May 25, 2000

NOTE TO: Bill Huffman, Project Manager
PD-IV, DLPM, NRR

FROM: Glenn Kelly, Sr. Reliability and Risk Analyst
SPSB, DSSA, NRR

SUBJECT: SPSB COMMENTS ON DECOMMISSIONING RULEMAKING PACKAGE

Enclosed are our comments on the package you left with me on May 23rd. I provided a number of clarifications that should be included in the package.

I have also marked two pages in Appendix C, Sample Regulatory Language for Security at Decommissioning Plants. On these and other pages I noted that you had struck out the references to armed response persons, leaving only language for guards or watchmen. Could you please clarify why the deletion of the requirement for armed response personnel is being proposed even though very large offsite consequences (i.e., thousands of latent fatalities and many millions of dollars in property damage) could occur if an intruder were able to quickly drain the spent fuel pool.

cc: R. Barrett
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RULEMAKING OPTIONS

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

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

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

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

After being shutdown 5 years, and as long as there is fuel stored on site, the proposed rule would require EP similar to that for ISFSIs identified in 10 CFR 72.32(a), provided that the licensee does a site specific evaluation showing that the maximum dose to a person offsite due to a release of radioactive material would not exceed the EPA PAGs at the site boundary.

There would be no need for EP requirements when spent fuel is no longer stored onsite and an accident involving radioactive material stored onsite in quantities above those specified in 10 CFR 30.72, "Schedule C - Quantities of Radioactive Material Requiring Consideration of the Need for an Emergency Plan for Responding to a Release," does not result in exceeding EPA PAGs at the site boundary.

ASSESSMENT OF OPTION 1

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

This 12 month period provides adequate decay time necessary to reduce the SFP heat load to a level that would provide adequate human response time for anticipated transients. This is also the decay time that would result in a 10-12 hour delay from fuel uncovery to initiation of a postulated zirconium fire, even for very improbable severe seismic events or heavy load drop events causing total loss of pool inventory. The more spent fuel decay time increases after permanent shutdown, the later any potential release due to a zirconium fire could occur after an initiating event.

Because of the considerable time available to initiate and implement mitigative actions, or if necessary protective actions, there is no longer a need for formal emergency plans for rapid initiation and implementation of protective actions. The principle aspect of emergency planning which is needed for SFP events at this time is the means for identification of the event and for notification of offsite emergency response officials. With 10-12 hours available from the time of

an initiating event to the point where condition would be such that a significant offsite release may be initiated, sufficient time is available to implement offsite protective actions, if necessary, without preplanning.

For this reason detailed and complex offsite radiological emergency plans would no longer be needed. The level of community emergency services available in contiguous communities would be adequate to develop and implement protective actions, such as an evacuation if called for, much the same as would be needed for other events, like a chemical release from an industrial site or transportation accident, which would call for similar protective actions.

In previous licensing actions to grant exemptions from offsite EP requirements, particularly for the Maine Yankee and Big Rock Point sites, the staff relied partly on the position that in view of the low likelihood of the bounding scenarios, and with sufficient lead time, offsite protective measures could be taken, if called for, without preplanning.

The amount of time needed to develop and implement offsite protective actions without preplanning is subject to further discussion between NRC and FEMA. However, the staff is confident that 10 to 12 hours is reasonable. The rulemaking process may continue while a consensus is established between NRC and FEMA to support the proposed rule before submitting it to the Commission for approval. Other stake holders will have the opportunity for comment on this position during the rulemaking process.

However, since it is still theoretically, though remotely, possible to have an event that could lead to an offsite release it is prudent to maintain the capability to classify events up to and including the general emergency level. This would also necessitate retaining the capability for licensee's to perform dose assessments and provide protective action recommendations to offsite officials.

Therefore, this option would require a licensee to maintain EP based on that required for a Monitored Retrievable Storage Installation (MRS) identified in 10 CFR 72.32(b), with the addition of a classification for accidents to include the "general emergency" level. This level of EP would be needed for the period of 12 to 60 months after shut down. This option would require a licensee to document in the decommissioning safety analysis report (DSAR) how SFP accident risk reduction measures will be implemented for the site.

After 60 months, and when there is no longer a possibility of an accident involving radioactive material which would result in exceeding EPA PAGs at the site boundary, there would no longer be a need to classify events above the alert level. At this point an EP based on that required for an ISFSI identified in10 CFR 72.32(a) would be adequate.

There would be no need for EP requirements when spent fuel is no longer stored onsite and an accident involving radioactive material stored onsite in quantities above those specified in 10 CFR 30.72, "Schedule C - Quantities of Radioactive Material Requiring Consideration of the Need for an Emergency Plan for Responding to a Release," does not result in exceeding EPA PAGs at the site boundary.

At the discretion of the licensee they could conduct a site specific T-H analysis to demonstrate that the decay heat from spent fuel necessary for a zirconium fire no longer exists. At that

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

§ 50.54 Conditions of licenses.

* * * * *

(ff) * * *

(gg) A decommissioning nuclear power reactor licensee that has docketed certifications of permanent cessation of operation and permanent removal of fuel from the reactor vessel in accordance with the requirements of 10 CFR 50.82(a) may elect to follow the emergency planning requirements for an operating reactor as specified in paragraph (q) above, or may elect to maintain the following applicable emergency planning requirements:

(i) For decommissioning nuclear power reactors where spent fuel stored in the spent fuel pool has less than12 months decay time, the licensee shall follow and maintain in effect emergency plans that meet the standards in 10 CFR 50.47(b) and the applicable requirements in Appendix E of this part as specified in paragraph (q) for a licensee authorized to possess and operate a nuclear power reactor. However, after certification of permanent cessation of operation in accordance with 10 CFR 50.82(a) the requirements of 10 CFR 50, Appendix E, IV.F.2.c and IV.F.2.d for a biennial exercise of offsite plans and six year ingestion pathway exercise are suspended. Participation of offsite response organizations in biennial exercises, although recommended, is not required.

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

(a) Either not defined Load drop consequence analyses will be performed and associated mitigative actions implemented to preclude rapid draining of the pool or single failure proof cranes will be in use for handling of heavy loads

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

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

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

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

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

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

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

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

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

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

(l) Shiftly SFP and support systems surveillances.

(m) Verification of SFP seismic robustness.

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

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

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

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

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

suspension of safeguards measures must be reported in accordance with the provisions of 10 CFR 73.71. ~~Reports made under §50.72 need not be duplicated under §73.71~~

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

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

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

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

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

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

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

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

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

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

(ii) Each licensee shall establish, maintain, and follow an NRC-approved training and qualifications plan outlining the processes by which guards or watchmen, ~~armed response persons,~~ will be selected, trained, equipped, tested, and qualified to ensure that these individuals meet the requirements of this paragraph. The licensee shall maintain the current training and qualifications plan as a record until the Commission terminates the license for which the plan was developed and, if any portion of the plan is superseded, retain that superseded

~~responding to threats, thefts, and radiological sabotage. related to the nuclear facilities subject to the provisions of this section. Safeguards contingency plans must be in accordance with the criteria in appendix C to this part, ``Licensee Safeguards Contingency Plans.''~~

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

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

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

(i) Determine whether or not a threat exists,

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

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

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

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

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

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

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