

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of Wisconsin Public Service
Corporation, Wisconsin Power and Light, &
Madison Gas and Electric Company, License
No. DPR-43

Docket No. 50-305

8/16/78
August 16, 1978

AMENDED CONTENTIONS

The following amended contentions are based on the Applicants' proposed license amendment request to compact and store spent fuel at the Kewaunee Nuclear Power Plant.

In these revised contentions, the intervenors are calling for an assessment and re-evaluation of the safety, health, environmental, and economic considerations associated with the creation of a storage facility for spent fuel. This is necessary because the Applicants are significantly changing their original operating license from that of an electrical generating facility to that of an electrical generating and storage of spent fuel facility.

The intervenors, therefore, submit the following specific contentions for assessment:

1. The Applicant fails to discuss:
 - a. the monitoring systems range of sensitivity;
 - b. the amount of (quantification of) all radioactive materials emitted;
 - c. frequency of released emissions;
 - d. reason emission reports are not published in the newspaper.

2. The Applicants fail to address the combined or accumulated effect of radioactive emissions generated from increased spent fuel storage at the Kewaunee Nuclear Plant and the Point Beach Nuclear Plant.
3. The Applicants fail to estimate the expanded spent fuel pools (SFP) water temperature maximums in the event of:
 - a. a core offload into the filled pool (869 assemblies) combined with the failure of the coolant pumps and/or heat exchanger;
 - b. an accidental blockage of the SFP's coolant pipes due to increased worker activity above and around the SFP;
 - c. a loss of volume of coolant water in the SFP due to pipe breaks or pool leakage caused by increased worker activity necessitated by compaction;
 - d. a loss of service water flow thru the heat exchanger while SFP contains large numbers of spent fuel assemblies.
4. Applicants fail to discuss the emissions possibilities in the event that the SFP coolant water should boil due to increased heat load coupled with a cooling system failure.
5. In the event of damage to the pool liner and/or fuel assemblies, the Applicants fail to discuss where the increased number of assemblies could be kept during repairs, or how the repairs could be accomplished.
6. Applicants fail to discuss the effects of thermal expansion on the racks and assemblies should the cooling system fail. Linear expansion and their effects, caused by the increased heat load from more assemblies could damage the pool and/or liner.

7. Applicants have made no provisions to monitor ground water around the plant for traces of radiation due to leakage from the SFP due to pool failure or worker activity associated with compaction.
8. Applicants fail to discuss problems associated with defective or deteriorating neutron absorber plates and how the specimens will be monitored for a loss of neutron absorber material, bulging and swelling.
9. The Applicants have failed to adequately discuss the role of security and sabotage with the new role of the facility with compaction. The shattering of fuel elements; punctuating of the basin wall; drainage of the basin; and the sealing of the building; theft of spent fuel in transit or storage have not been considered. Further, the review or revision of security with the aforementioned activities was not listed in the license nor was the transportation of spent fuel rods considered or reviewed.
10. The Applicant fails to review the health and safety issues of long-term storage of spent fuel. The change in the nature of the facility would require that the effects on public health and care be revised.
11. The emergency plans or evacuation plans are not discussed or reviewed by the Applicants. The Applicants should demonstrate the capability for coping with all emergency situations that are credible where the destruction of spent fuel rods or drainage of the pool or related activities could occur. It should be demonstrated that the population

in the vicinity of the storage pool have and understanding of the emergency plan and evacuation system.

12. Applicant did not quantify the increases of filters, cartridges, resins and other low-level radioactive wastes as well as the racks that would have to be disposed of due to the proposed compaction and additional storage of spent nuclear fuel at Kewaunee. Applicant should indicate where these increased quantities of low-level radioactive solid wastes, whether "minimal" or sizeable, will be disposed of and discuss the availability of off-site disposal of these wastes in light of current problems with licensed low-level radioactive wastes land burial facilities in our country. Applicant should also discuss the possibility of land burial or storage of these increased quantities of low-level wastes, at Kewaunee.

13. Applicant has not discussed the long-term integrity of the various components of and in the spent fuel storage pool in light of the proposed compaction and increased amount of spent fuel at Kewaunee. The health, safety, environmental and economic impact of the loss of integrity of these components due to more dense and increased storage of spent fuel for the period of licensing must be evaluated.

a. Applicant should evaluate the corrosive affects of borated water on spent fuel and its cladding, support frames, storage racks, fuel basin liner, neutron absorber plates, bundle bails, and any other components in contact with the storage pool borated water.

According to A. B. Johnson in Behavior of Spent Nuclear Fuel in Water Pool Storage, Battelle North West Laboratories 2256, September 1977 at page 36: "...(P)ool and fuel bundle materials have appeared to function satisfactorily in boric acid fuel pool chemistry, but very few detailed analyses of the materials are available." These analyses are necessary to process the application to amend Kewaunee's operating license to compact spent fuel and to store an unprecedented number of spent fuel assemblies as proposed by Applicant. These analyses are also important because problems of spent fuel storage racks swelling associated with borated water have been experienced at the Connecticut Yankee facility,

and, consequently, the possibility of this situation being duplicated at Kewaunee must be examined and studies documented.

- b. Applicant should examine the effects of accelerated corrosion, microstructural changes, alterations in mechanical properties, stress corrosion, cracking, intergranular corrosion, and hydrogen absorption and precipitation by the zirconium alloys due to the proposed compaction and long-term storage of spent fuel at Kewaunee. The Nuclear Regulatory Commission Draft Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel, NUREG-0404, Volume 2, March 1978, at page H-23 states that these corrosion effects in underwater spent fuel storage requires examination.
- c. Applicant must analyze the long-term electrolytic corrosion effects of using dissimilar alloys for the pools liners, pipes, storage racks, and storage rack bases.
- d. Because of the possibility of leakage and disintegration of spent fuel and its cladding over the long-term, Applicant must discuss the desirability of and methods for sensitive monitoring to identify defective fuel elements. In Behavior of Spent Nuclear Fuel in Water Pool Storage at page 76, there is definite need for selected, focused, exploratory surveillance at present to confirm wet storage as an acceptable option for storing spent fuel and to define the condition of pool-stored spent fuel when removed to any

alternative storage or to a reprocessing plant.

Applicant must also analyze the desirability of monitoring each individual spent fuel assembly.

- e. Applicant should discuss the desirability of and various methods and effectiveness of encapsulating defective spent fuel elements upon discovering leakage or disintegration due to loss of cladding integrity. This discussion is essential when considering longer-term storage and increased density of spent fuel at Kewaunee than had originally been anticipated in the original license.

- f. Applicant should delineate anticipated thickness of crud layers and crud tendency to influence corrosion of spent fuel and its cladding due to increased and more dense spent fuel storage as proposed for Kewaunee. A.B. Johnson, in Behavior of Spent Nuclear Fuel in Water Pool Storage at page 65, indicates that study of existing crud analyses and selected other analyses "...may determine whether the corrosion environments in crud layers are as inert as they currently are regarded to be."

- g. Because of the uncertainties pertaining to borated water stress on materials in spent fuel pools, corrosive resistance of zircaloy, and other conditions prevalent with wet storage of more densely packed spent fuel at Kewaunee , applicant should discuss and evaluate the health, safety, environmental and economic impact

of alternatives to on-site underwater storage of spent fuel at Kewaunee, including dry storage in sealed storage casks, air-cooled vaults, and near surface heat sinks -- both on-site and off-site. According to Alternatives for Managing Wastes from Reactors And Post-Fission Operations in the LWR Cycle, ERDA 76-43, May 1976, at pages 17.17-17.44, the advantages of these dry and/or surface storage methods of spent fuel storage is that containment and cooling can be provided with passive, low maintenance systems.

- h. Applicant should analyze problems in handling spent fuel (e.g. including but not limited to transfer from one pool to another during re-racking, repositioning upon removal from the nuclear core and placement in spent fuel pools, encapsulation of defective spent fuel elements, placement in or removal from shipping casks, etc.) resulting from loss of integrity of spent fuel and its cladding as well as other components of and in the spent fuel storage pool due to more dense and increased storage of spent fuel as proposed by Applicant.
- i. Applicant must analyze the health, safety, environmental and economic impacts of loss of integrity of spent fuel its cladding, and various other components of and in the spent fuel storage pools due to borated water stress, corrosion, pool temperature and water chemical transients in more dense and increased spent fuel storage as proposed beyond the period of license to operate Kewaunee. Because of the unavailability

of commercial reprocessing of spent fuel and the absence of and scientific, political, social, and regulatory obstacles to an operating system for retrievably and/or permanently storing spent fuel to preclude its radioactivity from entering our living environment, Applicants must consider, for the purpose of this proceeding, that the more abundant and densely stored spent fuel may never leave Kewaunee and must be securely contained so it and other radioactive contaminated materials in and of the storage pools may not pose any health, safety, environmental or economic impact. Applicants must stipulate through documentation the anticipated period of time the spent fuel, its cladding and any storage pool components can be contained and their integrity maintained at Kewaunee in the manner proposed in this application. Such stipulations and analyses are vital because of the changed nature of the license of Kewaunee from short-term storage of a few months to Applicants' proposal for long-term, indefinite storage of spent fuel in more closely stored increased quantities.

14. The Applicants have not presented any evidence that they have acquired sufficient financial protection to cover any and all public liability claims that may arise from any nuclear accident associated with Kewaunee's spent fuel storage.

15. The Applicants have failed to identify the entity that would be responsible for the care of the stored spent fuel rod assemblies should the Applicants abandon the site prior to the disposal of the assemblies. The identification of a special entity both technically and financially capable of performing the task of ultimate disposal is necessary in order to ensure that the storage of an increased amount of spent fuel at the Kewaunee facility will not endanger the health and safety of the public.
16. Applicants state the costs of storage to be \$2200 per storage location if compaction is granted. Applicant should state what the total cost of compaction will be (including contingencies, financing and other peripheral costs) and how this cost will affect the consumer.
17. Applicants should quantify the ultimate cost of disposal of the spent fuel assemblies and how this cost will affect the consumer of nuclear generated power.
18. Applicants have not estimated the cost of more dense and increased spent fuel storage at ~~the site~~^{Kewaunee} beyond the period of licensing. Costs of storage of spent fuel must be estimated and funds put aside to assure containment of the spent fuel for the life span of the radioactive materials. This estimation and provision of adequate funds for care of the spent fuel is reasonable and consistent with current Nuclear Regulatory Commission practices as indicated by the United States General Accounting office in Cleaning Up the Remains of Nuclear Facilities-- A Multibillion Dollar Problem, EMD-77-46, June 16, 1977,

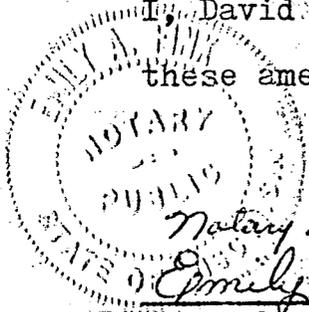
at page 12: "NRC will no longer issue a mill license, or renew an existing license, unless the mill owner submits a reclamation plan for tailings and a bonding arrangement to finance the plan when mill operations cease." Applicants must, too, have a plan for care of the spent fuel and cladding as well as the other components of and in the spent fuel pool.

19. The Applicants' Environmental Report fails to quantify the effects of radioactive emissions from the compaction and increased storage of spent fuel on the health of:
- a. the occupational personnel of the facility;
 - b. the general public who live in the vicinity of the facility. No consideration has been made for the changing population levels which will occur during the life of the facility - or during the period of increased storage of spent fuel, which may extend beyond the operational life of the plant. A study of this is imperative because of the large compaction request, and because the standards for acceptable doses of radiation for both occupational and non-occupational exposures are being lowered;
 - c. the health hazards of radioactive emissions from increased spent fuel storage on age groups known to be more susceptible to health hazards due to low level radiation (the very young, the elderly, asthmatic's and those with allergies.)

THESE AMENDED CONTENTIONS IN NO WAY INVALIDATE OUR PREVIOUSLY SUBMITTED REQUEST FOR STAY AND REQUESTS FOR ACTION AS STATED IN OUR ORIGINAL PETITION SIGNED BY MARY LOU JACOBI AND DATED APRIL 24, 1978.

FURTHER, WE RESERVE THE RIGHT TO AMEND, DELETE, ADD TO AND RESTATE, AS NEEDED, REGARDING THIS PETITION.

I, David Estes, swear that I have been authorized to resubmit these amended contentions.



David Estes

DAVID ESTES

These amended contentions will be mailed or hand delivered by the 19th of August, 1978, to the following persons:

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