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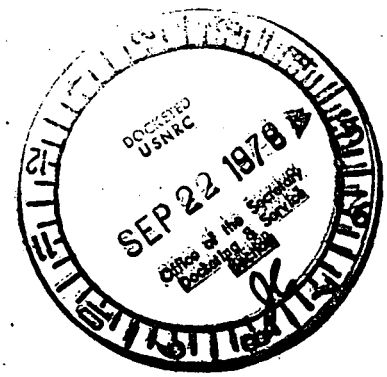

Dr. John M. Deutch, Director
Office of Energy Research
Department of Energy
Washington, D.C. 20585

Dear Dr. Deutch:

We were encouraged by your letter of June 27, 1978, assuring us that with respect to the formulation of a policy for the management of nuclear wastes both the Interagency Nuclear Waste Management Task Force and the Department of Energy intend to comply fully with the requirements of NEPA. The purpose of this letter is to question the application of that principle to DOE development of specific proposals for interim storage of spent fuel.

As we are all aware, the spent fuel storage policy announced in October, 1977, did not comply with NEPA. The only way to achieve any possible compliance with NEPA with respect to that policy is to conduct all analyses, studies and NEPA reviews subsequent to that announcement as though it had never been made. Thus, DOE would fully explore in its impact statements on spent fuel storage policy the alternatives that the further production of spent fuel is allowed only as a last resort, that spent fuel storage problems are handled by the industry without any government involvement, that no one-time fixed fee is established for waste management services at this time, and that spent fuel is stored at the reactor and not away from the reactor. Similarly, studies being conducted by DOE on spent fuel storage should be unbiased in their efforts to uncover facts which would favor any one or more of the possible spent fuel storage policies.

It appears to us that with respect to spent fuel storage policy, despite the appearance that there is compliance with NEPA, in fact DOE has developed its NEPA reviews and conducted its studies to support the pre-announced spent fuel policy. We are led to this conclusion by two major factors.

First, DOE has never conducted a thorough study of the technical feasibility of at-reactor storage, including construction of additional spent fuel pools at operating reactors and expansion of the dimensions of spent fuel pools for reactors under construction and proposed for construction. A recent GAO report on spent fuel storage policy was critical of DOE's narrow view of the possible solutions to the spent fuel storage problem and listed utility solution of its own spent fuel storage problems as the highest priority for DOE consideration. We are attaching a preliminary report prepared by NRDC which reveals that less than one-quarter acre is needed to accommodate a spent fuel pool that will hold the lifetime supply of spent fuel from a large reactor and that all operating reactors examined appear to have more than ample space for such a facility.

Second, DOE appears to be on the verge of committing substantial resources to establish the feasibility of using spent fuel storage capability at the Barnwell Reprocessing Plant and the Savannah River Plant for spent fuel storage facilities without awaiting completion of NEPA reviews which are intended to explore, inter alia, whether such use is needed, whether it is feasible, and how such use would jeopardize our efforts to persuade foreign countries to indefinitely defer reprocessing. Although the impetus for this premature resource commitment appears to come from the Senate Energy and Natural Resources Committee, we believe it is incumbent upon DOE to advise the Senate Committee that the answer to the questions posed will come as part of the ongoing NEPA process and not apart from it. In addition, it must be clear that under NEPA, similarly detailed feasibility studies will be conducted of all reasonably available options to avoid the inaccurate impression that Barnwell and Savannah River are leading candidates for interim spent fuel storage.

As you have indicated on a number of occasions, public acceptance of a nuclear waste plan is essential to its success. The efforts by DOE to prematurely commit to a particular spent fuel policy and to pursue that commitment even while undertaking NEPA reviews is destroying public confidence in the integrity of the process and endangering the entire waste management plan. To avoid further erosion of public confidence and to bring DOE actions in line with its words with respect to compliance with NEPA, we request that prior to issuance of any draft or final NEPA statement on spent fuel policy:

1. DOE conduct the studies and analyses necessary to fairly assess options to the previously announced spent fuel policy, including particularly a study of the technical feasibility of at-reactor storage;

2. DOE thoroughly explore in the draft and final impact statements all reasonably available alternatives to the announced spent fuel storage policy in similar depth to exploration of the announced policy;

3. DOE conduct feasibility studies of possible uses of the Barnwell and Savannah River facilities for spent fuel storage only as part of feasibility studies of all reasonably available methods of storing spent fuel and take positions with respect to such alternatives only as part of a final NEPA review.

We would appreciate an answer to this letter by August 9, 1978.

Sincerely,

Anthony Z. Roisman
Staff Attorney

Thomas B. Cochran
Staff Scientist

Attachment

cc: Dr. James R. Schlesinger
Michael J. Lawrence
Dr. James Liverman
J. Gustave Speth

Analysis of Space Available for Storage of Spent Fuel at Existing Operating Reactor Sites

Natural Resources Defense Council
917 15th Street, N.W.
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July, 1978

Introduction

Although the Department of Energy has announced a spent fuel policy dependent upon use of away-from-reactor-storage (AFRs) for accumulated spent fuel, there is no evidence that DOE has investigated the potential for expansion of spent fuel capacity at reactors (ARs) by building new spent fuel pools. Because of numerous environmental and political problems inherent in the use of AFRs,*/ their use should be avoided if at all possible. The attached analyses attempt, on the basis of readily available data, to explore the potential for ARs. The most significant finding is that a storage pool large enough to accommodate 40 years of spent fuel from a reactor could be installed on less than 1/4 of an acre. The smallest reactor site for any operating reactor is 83.63 acres and the average reactor site is over 1,000 acres.

Before further effort is expanded on development and approval of AFRs, we believe DOE should thoroughly analyze the relevant data and determine definitively whether there is any technological reason why the use of expanded ARs cannot meet any legitimate need for spent fuel storage space.

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*/ See two NRDC analyses of these problems, "Away From Reactor Storage Facilities: Our Next Nuclear Waste Blunder?," June 6, 1978, and "Nuclear Waste, Too Much Too Soon," June 1, 1978.

Spent Fuel Storage Area for Lifetime Reactor Requirements (based on Morris, Illinois, figures) */

Conversion factors:

1 gal = 231 in^3

1 ft^3 = 1728 in^3

1 gal = 0.13368 ft^3

1 acre = 43,560 ft^2

Morris data:

700 tons fuel

675,000 gal = 90,234 ft^3 of water in the pool

Pool depth = 28.5 ft

Area = $\frac{90,234}{28.5}$ = 3166 ft^2 or 56' x 56'

If spent fuel capacity = 1200 tons fuel (lifetime reactor requirement)

$\frac{1200}{700}$ x 3166 ft^2 = 5428 ft^2 or 73' x 73'

$\frac{5428}{43,460}$ = 0.125 acres

*/ Data based on informal document entitled "Activities at Morris Operation," prepared by E. E. Violand of General Electric Company, attached to NRC Site Visit Report dated November 28, 1977, NRC Docket No. 70-1308.

Acreage at Operating Reactor Sites

There are presently 68 commercial power reactors licensed to operate in the United States. Sixty-seven of these units are actually in operation.[1/] These generating stations are located at 48 separate sites, which vary greatly in size, ranging from 4,738 acres for the Crystal River facility, to a mere 83.63 acres for San Onofre Unit 1 on the Camp Pendleton Marine Reservation in California. Data on site acreage for 53 reactors at 38 separate locations was obtained from either Preliminary Safety Analysis Reports or the Environmental Reports on file with the NRC. Data was not available for 12 reactors at 8 sites, and material available for 3 reactors at the remaining 2 sites did not specify acreage in site descriptions.[2/] The data obtained from the NRC is set forth in Table I, supplying the names of the 68 reactors, the acreage of the sites on which they are situated, and the names of the companies which own these sites. Taken together, these 38 sites comprise a total of 38,369 acres, averaging 1,010 acres per site.

Each utility listed is assumed to have legal title to the acreage listed, unless specified otherwise. The PSARs and ERs examined varied in the extent of their discussion of site ownership. Most stated that the applicant owned/controlled the reactor site. Others did not. In one instance, joint ownership is described in detail.[3/] In the case of Brown's Ferry, the 840-acre site is owned by the federal government, but is in the custody of the Tennessee Valley Authority.

The information on the various uses to which different parts of the site are put also varies significantly. Most site descriptions list a general acreage figure without further breakdown. Some, however, are quite specific, such as the description supplied for the Edwin I Hatch Nuclear Plant, Unit 1, set forth below:

Plant area	23
Cooling tower area	25
Substation	18
Construction area	18
Railroad yard	22
Visitors center	4
Access road	4
Spoil and borrow area	87
Total acreage	201

An interesting aspect is that from the small amount of evidence available, it appears that acreage requirements for nuclear-related facilities are quite small. Reactors themselves probably require less than 10 acres, as the 7.5 figure for Beaver Valley indicates.[4/] Acreage requirements are dependent to a certain extent upon design parameters, such as whether or not a facility has a once-through or tower cooling system, but the site acreage for San Onofre suggests that as few as 83.63 acres can be required. Even the figure of 201 acres presented above is quite small, being only 8.9% of the 2,244 acre site on which it it situated, and only 20% of the 1,010 acre average for the sites examined. NRC estimates that the land requirement for facilities directly related to the operation of the reactor itself is well under 100 acres and probably less than 50, but the average of land utilized as set forth in the summary

and conclusions of the environmental impact statements issued by the NRC is 100 - 150. This average, however, includes facilities such as parking lots and visitors centers. NRC also indicates that most utilities purchase enough land for a 200-foot radius around the reactor for an exclusion zone, which would be approximately 288 acres.

Table I

Nuclear Station/Operator	Acreage
Arkansas Nuclear One, Unit 2 Arkansas Power & Light Co.	1,164
Beaver Valley Power Station Duquesne Light Co.	449
Big Rock Point Reactor Consumers Power Co.	NA
Brown's Ferry Nuclear Plant, Units 1, 2 and 3 Tennessee Valley Authority	840
Brunswick Steam Electric Plant, Units 1 and 2 Carolina Power & Light Co.	NA
Calvert Cliffs Nuclear Power Plant, Units 1 and 2 Baltimore Gas & Electric Co.	1,135
Donald C. Cook Nuclear Power Plant, Units 1 and 2 Indiana-Michigan Electric Co.	650
Cooper Nuclear Station Nebraska Public Power District	1,090
Crystal River Nuclear Station, Unit 3 Florida Power Corporation	4,738
Davis-Besse Nuclear Power Station Toledo Edison Co. and Cleveland Illuminating Co.	950
Dresden Nuclear Power Station, Units 1, 2 and 3 Commonwealth Edison Co.	953
Duane Arnold Energy Center Iowa Electric Light & Power	500
Joseph M. Farley Nuclear Station, Unit 1 Alabama Power Co.	1,850
James A. Fitzpatrick Nuclear Power Plant Power Authority of the State of New York	702
Fort Calhoun Station Omaha Public Power District	382
Fort St. Vrain Reactor Public Service Co.	2,238

Robert Emmet Ginna Nuclear Power Plant Rochester Gas & Electric	338
Haddam Neck Plant, Unit 1, or the Connecticut Yankee Nuclear Power Plant Connecticut Yankee Atomic Power Co.	525
Edwin I. Hatch Nuclear Plant, Unit 1 Georgia Power Co.	2,244
Humboldt Bay Power Plant Pacific Gas & Electric Co.	142.9
Indian Point Nuclear Generating Station, Units 1, 2 and 3 Consolidated Edison Co.	239
Kewaunee Nuclear Power Plant Wisconsin Public Service Corp.	900
Lacrosse Boiling Water Reactor Dairyland Power Cooperative	NA
Maine Yankee Atomic Power Station Maine Yankee Atomic Power Co.	740
Millstone Point Power Reactor, Units 1 and 2 Northeast Nuclear Energy Co.	500
Monticello Nuclear Generating Plant, Unit 1 Northern States Power Co.	1,325
Nine-Mile Point Nuclear Station, Unit 1 Niagra Mohawk Power Corp.	900
North Anna Nuclear Station, Unit 1 Virginia Electric & Power Co.	1,075
Oconee Nuclear Station, Units 1, 2 and 3 Duke Power Co.	2,000
Oyster Creek Nuclear Power Plant Public Service Gas & Electric Co.	800
Palisades Plant Consumers Power Co.	487
Peach Bottom Atomic Power Station, Units 1 and 2 Philadelphia Electric Co.	600
Pilgrim Nuclear Power Station Boston Edison Co.	517

Point Beach Nuclear Plant, Units 1 and 2 Wisconsin-Michigan Power Co.	NA
Prairie Island Nuclear Generating Station, Units 1 and 2 Northern States Power Co.	NA
Quad Cities Station, Units 1 and 2 Iowa-Illinois Gas & Electric Co.	560
Rancho Seco Nuclear Generating Station, Unit 1 Sacramento Municipal Utilities District	2,480
H. B. Robinson, Unit 2 Carolina Power & Light Co.	NA
Salem Nuclear Generating Station, Unit 1 Long Island Lighting Co.	NA
San Onofre Nuclear Generating Station, Unit 1 Southern California Edison Co.	83.63
St. Lucie, Unit 1 Florida Power & Light Co.	1,132
Surrey Power Station, Units 1 and 2 Virginia Electric & Power Co.	840
Three-Mile Island Nuclear Station, Units 1 and 2 Metropolitan Edison Co.	NA
Trojan Nuclear Plant Portland General Electric Co.	623
Turkey Point, Units 3 and 4 Florida Power & Light Co.	1,524
Vermont Yankee Nuclear Power Station Vermont Yankee Nuclear Power Corp.	125
Yankee Rowe, Unit 1 Yankee Atomic Power Co.	NA
Zion Station Nuclear Power Plant, Units 1 and 2 Commonwealth Edison Co.	NA

Footnotes

1/ The Indian Point Nuclear Generating Station, Unit 1, is described as not being in commercial operation, but not yet decommissioned.

2/ The three units for which information was available but which did not specify site acreage were the Lacrosse BWR and the Brunswick Steam Electric Plant, Units 1 and 2. Files are not available on the following units: Big Rock Point, Point Beach Units 1 and 2, Prairie Island Units 1 and 2, Robinson Unit 2, Salem, Three-Mile Island Units 1 and 2, Yankee Rowe Unit 1, and Zion Station Units 1 and 2. These files are temporarily unavailable.

3/ The 449-acre site for the Beaver Valley Station is almost entirely owned by Duquesne Light Co., which controls 441.5 acres. The remaining 7.5 acres on which the reactor itself is located are owned jointly by Duquesne, Ohio Edison and Pennsylvania Power Co. The only other instances of joint ownership discovered occurred at the Kewaunee facility where 1.13 of the 900 acres are owned by the town of Carlton, Wisconsin, the remainder being under the control of the Wisconsin Public Service Corp. Joint ownership is certainly of far greater significance in the instance of Beaver Valley than Kewaunee. Other situations such as these may well exist, but the lack of detail in the PSARs and ERs make this difficult to determine.

4/ See footnote 3.

Attachments to the following comments are not included here. They are available for inspection in the NRC's file on this matter in the Public Document Room.