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May 20, 1975

General Lee V. Gossick
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Gossick:

I am writing this letter on behalf of my clients, the Natural Resources Defense Council, Businessmen for the Public Interest and the Sierra Club. Our purpose is to set out the reasons why we believe the National Environmental Policy Act requires the Nuclear Regulatory Commission (NRC) to begin immediately to prepare a generic environmental impact statement on the handling and storage of spent nuclear fuels and related matters.

On October 22, 1974, a memorandum was sent to the then Director of Regulation, L. Manning Muntzing, from H.J. Watters outlining a serious problem which has developed with respect to radioactive waste management at nuclear power plants. In particular, the memorandum described the present shortage of storage capacity for spent fuel from operating nuclear power reactors.

The Watters memorandum predicted a shutdown of several reactors if some action to provide additional storage were not taken. Indeed, according to recent estimates, inadequate spent fuel storage capacity may require up to 4 reactors to close down by the end of 1976. To avoid these shutdowns, the memorandum outlined five short-term courses of action which the Commission could take:

(1) authorize changes in the operation of cooling basins at nuclear power plants to permit storage of more spent fuel;

(2) license separately the spent fuel storage facilities at the Midwest Fuel Recovery Plant and at the Allied Gulf Nuclear Service facility at Barnwell, South Carolina;

(3) utilize existing governmental storage capacity for spent fuel;

(4) license new "storage only" facilities; and

(5) authorize the shipment of spent fuel outside the continental U.S.

In fact, it now appears that the Commission has made a decision on the courses of action to pursue in response to the Watters memorandum. These actions include:

(1) entertaining applications to modify spent fuel storage facilities at operating reactors -- see letter from Dairyland Power Cooperative to Giambusso, 12/12/74, Notice of Consideration, 2/5/75; letters from Consolidated Edison Company to NRC and from Lear to Consolidated Edison Company, 3/4/75 and 4/2/75; and Notice of Consideration for Maine Yankee Nuclear Reactor, 4/14/75.

(2) permitting the juggling of spent fuel by utilities which own several operating reactors through the device of shipping spent fuel from reactor to reactor depending upon the storage capacity available at any given time -- see letters from Commonwealth Edison to Ziemann, 10/10/74 and 1/17/75.

(3) allowing reactors to operate without maintaining a storage capacity for one full core in their spent fuel storage pool -- see letters from Commonwealth Edison to Ziemann, 10/10/74 and 1/17/75 and LWR Spent Fuel Disposition Capabilities (ERDA-25).

(4) proceeding to review on a separate basis the proposed operation or modification of spent fuel storage facilities at Allied-General Nuclear Service's Barnwell Reprocessing Plant and at the General Electric Midwest Fuel Recovery Plant -- see letter from L.G. Rouse to Allied-General, 1/21/75.

(5) allowing reactors to operate with inadequate spent fuel storage capability in the apparent hope that the applicant will solve the problem before the fuel storage capacity is needed -- see letters from Ziemann to Northern States Power and from Northern States Power to Ziemann, 1/31/75 and 2/17/75.

(6) reviewing proposals to alter significantly the quantity and method of storage of spent fuel at reprocessing plants -- see letter from Nuclear Fuel Services to Miller, 12/5/74.

These actions when viewed together and in the context of the Watters memorandum are clearly part of a programmatic decision by the Commission to:

a. permit the continued generation of radioactive wastes rather than halting it, and

b. institute a waste juggling program consistent with the Watters memorandum.

The safety and environmental reports for operating nuclear reactors were based on spent fuel being stored in specific configurations for specific times and in limited quantities. These documents also were based upon shipment of spent fuel from these plants to plants where they would be reprocessed. Furthermore, this anticipated course of events involving spent fuel has been a fundamental part of the Commission's conclusions on the radiological effects of the uranium fuel cycle (WASH-1248) and the radiological effects of the transportation of radioactive materials from nuclear reactors (WASH-1238).

No where do any of these documents contain an analysis of the additional radiological or safety implications of:

(1) Placing more spent fuel in the storage pools at operating reactors than originally intended -- an option which may, inter alia, (a) increase the risk of unintended criticality, (b) require the use of boron panels in the pools thereby inhibiting the flow of coolant through the pool, and (c) increase the amount of decay heat to be removed by the spent fuel cooling system.

(2) Reducing the excess storage space in reactor spent fuel storage pools to a point where it cannot hold a full core from the reactor, thus preventing the removal of the core when that is required or desirable for safety.

(3) Shipping spent fuel from reactor to reactor thus increasing the risks associated with transportation and handling.

(4) Utilizing the spent fuel storage pools at reprocessing plants as interim storage for nuclear wastes with the possibility that such wastes will not be reprocessed.

(5) Pre-filling the spent fuel storage pools at reprocessing plants prior to operation so that if and when they do begin to operate their ability to receive more spent fuel will be directly tied to the rate at which they reprocess thus placing enormous back pressure on the operating plants and their spent fuel storage pools in the future.

(6) Storing larger quantities of spent fuel for longer periods of time at operating plants where protection against sabotage and terrorism is limited due to the "soft" design of fuel storage pools.

Significantly the Watters memorandum -- and from all that appears the Commission -- never evaluated seriously the possibility that, rather than authorize a series of temporizing measures aimed at accommodating additional spent fuel, it might be more advisable to limit the generation of further spent fuel. This alternative must now be given particularly careful consideration since approved plans for managing the radioactive wastes and plutonium in the spent fuels still have not been formulated and apparently will not be for a substantial period of time. Moreover, the course apparently adopted by the

Commission -- authorizing make-shift actions to create additional spent fuel storage capacity -- may involve immediate environmental and safety risks; the methods used could narrow our options for the future; and the approach is completely unresponsive to the concern that no satisfactory waste management plans yet exist for handling the irradiated fuel which, as a result, would continue to be generated.

The decision to adopt or not to adopt make-shift solutions to the current shortage of spent fuel storage capacity clearly constitutes major federal action significantly affecting the quality of the human environment. It is certainly well established that federal licensing decisions concerning nuclear waste generation and management, including the generation and storage of spent fuel, constitute major federal actions significantly affecting the environment for which an environmental impact statement must be prepared under the National Environmental Policy Act. By the same token, licensing decisions which approve widespread changes in the method of storage, or location or quantity of spent fuel being stored, and which in the process permit the additional generation of spent fuel, constitute major federal actions significantly affecting the environment. Therefore, none of the options outlined in the Watters memorandum and none of the actions apparently contemplated by the Commission can be taken legally until an enviromental impact statement has been prepared on the proposed course of action, assessing all reasonable alternatives and their environmental impacts, and considering the effect these actions will have on the central effort to develop a safe, ultimate disposal method for radioactive wastes.

The National Environmental Policy Act requires governmental agencies to adopt a comprehensive approach to environmental management rather than persisting in decisionmaking where policy is established by default and inaction and environmental decisions continue to be made in small, but steady increments that perpetuate the mistakes of the past and where environmental problems are not dealt with until they reach crisis proportions. Scientists' Institute for Public Information, Inc. v. Atomic Energy Commission, 481 F.2d 1079 (D.C. Cir. 1973); Natural Resources Defense Council v. Grant, 341 F. Supp. 356 (E.D.N.C., 1972). In our judgment, the Commission is illegally attempting to treat the proposed solution for the current inadequate storage capactiy for spent fuel (and the safety and environmental consequences of that inadequacy) on an ad hoc basis without recognizing the generic and programmatic implications of its actions. */

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*/ The present decisions with regard to storage of spent fuel represent only the first in a series of major decisions which the Nuclear Regulatory Commission must face involving nuclear waste management in the back end of the fuel cycle. For example, NRC will be required to license any facilities proposed by the Energy Research and Development Administration (ERDA) for interim storage or long-term disposal

We therefore request that the Commission announce within 30 days that:

(1) It is preparing a generic environmental impact statement under NEPA that will address the following areas:

a. the environmental and safety implications of all alternative courses of action available to cope with the inadequate storage capacity for spent reactor fuel, including the possibility of halting the creation of spent fuel by any reactor which lacks the capacity to handle the spent fuel in a manner consistent with its present operating license.

b. the effect of each of the available short-term options for coping with the spent fuel storage problem on future options in the back end of the fuel cycle, including a discussion of whether and to what degree today's choices for spent fuel storage will narrow tomorrow's fuel cycle options, for example, by discouraging certain fuel cycle scenarios and favoring others. Two such scenarios which must be considered in this regard are (i) managing spent fuel by storage (both interim and indefinite) without reprocessing and (ii) disposing of spent fuel by processing for purposes of waste management but not for purposes of plutonium recycle.

c. the long-term environmental and safety implications of facilitating the production of radioactive materials through authorization of increased spent fuel storage capacity, including the NRC's ability

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of high-level radioactive wastes. Other NRC licensing decisions will affect the nature of the high-level wastes to be stored and the extent to which radioactive wastes may be released to the environment from the back end of the fuel cycle. Thus, NRC must regulate the storage or disposal of large equipment and buildings that will become heavily contaminated during spent fuel reprocessing and mixed oxide fuel fabrication. In addition, it must decide whether to require utilities and reprocessors to trap and concentrate radioactive noble gases, tritium, and carbon, and whether these materials must be stored or disposed of at the federal high-level waste repository. Perhaps, most importantly, NRC will decide in the context of its plutonium recycle decision -- which it has not yet made -- whether spent fuel must be stored for long periods or whether it will be reprocessed, producing liquid high-level wastes. These major decisions are obviously interrelated.

to assure the public that the health and safety of this and future generations will be fully protected from injury from such materials. The NRC obviously should not facilitate the production of radioactive wastes unless it can demonstrate that these materials will be contained both in the near future and in some form of ultimate storage or disposal. It is thus incumbent upon NRC, should it opt for short-term measures to increase spent fuel storage capacity, to set out in detail a plausible scenario for the back end of the fuel cycle (i) which is consistent with these short-term measures, (ii) which is fully protective of public health and safety, and (iii) which NRC would be prepared to enforce. This description must set out the regulatory-type criteria which NRC would impose to regulate industry activities in the various fuel cycle stages.

(2) There will be no action on any proposal for handling spent fuel in a manner other than that permitted by the original license until the generic reviews have been completed and hearings pursuant to Section 189 of the Atomic Energy Act and 5 U.S.C. § 554 with respect to each action (or to all actions generically) have been completed, except when health and safety considerations require removal of the entire fuel core from the reactor pressure vessel and temporary storage in the reactor's spent fuel pool in a configuration not specifically covered in the reactor's operating license and specifications. */

(3) It is releasing the names of all facilities which intend to handle spent fuel in a manner different than that assumed in the safety or environmental reviews for those facilities and identifying the actions which will be taken with respect to those facilities.

Finally, we append as an Attachment a list of questions. We would like answers to these questions in order to assist us in analyzing the spent fuel storage problem and NRC's plans to handle it. In addition, these questions indicate the nature of the information and analysis which we believe must be contained in the environmental impact statement that we believe is required under NEPA.

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*/ Regarding those reactors which do not have spent fuel storage capacity for a full core and which contemplate activities for which a full core removal would normally be implemented, for example to protect plant workers, such reactors should be required on a temporary basis to obtain and use the equipment necessary for full core removal and temporary storage.

We look forward to hearing from you in the near future, consistent with the time specified in this letter, and the provisions of the Freedom of Information Act.

Sincerely,

/s/

Anthony Z. Roisman

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Questions to accompany Letter of May 2[illegible], 1975, to NRC from NRDC, BPI and Sierra Club

Answers to the following questions are requested in order to facilitate review of the spent fuel storage problem and NRC's plans to deal with it:

1) Which 10 commercial nuclear power plants do not have storage space for a full core discharge?

2) What are the currently licensed storage capacities at the GE reprocessing plant at Morris, Illinois? at the Nuclear Fuel Services reprocessing plant at West Valley, New York? at the Allied-General Nuclear Services reprocessing plant at Barnwell, South Carolina?

3) By the end of 1975, 1976 and 1977, respectively, what are the projected licensed storage capacities at each of the above three reprocessing plants?

4) How much spent fuel is now stored and by the end of 1975, 1976 and 1977, respectively, how much spent fuel is projected to be stored at each of the above three reprocessing plants?

5) By the end of 1975, 1976 and 1977, respectively, how many commercial nuclear power plants will not have storage space for a full core discharge, assuming the Allied-General Nuclear Services plant is not licensed to store spent fuel, the GE storage basin is not expanded, the NFS storage basin is not expanded, and no modifications are made to increase storage capacity at commercial nuclear power plants?

6) What NRC restrictions or regulations, including the amount of spent fuel storage capacity, spacing of spent fuel in storage basins, degree of fuel "burn-up", and amount of cooling capacity available, apply to the storage of spent fuel at commercial nuclear power plants?

7) Has NRC assessed the environmental health hazards that could arise at each of the 10 commercial nuclear power plants that do not now have storage capacity for a full core discharge, if it becomes necessary or desirable to discharge a full core? If so, please provide a copy of each such assessment. If not, does NRC plan to conduct such assessments?

8) If it were prudent or necessary to discharge a full core at any of the 10 commercial nuclear power plants that do not now have storage capacity for a full core, what are the reasonably available options and which option would be chosen?

9) What are the alternative options under consideration by NRC for increasing spent fuel storage capacity and what are the economic, environmental and health advantages and disadvantages of each such option? How are these options dependent on fuel "burn-up" and decay time?

10) How long can spent nuclear fuel be stored safely under each alternative listed in answer to question number 9 above, and what are the principal characteristics or conditions that limit the safe storage time?

11) What effect do the gaseous fission products have on the safety of each concept?

12) What interim waste storage options are being considered that assume no plutonium recycle for at least several years? Do these differ in any respect from alternatives listed under 9) above, and if so, how?

13) How would the advantages and disadvantages of the options, provided in answer to question 9, change if it were decided not to allow the use of plutonium in nuclear fuel? Are any of the options more attractive than others, presupposing that there will be "plutonium recycle"?

14) How would the advantages and disadvantages of the options, provided in answer to question 9, change, if it were decided not to reprocess spent fuel and not to build the proposed Retrievable Surface Storage Facility (RSSF) and, instead, to store spent fuel until such time as an ultimate disposal means was developed?

15) What is the range of projections for the amount of spent fuel that will have to be stored if the plutonium recycle decision is made in 1975, 1976, 1977, 1978, 1979 and 1980?

16) How much spent fuel storage capacity will NRC require for commercial nuclear power plants under construction or planned?

17) How much nuclear fuel can be reprocessed at Barnwell and NFS over the lifetimes of these facilities, assuming they are licensed to operate? These facilities over their lifetimes can reprocess the nuclear fuel generated over the lifetimes of how many commercial reactors?

18) How much storage area is required to store the lifetime production of spent nuclear fuel at each licensed reactor, and each reactor under construction?

19) To what degree will NRC permit spent fuel to be transported from one nuclear power plant site to another for the purpose of optimizing the use of existing spent fuel storage capacity?

20) Has any spent fuel from commercial nuclear power plants been shipped to the Savannah River Plant, the Hanford Reservation or the Idaho National Engineering Laboratory (formerly the National Reactor Testing Station) during the past two years because of the shortage space at nuclear power sites? If so, how much spent fuel has been shipped from each reactor? Has any of this spent fuel been reprocessed at federal plants?

21) How much, if any, spent fuel from commercial nuclear power plants is in storage at the SRP, Hanford Reservation or INEL, respectively? If there is such spent fuel in storage, from which commercial nuclear power plants was it shipped?

22) How much of the spent fuel removed from reactors in the last five years and expected to be removed from reactors in the next five years is or will be removed from the core before the full design burn-up:

a. due to high fuel rod leakage;

b. due to use of lower power density fuel rods to meet ECCS criteria;

c. due to any other reason.

23) How could the objectives sought to be achieved by the actions referred to in 22 a., b., and c. have been met without permanent removal of the fuel from the core or plant shutdown? For instance could ECCS criteria have been met by derating rather than fuel rod redesign? Could high leak rates have been prevented by derating or relocating of leaking fuel rod bundles in the core rather than removal and replacement with new fuel rods?

24) How many approved shipping casks for spent fuel are now available to ship spent fuel from operating reactors? How many will be or are expected to be available by the end of 1975, 1976 and 1977?

In answering these questions please disclose the assumptions used such as what plant capacity is assumed, what fuel burn-up is assumed for spent fuel removed from the reactor, etc.