

Appendix O

submitted on July 7, 2000: Concrete from contaminated structures will be remediated to a level meeting the radiological criteria for unrestricted release of the site. After completion of final status surveys and absent any findings during NRC inspections, concrete building debris from decontaminated structures may be used as backfill and placed into the remaining subsurface building foundations. (CL-30/4)

Comment: The burial of radioactively contaminated material as a means of site remediation is unacceptable for property that is to be released for unrestricted use. Rubblization (the burial of contaminated rubble) must not be permitted under any circumstances. The permission to build nuclear reactors hinged upon the utilities' commitments to regulators and the community to restore the site to "green fields." Rubblization is a blatant default on cleanup commitments, is a gross injustice to reactor communities and is a regulatory cave-in to utilities' desires and financial needs. In response to rubblization CAN also incorporates by reference Contention's 5.2 and 5.3 submitted by the organizations to the Commission on March 12, 2001 regarding Haddam Neck Reactor's License Termination Plan (Docket No. 50-213-OLA). (CL-50/21)

Comment: "Rubblization", to me reflects a sense that NRC is looking for ways to make it easier to finish the decommissioning process rather than thinking about ways to make it safer or more environmentally sound. And that concerns me. It seems to be driven by how we can facilitate the process, making it happen more quickly or with less cost as opposed to considering the safety issues. All of those issues relate to doing it more quickly and less costly. (CH-A/11)

Comment: The fact that the Staff and the Commission have even considered rubblization shows an utter disregard for the health and welfare and safety of the public and the ecosystem upon which life depends. (CL-20/20)

Comment: I oppose the concept of rubblization as it is very dangerous. (CL-29/2)

Comment: There should be no allowance for the industry to hurriedly raze structures, sweep the radioactive mess under a porous and permeable carpet (or disperse the remains and cleanup materials in many unregulated forms far from the reactor site), cut corners and add risks and contamination to an already precarious cleanup operation. The public must be protected. (CL-47/9)

Response: *The NRC staff has decided to retain the discussion of Rubblization in the Final Supplement. Rubblization (the process of onsite disposal of slightly contaminated material in a manner to meet the site-release criteria of 10 CFR Part 20, Subpart E) is considered a viable*

decommissioning process that is consistent with the requirements of the LTP and is not considered low-level waste under 10 CFR Part 61. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.

Comment: Rubblization (p. 4-14), the breaking of contaminated concrete structures into gravels and blocks cannot be considered an option where: A. the leachate plume could contaminate potable water, B. the leachate plume could contaminate water used for food production such as farming, fishing, seafood harvest, or dairy, C. the leachate plume could contaminate closed bodies of water such as cooling canals or cooling ponds, or D. airborne particles could contaminate food crops, fishing waters, seafood harvesting waters, or dairy areas. All contaminated building materials must be removed from the nuclear plant site. (CL-14/4)

Comment: We concur with the GAO findings as reported in GAO-02-48 "NRC's Assurances of Decommissioning Funding During Utility Restructuring Could be Improved" dated December 2001. GAO reported the following conclusions: "Water intrusion is also a major concern for rubblized or entombed sites, and the fact that most nuclear power plants are situated in shallow water table or flood plain locations may limit the viability of these options." (CL-48/34)

Comment: Essentially, the agency and industry are proposing that a so-called "low-level" radioactive waste dump can now be grandfathered on a reactor site without a formal permitting and licensing hearing process. The decommissioning utilities will provide an analysis that can "assure" that no ground water movement will occur through the radioactive burial site providing a potential transport mechanism and potential radioactive exposure to the public and environment. The utilities are to provide a "dose model" to "assure" the affected communities that the radioactive site will pose no health risks to present and future public health and the environment. These "assurances" cannot be bona fide by generic treatment and therefore require the availability of site-specific proceedings. (CL-48/30)

Response: *Rubblization (the process of onsite disposal of slightly contaminated material in a manner to meet the site-release criteria of 10 CFR Part 20, Subpart E) would require a site-specific analysis during the LTP review. Such a site-specific review would consider the potential for groundwater contamination. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: The Supplement improperly addresses rubblization by stating it will require a site-specific analysis at the time the license termination plan is submitted. Rubblization should be addressed generically as a part of the decommissioning process. The NRC should continue to

Appendix O

maintain that to the extent that 10 CFR Part 20, Subpart E dose performance criteria are met - and that decommissioning has been performed using the ALARA principle, rubblization has a SMALL environmental impact. (CL-31/4)

Comment: Some of my concerns about NUREG-0586 include: the generic approval of rubblization of reactor buildings and leaving them on site. (CL-38/3)

Comment: I oppose rubblization but support its designation as site-specific. (CL-24/4)

Response: *Both site-specific factors and the licensee's preparation of the demolished demolition debris prior to onsite disposal can significantly affect the dose assessment calculations that are necessary to demonstrate compliance with the licensee termination criteria. As such, a generic analysis cannot be made that would envelop rubblization. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Now, with Supplement 1 to NUREG-0586, the NRC would appear to be paving the way for the very rubblization and possible release into the environment of slightly contaminated material that the AEP rep said could not happen. The vehicle to allow this (rubblization) would appear to be the declaration of more decommissioning issues "Generic" rather than "Site-Specific," thus preempting the right of local residents to raise concerns during the License Termination Plan review. (CL-38/1)

Comment: NRC's proposal to allow "rubblization" (defined as: "the demolition of onsite concrete structures. Rubblizing these structures could result in material ranging from gravels to large concrete blocks, or a mixture of both.") of concrete structures at the reactor site to take place without opportunity for public intervention until after the action is completed is outrageous. (CL-47/14)

Comment: NRC allows "rubblization" (crumbling the concrete reactor building) of nuclear reactors, without opportunity for public intervention until the action is completed. (CL-48/36)

Comment: We adamantly disagree with the possibility of rubblization as a method of decommissioning. Chopping up a plant and storing it on site not only sounds ridiculous, but also is grossly negligent of the fact that there are facilities designed, built and licensed to handle radioactive materials. Plant owners never told communities near nuclear plants that they were also accepting a permanent nuclear waste dump. Rubblization is an egregious assault on the public participation process and a devious example of corporations casting aside those communities that supported them over the years. (AT-A/37)

Comment: I am opposed to the following proposal(s) in the EIS: NRC allows "rubblization" (crumbling the concrete reactor building) of nuclear reactors, without opportunity for public intervention until the action is completed. (CL-26/2)

Comment: [Georgians for Clean Energy] recognizes that nuclear plant owners and the NRC never told communities near nuclear plants that they were also accepting a permanent nuclear waste dump. Rubblization is an egregious assault on the public participation process and a devious example of corporations casting aside those communities that supported them over the years. (CL-08/22)

Comment: I am opposed to the following change to NUREG-0586: In Supplement 1 to the Generic Environmental Impact Statement on Decommissioning: NRC allows rubblization (crumbling the concrete reactor building) of nuclear reactors, without opportunity for public intervention until the action is completed. (CL-43/1)

Comment: I am opposed to NRC regulations pertaining to Decommissioning which would allow rubblization (crumbling the concrete reactor building) of nuclear reactors, without opportunity for public intervention until the action is completed. (CL-44/5)

Comment: Rubblization poses some specific risks to the surrounding communities and the site workers, as the rubblized material could contaminate via air, soil, and water pathways. Thus, Public Citizen insists that it is only appropriate that the affected communities surrounding the reactor site be given opportunities to review rubblizing plans and procedures, and that this issue be addressed on a site-specific basis. (CL-47/15)

Comment: However, the rubblization process must account for the permeation of porous concrete structures (containment dome, basemat, and walls) with radioactivity much deeper than surface contamination that would be sand blasted during a decontamination process. Activated concrete would be rubblized and would thus constitute so-called "low-level" radioactive waste. Long-lasting radioactive elements such as cesium-135 and strontium-90 are present with many other fission products and radioisotopes in the concrete and should not be ignored or defined away. No data are provided in this Supplement to justify rubblization and onsite or offsite disposition. Thus, local communities have every right to participate legally (in adjudicatory proceedings) and be provided with information - full disclosure of such planning. (CL-48/29)

Comment: I utterly oppose "rubblization" with no opportunities for meaningful public intervention ahead of time. (CL-33/7)

Comment: It is extremely important for the NRC to level with the public about the potential hazards of the concrete debris and related rubble from the dismantled plants. (CL-51/7)

Appendix O

Response: *Rubblization (the process of onsite disposal of slightly contaminated material in a manner to meet the site release criteria of 10 CFR Part 20, Subpart E) is considered a site-specific issue and would be addressed during the LTP review. Since the LTP is approved by amendment to the facility license, the public will have the opportunity to participate in the review. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: If rubblization were technologically achievable, where on a plant site could the wastes be stored in perpetuity? Would that be above grade or below? **(CL-51/14)**

Response: *An explanation of rubblization and the location of the demolition debris is given in Section 1.3. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The question goes to the issue of the rubblization and the language in the GEIS that puts part of it out of scope and part of it is discussed as being covered under the generic environmental impact statement supporting the license termination rule. The heart of the comment and question really gets at the issue that from our perspective is not yet covered in that license termination rule and the assumptions embedded in that GEIS. And that has to do with the scenario of what happens and what are the assessments for the radiological materials post license termination. The rubblization is one angle that begs that question...The question is do you need to assume some refurbishment scenario post-license termination?...The question the industry asks is how do we address that? Do we come up with some scenario and refurbishment that would account for that? What would that scenario look like? We need that information so that we can do those assessments....Again, the issue is post-license termination. How do you assess a potential risk to a member of the public from that material?...The question is, is there some unique pathway that needs to be assessed for this material, such as an intruder pathway?...Our understanding was this GEIS would sort of beef that up because of this new idea; however, it appears that was sort of left out of scope and appropriately maybe so. Perhaps that is in the scope of the license termination rule. **(AT-E/1)**

Response: *The License Termination Rule does not contemplate post-license termination assessments for radiological hazards. The staff finds that the site-release criteria are sufficiently conservative to protect public health and safety and the environment for any reasonable post-license termination use of the site. The expectation is that any potential pathway would be addressed during the site-specific review of rubblization that occurs during the LTP review. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: We concur with the GAO findings as reported in GAO-02-48 "NRC's Assurances of Decommissioning Funding During Utility Restructuring Could be Improved" dated December 2001. GAO reported the following conclusions: "rubblization represents a departure from NRC's past licensing practice, which emphasized shipping low-level radioactive wastes from decommissioning sites to disposal sites. Although NRC has estimated that rubblization could save a licensee from \$10 million to \$16 million in waste disposal costs during decommissioning, its Advisory Committee on Nuclear Waste has concluded that technical factors, such as the depth of radioactive contamination and the volume of rubblized waste, could significantly diminish the potential cost savings. The Advisory Committee also believes that evaluating radioactive material content and doses from rubblization, both at the site and in local groundwater, may prove difficult and expensive." (CL-48/31)

Response: *Rubblization requires a site-specific analysis, as noted in Section 1.3 of the Supplement. The staff acknowledges that technical factors related to the site and the licensee's actions could significantly influence the cost savings. Additionally, the staff acknowledges that it may be difficult to demonstrate that the material can be safely disposed of in the below-ground structures on site. These and other factors have led the staff to conclude that the radiological effects of rubblization would necessarily have to be considered on a site-specific basis. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: I find it hard to believe that the massive structures of concrete and steel reinforcing bars found in a typical commercial power plant could be rubblized. The complexity and size of the task seem overwhelming. What technologies could be used to dismantle the base mat of the Callaway reactor building, for example: 13,400 tons of concrete plus 1,470 tons of intertwined #18 reinforcing steel bars? Do most 1,000-megawatt pressurized water reactor containment building have similar base mats? (CL-51/12)

Response: *The staff believes that if a licensee chose to rubblize a portion of their facility and dispose of the slightly contaminated rubble onsite they would only rubblize above-ground structures. Rubblizing a base mat for a reactor would not be necessary or required. The deconstruction industry is very effective in rubblizing reinforced concrete and it is done quite frequently. San Onofre recently rubblized several uncontaminated structures onsite, separating the reinforcing steel from the concrete. The effort was accomplished without incident. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.2.4 Safety of Decommissioning

O.2.4.1 Issues Related to Terrorist Events

Comment: Getting onto a brief comment on security, as many things are being reviewed in light of September 11, the decommissioning of nuclear reactors should be no exception. From what I've heard today, it sounds like there will be some sort of analysis of security issues and I hope that's directly relating to this decommissioning document. As we know, the draft EIS is grossly deficient in ensuring that security measures are taken to protect our homeland security from threats of sabotage at a nuclear plant. Georgians for Clean Energy request that a thorough amended review of necessary security measures be compiled by the NRC and added to the supplement. (AT-A/12)

Comment: If there is the possibility of release during decommissioning, then that should be something that should be accounted for especially in light of concerns of attack. (CH-A/9)

Comment: The terrorist attacks of September 11, 2001 have raised many issues concerning the currently, inadequate security of our nation's nuclear reactors. Because decommissioning creates opportunities for release of spent fuel and structures contaminated with radioactive material, the Final GEIS should revisit the appropriate security needed during decommissioning. (CL-11/12)

Comment: While EPA did not identify security issues during the GEIS scoping process, the events of Sept. 11 have brought them to the forefront of public concern. EPA suggests that NRC include in the final Supplement a general discussion on how the Commission is addressing security from terrorism at plants undergoing decommissioning. (CL-16/9)

Comment: I do want to talk about the physical protections and the existing regulations under 10 CFR 73.55. I guess I could state this as more or less of a question. For example, what measures will the Commission employ during decommissioning to protect against radiological sabotage? (AT-F/2)

Comment: Even 10 CFR 73.55 falls short in our estimation in the preparations for such a scenario. 73.55 considers only primary physical security barriers for vehicles, for isolation zones, for access to the plant, for detection of intrusion and what not. For example, it mentions that there [would] be bullet resistant walls, floors and doors in reactor control rooms. Well plainly this 10 CFR 73.55 needs to be updated because this is woefully inadequate to consider anything which is now possible after September the 11th. (AT-F/4)

Comment: Security must be upgraded, not downgraded. (CL-20/74)

Comment: EVERY SITE, OPERATING OR NOT OPERATING, IS A PRIME TERRORIST TARGET AS I HAVE SAID FOR DECADES. (CL-20/79)

Comment: It ought to be equally obvious that a serious accident or terrorist act in this industry could be catastrophic, leaving immense fatalities, injuries, future cancer victims and vast areas uninhabitable for years. (CL-42/3)

Comment: A reduced security force at a decommissioned nuclear plant increases the threat of terrorism. A thorough amended review of necessary security measures during decommissioning of nuclear facilities [due to 9/11] must be compiled by the NRC and added to the supplement. (CL-53/2)

Comment: The danger to the public from a terrorist act is a function of the total level of radiation that exists on one given site. We cannot do anything about the total level of radiation in a global sense, but through government regulations we could do something about the amount of radioactive material that is stored at any one location. (SF-C/6)

Comment: But I think that there is an overall concern, which I know that this doesn't address, and that is the vulnerability of nuclear power plants to various acts of terrorists. And I don't think it should be ignored, and I think that we should be very concerned about it. (SF-C/3)

Comment: Before September 11th, I probably felt that the SAFSTOR approach was one of the best things, to let them sit for 10, 20 years, and let the radioactive level decrease significantly before you try to disperse it. I no longer think that. And yet I just heard, well, the licensees have 60 years to decide, and they can do anything they want. And I don't think that's a danger that the public should put up with. (SF-C/4)

Response: *NRC and other Federal agencies have heightened vigilance and implemented initiatives to evaluate and respond to possible threats posed by terrorists, including the use of aircraft against commercial nuclear power plants. Malevolent acts remain speculative and beyond the scope of a NEPA review. NRC routinely assesses threats and other information provided to them by other Federal agencies and sources. The NRC also ensures that licensees meet appropriate security levels. The NRC will continue to focus on prevention of terrorist acts for all nuclear facilities and will not focus on site-specific evaluations of speculative environmental impacts. While these are legitimate matters of concern, they should continue to be addressed through the ongoing regulatory process as a current and generic regulatory issue that affects all nuclear facilities and many activities conducted at nuclear facilities. The NRC has taken a number of actions to respond to the events of September 11, and plans to take additional measures. However, the issue of security and risk from malevolent acts at nuclear*

Appendix O

power plants is not unique to decommissioning facilities and, therefore, is not within the scope of a Generic Environmental Impact Statement (GEIS) on decommissioning of nuclear power plants. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.

Comment: With regard to the threat of attack, I think this relates to our second point. The document was prepared after September 11th, but it doesn't seem to respond to September 11th. We think the document should be responsive to the events of September 11th. What is NRC going to do to make sure that facilities are protected and secure during decommissioning? Has that changed in response to the threat of terror attack? We think it should. (CH-A/8)

Comment: In light of September 11th it is now abundantly clear that nuclear materials are desired by terrorist organizations. Our nation's operating nuclear power plants represent terrorist targets, but so too does the nuclear waste they generate. Since a decommissioned nuclear power plant would have a greatly reduced security force, the closed plant could provide an easier opportunity for terrorists to obtain nuclear materials. In the case of plants like Hatch that have outdoor storage of nuclear waste, the notion of a reduced security force is even more troubling. Georgians for Clean Energy again stresses the need for a full evaluation of security measures to be assessed prior to issuing a final GEIS. (CL-08/3)

Comment: NRC staff mentioned at the public meeting on 12/12/01 that a full, top-to-bottom review of security concerns would be conducted. Georgians for Clean Energy urges that this review be done prior to the issuance of the final generic impact statement for decommissioning (GEIS). (CL-08/34)

Comment: The massive destruction of September 11th accomplished by the Al Qaeda terrorists has rendered the Waste Confidence Policy ineffective and obsolete. No reasonable person can be assured that high-level nuclear waste can be safely stored at plant sites under present conditions. The GEIS fails to consider the consequences of acts of terrorism and acts of war perpetrated by suicidal zealots against spent fuel facilities at decommissioned nuclear plant sites. This failure of the GEIS needs to be remedied. (CL-14/6)

Comment: In the aftermath of September 11th, NRC and licensees must address earlier assumptions that decommissioning was less dangerous than operation and that security measures and insurance could be reduced because of it. Nuclear fuels pools as well as on site dry cask storage of high-level waste are targets for terrorism. In fact decommissioned sites could be selected as targets because there is less security and oversight during decommissioning and the monitoring of the ISFSI. NRC must require increased security and the

reinstatement of insurance provisions. Additionally, emergency preparedness drills and the EPZ should be reestablished. KI should be stockpiled in communities since the potential for off site consequences from a terrorist attack is possible. (CL-50/28)

Comment: The threat of terrorism: With terrorism now a legitimate concern in the United States, the potential of a suicide assault on a nuclear plant - whether the plant is operable or decommissioned - must be assessed plant by plant, not generically. (CL-51/21)

Comment: THE SPENT FUEL IS THE ULTIMATE IN TERRORIST TARGETS. (CL-20/80)

Response: *Malevolent acts affecting the physical security of nuclear power plants is an important issue for all reactors, both operating and permanently shut down, and is not unique to reactors in the decommissioning process. Shortly after the events of September 11, 2001, the NRC initiated a comprehensive review of its security requirements at nuclear power plants to ensure that the appropriate level of protection is in place for both operating and decommissioning reactors. The safety review will transcend the entire NRC licensing framework (operating reactor licensing, license renewal, decommissioning etc.) to fulfill NRC's responsibilities under the Atomic Energy Act. The findings resulting from the NRC's comprehensive review of its security requirements and whatever actions the Commission determines to be appropriate will be required of decommissioning reactors. Comments related to physical security considerations at decommissioning facilities have been forwarded to the appropriate program office within the NRC for consideration during the Commission's comprehensive review of security requirements. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Indeed, under the current plan, facilities under SAFSTOR will have fewer personnel at the site even though the radioactivity of the material will still be high. With less security, these facilities are at greater risk for attack. (CL-11/13)

Comment: Since a decommissioned nuclear power plant would have a greatly reduced security force, the closed plant could provide an easier opportunity for terrorists to obtain nuclear material. (AT-A/14)

Response: *Changes in the level of security at a nuclear power plant during decommissioning would be related to the type of activities and the area that requires protection. The Commission has initiated activities to reassess security issues in light of recent terrorist activities with the principal objective of maintaining public health and safety. While these are legitimate matters of concern, they should continue to be addressed through the ongoing regulatory process as a current and generic regulatory issue that affects all nuclear facilities. Comments related to physical security considerations have been forwarded to the appropriate program office within*

Appendix O

the NRC for consideration. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.

Comment: If an organization like ours can spot a train carrying very dangerous radioactive waste, any terrorist organization can do the same thing. You've got to take that into consideration. **(AT-B/11)**

Comment: Re 9/11: I direct you to a quote from a recently published German report concerning the vulnerability of the Castor containers to terrorism: "The fact that all the technical data used in the report can be accessed by terrorists does not imply that a more restrictive policy towards information is required. Rather, it should be regarded as an argument against the use of a technology which is, at the time, hazardous and complex to a large degree, creating a conflict between the necessary societal discussion on the one hand and the protection of society from terrorist attacks on the other." **(CL-27/3)**

Response: *NRC routinely assesses threats and information provided to the NRC by other Federal agencies and other sources and ensures that licensees meet appropriate security levels. This issue will remain a priority for the NRC even during the transportation of the spent fuel. However, as discussed in Section 1.0, transportation of the spent fuel is outside the scope of the Supplement. Comments related to physical security considerations have been forwarded to the appropriate program office within the NRC for their consideration. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

O.2.4.2 Safety of Decommissioning

Comment: We're also concerned about safety. With reduced staffing as mentioned in the document, there's an increased risk of accident [and] the threat of attack on these sites with huge environmental and human consequences. **(CH-A/7)**

Response: *The missions of the NRC include the protection of public health and safety and protection of the environment. Staffing reductions at decommissioning power facilities are made commensurate with the reduction in risk associated with the facilities' permanently shutdown condition. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Every shut down reactor can take us a step closer to a sustainable energy future but, unfortunately, reactor shut down is not the threshold of safety, where the public can be assured that no health or environmental dangers will originate from the site. **(CL-47/6)**

Comment: Since many nuclear contaminants are extremely long-lived and dangerous to humans and the environment, decommissioning measures need to be handled most carefully, as our future generations literally will depend on how well the job is done today. (AT-A/10)

Comment: The notion presented by industry and others that decommissioning is inherently safe because the plant is no longer operating is a deceptive argument that confuses the public. Due to the nature of radiation, even after shutdown, parts of the plant, as we know, remain highly contaminated and extremely radioactive. The nuclear waste, such as the spent fuel produced by the plant during operation generates heat and emits radiation for thousands of years after the plant is shut down. Therefore, there is risk to the workers at the plant and to the local communities during decommissioning. (AT-A/11)

Response: *Decommissioning results in a reduction of the risks associated with the nuclear power plant. No major decommissioning activities take place until the fuel has been permanently removed from the reactor. Those risks associated with nuclear power plant operation are eliminated when the spent fuel is permanently removed from the reactor and placed in spent fuel storage. The risks continue to decrease as contaminated structures and systems are cleaned up and dismantled and the contaminate material is shipped offsite. Risks associated with storage of spent fuel are also reduced over time but are outside of the scope of this review. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: The NRC must address the subject of radiation dangers after decommissioning HONESTLY, USING THE BEST INDEPENDENT RESEARCH, including: --exposure of children --exposure of the weak, the ill, the elderly --offsite contamination --credible, not arbitrary, environmental impact categories FOR EACH STEP OF A DECOMMISSIONING. (CL-36/6)

Response: *Potential radiological impacts following license termination that are related to activities performed during decommissioning are not considered in this Supplement, as discussed in Table 1-1. Such impacts are covered by NUREG-1496, Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities and given in regulations in 10 CFR Part 20. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The workers were not prepared. They didn't—whatever the—the moon suits they were supposed to wear or something, they often didn't. And it was—I mean it's dangerous. (AT-D/2)

Appendix O

Response: *Radiological conditions that workers are likely to be exposed to dictate the need and type of protective clothing to be used for a specific task. The industry has a remarkably good safety record when it comes to radioactive contamination and exposure. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: It affects people's health. Workers especially who are not warned, who are not protected. (AT-D/11)

Response: *Training is required including notification of hazards for each specific job that involves the actual or potential exposure to radiation. In addition, there are regulations controlling the occupational doses to the workers. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.2.4.3 Risk-Informed Regulations

Comment: The U.S. Nuclear Regulatory Commission (NRC) has applied extraordinary effort to risk-inform reactor oversight but, save for Appendix G of this report, has avoided translation of environmental impacts from dose based-language to risk-based language. (CL-13/1)

Response: *The commenter is correct. The Supplement does not use risk-based language for the major portion of the Decommissioning Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The whole approach—the whole probabilistic approach to risk is inappropriate. You must assume that whatever can go wrong will go wrong and that should be the level at which your risks are evaluated, not some unrealistic dream-like assessment of probability that isn't real world anymore. (AT-B/12)

Response: *The use of probabilistic risk assessments (PRA) as a tool to support regulatory decision making is a well established process that has been fully vetted, publically discussed, and widely accepted. The use of PRA by the industry and NRC staff complements the staff's deterministic approach to evaluating safety and supports the more traditional defense-in-depth philosophy. One of the primary reasons to employ a PRA approach is to achieve greater realism and effectiveness in evaluating and regulating what precisely is important and safety-significant. Evaluating every conceivable accident scenario without regard to its probability of occurrence is not realistic, wasteful of resources, and does not lead to good regulatory decisions. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Instead, the NRC has chosen to abandon its former regulatory philosophy (defense in depth and redundancy of safeguards) in favor of the far less restrictive and less protective approach (performance-based and risk-informed). (CL-52/22)

Response: *The NRC staff has not chosen to abandon its former regulatory philosophy. Defense-in-depth, which includes redundancy, remains a principal element of the NRC safety philosophy. Any application of risk-informed or performance-based regulation must be entirely consistent with the principals of providing for defense-in-depth and maintaining adequate safety margins. See Regulatory Guide 1.174, "An approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis", July 1998, for a detailed discussion of the NRC's regulatory guidance on risk-informed decision making. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.3 Decommissioning Process

Comment: The location of intake and outfall structures in the lake alone requires site-specific analysis. As written, the Draft GEIS does not make clear whether an intake/outfall structure on the facility is considered part of a previously disturbed area. If deemed part of the previously disturbed area, any work on the intake/outfall structure will be deemed generic and the impact small. (CL-11/6)

Response: *Chapter 4 of the Supplement has been extensively revised and the concept of "previously disturbed area" is no longer the criteria for initiating a site-specific analysis. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Page 3-5, Section 3.1.2, Lines 31-33 and Page 3-8, Lines 13-16. The document states on page 3-5 that "the impacts of dismantling all SSCs (structures, systems and components) that were built or installed at the site to support power production are considered in this Supplement." It then states on page 3-8 that the Supplement does not evaluate switchyards which "may remain on the site." If they are dismantled, would they be evaluated? (CL-16/17)

Response: *None of the facilities that have recently permanently ceased operation have dismantled their switchyards. However, if licensees choose to remove the switchyards it could be accomplished with little or no impact to the environment. The staff, in deciding the scope of the Supplement, attempted to place reasonable limits on the analysis. Since historically*

Appendix O

licensees generally maintained the switchyard the staff chose to not include it in the assessment of potential impact. The comment did not provide new information relevant to this supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: Could you explain to me what that [previously disturbed area] would mean for an intake for water for cooling at the facility. Would that, does anything happen to that intake position during decommissioning? (CH-A/3)

Response: *Chapter 4 of the Supplement has been extensively revised and the concept of "previously disturbed area" is no longer the criteria for initiating a site-specific analysis. The intake structure, for the purpose of this Supplement, is considered within the operational area (the concept that replaced "previously disturbed area"). The licensee may choose to remove the intake structure during decommissioning, could wait until after the license is terminated to remove the intake structure, or could choose to leave the structure in place. The text was revised in several sections of this Supplement to better describe this issue.*

Comment: Major component removal should not be approved with the submission of a Post Shutdown Decommissioning Activities Report (PSDAR). A clear definition must be established to clarify what constitutes major and minor component removal. Approval of decommissioning plan should be required before major decommissioning activities begin. The PSDAR does not afford the community effective input into the decommissioning process since this document is a skeletal outline of generalized activities planned by the licensee. (CL-50/7)

Response: *Major decommissioning activities are clearly defined in 10 CFR 50.2. Regulatory Guide 1.184, Decommissioning of Nuclear Power Reactors, July 2000, provides additional clarification on major and minor components and what can be removed prior to submission of the PSDAR. The NRC regulations do not require the approval of a decommissioning plan prior to the commencement of major decommissioning activities. The purpose of the PSDAR is to inform the public and the NRC of the licensee's plans for the decommissioning of the facility. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The original site maps and drawings and photos made during construction should be consulted (some building techniques may have changed) all modifications and revisions should be tracked down. All vent systems should go through both HEPA (for the chemicals) and sand filters. Additional containment should be added around spent fuel pools including over the top and beneath it, extra supports, new liners. They will suffer serious embrittlement and activation, same goes for the casks. Such issues must be addressed. (CL-20/72)

Response: Licensees are required by 10 CFR 50.75(g) to keep records of information important to the safe and effective decommissioning of the facility. Records of spills or unusual occurrences as well as "as-built" drawings and modifications to structures, systems, and components are covered by this requirement. The licensee is also required to use procedures and processes to accomplish decommissioning in a safe manner and to keep doses to the public and to the workers As Low As Reasonably Achievable (ALARA). The staff does not prescribe specific requirements related to facility decommissioning. The detailed suggestions made by the comment are outside the scope of this environmental assessment. The staff does, however, oversee the decommissioning process to ensure that appropriate regulatory requirements are being met. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: The License Termination Plan (LTP) should be established, reviewed by the public and approved by the NRC before site remediation begins. (CL-50/18)

Response: The NRC regulations require that the licensee submit the License Termination Plan (LTP) approximately two years prior to expected termination of the license. This could, depending on the decommissioning option chosen, be anywhere from approximately 3 to 58 years after permanent cessation of operation. Therefore, the current regulations (10 CFR 50.82) allow for site remediation to begin prior to submission and approval of the LTP. The regulations require that the NRC staff conduct a public meeting related to the LTP submittal in the vicinity of the plant. Since the LTP is approved by amendment to the facility license, the public will have the opportunity to participate in the review. Amendment of NRC regulations is outside the scope of this Supplement. NRC rulemaking procedures are found in 10 CFR Part 2. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: But things that shouldn't have been done did happen and things—you know, when they were washing some of the surfaces to prepare for cutting apart and shipping the wash water—I've spoken about this to some of the people already. It just went into the ground. It was supposed to be contained and it wasn't. And other things like that, that happened that were not supposed to happen, but they do happen. (AT-D/5)

Response: Although infrequent, inadvertent releases of radioactive material during decommissioning occurs, the amount and consequences of those releases in the past have been minor and pose no threat to public health and safety. Past Releases to the environment have been remediated or determined to be of inconsequential health risk. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Appendix O

Comment: One idea that we've talked about for a long time, and we actually had a big meeting about it and I think the idea is probably still alive, the site-specific advisory board. (AT-G/4)

Response: *Licensees at many decommissioning facilities have developed site-specific advisory boards that are composed of elected officials, technical experts, and members of the local public. These boards have been used as a means of keeping the public informed regarding the decommissioning process and to provide public input to the utility. The NRC encourages the use of these boards and frequently attends the meetings. However, NRC regulations do not require the formation of these advisory boards, nor is the NRC involved in their formation or their maintenance. This subject is outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: My direct experience is limited to having heard an eyewitness account of the decommissioning of Yankee Rowe. This person reported a whole list of unfortunate incidents that released contamination into the air and groundwater, contaminating workers on site who were not wearing protective clothing, and possibly contaminating people along the rail and truck routes where parts of the plant were being transported. (CL-10/3)

Response: *Occasional releases of radioactive material have occurred at Yankee Rowe during decommissioning. Such events have been documented, investigated, and determined not to pose any risk to public health and safety. Specific information on the decommissioning at Yankee Rowe can be found in the NRC's ADAMS information system under docket number 050-00029. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The Technical Specifications and what the facility was allowed to dump under the license are outdated and bear no resemblance to current knowledge and should be junked and the whole thing done over. (CL-20/14)

Response: *The comment is nonspecific. The Technical Specifications for the decommissioned facility are modified as decommissioning progresses through the license amendment process. Releases of radioactive material from the facility must be consistent with the regulations. The release limits are the same for decommissioning plants and operating plants. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: To find out the extent of past problems, and contamination levels, IT IS VITAL THAT THE NRC; THE LICENSEE (as some are new owners/licensees), AND THE CONTRACTORS AND SUB-CONTRACTORS, GET ALL REPORTS OF ACCIDENTS,

LICENSEE EVENT REPORTS, VIOLATIONS, INSPECTION REPORTS, SPILLS AND
CONTAMINATION EVENTS FROM THE DOCKET FOR THE REACTOR AND SITE IN
QUESTION. (CL-20/22)

Response: *The staff agrees that those NRC staff members responsible for the oversight of the facility decommissioning should have access to and become familiar with the relevant NRC documents. Licensees are required by 10 CFR 50.75(g) to keep records of information important to the safe and effective decommissioning of the facility. Records of spills and unusual occurrences as well as "as-built" drawings and modifications to structures, systems, and components are covered by this requirement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: NRC must stipulate, that ALL CONTRACTORS AND SUB-CONTRACTORS RIGHT DOWN TO THE BACK-HOE OPERATORS MUST BE HIGH SCHOOL GRADUATES. Cleanup cannot just be dished out to any contractor, all involved should not only have a sterling track record, but experience in nuclear fields. There should be a radiation biologist on site, plus a health physicist, plus a wildlife biologist with a knowledge of radiation effects, plus there must be federal and state oversight ON THE SITE at all times. (CL-20/23)

Response: *Qualifications and educational requirements for various licensee positions are specified in the regulations in 10 CFR Part 50 and are outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: ALL workers must have self-contained breathing systems (moon-suits). (CL-20/32)

Response: *Requirements for personnel protection are outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The use of high pressure water sprays is obscene. (CL-20/69)

Response: *High-pressure water sprays have been used to decontaminate structures, systems, and components and are an effective and safe method of decontamination. The use or non-use of specific decommissioning equipment is outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Appendix O

Comment: Methodology must be established to locate and collect for proper disposal contaminated tools, soils, concrete blocks, plywood and other building materials that may have been taken offsite by workers during reactor operation such as was the case at Connecticut Yankee and Yankee Rowe. (CL-50/15)

Response: *Licensees, as part of their radiological control procedures, have established requirements to limit the spread of radioactive contamination from tools. The recovery of contaminated material improperly released from facilities undergoing decommissioning is outside the scope of this document. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: It is obvious that the reactor vessel should NEVER be cut up, but do what was done with the Trojan vessel (p.G-18, remove the whole thing offsite) (CL-20/58)

Response: *Although the intact shipment of the reactor vessel greatly reduced the dose to the workers and the cost of removal, it was only facilitated because of the proximity of the Trojan Nuclear Plant to the low-level waste site at Hanford, Washington, the ability to use the Columbia River, a navigable river that allowed the barge transport for the reactor vessel, and the ability of Hanford to take the vessel for disposal. The industry has had experience in removing reactor vessel internals and, in the case of Shoreham, did segment and dispose of the reactor vessel. Such activity has been performed safely in the past and without serious injury or release of radioactivity to the environment. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: However, the vessel should have additional shielding placed around it prior to placement on the heavy haul trailer, and upon arrival at the disposal site it should be further encased in what would amount to a giant burial cask. (CL-20/59)

Response: *Licensees must comply with NRC standards for allowable offsite radiation; regulations for transportation of waste materials are in 10 CFR Part 20, Subpart K. Additional shielding beyond that required by NRC regulations is not required to protect the health and safety of workers or members of the public. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Removing the vessel offsite massively reduces worker doses, water contamination and the contamination to the local community and the environment. (CL-20/60)

Response: *The comment was not specific and did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: I noticed that it said cutting methods included abrasive water G-17, but in any case where there is plutonium contamination or depleted uranium metal, that all is meant to be cut under heavy oils and much else besides. Since many of the components will have been contaminated with plutonium, or were made of depleted uranium (when is the NRC going to tell the public that DU is NOT radioactive waste?) (CL-20/57)

Response: *Abrasive cutting of structures, systems, and components has been used frequently in decommissioning operations (Trojan, Fort St. Vrain, Haddam Neck). Such activities require stringent contamination control measures and occur inside buildings or structures, such as the containment building, which are designed to contain radioactive contamination. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: No structural remains should be sent to local landfills. (CL-20/75)

Response: *Only materials that have been carefully surveyed and determined to have no detectable radiation are allowed to be released from the plant. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.4 Out-of-Scope Issues

O.4.1 Reuse of Materials Offsite

Comment: In a related issue, there continues to be a gap in regulations concerning the release of slightly contaminated solid materials. In both partial site release without a license termination plan and license termination for the entire site, residual radioactivity may remain as long as the exposure criterion of 10 CFR 20 Subpart E is satisfied. Conversely, this same residual radioactivity is treated as licensed material prior to license termination--regardless of how little the amount, concentration, or dose significance--and can only be disposed of at a licensed facility. This double standard poses an incentive to retain radioactive material onsite until the license has been terminated to avoid potentially excessive costs for radwaste disposal, while creating a longer term risk for additional site cleanup required by other regulator authority or court of law. While we recognize that the U.S. Nuclear Regulatory Commission (NRC) is seeking to resolve this discrepancy through study by the National Academy of Sciences, and further agency deliberation, this process may take several years. Prolonged delay contributes to the erosion in public understanding and confidence in government policy as well as the lack

Appendix O

of resolution mentioned above for licensees. Public policy is needed to define the quantitative dose and radionuclide characteristics that have no discernible public health consequences. (CL-01/8)

Comment: The release of scrap metal from power reactors undergoing decommissioning will present a far more insidious problem than orphan sources, by greatly increasing the volume of radioactive scrap arriving at, and the frequency of alarms at, metals companies. This poses a serious problem for the suppliers and transporters, who must manage and arrange for the ultimate disposition of the rejected scrap. It would have a similarly enormous adverse impact on the smaller producers, foundries, scrap dealers and processors, fabricators, and end product manufacturers. Metals companies experiencing several alarms daily would continue to incur enormous costs, either unfairly increasing their manufacturing costs or compelling them to raise detection levels to above background, thereby exposing themselves to increased risk of inadvertently melting sealed sources. Receipt of even slightly elevated levels of radioactively contaminated scrap imposes enormous costs on metals companies. (CL-03/6)

Comment: No radioactively contaminated parts should be allowed into consumer use, commerce, or unregulated disposal. (CL-39/3)

Comment: Georgians for Clean Energy also opposes any efforts by the nuclear industry or licensee of a decommissioning nuclear plant to “recycle”—and I use that in quotes—radioactive materials for release into the marketplace. It is appalling that there may be an option for companies involved in a technology that can cause its own facilities to become radioactive, to financially benefit from selling the hot garbage to unsuspecting citizens in the form of daily household products. (AT-A/38)

Comment: Georgians for Clean Energy also opposes any efforts by the nuclear industry or licensee of a decommissioning nuclear plant to “recycle” radioactive materials for release into the marketplace. No facilities should be able to sell their demolition debris. Instead, it should be dealt with as regulated nuclear waste since the bulk of the materials will be radioactively contaminated. (CL-08/23)

Comment: The radioactive components, parts, liquids i.e. anything part of or to do with or emanating from the structures and the site MUST NEVER BE RE-CYCLED, OR RE-USED. (CL-20/109)

Comment: NRC MUST IMMEDIATELY CEASE ALLOWING, OR THINKING OF ALLOWING, RADIOACTIVELY CONTAMINATED SOIL TO BE RE-USED FOR ANYTHING. (CL-20/110)

Comment: Has the NRC no common sense at all? Releasing radioactively contaminated materials into daily consumer use and commerce and unregulated disposal is a direct assault on humanity. Don't let this happen. (CL-23/1)

Comment: Although it is not certain, a strong possibility exists that power reactors could release scrap metal that has a serious impact on the environment, such as by contaminating the soils or groundwater underneath a scrap yard or by escaping detection and becoming melted inadvertently in a metal company furnace. Furthermore, certain isotopes in scrap metal that escape detection before melting may accumulate and concentrate in emission control systems at metals company facilities, to the extent that metals producers could generate low-level wastes ("LLW") or mixed wastes. (CL-03/3)

Comment: Even if NRC eventually does establish dose-based clearance standards for solid materials, thousands of tons of scrap metal with residual radioactive contamination still would be released into the economy or sent to LLW or industrial waste landfills. (CL-03/4)

Comment: The economic and socioeconomic impacts of decommissioning, coupled with the lack of health-based release criteria using dose-based standards, create a disturbing incentive for the nuclear power industry to release as much surplus metal as it can into the economy and market it as useful material, rather than incurring additional disposal costs when the scrap metal meets general regulatory release guidelines but may contain levels of residual radioactivity unacceptable to metals producers. NRC's recognition of these economic and socioeconomic impacts and its concurrent failure to consider the impacts of contaminated scrap metal on the metals industries create the mistaken impression that the agency has covered all of the significant impacts of decommissioning. (CL-03/8)

Comment: We oppose any unlicensed disposition of long-lasting radioactivity from the nuclear fuel chain activities. As long as radioactive materials remain, someone should retain a license for those materials, and responsibility for them. That burden should not be shifted to the states and local communities without clear acknowledgment of the stewardship responsibility for that material. (CL-48/17)

Comment: I specifically oppose any release of contaminated materials during decommissioning or other times/procedures. (CL-38/7)

Comment: Concerning the scope of this hearing and to what extent the radioactive contamination levels that are permitted to be released from regulatory control for decommissioning are being used to release radioactive materials routinely. (SF-D/2)

Comment: We would oppose any release of contaminated materials during decommissioning or other times. (SF-D/3)

Appendix O

Comment: I Firmly oppose the “release” of radioactively contaminated materials into daily consumer use and commerce and unregulated disposal. (CL-24/5)

Comment: I stand firmly against the “release” of contaminated materials into daily consumer contact and commerce or unregulated disposal. (CL-25/11)

Comment: I stand firmly against the “release” of radioactively contaminated materials into daily consumer use and commerce or unregulated disposal. (CL-26/15)

Comment: I oppose the release of radioactive contaminated materials into daily consumer or commercial uses. (CL-29/3)

Comment: I stand firmly against the “release” of radioactively contaminated materials into daily consumer use and commerce or unregulated disposal. (CL-37/1)

Comment: The Supplement indicates that portions of a nuclear reactor site could be released from regulatory control prior to the site operator's license termination. This would relieve the nuclear utility of responsibility and liability for portions of sites (be they materials or real property) while still being licensed for the control of the entire site. Public Citizen is completely opposed to any such practice, which would allow radiation/radioactively-contaminated materials and wastes to be released, reused, or recycled, without restriction, into the unregulated industrial, commercial, and public environment. (CL-47/16)

Comment: Subsequent uses of these “slightly contaminated” materials and wastes—in roadbeds, or construction, consumer products, or other objects individuals may contact—will each add to the radiation doses received without knowledge or consent of the recipient. (CL-52/16)

Comment: NRC defines decommissioning, in part, to include the “release of property for unrestricted use....” and the “release of property under restricted conditions...” NIRS stands firmly against the “release” of radioactively contaminated materials into daily consumer use and commerce or unregulated disposal. (CL-48/49)

Comment: The NRC must NOT permit “release of property for unrestricted use” or under “restricted conditions.” To permit the release of radioactively contaminated materials into daily consumer use and commerce, or to allow unregulated disposal of such materials is abhorrent. Bin Laden might approve of such an interesting experiment; I trust that the NRC does not and will not. (CL-36/7)

Comment: MIRC appreciates the opportunity to comment on the draft Supplement and urges NRC to consider in the final Supplement to the GEIS the environmental impacts of releasing radioactively contaminated scrap metal into the economy for unrestricted use, as well as the economic impacts on the metals industries and related socioeconomic impacts. (CL-03/9)

Comment: The Supplement does not discuss the potential environmental impacts of releasing scrap metal or other solid materials pursuant to NRC's unrestricted release guidance, except to state that licensed facilities must comply with standards in 10 CFR, Part 20, limiting the sum of allowable internal and external doses to individual members of the general public to 0.1 rem per year. NUREG-0586 at 4-26. (Allowable doses to individual members of the public following license termination are limited to 25 millirem per year during the control period and 100 millirem per year after the end of institutional controls. See 10 CFR § 20.1402) (CL-03/2)

Comment: IF NRC, EPA, THE DOE AND OTHERS DO NOT STOP THIS INSANE RUSH TO REUSE, RECYCLE, DUMP AND COVER ETC. NUCLEAR MATERIALS, RADIOACTIVE MATERIALS, ACTIVATED MATERIALS ETC., WITHIN FIFTY YEARS NO LIVING BEING WILL BE BORN WITHOUT SOME TYPE OF DEFORMITY, GENETIC ABNORMALITY, CHROMOSOME ABERRATION ETC AND THE IMMUNE SYSTEMS OF EVERY LIVING BEING WILL BE SERIOUSLY COMPROMISED DUE TO RADIATION SUPPRESSING THE IMMUNE SYSTEM RESPONSE, AND ALL BECAUSE WE WILL BE COMPLETELY ENGULFED IN A MIASMA OF MANMADE, OR MAN ENHANCED, RADIOACTIVE CONTAMINATION. (CL-20/112)

Comment: These exposures from multiple unmonitored, unlabeled, uncontrolled sources are in no way accounted for, but they are additive and cumulative for the individual. They violate the fundamental tenet of radiation protection: viz., that the recipient of a radiation dose that is in addition to naturally-occurring background exposures should receive a benefit equal to or greater than the risk incurred. (CL-52/17)

Comment: IT MUST FORBID THE MELTING, SMELTING OR RE-USE OF RADIOACTIVELY CONTAMINATED METALS, PIPING, PLASTICS, WOOD, (INCLUDING FORBIDDING THE BURNING OF WOOD), ASPHALT, AND SO ON. (CL-20/111)

Comment: As we have previously commented in other dockets, there should be no release of radioactively contaminated material of any kind into consumer use or into general commerce. Disposal of all materials from decommissioning needs to be regulated, regardless of whether they are radioactive or not. (CL-40/4)

Comment: The NRC should not permit radioactive materials or wastes to be released into the environment. That is the basic message, the rightful demand of all those who will be affected negatively by releases. (CL-52/18)

Appendix O

Comment: Because the costs of sequestration (“disposal”) of wastes is high, and deemed to be a “burden” for the licensee, the agency continues its endeavor to allow massive deregulation—release, recycle, and re-use—of radioactively-contaminated materials and wastes and their entry into the “free market” for resale and reuse in a host of consumer products. (CL-52/15)

Response: *During the decommissioning process, solid materials may not be released, recycled, or reused if there are detectable levels of licensed radioactive material present. Solid materials are carefully surveyed before release. The NRC has an initiative underway to consider the reuse or recycling of slightly contaminated solid material. This issue is being considered in an open forum and is outside the scope of the Supplement. Comments on the reuse or recycling of solid material will be forwarded to the appropriate NRC office for consideration. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Since at least as early as 1974, NRC has espoused a policy of “unrestricted release” of solid materials, including scrap metal, from nuclear fuel cycle facilities, without any specific, health-based release criteria. Unlike NRC requirements applicable to gaseous and liquid releases from nuclear facilities, there are no specific criteria governing releases of solid materials by licensees. Requests to release solid material are approved on a case-by-case basis using existing regulatory guidance and license conditions. (CL-03/1)

Response: *The release criteria for scrap metals and other solid material from nuclear power reactors are not “health-based” because the release criteria are based on demonstrating that there is no detectable contamination on the material. While these criteria do not have a specific dose or risk basis, they are considered to be protective of public health. The NRC has an initiative underway to consider the reuse or recycling of slightly contaminated solid material. This issue is being considered in an open forum and is outside the scope of the Supplement. The evaluation of environmental impacts from the release of potentially contaminated solid materials is not within the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.4.2 Partial Site Release

Comment: To categorize as “generic” “the release” from regulatory control portions of sites before they are completely decommissioned is not responsible. (CL-39/2)

Response: *The Supplement does not categorize partial site release as "generic". It does indicate that a proposed rule was issued on September 4, 2001 for partial site release prior to license termination. The partial site release rule does not advocate the release from regulatory control, portions of the site before they are completely decommissioned. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: I utterly oppose allowing portions of sites to be released from regulatory control before the whole site is released. (CL-33/8)

Comment: I am opposed to the following change to NUREG-0586: In Supplement 1 to the Generic Environmental Impact Statement on Decommissioning: NRC allows portions of sites to be "released" from regulatory control before the whole site is released. (CL-43/2)

Comment: I am opposed to NRC regulations pertaining to Decommissioning which would allow portions of sites to be "released" from regulatory control before the whole site is released. (CL-44/6)

Comment: NRC allows portions of sites to be "released" from regulatory control before the whole site is released. (CL-48/37)

Comment: I am opposed to the following proposal(s) in the EIS: NRC allows portions of sites to be "released" from regulatory control before the whole site is released. (CL-26/3)

Response: *The partial site release rule does not advocate the release from regulatory control portions of the site before they are completely decommissioned. The rule requires that portions of a site released prior to NRC approval of the License Termination Plan must meet the same criteria as the entire site would at license termination. In providing public review of a proposed partial release, the NRC notices receipt of a licensee's proposal for a partial site release, regardless of the potential for residual radioactivity, and makes it available for public comment. The NRC is also required to hold a public meeting in the vicinity of the site to discuss the licensee's request for approval, or license amendment application in the case of impacted property, as applicable, and obtain comments before approving the release. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Again THERE MUST NEVER BE A PARTIAL OR FULL SITE RELEASE. ALL PROPERTY DEEDS MUST STATE THE SITES ARE NOT ONLY RADIOACTIVE, BUT SUPERFUND SITES, AS THAT IS WHAT THEY ARE. THE RIVER, LAKE, OCEAN BEACH

Appendix O

STRETCH OR WHATEVER IS NEXT TO THE SITE SHOULD BE POSTED AS RADIOACTIVE ALSO, EVEN IF THE SEDIMENT IS REMOVED, AS IT IS IMPOSSIBLE TO GET EVERYTHING. (CL-20/73)

Response: *A power reactor site or portions of a power reactor site that are released prior to termination of the reactor license would not qualify as a Superfund site with respect to a radiological hazard because the site or portion of the site would not be released from the NRC license until the licensee could demonstrate that the property posed no immediate or long-term radiological danger to the public. How former sites are identified, posted, or described in property deeds is outside the scope of NRC's mandate and regulations. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the text of the Supplement.*

Comment: Partial release of property for unrestricted use should not be allowed until the LTP has been established, reviewed by the public, approved by the NRC and implemented on the given piece of land. Furthermore, methodology should be established for preventing recontamination of the released property through environmental migration e.g. rain, wind, etc and future decommissioning activities i.e. excavating, tracking or relocating contaminated materials. (CL-50/19)

Response: *The partial site release rule requires that portions of a site released prior to NRC approval of the License Termination Plan must meet the same criteria as the entire site would at license termination. In providing public review of a proposed partial release, the NRC notices receipt of a licensee's proposal for a partial site release, regardless of the potential for residual radioactivity, and makes it available for public comment. The NRC is also required to hold a public meeting in the vicinity of the site to discuss the licensee's request for approval, or license amendment application in the case of impacted property, as applicable, and obtain comments before approving the release. The partial site release rule does not specifically address methodologies for preventing recontamination of the released property. Licensees, however, have the same continuing responsibilities for controlling radiological releases onto property previously released for unrestricted use as they do for releases onto any other unrestricted areas adjacent to the site. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.4.3 Disposal of Low-Level Radioactive Waste

Comment: The draft GEIS says that low-level radioactive waste disposal is not part of the scope of this GEIS. However, this would appear to be contradicted by the definition of decommissioning (pg. xii), and by the scope, the release and removal of Sites, Systems and Components (SSCs). (CL-38/6)

Response: *The disposal of low-level waste (LLW) is not within the scope of this Supplement as it is an activity performed at a facility that is separately licensed or regulated. Sections 1.2, "Process Used to Determine the Scope of this Supplement," and 1.3, "Scope of this Supplement," address low-level waste and how it is considered in this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: In addition to the economic gash in the GEIS portal, this fatally flawed document does not adequately address, acknowledge, account for, or compute a number of significant barriers related to radiological decommissioning; including:] "Low-level" Radioactive Waste Isolation; (CL-02/6)

Comment: You talk about burying it somewhere, well everybody is in danger when you do this kind of thing. (AT-D/7)

Response: *The disposal of LLW is not within the scope of this Supplement, as it is an activity performed at a facility that is separately licensed or regulated. LLW facilities are sited in areas that are away from surface water and where the groundwater is located at depths sufficiently beneath the trenches to minimize nuclide migration. Sites and the surrounding areas are monitored using a system of wells to determine whether radioactive material is migrating into the groundwater. A combination of natural site characteristics and engineered safety features is used to ensure the safe disposal of LLW. In addition, restrictions of types and amounts of waste disposed of at a site, as well as the technical analysis performed as part of the licensing review to demonstrate compliance with performance objectives in NRC regulations, maintain the safety of LLW disposal. The natural characteristics of an LLW disposal site are relied on in the long-term, and they should promote disposal-site stability and attenuate the transport of radionuclides away from the disposal site into the general environment. Sites generally must possess the following characteristics: (1) relatively simple geology, (2) well-drained soils free from frequent ponding or flooding, (3) lack of susceptibility to surface geological processes, such as erosion, slumping, and landslides, (4) a water table of sufficient depth so that groundwater will not periodically intrude into the waste or discharge onsite, (5) lack of susceptibility to tectonic processes, (6) no known potentially exploitable natural resources, (7) limited future population growth or development, and (8) capability of not being adversely impacted by nearby facilities and activities. Engineered barriers are man-made structures designed to improve the natural site characteristics to isolate and contain waste. They consist of various engineered system components, including the following: (1) a layered earthen cover, (2) a disposal vault, (3) a drainage system, (4) waste forms and containers, (5) backfill material, and (6) an interior moisture barrier and low-permeability membrane. Regulations specify the*

Appendix O

allowable radiation dose from the LLW facilities to the workers and to the public. Evaluation of the environmental impacts associated with the disposal of low-level waste is outside the scope of this Supplement. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.

Comment: The on site disposal of radiological demolition debris (rubblization) is considered in the GEIS. With rubblization abandoned at Maine Yankee, the cumulative effect of disposal of the debris at a licensed facility elsewhere is not considered. This makes no sense. Nor does it make sense to "lose" impacts when contaminated materials are shipped to handling facilities for recycling. Different choices made at the decommissioning site will result in different impacts to workers and other citizenry offsite and away. These effects should not be artificially separated from the environmental impacts of decommissioning simply because they are exported.
(CL-13/19)

Response: *The disposal of low-level waste (LLW) is not within the scope of this Supplement, as it is an activity performed at a facility that is separately licensed or regulated (see Section 1.3). Regulations related to LLW disposal are in 10 CFR Part 61 and 10 CFR Part 20, Subpart K, of the Code of Federal Regulations. The staff did consider cumulative impacts. Section 4.2 has been changed for clarification.*

Comment: If such a tent system were used, afterwards it would be disposed of as rad waste.
(CL-20/35)

Response: *If the tent system was contaminated and the contamination could not be removed to undetectable levels then the tent or the contaminated portions of the tent would have to be disposed of as LLW. The disposal of low-level waste (LLW) is not within the scope of this Supplement, as it is an activity performed at a facility that is separately licensed or regulated. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: In addition to recomputing the cost of LLW disposal, the reopening of Barnwell has indefinitely postponed the siting of a waste facility in Pennsylvania. (CL-02/29)

Response: *The factors influencing the siting of regional-compact burial sites is outside the scope of the Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The fact is, wherever this radioactively contaminated refuse winds up - from spent fuel to contaminated rags - it can't be contained forever and will reach the environment, which is why it must go to a remote location, below ground (none of this idiot parking lot out in Utah or

Nevada cask storage either) in a dry, geologically sound (as far as possible in a moving planet) location where monitoring could alleviate problems that arise prior to reaching the public and wildlife. NRC must recognize that this "solution" - while not a perfect solution, as there is no perfect solution to the nuclear waste issue, is the solution that has been gone back to repeatedly over the decades, after thousands of studies contemplating what to do with the waste failed to identify anything better, or safer. What NRC and industry are proposing in this Draft, flies in the face of thousands of prior studies by some of the world's most renowned people who understand the horror of the dilemma, and of their conclusions. Leaving all this contamination on sites around the nation to contaminate and kill hundreds of communities is simply barbaric and must be stopped at all costs. (CL-20/114)

Comment: The nuclear industry is leaving humankind a legacy of devastation, epitomized by its long-lived and highly dangerous nuclear waste. They are unable to solve their waste problem and now, when faced with the eventual shutdown of their plants, are unwilling to take measures to ensure that the public is protected. (AT-A/43)

Response: *The NRC has stated in its regulations: "The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impact for at least 30 years beyond the licensed life for operation (which may include the term of renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent fuel-storage installations." Further, the Commission believes there is reasonable assurance that at least one mined geological repository will be available in the first quarter of the 21st century, and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time. The evaluation of environmental impacts from the disposal of LLW and spent fuel is outside the scope of the Supplement (see Section 1.3). The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: There still remains a mountain of radioactive waste after shut down, including the reactor itself and, typically, an incredibly dangerous stockpile of irradiated reactor fuel. Whereas the reactor itself and the equipment and materials of the central facilities are often treated as the object of decontamination, it must be noted that the previous operation of the plant has dispersed radiation and contamination that did not regard the facility's fence line as a barrier. Any serious approach to decommissioning a site must take this into account. (CL-47/7)

Response: *Nuclear power facilities were licensed with the expectation that there would be routine releases of detectable radioactivity to the air and water surrounding the site. Such releases are controlled and limited to levels considered adequate to protect public health and*

Appendix O

safety. Radiological impacts of releases during plant operations are limited by criteria set forth in 10 CFR Part 20. Offsite remediation due to routine plant release is not warranted. The evaluation of environmental impacts from the disposal of LLW and spent fuel is outside the scope of the Supplement (see Section 1.3). The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: Allowing NRC to determine whether waste can or will remain after a reactor license is terminated is contrary to the policy of the respective compacts and in direct disregard of the federal low-level radioactive waste framework established by Congress. (CL-17/9)

Response: *Material that could be classified as low-level waste would not be left behind after license termination. Any radioactive contamination left behind after license termination must meet the License Termination Criteria given in 10 CFR Part 20, Subpart E. Materials that cannot meet these criteria are considered to be low-level waste and would have to be disposed of at a licensed low-level waste facility before the license could be terminated. Therefore, any radioactive material remaining onsite after license termination would not be considered radioactive waste. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Inherent in the decision to operate the reactors is an acceptance on the part of the generator and the regulator of the production of long-lasting radioactive waste and radioactive and chemical contamination of large volumes of resources. Decommissioning should include responsibly managing that material, not denying its existence. (CL-48/10)

Response: *Although long-term storage of spent fuel and low-level waste is not within the scope of the Supplement, as described in Section 1.3, NRC is committed to ensuring that both spent fuel and low-level wastes are managed to prevent detrimental health impacts to the public. The NRC has stated in its regulations: "The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impact for at least 30 years beyond the licensed life for operation (which may include the term of renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent fuel-storage installations." Further, the Commission believes there is reasonable assurance that at least one mined geological repository will be available in the first quarter of the 21st century, and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time. LLW facilities are sited in areas that are away from surface water and where the groundwater is located at depths sufficiently beneath the trenches to minimize nuclide migration. Sites and the surrounding areas are monitored using a system of wells to determine if there is any leakage of radioactivity into the groundwater. A combination of natural*

site characteristics and engineered safety features is used to ensure the safe disposal of LLW. In addition, restrictions of types and amounts of waste disposed of at a site, as well as the analysis performed as part of the licensing to demonstrate compliance with performance objectives in NRC regulations, increase the safety of LLW disposal. The natural characteristics of an LLW disposal site are relied on in the long-term, and they should promote disposal-site stability and attenuate the transport of radionuclides away from the disposal site into the general environment. Sites generally must possess the following characteristics: (1) relatively simple geology, (2) well-drained soils free from frequent ponding or flooding, (3) lack of susceptibility to surface geological processes, such as erosion, slumping, and landslides, (4) a water table of sufficient depth so that groundwater will not periodically intrude into the waste or discharge onsite, (5) lack of susceptibility to tectonic processes, (6) no known potentially exploitable natural resources, (7) limited future population growth or development, and (8) capability of not being adversely impacted by nearby facilities and activities. Engineered barriers are man-made structures designed to improve the natural site characteristics to isolate and contain waste. They consist of various engineered system components, including the following: (1) a layered earthen cover, (2) a disposal vault, (3) a drainage system, (4) waste forms and containers, (5) backfill material, and (6) an interior moisture barrier and low-permeability membrane. Regulations specify the allowable radiation dose from the LLW facilities to the workers and to the public. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: Limerick, Oyster Creek, Peach Bottom, Salem, and Three Mile Island are among the nation's nuclear generating stations currently serving as "temporary" repositories for low-level radioactive waste. Limerick, Peach Bottom, and Three Mile Island do not meet the standards set by the Appalachian Compact in regards to a permanent LLW facility. (CL-02/30)

Response: The NRC has historically discouraged the use of onsite storage as a substitute for permanent disposal, but has not limited the amount of time that the waste can be stored. However, LLW is normally stored onsite on an interim basis before being shipped offsite for permanent disposal. Onsite storage facilities are designed to minimize personnel exposure. High-dose-rate LLW is isolated in a shielded storage area and is easily retrievable. The lower dose-rate LLW is stacked or stored to maximize packing efficiencies. The NRC has guidelines regarding the storage facility, including the following: (1) shielding used should be controlled by dose-rate criteria for both the site boundary and any adjacent offsite areas and (2) a liquid drainage collection and monitoring system should be present. The drain should be routed to a radwaste processing system. The regulations related to LLW disposal are in 10 CFR Part 61 and 10 CFR Part 20 Subpart K. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Appendix O

Comment: Anything dumped or buried from the past practices on site must also be dug up and removed. (CL-20/21)

Response: The licensee is required to conduct a site characterization study to determine the location and extent of radioactive contamination. The LTP addresses the issue of onsite buried waste and soil contamination. Site remediation is addressed by the LTP. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: YOU CAN'T BURN IT/INCINERATE IT, IT GOES OUT THE STACK AND POLLUTES THE STACK, YOU CAN'T WASH IT, IT WINDS UP ALL OVER THE PLACE AND IN THE WATER, IT IS ALWAYS THERE, THE DEADLY, INVISIBLE KILLER. AT MOST YOU CAN TRY AND CONTAIN IT. (CL-20/71)

Response: *Companies licensed to incinerate radioactive waste are regulated by the NRC and EPA. Effluents are monitored and controlled prior to release and limited by NRC and EPA regulations. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: None of the mixed-waste should be dealt with as mixed waste (i.e. a combination of chemical/hazardous and radioactive) because MIXED WASTE FALLS THROUGH ALL REGULATORY CRACKS, BUT IT SHOULD BE TREATED AS RADIOACTIVE WASTE. (CL-20/77)

Response: *The disposal of mixed waste falls under NRC regulations (10 CFR Part 61, "Licensing requirements for land disposal of radioactive waste") and EPA regulations for disposal of hazardous waste (40 CFR Part 260 through 40 CFR Part 270). Offsite disposal of mixed waste is outside the scope of the Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: WASTE OILS SHOULD NOT BE SENT TO VENDORS FOR INCINERATION OR RECYCLING OR REUSE AS THEY ARE CONTAMINATED. (CL-20/78)

Response: *Contaminated waste oil will be dealt with in an appropriate manner consistent with NRC and EPA regulations. Offsite disposal of LLW is outside the scope of the Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: One of the things that has to be acknowledged I think or anticipated is the failure of the United States nuclear waste program on all levels, so that low-level dumps are not getting established, high-level dumps are not getting established. Therefore, we may really have to keep a lot more of this radiation on site than we had anticipated. (AT-G/2)

Comment: No facility exists for the permanent disposal of the nation's high-level waste (irradiated reactor fuel), and only one burial site, in Barnwell, SC, is currently available to most reactors for the rest of their wastes (their so-called "low-level" wastes, which ultimately could include the rubble and dismantled components from decommissioned plants). That one "low-level" waste facility however, that is serving most of the nation, is expected to be closed in the near future to non-Southeast-United States reactors. (CL-51/22)

Response: *The NRC has stated in its regulations: "The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impact for at least 30 years beyond the licensed life for operation (which may include the term of renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent fuel-storage installations." Further, the Commission believes there is reasonable assurance that at least one mined geological repository will be available in the first quarter of the 21st century, and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time. LLW facilities are sited in areas that are away from surface water and where the groundwater is located at depths sufficiently beneath the trenches to minimize nuclide migration. The natural characteristics of an LLW disposal site are relied on in the long-term, and they should promote disposal-site stability and attenuate the transport of radionuclides away from the disposal site into the general environment. Sites generally must possess the following characteristics: (1) relatively simple geology, (2) well-drained soils free from frequent ponding or flooding, (3) lack of susceptibility to surface geological processes, such as erosion, slumping, and landslides, (4) a water table of sufficient depth so that groundwater will not periodically intrude into the waste or discharge onsite, (5) lack of susceptibility to tectonic processes, (6) no known potentially exploitable natural resources, (7) limited future population growth or development, and (8) capability of not being adversely impacted by nearby facilities and activities. Engineered barriers are man-made structures designed to improve the natural site characteristics to isolate and contain waste. They consist of various engineered system components, including the following: (1) a layered earthen cover, (2) a disposal vault, (3) a drainage system, (4) waste forms and containers, (5) backfill material, and (6) an interior moisture barrier and low-permeability membrane. Regulations specify the allowable radiation dose from the LLW facilities to the workers and to the public. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

O.4.4 Spent Fuel Maintenance, Storage, and Disposal

Comment: I find nothing in this thick document where [it] addresses at all the generic, or under generic or site-specific issues the impact and the effects on the structure, systems and components of an event which happens during decommissioning. And, of course, the radioactive fuel pools are the principle source in that case of radioactive contamination. (AT-F/3)

Response: *Section 4.3.9 addresses accident analysis, including those involving the spent fuel pool. Details of potential accidents are in Appendix I. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The Draft says, p.1-6, that NRC and the Commission are not considering the issue of spent fuel storage (in a pool or in one of those ridiculous casks outside in plain view for every terrorist to see) as part of decommissioning. The excuse is that its dealt with under other license aspects. (CL-20/25)

Response: *The commenter is correct in noting that the issue of spent fuel storage is outside the scope of this Supplement for reasons discussed in Section 1.3, "Scope of This Supplement." The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: It also says that the Commission has made a finding that the DEADLY, RADIOACTIVE SPENT FUEL BE STORED SAFELY AND WITHOUT SIGNIFICANT ENVIRONMENTAL IMPACTS FOR AT LEAST THIRTY YEARS BEYOND THE LIFE FOR OPERATION ETC. ETC. (CL-20/26)

Comment: [In addition to the economic gash in the GEIS portal, this fatally flawed document does not adequately address, acknowledge, account for, or compute a number of significant barriers related to radiological decommissioning; including:]Spent Fuel Isolation. (CL-02/5)

Comment: When California's nuclear plants received licenses for construction and operation, promises were made that high-level radioactive waste would be removed within a few years. Every deadline to open a safe and permanent repository for high-level radioactive waste has been missed. Therefore, the issue has grown; we are not accessing only the decommissioning of a power plant, but dealing also with storage and transportation of lethal substances unforeseen when licenses were granted. (CL-53/4)

Comment: One of the things it (the 60 year period) presumes is that there's going to be a viable option for removing the spent fuel from the site. And I'm just wondering if anybody could

talk a little bit about the relationship there, because I am one of many people who believe that Yucca Mountain is not a foregone conclusion, although probably that is not your view here, but there is significant opposition to it from some rather more powerful actors than us in the State of Nevada. (SF-B/5)

Comment: Can the Commission identify a pragmatist, physicist, chemist, policy analyst, or behavioral scientist who is willing to testify that radiological decommissioning can be achieved with the fate of Yucca Mountain in perpetual limbo and the three current "low-level" radioactive waste facilities limited by finite capacity and geopolitical considerations? (CL-02/13)

Comment: Spent fuel "disposal" is an unresolved and hugely problematic area. Each reactor produces approximately 20 to 30 tons of high-level radioactive waste per year. There is presently, and at least until 2010, nowhere to put this waste. The technology to safely manage spent fuel for an indefinite period of time does not exist. There is no location to permanently store spent fuel and high-level radioactive waste (HLW) generated by nuclear power plants. (CL-02/21)

Comment: Aggravating the critical shortage of HLW storage space is the bleak estimate for the completion of Yucca Mountain, the designated repository for high-level nuclear waste. The earliest date this repository could be available is 2010. Lynn M. Shishido-Topel served as the Overseeing Commissioner of the Illinois Commerce Commission testified, also predicted that the amount of spent fuel generated by 2000 will be 40,000 metric tons (MTU). This amount of waste would exceed Yucca Mountain's capacity, and the State of Nevada has demonstrated that Yucca Mountain will probably hold about 20% of the total 85,000 MTU of spent fuel earmarked for the facility. (CL-02/23)

Comment: Isolation of high-level radioactive waste, which is primarily composed of spent fuel, can not be separated from radiological decommissioning. The earliest Yucca Mountain will be available is in the year 2010. Nuclear generating stations can not be decommissioned or decontaminated with the presence of HLW onsite or inside the reactor vessel. Aggressive decontamination process will be precluded, necessitating utilities to place retired reactors into extended-DECON or SAFSTOR. If a long-term solution to spent fuel isolation is not found in the immediate future, some of the nation's nuclear generating stations will be shut down prematurely due to an absence of spent fuel storage capacity. (CL-02/26)

Comment: It ought to be equally obvious that a satisfactory waste isolation solution evades us (we do not agree with Secretary Abraham that Yucca Mountain is a suitable repository based on science - the DOE itself admits that the site is not geologically suitable and the GAO raises serious questions about the selection process). (CL-42/2)

Appendix O

Response: *Although long-term storage of spent fuel is not within the scope of the Supplement, as described in Section 1.3, "Scope of This Supplement," NRC is committed to ensuring that both spent fuel and low-level wastes are managed to prevent detrimental health impacts to the public. The NRC has stated in its regulations: "The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impact of at least 30 years beyond the licensed life for operation (which may include the term of renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent fuel-storage installations." Further, the Commission believes there is reasonable assurance that at least one mined geological repository will be available in the first quarter of the 21st century, and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time. The comments do not provide new information relevant to this Supplement and will not be evaluated further. The comments do not result in a change to the Supplement.*

Comment: I probably have a question in there because I wasn't sure, reading through the document itself, where, like the outdoor storage facilities at Plant Hatch and elsewhere—how they are dealt with after the plant itself is decommissioned and if the license is terminated. I'm not sure how that works and who's responsible and I would like more clarification on that.

(AT-A/16)

Response: *Both operating plants and plants that have permanently ceased operations and are decommissioning have the option to store their spent fuel in dry cask storage outside on a specially constructed concrete pad. The facility is called an Independent Spent Fuel Storage Installation or ISFSI. An ISFSI can be constructed and operated either under the same licensee that is used for an operating or decommissioning facility (called a "Part 50 license" in reference to the location in the Code of Federal Regulations that describes the license requirements) or under a site-separate license (called a "Part 72 license" in reference to the location in the Code of Federal Regulations that describes the licensing requirements for the ISFSI). Licensing the ISFSI separately under Part 72 license allows completion of the decommissioning of the power reactor and its associated structures, systems and components while retaining a license for the ISFSI. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Furthermore, some nuclear plants, like Hatch have overflowing volumes of nuclear waste that are now being stored outdoors which impacts the environment and could affect decommissioning. **(AT-A/25)**

Comment: Some nuclear plants, like Hatch, have overflowing volumes of nuclear waste that are now being stored outdoors which impacts the environment and could affect decommissioning. (CL-08/7)

Response: *Some of the spent fuel at Hatch is stored in an ISFSI located onsite. The ISFSI is licensed under the provisions of 10 CFR Part 50. The spent fuel at Hatch is stored in accordance with the regulations in 10 CFR Part 50 and/or 10 CFR Part 72. However, the impacts from an ISFSI are outside the scope of this Supplement, as discussed in Section 1.3. The impacts that an onsite ISFSI might have on decommissioning activities were considered to be insignificant since it is an independent facility located some distance from structures, systems or components that are likely to be removed during decommissioning. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: How will onsite, outdoor nuclear waste storage dumps, [also known as Independent Spent Fuel Storage Installations—ISFSI] like at Plant Hatch, be affected by decommissioning? How will the licensee of an ISFSI be impacted by events that may happen during decommissioning, i.e. what if there is an accident nearby and the casks are damaged or the site is rendered inaccessible? (CL-08/27)

Comment: Those issues are of grave concern. What happens, if during decommissioning terrorists take out three spent fuel casks blasting them to kingdom come OR two casks had a major problem and needed to be opened under shielding inside the spent fuel pool and there was either no room in the spent fuel pool or the cask came apart while trying to move it due to embrittlement of the cask from the radioactive decay heat coming off the spent fuel? (CL-20/27)

Response: *ISFSIs are generally located far enough away from structures and systems being dismantled or demolished during decommissioning that an accident during decommissioning would be unlikely to adversely impact the ISFSI. If a cask were to be damaged by some means, the licensee would be required to decontaminate the area and re-secure the spent fuel. Although difficult, such activity is technically feasible and could be accomplished relatively quickly. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: The GEIS does not consider the impacts of spent fuel storage. We believe this to be based on artificial distinctions. Both Maine Yankee and Haddam Neck have identified establishing an Independent Spent Fuel Storage Facility as a "critical pathway" in decommissioning. ISFSI construction has been regulated under the very same Part 50 license that

Appendix O

will be terminated upon successful decommissioning. Only then will a Part 72 license be issued. The ISFSI is in the middle of a decommissioning site and physically inseparable from decommissioning. Its impacts should be considered among the impacts of decommissioning in the GEIS. (CL-13/18)

Comment: Nuclear corporations should not be allowed to decommission reactors under an operating license through a series of amendments nor should they be allowed to create an Independent Spent Fuel Storage Installation (ISFSI) under an operating reactor license when they are decommissioning. Decommissioning reactors installing ISFSI's should be required to go into a Part 72 license to provide adequate regulatory oversight protect public health and safety. The Part 72 general license provision for creating an ISFSI at an operating reactor was never intended to cover a decommissioning reactor when regulatory oversight is minimized. (CL-50/23)

Response: *Both operating plants and plants that have permanently ceased operations and are decommissioning use ISFSIs. ISFSIs are not unique to decommissioning plants. The initial development of the decommissioning regulations occurred in the early 1980s. At that time, the NRC and the industry assumed that by the time facilities began decommissioning, the U.S. Department of Energy's (DOE) high-level waste repository would be accepting spent fuel for ultimate disposal. Therefore, spent fuel onsite during decommissioning was not expected to be an issue. Consequently, development of regulations related to ISFSIs occurred separately from the development of decommissioning regulations. Since the ISFSI may in some cases remain at the site longer than a nuclear facility that is undergoing immediate decommissioning, it is appropriate that ISFSIs be capable of being licensed separately. The decommissioning of the ISFSI is also handled separately from the decommissioning of the nuclear power plant. Site-specific ISFSI licenses require the evaluation of the ISFSI separately from the remainder of the facility although other site activities adjacent to the ISFSI are considered to evaluate their impact on the storage of the spent fuel. An ISFSI can be constructed and operated either under the same license that is used for an operating or decommissioning facility (called a "Part 50 license" in reference to the location in the Code of Federal Regulations that describes the license requirements) or under a site-separate license (called a "Part 72 license" in reference to the location in the Code of Federal Regulations that describes the licensing requirements for the ISFSI. ISFSI licensing, siting, construction and operation are outside the scope of the GEIS on decommissioning (see Section 1.3). The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Until the spent rods are removed from local nuclear power plants the decommissioning rules should be tightened, not loosened. Your proposal may have seemed reasonable earlier this year but we live in a very different world now. It can no longer be business as usual at the NRC. (CL-25/4)

Response: *The Supplement provides an assessment of impacts related to the decommissioning process. The Supplement does not (1) establish policy, (2) establish or revise regulations, (3) impose requirements, (4) provide relief from requirements, or (5) provide guidance on the decommissioning process. The regulations for maintenance and storage of spent fuel are given in 10 CFR Parts 50 and 72 and are summarized in Appendix L of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: In the case of plants like Hatch, that have outdoor storage of nuclear waste, the notion of a reduced security force is even more troubling. (AT-A/15)

Response: *Nuclear power plants are regulated under 10 CFR Part 50 during both plant operation and decommissioning. Typically once a plant permanently ceases operation there is a gradual reduction in security requirements commensurate with the reduction of risk associated with the various structures, systems and components. However, security around the spent fuel pool remains at levels commensurate with those at an operating nuclear facility. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The excess storage—I mean the storage in pools, but there's a whole lot setting out in dry casks very vulnerable to whatever comes along, whatever happens. I mean the whole thing is just—I don't know how in the world they're going to deal with it. (AT-D/4)

Response: *Although long-term storage of spent fuel is not within the scope of the Supplement, as described in Section 1.3, "Scope of This Supplement," NRC is committed to ensuring that both spent fuel and low-level wastes are managed to prevent detrimental health impacts to the public. The NRC has stated in its regulations: "The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impact of at least 30 years beyond the licensed life for operation (which may include the term of renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent fuel-storage installations." The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: As early as 1995, concerns about Yucca Mountain's integrity surfaced from scientists at Los Alamos National Laboratories. Dr. Charles Bowman warned that plutonium would remain after the steel casks holding the nuclide dissolved. Plutonium could then migrate and concentrate. And in February 1999, the scientific peer review panel for Yucca Mountain commissioned by the U.S. Department of Energy (DOE) produced a "highly critical" report. "The review panel said the model [DOE'S computer model] has so many uncertainties - like the corrosion rates of waste containers, the area's vulnerability to earthquakes and how climate

Appendix O

changes would affect rainfall - that its reliability was limited. In February, 1999, the scientific peer review panel for Yucca Mountain commissioned by the U.S. Department of Energy (DOE) produced a "highly critical" report. The review panel said the model [DOE's computer model] has so many uncertainties - like the corrosion rates of waste containers, the area's vulnerability to earthquakes and how climate changes would affect rainfall - that its reliability was limited." (CL-02/24)

Comment: A satisfactory waste isolation site evades us. Yucca Mountain is not a suitable geologic repository based on science – the DOE itself admits that the site is not geologically suitable; storage canisters will be required to protect the waste from exterior environmental contamination. Additionally, the GAO raises serious questions about the selection process. (CL-46/3)

Comment: I don't think there is any good way to treat the long-term storage of radioactive waste. I don't think Yucca Mountain is the answer, for darn sure, for various reasons. Also at Lawrence Berkeley Lab the group that's the Earth science group has done the study on groundwater transportation. And I know from some of my associates there that they think it is not a satisfactory location for long-term storage. (SF-C/5)

Response: *The spent fuel repository planned for Yucca Mountain is the subject of a separate NRC licensing action. Uncertainties of specific parameters are being evaluated at this time and will ultimately be addressed in the licensing action and the specific documents associated with it at that time. High-level waste disposal is outside the scope of this Supplement, as discussed in Section 1.3, "Scope of This Supplement." The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Furthermore, on October 4, 1999, LeBoeuf, Lamb, Green & MacRae, filed a complaint alleging a conflict of interest by the Department of Energy in their selection and awarding of \$16 million legal contract to Winston & Strawn. Former general counsel to the Energy Department, R. Jenney Johnson, in a sworn affidavit, stated: "[A] situation has been created which an entity [Winston & Strawn] will pass judgment on its own work." (CL-02/25)

Comment: Years ago, when people spoke of some type of monitored, retrievable spent fuel storage, they meant monitored, so repairs could be made by remote control if needed, and retrievable so problems could be addressed. Spent fuel is the stuff that the Department of Energy has been charged with trying to contain for approx. 10,000 years removed from the biosphere. (CL-20/81)

Response: *High-level waste disposal is outside the scope of this Supplement as discussed in Section 1.3, "Scope of This Supplement." The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: THE SPENT FUEL IS THE MOST SERIOUS ISSUE THERE IS. ANYONE WHO DOES NOT UNDERSTAND THAT SPENT FUEL CANNOT BE LEFT WHERE IT IS ON SITE, IN POOLS OR ISFSI'S BEYOND A VERY LIMITED NUMBER OF YEARS, BUT MUST BE PLACED DEEP UNDERGROUND, IN A DRY LOCATION, GEOLOGICALLY AS SOUND AS POSSIBLE, MONITORED FOR ETERNITY, DOES NOT UNDERSTAND RADIATION OR THE NUCLEAR ISSUE AND SHOULD NOT BE WORKING FOR THE NRC. NRC MUST SET THE TIME WHEN THE SPENT FUEL SHOULD ALL BE REMOVED OFFSITE AS NO LATER THAN TWO YEARS AFTER THE LAST CORE OFFLOAD HAS SPENT TEN YEARS IN THE SPENT FUEL POOL, I.E. FROM SPENT FUEL REMOVED FROM THE REACTOR INTO THE SPENT FUEL POOL AND THEN THE TEN YEAR "COOL DOWN" PLUS TWO YEARS, AFTER WHICH IT MUST BE MOVED. IF SUCH A DEADLINE IS NOT DECIDED, AND SET, COMMUNITIES ARE GOING TO BE STUCK WITH IT, WITH AWFUL CONSEQUENCES.
(CL-20/84)

Response: *Although long-term storage of spent fuel is not within the scope of the Supplement, as described in Section 1.3, "Scope of This Supplement," NRC is committed to ensuring that both spent fuel and low-level wastes are managed to prevent detrimental health impacts to the public. The NRC has stated in its regulations: "The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impact of at least 30 years beyond the licensed life for operation (which may include the term of renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent fuel-storage installations." Further, the Commission believes there is reasonable assurance that at least one mined geological repository will be available in the first quarter of the 21st century, and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time. The comment proposes limits for the onsite storage of spent fuel. The Supplement does not (1) establish policy, (2) establish or revise regulations, (3) impose requirements, (4) provide relief from requirements, or (5) provide guidance on the decommissioning process. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.4.5 License Extensions

Comment: Likewise, there is no experience in decommissioning nuclear reactors that have operated beyond the original 40-year license period. (AT-A/26)

Comment: The NRC has no experience in decommissioning nuclear reactors that have operated beyond the original 40-year license period. (CL-08/8)

Response: *The commenter is correct. Nevertheless, the NRC is considering the environmental impacts of decommissioning following the extended operation during the renewal period and, if appropriate, refurbishment activities. License renewal is not within the scope of this Supplement, as it is a licensing activity covered elsewhere in the NRC regulations (see 10 CFR Parts 51 and 54) and in other EISs (see NUREG-1437, its addendum and supplements). The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: We believe that the decommissioning document has definitely underestimated the impacts of the additional license extension period. In fact, the minimization of that impact I think is a major flaw in the document and that there needs to be a reassessment of all of the impacts, including cost, but also including the aging issues, including the waste issues and other offsite environmental impacts for license extension periods. (AT-B/8)

Response: *An analysis performed for NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, indicated that the physical requirements and attendant effects of decommissioning nuclear power plants after a 60-year license renewal (original 40-year license plus an additional 20 years for license renewal) are not expected to differ from those of decommissioning at the end of 40 years of operation. Section 1.3 was changed for clarification of this information.*

Comment: None should be re-licensed - the NRC should be ashamed of re-licensing. (CL-20/116)

Comment: I am opposed to any extensions on operating licenses for nuclear facilities of any sort and wish for a move to cleaner renewable energy. (CL-41/2)

Response: *License renewal is outside the scope of this Supplement. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

O.4.6 Site Characterization and Final Site Surveys

Comment: Additionally each nuclear power plant has a different historical performance record that may have impacted the surrounding environment in ways that are unique to the facility. What makes it acceptable to ignore these operating histories when decommissioning?
(AT-A/24)

Response: Licensees are required by 10 CFR 50.75(g) to "keep records of information important to the safe and effective decommissioning of the facility in an identified location until the license is terminated." These records include records of spills, etc. Prior to termination of an operating license, the NRC must determine that the terminal radiation survey and associated documentation demonstrate that the facility and site are suitable for release in accordance with the criteria for decommissioning in 10 CFR Part 20, Subpart E. Title 10 CFR Part 51.53(d) requires that the "Supplement to the Applicant's Environmental Report-Post Operating License Stage," which must be submitted with the License Termination Plan, update the "Applicant's Environmental Report- Operating License Stage" to reflect any new information or significant environmental change associated with the applicant's proposed decommissioning activities or with the applicant's proposed activities with respect to the storage of spent fuel. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: In order to provide a complete and up-to-date environmental profile of the site, the Supplement should direct licensees to summarize the following in their site-specific NEPA analyses (and as appropriate in the PSDAR and LTP): (a) pre-plant construction environmental reports (for plants constructed before the enactment of NEPA) and environmental impact statements (EISs) regarding the impacts of plant construction and operation, (b) environmental reports and/or assessments that were prepared during the period the plant was in operation regarding the impacts of plant operation, (c) significant requirements and changes in the licensee's environmental permits, and (d) changes in the environmental parameters of a facility site during operation and the impacts of any such changes (see also Response to Comment #6-A, page A-11). (CL-16/7)

Response: The purpose of the Supplement is to provide an environmental analysis of the impacts associated with the decommissioning process. The Supplement does not (1) establish or revise regulations, (2) impose requirements, (3) provide relief from requirements, or (4) provide guidance on the decommissioning process. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.