means of offsite communication to a commercial telephone should be provided for notification of emergencies and requests for assistance.

2.0 Staffing and Communication

Applicable Regulation(s): 10 CFR 50.47(b)(1), (2), (5) and (6), Appendix E to 10 CFR Part 50, Sections IV.A, C and D

2.1. Background and Discussion:

Table B-1 in NUREG-0654/FEMA-REP-1, Revision 1 describes the minimum emergency response staffing requirements for nuclear power plant licensed per 10 CFR Part 50 and 10 CFR Part 52. The staff recognizes that due to the limited number, lower possible frequency and relative magnitude of events at a defueled facility, fewer staff may be required during decommissioning. The major functional areas remain the same, but the major tasks are different and the time available to take mitigating actions changes significantly. Defueled Technical Specifications typically will define the onshift operating staff at a defueled decommissioning site as two positions: a certified fuel handler and an operator or technician. The major responsibility of the onshift staff, while there is fuel in the SFP, is to maintain SFP cooling. Performing the role of an Emergency Director should be within the qualifications and capabilities of the designated onshift staff member.

2.2. Guidance

2.2.1 Responsibilities

The emergency plan should describe the emergency organization to be activated onsite for possible events, and offsite augmentation and support. The plan should delineate the authorities and responsibilities of key positions and groups, and identify the communication chain for notifying and mobilizing personnel during normal and non-working hours. Personnel with the responsibility for event classification, onsite protective action decisions, and prompt notification of State and local government authorities and the NRC should be identified.

2.2.2 Decommissioning Facility Organization

The emergency plan should provide a brief description of the normal (day-to-day) facility organization and identify by position those with responsibility to declare an emergency and to initiate the appropriate response. Personnel responsible for maintaining the emergency plan and emergency response procedures should be identified.

2.2.3 Onsite Emergency Response Organization

The emergency plan should identify the onsite emergency response organization for the facility, including during periods such as holidays, weekends, and extended periods when normal operations are not being conducted. Organizational charts and tables should be used when appropriate. If the organization is activated in phases, the plan should describe the base organization and each additional component that may be activated to augment the organization. Typically, a minimum staff to augment the minimum onshift staff is manned within an hour of declaration of an Alert with a goal of total augmentation within two hours. The plan should clearly state the minimum level of staffing needed to effectively implement the plan for each period or phase described.

2.2.4 Direction and Coordination

The emergency plan should designate the position of the person, and alternate(s), who has principal responsibility for implementing and directing the emergency response. This person's duties and authorities would include:

- control of the situation
- initial classification, escalation or termination of the emergency condition
- event notification
- coordination of the staff and offsite personnel who augment the staff
- communication with parties requesting information regarding the event
- onsite protective measure decision-making
- request of support from offsite agencies

The emergency plan should also describe this person's authority to delegate responsibilities and the individuals who may be delegated certain emergency responsibilities.

2.2.5 Onsite Staff Emergency Assignments

The emergency plan should specify the organizational group or groups assigned to the functional areas of emergency activity listed below. The plan should also describe strategies for staffing these positions if the emergency lasts for an extended period of time. The duties, authorities, and interface with other groups and offsite assistance should be described. The organizational groups should provide support in the following areas:

- facility systems operations,
- fire control,
- onsite protective measures, including personnel evacuation and accountability,
- search and rescue operations,
- first aid,
- communications,
- onsite radiological survey and assessment,
- personnel and facility decontamination,
- facility security and access control,
- facility repair and damage control,
- post-event assessment,

- record keeping,
- media contact, and
- criticality safety assessment

2.2.6 Emergency Response Records

The emergency plan should describe the assignment of responsibility for reporting and recording incidents of abnormal operation, equipment failure, and accidents that led to a facility emergency. Decommissioning records shall be maintained until the license is terminated as required by10 CFR 50.75(g). Records of an emergency or incident to be maintained should include the following:

- cause of the incident,
- personnel and equipment involved,
- extent of injury and damage (onsite and offsite) as a result of the incident,
- locations of contamination with the final decontamination survey results,
- corrective actions taken to terminate the emergency,
- actions taken or planned to prevent a recurrence of the incident,
- onsite and offsite assistance requested and received, and
- any program changes resulting from a critique of emergency response activities.

The emergency plan should provide a description of the records associated with emergency plan maintenance that will be kept. These should include the following:

- training and retraining (including lesson plans and test questions),
- drills, exercises, and related critiques,
- inventory and locations of emergency equipment and supplies,
- maintenance, surveillance, calibration, and testing of emergency equipment and supplies,
- letters of agreement with offsite support organizations,
- reviews and updates of the emergency plan submitted per 10 CFR Part 50.54(q), and
- notification of onsite personnel and offsite response organizations affected by an update of the plan or its implementing procedures

The emergency plan should include provisions for an annual review and audit of the emergency preparedness program to ensure the program remains adequate. Elements of the audit should include a review of the following:

- emergency plan and associated procedures,
- emergency response training activities,
- records of emergency facilities, equipment, and supplies,
- records associated with offsite response agencies interface (such as training and letters of agreement),
- exercises, drills, communications, and inventory checks, and
- activation of the emergency plan since the last audit

2.2.7 Coordination with Offsite Response Organizations

The emergency plan should identify the principal State agency and other government (local, county, State, and Federal) agencies or organizations having authority for radiological or other hazardous material emergencies. The agencies' and/or organization's location and specific response capabilities in terms of personnel and resources should be described. The plan should include a description of the onsite and offsite services that support emergency response operations, including the following:

- decontamination facilities,
- medical treatment facilities,
- first aid personnel,
- fire fighters,
- law enforcement assistance, and
- ambulance services

2.2.8 Notification and Coordination

The emergency plan should describe the means used to activate the emergency response organization for each class of emergency on a 24-hours per day/7-days per week basis. The plan should describe the means provided to detect and notify the licensee's onshift staff of any abnormal conditions or of any danger to safe operations (e.g., a severe weather warning). The means to promptly notify State and local government authorities and the NRC should be described. The ability to request offsite assistance, including medical assistance for the treatment of contaminated injured onsite workers, should also be described. The plan should include the commitment to notify the NRC Operations Center immediately after notification of State and local government authorities but no later than one hour after an emergency is declared.

2.2.9 Information to be Communicated

The emergency plan should describe the type of information to be communicated to State and local government authorities and the NRC. The information should be clear, concise and should avoid technical terms and jargon. The types of information to be communicated should include the status of the facility, if a release of radioactive material is occurring or could occur, and dose rate projections. A standard reporting checklist should be included in the plan to facilitate timely notification for each postulated accident.

3.0 Mitigation of Consequences

Applicable Regulation(s): 10 CFR 50.47(b)(3), (8) and (10), Appendix E to 10 CFR Part 50, Section IV.B

3.1. Background and Discussion

Sites which hold spent fuel susceptible to zirconium fires have been exempted from some EP regulations based on their analysis showing the ability to perform actions to prevent such events or to take offsite protective actions were necessary. A site-specific SFP analysis should show that there is sufficient time from the loss of SFP inventory

until the onset of a zirconium fire to take the actions to mitigate the inventory loss and prevent a zirconium fire and to take offsite protective actions. Specifically, a time of at least ten hours from the loss of SFP inventory, without air cooling, to a temperature of 900 degrees C should be one conclusion from this site specific analysis. The emergency plan should describe the equipment, personnel, resources, such as water supplies, procedures and strategies in place for movement of any necessary portable equipment, initial and continuing training, that will be relied upon for prevention of a zirconium fire in the SFP. These mitigative strategies may have been developed as part of a response to or the result of NRC Order on Mitagative Strategies (EA-12-049). A time estimate for completing necessary actions to preclude the zirconium fire should be made.

3.2. Guidance

3.2.1 Limiting Actions

The emergency plan should describe the means and equipment provided for limiting the consequences of each type of accident identified in the plan. The plan should address the actions and systems in place to reduce the magnitude and/or reduce the effect of a radioactive or hazardous material release that has occurred. The plan should include actions to be taken to limit and mitigate the consequences to the public and workers. Means for limiting releases could include the following:

- sprinkler systems and other fire suppression systems
- fire detection systems
- firefighting capabilities
- filtration or holdup systems
- use of water sprays on airborne releases of radioactive material
- automatic shut-off of process or ventilation flow
- use of fire-resistant building materials

If portable equipment is used to prevent or mitigate events, the emergency plan should describe the procedures, storage and maintainability of that equipment.

Based upon the type of emergency, the emergency plan should describe the criteria for the shutdown of systems or the facility and any steps to be taken to ensure a safe, orderly shutdown of fuel handling operations and the approximate time required to complete the shutdown.

3.2.2 Onsite Protective Actions

The emergency plan should describe the nature of onsite protective actions, criteria for implementing those actions, the areas involved, and the procedures for notification to potentially affected persons. The plan should allow for timely relocation of onsite persons, effective use of protective equipment and supplies, and use of appropriate contamination control measures. The plan should describe the means for controlling and/or minimizing radiological exposures for personnel onsite, and any personnel expected to arrive onsite. The onsite exposure guidelines should be consistent with the EPA PAGs to be used in actions to control fires, stop releases, or protect the facilities. Exposure guidelines should be provided for:

- search and rescue
- removing injured persons
- undertaking mitigating actions
- performing assessment actions
- providing onsite first aid
- performing personnel decontamination
- providing ambulance service or offsite medical treatment

The emergency plan should include methods for onsite personnel evacuation and accountability. This could include:

- criteria for ordering a site evacuation
- means and timely notification of onsite persons impacted
- provisions for determining and maintaining accountability of assembled and evacuated personnel, and for identifying and determining the locations of personnel that were not evacuated
- search and rescue
- locations of onsite and offsite assembly areas
- evacuation routes and means for transporting onsite personnel (e.g., privately owned vehicles, buses, company vehicles)
- monitoring of evacuees for contamination and control measures if contamination is found
- criteria for command center and assembly area evacuation and re-establishment at an alternate location
- means for evacuating and treating onsite injured personnel, including potentially contaminated personnel

The emergency plan should describe provisions for preventing further spread of radioactive materials and for minimizing personnel exposure from radioactive materials. The plan should specify action levels for decontaminating personnel. The plan should describe provisions for determining the doses and dose commitments from external radiation exposure and internally deposited radioactive material received by emergency response personnel, including personnel from offsite emergency response organizations (e.g. fire, medical, police).

The emergency plan should describe arrangements made for hospital and medical services, both primary and backup, and their capabilities to evaluate and treat contaminated, injured persons, and injuries involving radiation, radioactive materials, and other hazardous materials used in conjunction with radioactive materials. The medical facility description should include capabilities to control any contamination that may be associated with the physical injuries. The plan should specify how injured personnel who are potentially contaminated will be transported to offsite medical facilities. The plan should describe how chemicals or hazardous materials stored onsite may impact transporting injured personnel. The commitment to provide ambulance and hospital personnel with health physics support should be included.

3.2.3 Assessment of Releases

The emergency plan should discuss the actions to be taken to determine the extent of the problem and to decide what corrective actions may be required for each class of emergency. This should include the types and methods of onsite and offsite sampling and monitoring in case of a release of radioactive or other hazardous material. The provisions for projection of offsite radiation exposures should be described.

4.0 Emergency Action Levels

Applicable Regulation(s): 10 CFR 50.47(b)(4), Appendix E to 10 CFR Part 50, Section IV.B, 10 CFR 72.32.a.

4.1. Background and Discussion

Recognition Category Permanently Defueled (PD) of the Nuclear Energy Institute (NEI) document NEI 99-01 Revision 6, “Methodology for Development of Emergency Action Levels," provides a stand-alone set of initiating conditions (ICs) and emergency action levels (EALs) for a permanently defueled NPP to consider for use in developing a site-specific emergency classification scheme. For development, it was assumed that the plant had operated under a 10 CFR Part 50 license and that the operating company has permanently ceased plant operations. Further, the licensee intends to store the spent fuel within the plant for some period of time. When in a permanently defueled condition, the licensee will typically receive approval from the NRC for exemption from specific emergency planning requirements. These exemptions reflect the lower radiological source term and risks associated with spent fuel pool storage relative to an operating power reactor. Source terms and accident analyses associated with plausible accidents are documented in the station’s Final Safety Analysis Report (FSAR), as updated. As a result, each licensee will need to develop a site-specific emergency classification scheme using the NRC-approved exemptions, revised source terms, and revised accident analyses as documented in the station’s FSAR.

Recognition Category PD uses the same emergency classification levels (ECLs) as operating reactors; however, the source term and accident analyses typically limit the ECLs to an Unusual Event and Alert. The Unusual Event ICs provide for an increased awareness of abnormal conditions while the Alert ICs are specific to actual or potential impacts to spent fuel. The source terms and release motive forces associated with a permanently defueled plant would not be sufficient to require declaration of a Site Area Emergency or General Emergency unless a zirconium fire occurs.

A permanently defueled station is essentially a spent fuel storage facility with the spent fuel stored in a pool of water that serves as both a cooling medium (i.e., removal of decay heat) and a shield from direct radiation. These primary functions of the spent fuel storage pool are the focus of the Recognition Category PD ICs and EALs. Radiological effluent IC and EALs were included to provide a basis for classifying events that cannot be readily classified based on an observable event or plant conditions alone.

Appropriate ICs and EALs from the other Recognition Categories of NEI 99-01 were modified and included in Recognition Category PD to address a spectrum of the events that may affect a spent fuel pool. The Recognition Category PD ICs and EALs reflect

the relevant guidance in this document (e.g., the importance of avoiding both over-classification and under-classification). Nonetheless, each licensee will need to develop its emergency classification scheme using the NRC-approved exemptions, and the source terms and accident analyses specific to the licensee. Security-related events will also need to be considered and documented in the licensee Physical Security Plan and written implementing procedures.

Selected guidance in NEI 99-01 is applicable to licensees electing to use their 10 CFR Part 50 emergency plan to fulfill the requirements of 10 CFR 72.32 for a stand-alone Independent Spent Fuel Storage Installation (ISFSI). The emergency classification levels applicable to an ISFSI are consistent with the requirements of 10 CFR Part 50 and the guidance in NUREG 0654/FEMA-REP-1. The initiating conditions germane to a 10 CFR 72.32 emergency plan (as described in NUREG-1567) are subsumed within the classification scheme for a 10 CFR 50.47 emergency plan.

The generic ICs and EALs for an ISFSI are presented in NEI 99-01, ISFSI ICs/EALs. IC E-HU1 covers the spectrum of credible natural and man-made events included within the scope of an ISFSI design. This IC is not applicable to installations or facilities that may process and/or repackage spent fuel (e.g., a Monitored Retrievable Storage Facility (MRS) or an ISFSI at a spent fuel processing facility). In addition, appropriate aspects of IC HU1 and IC HA1 should also be included to address security events directed against an ISFSI.

4.2. Guidance

4.2.1 Unusual Event

The emergency plan should identify events which could lead to initiation of an Unusual Event. Initiating events may include:

- release of gaseous or liquid radioactivity greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer
- unplanned rise in plant radiation levels
- unplanned spent fuel pool temperature rise
- confirmed security condition or threat
- hazardous event affecting safety system equipment necessary for spent fuel cooling
- other conditions exist which in the judgment of the Emergency Director warrant declaration of an Unusual Event

4.2.2 Alert

The emergency plan should identify events which could lead to initiation of an Alert. Initiating events may include:

- release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem total effective dose equivalent (TEDE) or 50 mrem thyroid committed dose equivalent (CDE)
- unplanned rise in plant radiation levels that impedes plant access required to maintain spent fuel integrity

- hostile action within the Owner Controlled Area or airborne attack threat within 30 minutes
- other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert

4.2.3 Independent Spent Fuel Storage Installation

If the licensee elects to transfer the spent fuel and store it in an ISFSI, the emergency plan should also identify events for the ISFSI which could lead to initiation of an Unusual Event. Initiating events may include:

- Damage to a loaded cask confinement boundary

5.0 Exercises

The emergency plan should describe the provisions for periodic drills and exercises. Communications checks with offsite agencies,and radiological/health physics, medical, and fire drills should be performed at the interval established by 10 CFR 72.32(a) or (b). The biennial onsite exercise should test the effectiveness of the personnel, plan and procedures, and readiness of facilities, equipment, supplies and instrumentation. Offsite responses organizations should be invited to participate, however, participation is not required. The plan should describe the responsibility for developing the exercise accident scenario, requirements for non-participating observers to evaluate the effectiveness of the exercise, the need for a critique of the exercise, and if deficiencies are found, how they will be corrected.

6.0 Assistance

The emergency plan should describe provisions and arrangements for assistance from offsite response organizations during and after an emergency. The plan should indicate the location of local assistance with respect to the facility. Exposure guidelines should be clearly communicated to offsite emergency response personnel. The plan should identify the services to be performed, means of communication and notification, and types of agreements that are in place for the following:

- medical treatment facilities,
- first aid personnel and/or ambulance service,
- fire fighters, and
- local law enforcement assistance/documented memorandum of agreements (specific details may be Safeguards Information.

The emergency plan should describe the measures that will be taken to ensure that offsite response organizations maintain an awareness of their respective roles in an emergency and have the necessary equipment, supplies and periodic training to carry out their emergency response functions. Any provisions to suspend security or safeguards measures for site access during an emergency should be described.

The licensee should offer to meet at least annually with each offsite response organization providing onsite support as identified in the licensee's emergency plan, to review items of mutual interest, including relevant changes to the emergency plan. The

licensee should discuss the emergency action level scheme, notification procedures, and overall response coordination process during these meetings.

Attachment 2
PREVIOUSLY APPROVED LICENSING ACTIONS

Licensee	Date Operations Ceased	Date Exemption Issued	Basis for Exemption
Humbolt Bay	7/2/76	4/29/87	The staff evaluated offsite radiological consequences of potential accidents involving the fuel stored in the spent fuel pool including a fuel handling accident, a non-mechanistic heavy load drop, and a seismically- or otherwise-induced rearrangement of the stored fuel assemblies. Other hypothetical accident scenarios considered by the staff were a non-mechanistic expulsion of all pool water to the atmosphere, a spent fuel rupture, and uncontrolled release of all contents of the liquid radwaste tanks to the discharge canal. The staff concluded that all atmospheric releases were well below EPA PAGs.
La Crosse	4/30/87	7/8/88	The staff evaluated the offsite consequences of potential accidents to the fuel stored in the spent fuel pool. The analysis assumed all fuel rods damaged with no iodine filters operating, and no fuel pool water missing. In this scenario, the doses at the exclusion area boundary would be less than 25% of the 10 CFR Part 100 paragraph 11 guideline values, i.e., much less than 75 rem for the thyroid and 6 rem for whole-body dose. The above dose values are the acceptance criteria value from the NRC Standard Review Plan (NUREG-800) Section 15.7.5 on spent fuel cask drop accidents. Similarly, the calculated doses are well below EPA PAGs.
Fort St. Vrain	8/18/89	12/31/90	Analyzed radiological consequences of potential accidents involving a fuel handling accident (i.e., dropped fuel shipping cask) provided doses offsite less than EPA PAGs.
Rancho Seco	6/7/89	2/22/91	Analyzed radiological consequences of potential accidents involving a fuel handling accident (i.e., dropped fuel shipping cask) provide doses offsite less than EPA PAGs.

Attachment 2
PREVIOUSLY APPROVED LICENSING ACTIONS

Licensee	Date Operations Ceased	Date Exemption Issued	Basis for Exemption
Yankee Rowe	10/1/91	10/30/92	Analyzed radiological consequences of potential accidents involving a fuel handling accident (i.e., dropped fuel shipping cask) provide doses offsite less than EPA PAGs.
Trojan	11/2/92	9/30/93	Analyzed radiological consequences of potential accidents involving a fuel handling accident (i.e., dropped fuel shipping cask) provide doses offsite less than EPA PAGs. The staff concluded that in view of the low likelihood of a seismic event > 0.5g and the time elapsed since shutdown of the facility, and the configuration of the fuel in the spent fuel pool, that there would be sufficient time after a postulated loss of water and before the initiation of a cladding fire for the licensee to implement actions to preclude heat up of the spent fuel.

Attachment 2
PREVIOUSLY APPROVED LICENSING ACTIONS

Licensee	Date Operations Ceased	Date Exemption Issued	Basis for Exemption
Haddam Neck	7/22/96	8/28/98	The staff evaluated: 1. Release of activity from combustible ion exchanger resin and fuel handling accidents would not exceed EPA PAGs. 2. For gamma radiation due to a loss of spent fuel pool level, it would take 2.6 days to exceed EPA PAGs. 3. For a bounding scenario where the fuel is totally uncovered, the decay heat would not heat up higher than 565 degrees Celsius (C); therefore the cladding would stay intact. The staff concluded that the postulated doses to the general public from any reasonably conceivable accident would not exceed EPA PAGs and, for the loss of fuel pool level, the length of time available gives confidence that mitigative actions could be taken and provides confidence that additional offsite measures could be taken without planning.
Maine Yankee	12/6/96	9/3/98	The staff evaluated: 1. A fire involving resin and gamma radiation due to a loss of spent fuel pool level not exceeding EPA PAGs. 2. A bounding scenario where the fuel is totally uncovered and no natural circulation flow path exists. The staff calculated that it would take ~10 hours to heat up to 900 degrees C. The staff concluded that the postulated doses to the general public from any reasonably conceivable accident would not exceed EPA PAGs and, for the bounding accident, the length of time available gives confidence that mitigative actions and, if necessary, offsite measures for the public could be taken without preplanning.

Attachment 2
PREVIOUSLY APPROVED LICENSING ACTIONS

Licensee	Date Operations Ceased	Date Exemption Issued	Basis for Exemption
Big Rock Point	8/29/97	9/30/98	The staff evaluated: 1. Gap release of activity from a fuel handling accident and heavy load drops on spent fuel not exceeding EPA PAGs. 2. A fire involving resin and gamma radiation due a loss of spent fuel pool level not exceeding EPA PAGs. 3. A bounding scenario where the fuel is totally uncovered and no natural circulation flow path exists. The staff calculated that it would take ~14 hours to heat up to 900 degrees C. The staff concluded that the postulated doses to the general public from any reasonably conceivable accident would not exceed EPA PAGs and, for the bounding accident, the length of time available gives confidence that mitigative actions and, if necessary, offsite measures for the public could be taken without preplanning.
Zion	2/13/98	8/31/99	The staff concluded that there were no design basis accidents or other credible events that would result in a radiological dose beyond the exclusion area boundary that would exceed EPA PAGs. For a bounding scenario where the fuel is totally uncovered, the decay heat would not heat up higher than 482 degrees C; therefore the cladding would stay intact.

Attachment 3
Industry Decommissioning Commitments and Staff Decommissioning Assumptions

Industry Decommissioning Commitments (IDCs)

IDC #1 Cask drop analyses will be performed or single failure-proof cranes will be in use for handling of heavy loads (i.e., phase II of NUREG-0612 will be implemented).

IDC #2 Procedures and training of personnel will be in place to ensure that onsite and offsite resources can be brought to bear during an event.

IDC #3 Procedures will be in place to establish communication between onsite and offsite organizations during severe weather and seismic events.

IDC #4 An offsite resource plan will be developed which will include access to portable pumps and emergency power to supplement onsite resources. The plan would principally identify organizations or suppliers where offsite resources could be obtained in a timely manner.

IDC #5 Spent fuel pool instrumentation will include readouts and alarms in the control room (or where personnel are stationed) for spent fuel pool temperature, water level, and area radiation levels.

IDC #6 Spent fuel pool seals that could cause leakage leading to fuel uncovery in the event of seal failure shall be self-limiting to leakage or otherwise engineered so that drainage cannot occur.

IDC #7 Procedures or administrative controls to reduce the likelihood of rapid draindown events will include: (1) prohibitions on the use of pumps that lack adequate siphon protection or (2) controls for pump suction and discharge points. The functionality of anti-siphon devices will be periodically verified.

IDC #8 An onsite restoration plan will be in place to provide repair of the spent fuel pool cooling systems or to provide access for makeup water to the spent fuel pool. The plan will provide for remote alignment of the makeup source to the spent fuel pool without requiring entry to the refuel floor.

IDC #9 Procedures will be in place to control spent fuel pool operations that have the potential to rapidly decrease spent fuel pool inventory. These administrative controls may require additional operations or management review, management physical presence for designated operations or administrative limitations such as restrictions on heavy load movements.

IDC #10 Routine testing of the alternative fuel pool makeup system components will be performed and administrative controls for equipment out of service will be implemented to provide added assurance that the components would be available, if needed.

Attachment 3
Industry Decommissioning Commitments and Staff Decommissioning Assumptions

Staff Decommissioning Assumptions (SDAs)

SDA #1 Licensee's SFP cooling design will be at least as capable as that assumed in the risk assessment, including instrumentation. Licensees will have at least one motor-driven and one diesel-driven fire pump capable of delivering inventory to the SFP:

Makeup pump: 20-30 gallons per minute (gpm)
Firewater pump: 100-200 gpm
Fire engine: 100-250 gpm (100 gpm, for 1 1/2-in hose, 250 gpm for 2 1/2-in. hose)

SDA #2 Walk-downs of SFP systems will be performed at least once per shift by the operators. Procedures will be developed for and employed by the operators to provide guidance on the capability and availability of onsite and offsite inventory makeup sources and time available to initiate these sources for various loss of cooling or inventory events.

SDA #3 Control room instrumentation that monitors SFP temperature and water level will directly measure the parameters involved. Level instrumentation will provide alarms at levels associated with calling in offsite resources and with declaring an emergency.

SDA #4 Licensee determines that there are no drain paths in the SFP that could lower the pool level (by draining, suction, or pumping) more than 15 feet below the normal pool operating level.

SDA #5 Load drop consequence analyses will be performed for facilities with non-single failure-proof systems. The analyses and any mitigative actions necessary to preclude catastrophic damage to the SFP that would lead to a rapid pool draining would be sufficient to demonstrate that there is high confidence in the facilities ability to withstand a heavy load drop.

SDA #6 Each decommissioning plant will successfully complete the seismic checklist provided in Appendix 2B to NUREG-1738. If the checklist cannot be successfully completed, the decommissioning plant will perform a plant specific seismic risk assessment of the SFP and demonstrate that SFP seismically induced structural failure and rapid loss of inventory is less than the generic bounding estimates provided in NUREG-1738 ($<1 \times 10^{-5}$ per year including non-seismic events).

SDA #7 Licensees will maintain a program to provide surveillance and monitoring of Boraflex in high-density spent fuel racks until such time as spent fuel is no longer stored in these high-density racks.