

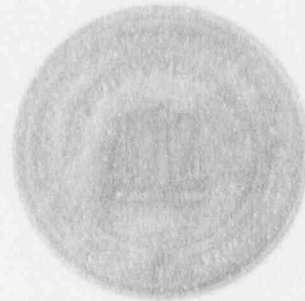
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To: Charles J. Haughney  
Nuclear Regulatory Commission

From: Cas Robinson, Director  
NWPO / NARUC  
Comm. Lynn Shishido-Topel  
Illinois Commerce Commission

Date: October 26, 1993

Subject: November 3rd Dialogue Meeting

Enclosed are some background documents for the upcoming meeting in Atlanta.

Please contact Cas Robinson at (202) 347-4314 or Comm. Lynn Shishido-Topel at (312) 814-2859 if you should wish to discuss these materials.

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This document summarizes and identifies some key advantages and disadvantages of several alternative approaches for meeting near-term spent fuel management objectives. In most cases, these alternative approaches are not mutually exclusive but rather mutually interdependent. It may be desirable to pursue one or several of these approaches in parallel to meet the needs of different utilities and states, and maximize the probability that at least one approach eventually succeeds. The following options are addressed:

- Option 1: At-Reactor Storage Without Compensation
- Option 2: At Reactor Storage With Compensation
- Option 3: Interim Storage Using Existing Federal Sites
- Option 4: Voluntary Interim Storage Site
- Option 5: Integrated Storage and Disposal Capacity in Nevada

#### **General Advantages of Off-Site Storage Options Over On-Site Storage Options**

- \* Moves spent fuel off reactor sites.
- \* Reduces on-site storage and DOE system costs.
- \* Amount of required additional on-site storage capacity is reduced and fewer reactor sites need to expand on-site storage capability.
- \* Provides greater flexibility and demonstrates the ability to close the nuclear fuel cycle and improves local/state public/political acceptance of existing reactors.
- \* Allows decommissioning of plants to go forward; reduces decommissioning costs.
- \* Alleviates NRC licensing issues associated with on-site storage.
- \* Centralizes high level waste in one [or perhaps fewer] locations.
- \* Where on site storage is limited, off site storage has the potential of extending the useful life of some plants.

### General Advantages of On-Site Storage Options Over Off-Site Storage Options

- \* Avoids political/public reaction problems associated with siting an off-site interim storage facility. However, there may be some local resistance to keeping the fuel on site and building independent storage facilities.
- \* Some utilities with life of plant storage capability may not benefit by investing in an off-site storage facility.
- \* Legislative action not necessarily required
- \* May minimize issues related to transportation.

## Option 1: At-Reactor Storage Without Compensation

Discussion: Under this approach, fuel is stored on-site by utilities beyond 1998 without compensation from DOE. ("Compensation" is used here in a general sense to mean payments or credits from the Nuclear Waste Fund, the provision of equipment/service by DOE, DOE taking title or possession of fuel on-site, or other possibilities.) This approach is similar to the current practice of utility-funded on-site storage which would continue beyond 1998. This would occur until initiation of off-site storage facility operations or initiation of waste acceptance at the repository.

### Advantages

1. NWF money is preserved for its intended use (transportation/off-site storage/disposal).
2. Political/public reaction problems associated with siting an interim storage facility are avoided, although there may be some local resistance to keeping the fuel on site, perhaps for different reasons.
3. Some utilities with life of plant storage capability may not benefit by investing in an off-site storage facility.
4. Legislative action not necessarily required
5. Minimizes issues related to transportation.
6. Utilities/states operated facility can probably be operated more efficiently than one operated by the federal government.

### Disadvantages

1. Local public/political opposition to reactor on-site storage.
2. Spent nuclear fuel remains on site; loss of cost savings to system and utilities/ratepayers; prevents complete reactor decommissioning, etc.
3. Utilities/ratepayers "paying twice" - once for DOE to store/dispose of fuel after 1998 and again for on-site storage.
4. Contract holders do not receive the service paid for under the contract.
5. May cause some plants to be decommissioned prematurely.

## Option 2: At-Reactor Storage With Methods of Compensation [Including MPC's, etc.]

Discussion: Under this approach, fuel is stored on-site by utilities beyond 1998 with compensation from DOE. Compensation might consist of payments or credits from the NWF, the provision of equipment/service by DOE, DOE taking title and/or possession of fuel on-site, or other possibilities. DOE would provide compensation in proportion to damages caused by its inability to meet its contractual commitment.

### Advantages

1. If the compensation is adequate, it may eliminate utilities/ratepayers "paying twice" - once for DOE to store/dispose of fuel after 1998 and again for on-site storage.
2. May be an effective means of encouraging UCS usage and implementing the UCS program.
3. Utilities/states operated facility can probably be operated more efficiently than one operated by the federal government.
4. Political/public reaction problems associated with siting an interim storage facility are avoided, although there may be some local resistance to keeping the fuel on site, perhaps for different reasons.
5. Some utilities with life of plant storage capability may not benefit from a compensation scheme
6. Legislative action not necessarily required
7. Minimizes issues related to transportation.

### Disadvantages

1. Local public/political opposition to reactor on-site storage.
2. Fuel remains on site; loss of cost savings to system and to the utilities/ratepayers; prevents complete reactor decommissioning, etc.
3. May cause increase in waste fee. Under some compensation scenarios, NWF money may be diverted from its intended use - transportation/off-site storage/ disposal; under full-cost recovery, utilities gain nothing in long run.
4. Possible decrease in contractual pressure for DOE to develop facilities (compensation could relieve such pressure).
5. Creates significant inter-utility equity issues.
6. Depending upon form of compensation, legislation likely required.
7. By invading the waste fund to provide compensation, the funds available to complete the repository may be reduced resulting in costly delays.

### Option 3: Interim Storage Using Existing Federal Sites

Discussion: Under this approach, DOE would use an existing federal site (such as a DOE or DOD site) for interim spent fuel storage, pending commencement of repository operations.

#### Advantages

1. Moves fuel off reactor sites. Alleviates need for on-site storage capacity, cutting costs to utilities/ratepayers. Allows decommissioning of mothballed plants to proceed.
2. The availability of existing environmental site information may be sufficiently flexible to meet 1998 DOE contract commitments.
3. Infrastructure may exist (structures, equipment, security, emergency plans, knowledgeable personnel).
4. Creates additional certainty for planning by utilities, regulators, and state emergency preparedness.
5. Would provide funding for site remediation.
6. Would be a step meeting the obligation by the federal government to take spent fuel. Shows progress in management of spent fuel.
7. The federal government is the only entity that has the authority to site a facility over a state's objection.
8. There may be less public resistance.
9. May offset defense cutback job losses.

#### Disadvantages

1. Potential severe state and local opposition, including environmental groups.
2. Use of defense waste/weapons sites may be negative to interest in separating defense from civilian programs.
3. Legislation needed.
4. DOE would be performing another siting program, causing negative reaction in Congress.
5. Co-location on federal sites raises questions of liability, poor environmental quality of federal sites, preexisting contamination, and licensing by NRC.
6. Additional transportation required.

## Option 4: Voluntary Interim Storage Site

Discussion: This approach refers to the possible use of a site volunteered for interim spent fuel storage through the present Office of Nuclear Waste Negotiator process or some other voluntary process. The facility might be developed and operated by DOE or some other entity. The spent fuel would be accepted from reactors for storage and eventually transported to the repository. The local community, state and/or tribe would receive benefits.

### Advantages

1. Active local suitable support for facility may exist.
2. Legislative framework and process already exists and is being implemented; interruption of process sends wrong signal to public.
3. Allows for maximum private and/or utility involvement in facility development/ operation and possible resulting cost savings.
4. Moves fuel off reactor sites. Alleviates need for on-site storage capacity, cutting costs to utilities/ratepayers. Allows decommissioning of mothballed plants to proceed.
5. Would be a step meeting the obligation by the federal government to take spent fuel. Shows progress in management of spent fuel.
6. Creates additional certainty for planning by utilities, regulators, and state emergency preparedness.

### Disadvantages

1. Difficult to find volunteers.
2. Concern that facility may be located in impoverished community.
3. Perhaps less control over facility location/design/operation than federally-selected approach.
4. Legislative action on negotiated agreement required.
5. Additional transportation required.
6. Strong state and local government opposition.
7. Characterized by some as "environmental racism".



## Option 5: Integrated Spent Fuel Storage and Disposal Capacity in Nevada

Discussion: Under this approach, the mission of DOE would be modified to include the interim storage of spent fuel in Nevada, including options such as use of the Yucca Mountain repository site for co-location of a monitored retrievable storage facility, lag storage, or early emplacement of waste using a test and evaluation facility or phased licensing.

### Advantages

1. Moves fuel off reactor sites. Alleviates need for on-site storage capacity, cutting costs to utilities/ratepayers, creating greater public acceptance by reactor community. Allows decommissioning of mothballed plants to proceed.
2. Option moving fuel off-site at the earliest date.
3. Requires transport only once. Allows early road/rail route designation.
4. Economics of siting MRS and repository in one location probably makes this the lowest cost option. Allows use of repository waste handling facility, rather than building an additional facility at remote MRS site. Ability to use fuel at site for test and evaluation facility. Replaces repository lag storage.
5. Shows progress in management of spent fuel.

### Disadvantages

1. State of Nevada, and Nevada environmental groups would strongly oppose.
2. There has been no Yucca Mountain site suitability determination.
3. Requires legislation to eliminate prohibitions and restrictions.
4. Exacerbates the Nevada inequity issue.
5. Could give the appearance that the decision about Yucca Mountain as a permanent disposal site has already been made.

## Additional Discussion Offered by Individual Participants

A.

First, with regard to the options:

1. The single-most important objective is that DOE demonstrate by 1998 the ability to accept spent fuel and remove it from a site. Plans or programs or promises will not have the value of a demonstration. DOE should adopt this as their objective.

If, later, it turns out that actual removal is not possible by 1998, DOE should take title to prove that they can do that; but the aim now should be for actual removal.

2. To meet the primary objective in 1 above, DOE should pursue all options including voluntary siting, federal siting, and storage at Yucca Mountain until there is a confidence that some site[s] will be available. develop a plan to seek re-authorized authority for emergency interim storage.
3. Consistent with this objective, priority should be given to minimizing total cost, handling of spent fuel, and shipment of spent fuel.
4. It may not be necessary for DOE to be accepting fuel as fast as it is generated. However, it will be important to reach fairly quickly a rate of acceptance and shipment sufficient to avoid the need for developing more on-site storage than exists or is underway by 1998. Subsequent acceleration of acceptance would help avoid additional on-site storage costs at some utilities.
5. DOE should aggressively pursue multipurpose containers. This should include explicit attempts to develop and conduct its programs so as to allow use of suitable existing and planned fuel containers insofar as technically and economically feasible. There is a least one approach being used or planned by several utilities for which NRC licenses for on-site storage exist and for which licensing of a computable shipping cask is in process and expected to be complete in 1995.
6. DOE should seek any necessary authority and announce as soon as possible the nuclear waste funds will be provided to cover costs of on-site storage that arise because of DOE inability to accept fuel as called for in the act. [But not for any cost unrelated to inability]. Such an announcement will the clean air and avoid wasting utility regulators and DOE efforts.

7. The basic criterion already established for queuing is equitable and consistent with the basic legislative framework. Attempts to change the queuing scheme now before solutions to the basic problems are clear would be counterproductive. In any event, actions taken by an individual utility since passage of the legislation should not operate to their disadvantage or advantage in "queuing".
8. With regard to the "tailoring option", that decision should be made on a case-by-case basis but that begs the basic question we are trying to address, "What should DOE do?" This question should be the focus of discussion.

Second, as to the implications "Do Nothing":

It will lead to increased on-site storage locations. This will involve significant use of financial, political, management, and regulatory resources with no value to public health and safety compared to removal to a central site. These additional cost will be wasted costs will be wasted compared to proceeding with other options. A good part of the wasted costs will be borne by rate payers.

There is almost universal agreement that centralized storage at remote site[s] preferably in a way that minimizes handling and shipment of fuel, is far preferable to dispersed storage at multiple sites in a variety of casks that may require subsequent rehandling and repackaging of spent fuel.

Finally, what is interim?

There should be a working definition to help clarify the discussion and recommendations. The definition of "twenty years starting in 1998" deserves support for this purpose.

B.

It is possible to conclude that the "producer" community has some flexibility on whether they ship fuel or store it on site as long as economics and local political/public issues are weighed in the equation. It is also possible to conclude that the "receiver" community may have some flexibility as long as one facility will not be the national dump. Another possible conclusion is that the "regulator" community has economics, local politics and continued plant operation as its priorities.

In light of these possible conclusions here is a the solutions that appears to be taking shape:

1. Treat every site as an individual case;

2. Consider both on-site and off-site options at each site;
3. On-site options should include both DOE and utility ownership and control;
4. Off-site options should include more than one site -- preferably both private [voluntary] and federal.

Two or three subsidiary outcomes can be presumed:

1. Payment from the nuclear waste trust fund for interim storage;
2. More than one [but probably not more than two or three] off-site storage options;
3. DOE development of a multi-purpose canister.

C.

The selection of options must be predicated on two conditions.

1. The concern that "interim" really means long-term or permanent must be alleviated. There must be a commitment from all parties that a permanent storage facility will be rigorously pursued and implemented and a realistic time schedule be established for such a repository.
2. "Time is on the side of technology." Time will ultimately resolve the risks associated with storage and transport and will create possibilities for utilization of spent fuel. DOE should be urged to spend money to accelerate this technology by establishing an international center for waste management and disposal involving contributions of personnel and cash from all developed countries facing these problems.

The options presented are not mutually exclusive. Without considering either cost or containers at this time, the following options are favorable:

1. On-site storage should be implemented at those sites where this is possible. Possible should be defined in terms of space, politics, and risk assessment;
2. Storage at two or more federally owned sites, including the possibility of Yucca Mountain or the NTS, if on-site storage is not feasible at any given site;
3. As an alternative of number 2, continue to locate voluntary [private or

public] sites that are geographically suitable for this function.

D. [See Attached Memorandum]

MEMORANDUM

To: Cas Robinson  
From: Jim Davenport  
Re: Options for Interim Storage  
Date: September 10, 1993

I have received your "Options Charts" showing four alternatives for "interim" storage of spent nuclear fuel. The options listed are: 1) at-reactor storage with no title transfer (no action option); 2) at-reactor storage with title transferred to DOE; 3) independent voluntary site(s); 4) storage at federal/military sites; and 5) reactor to Yucca Mountain (MRS/repository). I understand that these charts are primarily for the purpose of beginning to list what is known and what is not about the various options. Nevertheless, it is important to be specific about the context of the analysis of these options.

First, the term "interim" refers to a period which is not totally precise under the Nuclear Waste Policy Act. Although the discussion at the September 7 meeting presumed that the beginning of the interim period is January 1, 1998, the statute is not so precise. In fact the statute says:

Contracts entered into under this section shall provide that--

(A) following commencement of operation of a repository, the Secretary shall take title to the high-level radioactive waste or spent nuclear fuel involved as expeditiously as practicable upon the request of the generator or owner of such waste or spent fuel; and

(B) in return for the payment of fees established by this section, the Secretary, beginning not later than January 31, 1998, will dispose of the high-level radioactive waste or spent nuclear fuel involved as provided in this subtitle.

42 U.S.C. 10222(a)(5). The contradictions on the face of this section make the commencement date for the interim period cloudy at best. Arguably, no title to spent fuel can transfer prior to the "commencement of operation of a repository." The court's propensity to resolve such ambiguities by reading the language in the context of the entire legislative enactment could result in an interpretation that the DOE cannot be forced to take title until it has a place to put it under the spent fuel disposal program which

is currently authorized. Perhaps the point is that any of the chosen options may require statutory change.

Second, the options list which you have prepared does not discuss at all the implementation of any of these options. In other words it implies that only one, systemic option can be chosen. You may recall that one option I proposed at the September 7 meeting was that nuclear utilities be given the option of making spent fuel management proposals appropriate to their particular situations, and that the funding for such proposals be through credits (either retrospective or prospective) against that utility's obligation to the Nuclear Waste Fund. Such a proposal might implement one, several or a mix of the options you have listed. We referred to this as the "tailoring option".

The rest of my suggestion was that these proposals be in the form of amendments to NRC operating licenses. One critique of that aspect of my proposal was that the election of interim storage options is really a financial (i.e. rates) issue, rather than a safety issue, and therefore that the proposal should go to each respective public utility commission for approval. So long as the proposal includes any materials possession by the utility, the NRC retains jurisdiction of the safety issues. And NRC also has jurisdiction over DOE's civilian materials possession. Therefore NRC approval of such a proposal would be required. If the costs of such a proposal are a credit against the utility's obligation to the Nuclear Waste Fund, and there is no net additional cost to ratepayers, there is really no issue to take to utility commissioners (provided they have already included the nuclear waste fee in the rate base).

All of the options which were listed show cost on the "need to know" list. The cost of any of these options can only be evaluated by the most gross calculations. Only the tailoring option permits more precise calculation of cost. The choice of any of the options taken alone, utilizing a system approach, will ultimately require the DOE, the NRC or the Congress to make a "waste confidence" type prediction that the system will work for a certain price. We haven't had very good experience with this (one of the reasons for lack of public confidence).

A well-tailored proposal for interim storage might include:

- 1) A demonstration of the physical capability (or lack of it) for at-reactor storage.
- 2) A demonstration of waste acceptance capability at away-from-reactor storage.
- 3) A demonstration of assured participation by other parties involved in the plan (e.g. an agreement with DOE regarding willingness to receive fixed volumes of materials on certain dates if that is an element of the proposal).

4) An estimate of managerial capability for the estimated period of interim storage.

5) An estimate of total interim-period system cost, perhaps broken down by system elements (physical improvements, land costs, management or institutional costs, translocation costs, etc.

6) An estimate of fiscal capability for the estimated period of interim storage, including proposed mechanisms for implementation of a credit against the Nuclear Waste Fund.

7) A demonstration of continued compliance with safety regulations.

You may distribute this memorandum to other members of the committee.



### Answers to questions:

Question a. What is the present estimated total cost of the interim storage system (on-site, MRS, federal sites, at Yucca) to the point of delivery to the final repository site?

Discussion: The cost estimates in the following table were developed by EEI/UWASTE in evaluating the need for an MRS facility. Several scenarios are addressed. In general, the best cost savings to ratepayers and the DOE system occur in scenarios where the MRS opens early and accepts waste at a higher rate than currently planned.

For the purposes of this table, it is assumed that a voluntary MRS, a federally-sited interim storage facility, and lag storage at Yucca Mountain would have equivalent cost impacts on the system.

If a storage facility were located at Yucca Mountain, rather than a separate MRS site, the total DOE system costs may decrease, but this decrease would be relatively small - probably on the order of 1% - 2%. There would be a savings in transportation costs from the interim storage facility to the repository. However, these would be partially offset by an increase in from-reactor transportation costs. Other savings (sharing of support facilities, etc.) are expected to be difficult to estimate and relatively small.

(Billions of 1992 Dollars)

Case	Additional On-Site Storage Costs	DOE System Costs	Total Costs
<b>Option 1 <sup>a</sup></b> <i>Uncompensated On-Site Storage</i> <i>Interim Off-Site Storage: None</i> <i>Repository: 2010</i>	11.9	27.8	39.7
<b>Option 2 <sup>a,b</sup></b> <i>On-Site Storage with Compensation</i> <i>Interim Off-Site Storage: None</i> <i>Repository: 2010</i>	11.9	27.8	39.7
<b>Options 3 and 4 <sup>c</sup></b> <i>Interim Off-Site Storage: 1998</i> <i>at voluntary or federal site</i> <i>Accept. Rate: 2700 MTU/yr</i> <i>Repository: 2010</i>	4.9	30.5	35.4 <sup>c</sup>
<b>Option 5 <sup>d,e</sup></b> <i>Integrated Storage and Disposal Capacity in Nevada</i> <i>Interim Off-Site Storage: 1998</i> <i>Accept. Rate: 2700 MTU/yr</i> <i>Repository: 2010</i>	4.9	30.5	35.4 <sup>c</sup>

- a The difference between Options 1 and 2 is source and flow of money.
- b Under Option 2 - On-site storage with compensation - some portion of on-site storage costs could be paid for by DOE, thus shifting on-site storage costs to DOE system costs. If compensation is provided as cash, total cost is expected to be higher than in Option 1 because of inefficiencies associated with passing funds through the federal government (rather than utilities/ratepayers paying directly). The potential cost impact of compensation in the form of MPCs is not clear at this time.
- c If the initiation of off-site storage facility operation slips beyond 1998, the total system costs for Options 3,4, and 5 increase and approach (or exceed) the total system costs for Options 1 and 2.
- d Interim storage capacity reaches equilibrium of about 40,000 MTU. The 2700 MTU acceptance rate would increase to 3000 MTU when the repository opens.
- e Option 5 may be less expensive than Options 3 and 4, because it takes advantage of existing DOE infrastructure in Nevada and transportation savings.

Question b. Why does DOE believe that an MPC is not cheaper than the multiple handling of fuel at an MRS and the repository?

Discussion: As yet, DOE has not completed the MPC conceptual design report and has not determined the cost impact of MPCs on the overall system. However, the cost of MPC development (canisters and storage/transportation/disposal overpacks) and system implementation may exceed alternative scenarios where fuel is handled at the MRS or repository.

Question c. Why does NRC insist on a fuel handling capability for the MRS since there is no scenario that justifies it, nor any regulation that mandates it?

Discussion: Backup fuel handling capabilities are necessary in case of an emergency/accident at any spent fuel storage facility. Regardless of the regulations, one would expect NRC to find a facility without such capability to be insufficiently conservative from a health and safety standpoint. However, such backup handling capabilities could conceivably be dry rather than wet.

Question d. Is there any polling data available to determine whether the public prefers a central storage location(s) or spent fuel storage at existing reactor sites?

Discussion: Comparable data on low-level radioactive waste (LLW) is available. USCEA has conducted polls that show a significant majority of people prefer centralized disposal of LLW over storage at many dispersed generator sites (60% vs. 27%).

Question e. What are the licensing implications of DOE's taking title versus possession?

Discussion: DOE could take title to spent fuel without significant direct licensing implications. However, DOE cannot take possession of spent fuel without becoming the NRC licensee.

Question f. How should the issue of equity of acceptance ranking, payment and shipment be resolved? -- A proposal should be put on the table by the utilities.

Discussion: Through the ACR Issue Resolution Process, utilities have informed DOE that spent fuel should be accepted by DOE based upon allocations earned by utilities on an oldest discharged fuel first basis. Utilities would be able to provide any fuel for shipment against their earned allocations when they come up in the

acceptance queue.

If compensation is to be provided, equity issues associated with the compensation mechanism need to be resolved.

Question g. Should the acceptance rate be changed to reflect the real need to catch up with the built up inventory?

Discussion: Yes. Utilities have urged DOE to increase the acceptance rate to an amount slightly above the discharge rate. This optimally selected rate would not lead to an oversized DOE system once the backlog is worked off.

Question h. What is the realistic definition of time for interim?

Discussion: An interim storage facility is possible by 2000, but this would be difficult to achieve. The timing of initiation of operations at a federal site or early acceptance at Yucca Mountain depends upon the strength of political support for the effort. Once a site is identified, at least five years is needed for EIS, design, licensing, construction, etc.

Question i. How many MRS's might be necessary to show that there is equity and credibility to the temporary nature of the storage?

Discussion: While one eastern and one western MRS may be more equitable (geographically) than a single MRS, the question of equity will never really be resolved. In the LLW area, the states have tried to achieve equity by planning to develop nine or more sites, yet many find even this inequitable.

Credibility as to the temporary nature of storage has more to do with soundness of the repository program than the number of MRSs.

Question j. What legislative changes are required to implement the 1998 commitment?

Discussion: Legislative changes necessary to implement solutions to the 1998 commitments vary with regard to the interim storage solution.

Use of a federal facility would require legislation addressing the restrictions in the Nuclear Waste Policy Act "linking" construction and operation of an MRS with the construction and operation of the repository. Additionally, the authorization for using federal

interim storage expired in 1990 and requires reauthorization.

A negotiated agreement for a voluntary MRS, which must be enacted into law by Congress, would also have to address the linkages in the NWPA.

Other areas that should be addressed by legislation authorizing use of a voluntary MRS site or a federal facility include: the volume of waste at an interim storage site; benefits payments to the local community and the state; governmental control of management and operation of the facility, such as government use of a private MRS, use of Nuclear Waste Fund for construction and operation, questions of liability, etc; and various other restrictions currently in the NWPA.

Integrated spent fuel storage and disposal capacity in Nevada would also require authorizing legislation dealing with linkages, and the current prohibition against locating an interim storage facility and a repository in the same state.

At reactor storage with compensation may require legislation to allow DOE to make payments to the utilities/ratepayers, but probably is not necessary to allow DOE to make compensation.

At reactor storage without compensation is simply the status quo, and would not require legislation to authorize DOE's continued activities. However, the issue of the 1998 commitment is not satisfied and could become a Congressional legislative issue.

## Discussion of Compensation Alternatives

### A. Credits or payments from fund.

- \* Utilities/ratepayers would be financially compensated between 1998 and whenever DOE initiates spent fuel acceptance.
- \* Legislation likely required.
- \* Amount and timing of compensation could correlate to need for storage caused by DOE's inability to accept fuel starting in 1998 (NEED), or on an "oldest fuel first (OFF)" basis.
- \* Money is assumed to come from NWF, not general fund.
- \* Direct financial compensation can only provide short term financial gain and will likely harm current DOE program. All money paid out will be diverted from its intended use (trans/storage/disposal) and may have to be recovered from utilities/ratepayers in the future. Compensation may place upward pressure on the fee.
- \* Transaction costs in passing funds through DOE (rather than paying directly) could be significant.
- \* In NEED scenario, equity issues are likely to arise among utilities/ratepayers. Some need more money than others to pay for storage; some need no money at all; some have already made relevant investments; shutdown plants are not contributing to fund, but have a greater need; etc.

### B. Provision of UCS/MPC.

- \* DOE would provide MPC canisters (and maybe UCS storage overpacks) to utilities in accordance with their position in queue; if utilities don't want or need containers, they could receive financial payments equivalent to avoided system costs.
- \* May be designed in a manner to avoid some equity issues and other complications resulting from financial compensation.
- \* Can serve as incentive for usage and mechanism for implementing UCS/MPC program.
- \* Legislation probably not required.

C. DOE takes title and/or possession on-site.

- \* Probably could be done without legislation.
- \* DOE taking possession would raise licensing issues; DOE would become licensee.
- \* DOE taking possession could create appearance of numerous small MRS facilities.
- \* DOE taking title would not raise licensing problems.
- \* DOE taking title would provide no clear benefit to anybody, and could create difficulties for utilities. (perhaps losing ability to make necessary management decisions).

Route to SC 10

STATEMENT FOR THE RECORD

PRESENTATION TO THE U.S. NUCLEAR REGULATORY COMMISSION

REPORT ON THE NATIONAL ASSOCIATION OF REGULATORY  
UTILITY COMMISSIONERS NUCLEAR WASTE  
PROGRAM OFFICE

BY

CAS M. ROBINSON, DIRECTOR

JANUARY 26, 1994

INTRODUCTION

Thank you for the opportunity to brief the Commission on the National Association of Regulatory Utility Commissioners [NARUC] Nuclear Waste Program Office. Let me also take this opportunity to publicly express appreciation and thanks to Commissioner Ken Rogers for his dedicated support of the NARUC and his constant active participation in the meetings of the Electricity Committee and its Subcommittee on Nuclear Issues and Waste Disposal. His commitment and support of these committees is widely known among state regulators and I am confident they join me in expressing our gratitude to Commissioner Rogers for his commitment and positive contribution.

I am very pleased to have the opportunity to review with you the historical perspective for the creation of our office, its mission and the specific activities we have undertaken and plan to initiate this year.

BACKGROUND

First let me remind everyone that the NARUC is a quasi-governmental, non-profit organization of the governmental agencies engaged in the regulation of public utilities and carriers located in all fifty states, the



District of Columbia, Puerto Rico and the Virgin Islands. The chief objective of the organizations is to serve the consumer's interest by seeking to improve the quality and effectiveness of public regulation in the United States and its territories. In general, state utility regulators are charged by state statute to promote economical energy subject to various considerations for environmental safety, economic development, and public safety.

The NARUC, and particularly its Electricity Subcommittee on Nuclear Issues and Waste Disposal, has always had a strong interest in the Department of Energy [DOE] nuclear waste program. This interest has its genesis in the responsibility that state regulators have to protect the economic interest of the rate payers of the utilities they regulate. All utilities must pay into the Nuclear Waste Fund at the rate of one mil per kilowatt hour of electricity generated by nuclear power. State regulators have thus far permitted these utilities to recover this expense from the rate payers, but there is a concern on the part of state regulators, which is continuing to intensify, that, because of the uncertain progress in DOE's development of the waste program, the rate payers may be asked to pay twice for the same service. As storage pools reach capacity, utilities will find it necessary to find alternatives for the storage of their spent fuel. I would note that approximately 30 percent of the Nation's spent fuel pools will reach capacity in 1998 and approximately 80 percent of the Nation's pools will reach capacity by the year 2010. Even if DOE provides some compensation arrangement as a possible way to meet their obligation to address this problem, there are cost implications that could impact utilities and their rate payers.

Because of the immediacy and the urgency of the problem, several members of the NARUC Electricity Subcommittee on Nuclear Issues and Waste Disposal decided that the NARUC should establish an office in Washington that would provide a technical review of the Nuclear Waste Program on behalf of state regulators. Twenty state regulatory commissions agreed to a voluntary commitment of funds for two years to support such an office. The Michigan Public Service Commission provided a staff person on loan to this fledgling office for the two year period.

During those 24 months, several things occurred that affected the future of this effort. The weakening of the national economy forced a number of state commissions to reduce the size of their own professional staffs. All commissions experienced either a freeze or reduction of their operating budgets. Salaries were not increased and in some cases were reduced by involuntary furloughs or other mechanisms. Economic times were not good for state commissions, and for that matter, economic times still are not good for state commissions.

Another thing that happened was that I became the Chair of the Electricity Subcommittee on Nuclear Issues and Waste Disposal with about eight months remaining on the two year funding commitment. Upon assuming this responsibility, I came to two firm conclusions: 1. it would be unrealistic, given the economic realities, to go back to the state commissions and get extensions on their funding commitment to support the office, and 2. the concept of a NARUC technical review office was also unrealistic. Neither the NARUC nor its commissioner members, as a general rule, are expected to have scientific technical expertise. It is in the public policy arena where the NARUC and its members are particularly qualified to speak and act.

Therefore, I proposed that the NARUC close the office then in existence at the end of its two year life. Concurrently, I also prepared a proposal, with the approval of the NARUC, to the DOE Office of Civilian Radioactive Waste Management for a new office to be focused on the public policy issues related to the storage and disposal of spent nuclear fuel. The proposal was accepted by the DOE and the NARUC entered into an agency agreement with DOE, for a five year period, for the creation of the office as it now exists. We are now beginning our second year of this agreement.

As it was finally approved, the office has bifurcated lines of accountability. The office is administratively accountable to the NARUC Administrative Director and is programmatically accountable to the Electricity Subcommittee on Nuclear Issues and Waste Disposal and to the Electricity Committee as a whole.

## MISSION AND ACTIVITIES OF THE OFFICE

The Mission of the Nuclear Waste Program Office is very straightforward. It is:

1. To conduct a continuing review of the waste disposal program;
2. To represent the NARUC's interest with the Department of Energy, other government agencies and other relevant stake holders;
3. To make information available to public utility commissioners and their staffs to aid in the development of the NARUC policies on nuclear waste issues.

This mission is accomplished by seven tasks and specific activities related to each task. At the same time, every effort is made to maintain an openness to unanticipated opportunities and emerging requirements.

### Task 1 -- Publications

The NWPO publishes a quarterly **Issues Report** with topics to be determined in consultation with the Chair of the Subcommittee on Nuclear Issues and Waste Disposal and the DOE. The purpose of these publications is to provide public utility commissioners and state regulatory staff with a concise report on relevant current nuclear waste issues. The reports are intended to be informational in nature and do not take an advocacy position on the issues discussed.

In 1993 only three reports were published since this was the inaugural year for the office. The subjects of the 1993 reports were:

**'Reprocessing: Is It An Option for U.S. Utilities'**

**'Universal or Multi-Purpose Containers for Storage, Transport, and Disposal of Spent Fuel'**

## **"Directory of Organizations Concerned with Civilian High-Level Radioactive Waste"**

These publications are routinely mailed to all the NARUC public utility commissioners and to the members of the NARUC staff subcommittees of the Subcommittee on Nuclear Issues and Waste Disposal and the Electricity Committee. It is available to other interested parties, upon request and without cost, as long as the supply lasts. At each publication 500 copies are printed.

### **Task 2 -- Monitor and Review of Program Components**

The Nuclear Waste Program Office monitors and reviews proposed and pending legislation and regulations affecting the storage or disposal of high level nuclear waste. As appropriate, the Nuclear Waste Program Office assesses these proposed changes to determine their impact on state regulation, rate payers, and the nuclear utilities regulated by state utility commissions. The Chair and Vice Chair of the Subcommittee on Nuclear Issues and Waste Disposal are advised of the relevant issues pertaining to pending legislation and regulations so they can exercise a leadership response as may be appropriate.

On an occasional basis, advisory notices are sent to the members of the Subcommittee on Nuclear Issues and Waste Disposal and the Electricity Committee to apprise them of significant developments on emerging issues or events worthy of special notice. Such advisory notices may or may not suggest responsive action that could be taken by public utility commissioners.

#### ***To accomplish this task the Nuclear Waste Program Office:***

1. Participates in the regular program reviews of the Office of Civilian Radioactive Waste Management [OCRWM] and its contractors;

2. Monitors relevant Nuclear Regulatory Commission [NRC] meetings and the meetings of the NRC Advisory Committee on Nuclear Waste [ACNW];
3. Monitors the meetings and activities of the Nuclear Waste Technical Review Board [NWTRB] and reviews their recommendations;
4. Monitors the relevant activities of the nuclear utility industry and its industry association[s] to stay current on their views and priorities on nuclear waste issues;
5. Monitors relevant Congressional hearings on matters affecting the high level nuclear waste program; and
6. Maintains contact with key Congressional staff members to stay current on their legislative priorities and initiatives regarding the nuclear waste program.

### **Task 3 -- Stake Holder and Interested Party Consultation**

Participation in the meetings of the NARUC is an important part of the work of the Nuclear Waste Program Office as is attendance at the regulatory regional conferences. The Nuclear Waste Program Office also participates in selected technical conferences on nuclear waste issues to stay informed on current ideas on nuclear waste.

The Nuclear Waste Program Office meets with and consults with other relevant stake holders and interested parties to exchange information and views regarding high level nuclear waste issues. In addition, the Nuclear Waste Program Office does, from time to time, meet informally with senior managers of nuclear utilities and decision makers of other stake holder organizations to facilitate good communication and a better understanding of their concerns and positions on nuclear waste issues.

***To accomplish this task the Nuclear Waste Program Office will participate in the following events:***

## 1. Regulatory Events

- a. NARUC
  - Winter Committee Meeting, Washington, D.C.
  - Summer Committee Meeting, San Diego, CA.
  - Annual Convention, Reno, NV.
- b. Regulatory Regional Conferences,
  - Southeastern, Charleston, SC.
  - Great Lakes, White Sulphur Springs, WV.
  - Mid-America, Milwaukee, WI.
  - New England, Portland, ME.
  - Western, Seattle, WA.

## 2. Other Conferences

- a. Symposium on the Scientific Basis for Nuclear Waste Management, Boston, MA.
- b. Spent Fuel Management Seminar XI, Washington, D.C.
- c. International High Level Waste Conference, Las Vegas.
- d. American Nuclear Power Assembly, Washington, D.C.

## 3. Informal Consultations

- a. Nevada stake holders, Las Vegas and Reno, NV.
- b. Nuclear Utilities, Southeast and Mid-West or New England

### **Task 4 -- Education and Technical Transfer of Information**

The Nuclear Waste Program Office directly or indirectly provides informational materials to members of the Subcommittee on Nuclear Issues and Waste Disposal and the Electricity Committee and to the staff

subcommittee of the Subcommittee on Nuclear Issues and Waste Disposal. A library of current periodicals related to nuclear waste is maintained in the Nuclear Waste Program Office as a reference resource to public utility commissioners and state regulatory staff.

The Nuclear Waste Program Office responds to requests of public utility commissioners or state regulatory staff to assist in obtaining information pertaining to nuclear waste issues. Upon request, the Nuclear Waste Program Office will meet with public utility commissioners to provide a briefing on the nuclear waste program and nuclear waste issues.

The Nuclear Waste Program Office responds to requests from the DOE, other government agencies or interested parties for information on state regulatory positions or views on nuclear waste issues. Accordingly, we are available to meet with them to present and discuss this information upon request.

#### Task 5 -- Conferences and Workshops

The Nuclear Waste Program Office convenes an annual conference on nuclear waste to provide an interactive forum for regulators to discuss nuclear waste issues with one another and other stake holders. The conference is intended to address a range of nuclear waste issues and attempts to bring a diversity of opinion to the discussion. The goal is to provide information to public utility commissioners that will assist them as they formulate policy positions on nuclear waste issues.

Although the primary audience is public utility commissioners and state regulatory staff, participation by the nuclear industry, government and others concerned with these issues is encouraged. Such participation will enrich the discussion and better inform utility commissioners on the issues.

Three workshops are to be convened in conjunction with the three scheduled meetings of the NARUC. These workshops are more narrowly focused than the conference and are much shorter. The usual format is a dinner and meeting on the evening prior to the beginning of the NARUC

meetings. In most cases, the focus will be on a single topic related to nuclear waste.

***In order to accomplish this task the Nuclear Waste Program Office will:***

1. Convene an annual conference on Nuclear Waste, Las Vegas, N.V., September 28-30, 1994. [dates tentative]
2. Convene three workshops in conjunction with the three scheduled meetings of the NARUC  
Washington, D.C., February 26, 1994  
San Diego, CA., July 23, 1994  
Reno, NV., November 12, 1994

#### **Task 6 -- DOE Meetings, Program/Project Reviews and Site Inspections**

To fulfill the goal of mutual assistance between DOE and the NARUC, formal and informal interaction is necessary. The NARUC must take full advantage of opportunities to review and understand the OCRWM program and plans and see first hand the work being undertaken by DOE.

Participation in program reviews and on-site inspection of facilities enables the NARUC members, state regulatory staff and the Nuclear Waste Program Office to become better informed about the waste program, progress on the characterization of Yucca Mountain and related issues. Participants will be better able to evaluate policy options on matters related to nuclear waste within their jurisdictions or on proposed actions by the NARUC.

***To accomplish this task the Nuclear Waste Program Office will:***

1. Participate in the DOE OCRWM/M&O Project Reviews.
2. Conduct an annual Yucca Mountain Site Inspection for public utility commissioners, Las Vegas, NV.



3. Conduct an annual Yucca Mountain Site inspection for state regulatory staff, Las Vegas, NV.

### **Task 7 -- Communication with DOE and Relevant Operational Agencies**

Having a direct stake holder interest in the performance of the OCRWM program requires substantial ability to communicate with appropriate agencies regarding current or proposed activities, program plans and rules. The Nuclear Waste Program Office represents the NARUC and rate payer interest to the DOE and others regarding high level waste management issues.

In addition to its communication role and contact with DOE, the Nuclear Waste Program Office, in coordination with the Chair of the Subcommittee on Nuclear Issues and Waste Disposal, confers with various governmental agencies associated with the high-level waste program to provide briefings, comments or position statements of the NARUC. These agencies include the NRC, the Nuclear Waste Negotiator, NWTRB and various state agencies or organizations.

*To accomplish this task the Nuclear Waste Program Office will participate in meetings of the following agencies:*

1. The National Academy of Sciences Board of Radioactive Waste Management.
2. The NRC Advisory Committee on Nuclear Waste.
3. The Nuclear Waste Technical Review Board.
4. The National Council of State Legislatures.

As a consequence of the Workshop held in conjunction with the NARUC Winter Committee meeting in February of last year. The NARUC passed a resolution calling for a collaborative dialogue on the issues related to the interim storage of spent nuclear fuel. A delegation of state regulators

and the Nuclear Waste Program Office subsequently met with Secretary O'Leary to discuss this concern and were strongly encouraged by her to pursue the dialogue.

It was initially hoped that the Keystone Center would undertake to facilitate such a dialogue, and they did give the possibility very serious consideration. The Keystone Center finally concluded they could not undertake facilitating this dialogue.

The Nuclear Waste Program Office was then called upon by the Electricity Subcommittee on Nuclear Issues and Waste Disposal to convoke a Dialogue on Interim Storage Issues. The plan was to convene three meetings with state utility commissioners, and utility CEO's, along with representatives from the State of Nevada and the environmental movement to explore the interim storage options. In addition, the Department of Energy and the Nuclear Regulatory Commission would be requested to provide a resource person to assist in the discourse. These persons, while active as discussants, are not to be considered participants in the same sense as the other invitees. The mission of the dialogue is to ***prepare a report to government decision makers containing specific recommendations for the interim storage of spent nuclear fuel.***

The third and probable final meeting was held this week in Chicago. Full consensus was never anticipated and is still not expected. However, substantial agreement among the participants is likely. Since the issues under consideration are difficult and complex, it should also be expected that one or more minority reports will be attached to the final report.

A special word of thanks to Mr. Charles Haughney for his excellent assistance in this process. The expertise he brought to the dialogue was both helpful and appreciated. Thanks also to the NRC for making it possible for Mr. Haughney to assist as a resource to the dialogue.

## CONCLUSION

In closing let me thank all the NRC Commissioners for your interest in and your support of the NARUC Nuclear waste Program Office. I am grateful for the opportunity to be here today to describe the purpose and

work activities of our office. I want to stress my interest in having a very cooperative relationship with the NRC and my desire to receive your suggestions on how we can be more effective. Thank you very much.

# CONCEPT PAPER FOR A DIALOGUE ON INTERIM SPENT FUEL STORAGE ISSUES

## THE PROBLEM:

In accordance with the provisions of the Nuclear Waste Policy Act, it has been expected that DOE would begin accepting spent fuel from U.S. utilities in 1998. In the absence of a viable reprocessing option, DOE and utility interim spent fuel storage planning have been premised on this expectation. Although DOE has stated its willingness to begin taking spent fuel in 1998, it has not stated an obligation to do so, nor selected a location, nor sited a facility. Utility spent fuel inventories are growing and in some cases, there may no longer be room at reactor sites for continued on-site storage.

As 1998 approaches and passes, the need for on-site storage will become more acute, unless some provision for off-site storage is made available. The construction of additional at-reactor storage capacity in a timely fashion to carry utilities well beyond 1998 raises a host of difficult political, regulatory and ratepayer issues. What to do over the next two or three decades is the immediate issue, with the 1998 issue an important component of the problem.

## DIALOGUE:

The NARUC proposes to convene a dialogue of relevant stakeholders to review all realistic alternatives for the interim storage of spent nuclear fuel, beginning in 1998. The question on which the discussion will focus is "What is the Best way to deal with spent nuclear fuel in the interim between generation and permanent disposal?" The dialogue will examine a full range of options for addressing civilian high level radioactive waste issues in a 20-to-30 year time frame. It will seek to identify options that coordinate existing or potential policies and laws with the needs of government, industry, state regulators, and environmental, consumer and public interest organizations.

In reviewing the options, the dialogue will identify the advantages and disadvantages of each alternative. The group will try to arrive at consensus on the accuracy of the facts associated with each option. In addition, the group will try to reach agreement on the priority ranking of the options in order of preference. Further the dialogue will attempt to identify the proposed solutions that are unlikely to be either feasible or widely supported. A report is to be produced by the dialogue representing the positions of the group and the rationale supporting these positions.

## **SCOPE:**

The effect of current federal and state laws, regulations, and institutional requirements will be an important part of these discussions. The group will attempt to determine the implications and consequences of the top ranked options for rate payers, utilities, and for the DOE nuclear waste program in both the near and long term. The underlying assumption is that a deep geologic repository as determined in the NWPA will continue to be the U.S. disposal policy.

The discussion should examine all available options, including, but not limited to, construction of one or more MRS facilities at non-Federal sites, interim storage at one or more existing Federal sites such as defense waste storage sites, canister systems, and various engineering and financial options for continued reactor on-site storage.

## **PARTICIPANTS:**

The participants to be invited to the dialogue will include state utility regulators, nuclear utility CEO's, organized environmental representative(s), and persons from the state of Nevada. The intent is to assemble a dialogue that is fully representative of the affected interests. All participants will be requested to honor the rules established by the Nuclear Waste Program Office in convening the dialogue. Each participant will be asked to commit to the three scheduled meetings for the dialogue.

## **DIALOGUE STRUCTURE:**

The ground rules are: 1. all participants will agree to attend all three scheduled meetings; 2. the members of the dialogue will participate as individuals rather than representatives of an organization; 3. all conversations are off-the-record and not for attribution; 4. neither the work papers nor the documents produced in the course of the dialogue or drafts of the final report are to be made public until their release is authorized by the group.

## **REPORT OF RESULTS:**

At the conclusion of the dialogue the results of the inquiry will be published in a report containing the results of the dialogue. The report will describe the background for the dialogue, the issues discussed, the process that was followed and the options considered along with the advantages and disadvantages associated with each. These options will be presented in rank order of preference with the rationale for the selected preferences together with any recommendations reached by the group.

The report of the dialogue will contain recommendations reached by consensus with

agreement on the accuracy of the facts associated with each recommendation. If consensus is not possible, however, the report will delineate areas of agreement and disagreement, and state why disagreement exists in the belief this delineation will be useful to policy makers.

#### **MEETING LOCATIONS AND TIMES:**

The group will meet according to the following schedule:

September 7, 1993 In Atlanta, Georgia  
October 5, 1993 in Washington, D.C.  
November 3, 1993 in Atlanta, Georgia.

# OPTION \_\_\_\_\_

## ISSUES & QUESTIONS

Economic Consequence

Technological Consequence

Political Consequence

extent of anticipated support and opposition

Environmental Consequence

Societal Consequence

Who Pays

Should DOE's acceptance rates be changed to meet need?

What are they based on?

Who is helped and who is hurt by each option?

Equity issues raised by each option

how can optimal equity be achieved?

Transportation

What do the contracts mean?

Will regulators support the "do nothing" option?

What does the Environmental Community Want?

What does Nevada want?

What do utilities?

What does the broad public want?

What do financial regulators want?

What makes sense?

Is the option practically possible and achievable?

Can it be achieved in time to resolve the problem?

What legal or legislative changes are required to allow for option?

[for example the Minnesota issue]

NRC role relative to the option

The MPC in the context of long term disposal

How can the supporting rationale for each option be summarized.

Can the preferred options gain the support necessary for implementation?

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## DIALOGUE AGENDA

- |  |             |            |
|--|-------------|------------|
| <b>Welcome and Introduction</b>  | 10 minutes  | [Robinson] |
| a. logistics   |             |            |
| <b>Introduction of the Participants</b>  | 30 minutes  | [group]    |
| a. let each participant take one minute to tell something personal about themselves.   |             |            |
| b. Statement regarding co-option   |             |            |
| <b>Goal of the Dialogue</b>  | 5 minutes   | [Robinson] |
| <b>Objective of the First Meeting</b>  | 5 minutes   | [Robinson] |
| <b>Review of Roles and Ground Rules</b>  | 5 minutes   | [Robinson] |
| a. Role of Moderator   |             |            |
| b. Role of Participants  |             |            |
| c. Ground Rules  |             |            |
| <b>Statement of Problem and Needs</b>  | 15 minutes  | [Keesler]  |
| <b>Discussion of Assumptions</b>   | 45 minutes  | [group]    |
| a. Identify additional assumptions   |             |            |
| b. Identify assumptions on which there is agreement  |             |            |
| c. Identify and set aside for future discussion those assumptions on which there is not agreement unless resolution is essential unless vital to continued progress  |             |            |
| <b>Discussion of Options</b>   | 120 minutes | [group]    |
| a. To identify and evaluate the options available or potentially available for the storage of spent nuclear fuel and come to an understanding of the advantages and disadvantages as well as the costs and consequences of each option considered. |             |            |
| b. To identify any additional information required to make decisions on the selection of options.  |             |            |
| c. Consider the consequence of doing nothing.  |             |            |
| d. To make work assignments necessary to prepare for the next meeting of the Dialogue Group.   |             |            |
| <b>Wrap-up and Assignments</b>   | 10 minutes  | [Robinson] |
| a. Location, Date and Time of future meeting   |             |            |
| b. Identification of any additional tasks and assignments for next meeting   |             |            |

## ASSUMPTIONS

- It is expected that responsibility for developing permanent disposal capacity for existing civilian spent nuclear fuel will continue to reside with the Federal Government in accordance with the provisions of the Nuclear Waste Policy Act of 1982.
- It is assumed that the United States shall eventually utilize deep geologic repositories for the permanent disposal and isolation of civilian spent nuclear fuel.
- Sub-seabed disposal or reprocessing of civilian spent nuclear fuel are not considered viable options in the U.S. at the present time.
- The United States will remain committed to continuing characterization studies of Yucca Mountain as the potential first repository for civilian spent nuclear fuel.
- The need for interim storage solutions is immediate and will increase over time.
- Extended on-site storage of spent nuclear fuel is not likely to be an option for all utilities and sites.
- Long-term storage of spent nuclear fuel at reactor sites will not be acceptable to utilities and ratepayers that have paid for other disposal solutions, and will raise the total cost of waste disposal and impede progress towards a final solution.
- The Department of Energy has a responsibility to begin accepting civilian spent nuclear fuel in 1998.
- The stockholders and ratepayers of nuclear utilities will be asked to continue to pay the costs associated with interim storage of spent fuel as well as the cost of developing a long-term repository either through the existing nuclear waste fund and/or by individual assessment.
- Characterization studies at Yucca Mountain could be conducted more cost effectively and expeditiously if sufficient funding was made available.

- It is unlikely that a "greenfield" Monitored Retrievable Storage facility could be licensed, constructed and operating by 1998.
- There will be a need for off-site, interim spent fuel storage capacity or some utilities will be forced to cease nuclear plant operations prematurely until a site for a repository is selected, and the facility is licensed and operating.
- The Nuclear Waste Policy Act could be amended by Congress.

SEPTEMBER 7, 1993  
BIOGRAPHICAL INFORMATION

**DONALD H. BAEPLER**

Dr. Baepler is presently the Director, Barrick Museum of Natural History and the Harry Reid Center for Environmental Studies and Professor of Biology, University of Nevada-Las Vegas. He holds a Ph.D from the University of Oklahoma in Vertebrate Zoology. His research and field experience includes avian and ecological studies in most regions of the United States. He has done extensive field collecting (mammals and birds) in the Pacific Northwest and in the southwest. He has twenty-one years' field experience in the Mojave Desert. His current interests include work on desert fauna and ecology and on tropical ecology. He is presently working on two Desert Tortoise research projects; and serves as a supervising biologist on Desert Tortoise surveys; has undertaken a study of the regional status of the phainopepla populations; and is establishing an environmental research center in Honduras.

Dr. Baepler has managed institutions with hundreds of employees and multimillion dollar budgets. He is currently directing the activities of a museum and research center with over 70 full-time employees and with a budget in excess of \$7,000,000 per year.

**LAKE H. BARRETT**

Lake H. Barrett is Acting Director, Office of Civilian Radioactive Waste Management (OCRWM), U.S. Department of Energy (DOE). In this position he is responsible for developing the nation's waste disposal system for spent nuclear fuel and high-level radioactive waste, as mandated by the Nuclear Waste Policy Act of 1982, as amended.

He is also the Director of the Rocky Flats Program Office, Defense Programs, DOE. In this position, he is responsible for bringing about improvements in the safety culture, safeguards and security, and environmental protection programs of the Rocky Flats Plant. These improvements were necessary to allow resumption of plutonium processing in support of site cleanup.

Previously, Mr. Barrett served in a variety of senior management positions in DOE's OCRWM. His various responsibilities within the high-level radioactive waste program included Quality Assurance; Facilities Siting and Development; External Relations; and Policy, Transportation, and Systems Engineering areas between 1985 and 1990.

Mr. Barrett has held various engineering, supervisory and managerial positions with General Dynamics/Electric Boat Division, Bechtel Power Corporation, and the Nuclear Regulatory Commission, before joining DOE in 1985. Between 1980 and 1984, he was Site Director for the Nuclear Regulatory Commission, stationed at the Three Mile Island reactor site, and was responsible for regulatory programs during the cleanup of the damaged Unit 2 reactor.

Mr. Barrett received his B.S. degree in mechanical engineering in 1967 and his M.S. degree in mechanical/nuclear engineering in 1971, both from the University of Connecticut. He is a registered professional engineer, member of the American Nuclear Society, and has served on various standard and industry committees. Among Mr. Barrett's honors are Meritorious Service and Performance Bonus Awards, a DOE Special Act Award, and the Congressional Award for Exemplary Service Finalist.

### **FREDERICK W. BUCKMAN**

Frederick W. Buckman is President and Chief Executive Officer (CEO) of Consumers Power Company and is a member of the board of directors for both CMS Energy Corporation and Consumers Power Company. He was named CEO of the utility in December 1991 and has been president since March 1988.

In 1987, Dr. Buckman was elected senior vice president of energy supply with responsibility for operation of 60 electric generating units at eight power plants, two of them nuclear, and 13 hydroelectric dams. He was also responsible for fuel supply activities for both the electric and gas sides of the business. Previously, he had been vice president of nuclear operations, overseeing the Big Rock Point nuclear plant near Charlevoix and the Palisades nuclear plant near South Haven, since 1986.

Dr. Buckman first worked for the utility as a college intern during the summers of 1967 and 1968 and began working on a full-time basis after his 1970 graduation from the Massachusetts Institute of Technology (MIT) with a Ph.D degree in nuclear engineering. He held progressively more responsible positions in the utility's nuclear organization including executive director of nuclear activities and executive manager of engineering. He left the Company in 1983 to become president of the Delian Corporation, a Pittsburgh-based consulting firm. He returned as vice president of nuclear operations in early 1986.

Dr. Buckman completed the Harvard Business School's advanced management program in 1982 and earned a bachelor of science degree in engineering from the University of Michigan in 1966.

## PHILIP R. CLARK

Philip R. Clark, a 36-year veteran in the field of nuclear power is President, Chief Executive Officer and Chief Operating Officer of GPU Nuclear Corporation. He also is a Director of GPU Nuclear, GPU Service Corporation and Saxton Nuclear Experimental Corporation.

GPU Nuclear is a wholly owned subsidiary of General Public Utilities Corporation. It operates the Oyster Creek Nuclear Generating Station in Forked River, N.J.; Three Mile Island Unit 1 in Middletown, Pa.; and is responsible for the cleanup of the damaged Unit 2 reactor at Three Mile Island.

Mr. Clark is a Director of the Nuclear Utility Management and Resources Council (NUMARC), which represents the utility industry in generic nuclear regulatory matters, and a member of the NUMARC Executive Committee. He is also a Director of the Institute of Nuclear Power Operations (INPO), a non-profit organization of U.S. utilities devoted to excellence in commercial nuclear power.

In addition, he is a member of the Edison Electric Institute's Policy Committee on Energy Resources, the American Nuclear Society and the Power Generation Committee of the Association of Edison Illuminating Companies.

Before retiring from government service in August 1979, Mr. Clark worked as Associate Director, Reactors, Naval Reactor Division, U.S. Department of Energy, and as Chief, Reactor Engineering Division, Nuclear Power Directorate, Naval Sea Systems Command, Department of the Navy. In these positions, Clark reported to Admiral Hyman G. Rickover and directed a major element of the U.S. Naval Nuclear Propulsion Program.

He received the Navy Distinguished Civilian Service Award in 1972 and the U.S. Energy Research and Development Administration Special Achievement Award in 1976.

Mr. Clark earned a Bachelor's Degree in Civil Engineering in 1951 from Polytechnic Institute of Brooklyn, N.Y., where he did graduate study in 1951-53. He attended Oak Ridge School of Reactor Technology in 1953-54.

## SUSAN CLARK

Commissioner Clark was appointed by Governor Lawton Chiles to the Florida Public Service Commission in August 1991 to serve the remainder of a term which will expire in January 1995.

She served the Commission as General Counsel, representing the Commissioners in all state and federal courts, from 1988 until she was appointed Commissioner. Prior to that she served as Associate General Counsel and Deputy General Counsel from 1980 to 1988. While employed by the Commission, she participated in the development of Commission policies relating to cogeneration and conservation in the electric industry, restructuring of the telecommunications industry to accommodate competition, and streamlining the regulation of water and wastewater utilities.

Prior to her employment with the Public Service Commission, she was staff attorney with the Florida Joint Administrative Procedures Committee from 1977 to 1980, and was staff attorney for the Florida Senate Legislative Services from 1974 to 1977.

Commissioner Clark received her bachelor's degree in political science and her law degree from the University of Florida. She is a member of the Florida Bar, is admitted to practice in several Federal courts, including the U.S. Supreme Court, and is a member of the National Association of Regulatory Utility Commissioners Electricity Committee.

## JAMES H. DAVENPORT

James H. Davenport is the Special Deputy Attorney General, State of Nevada regarding implementation of the Nuclear Waste Policy Act and has served in this capacity since 1983. He is admitted to practice law before the United States Supreme Court, Washington State Supreme Court, State of Nevada Supreme Court, United States District Court, Eastern and Western Districts of Washington, and United States Court of Appeals for the Ninth Circuit.

From 1981 to 1983, Mr. Davenport was the Assistant Counsel, Environment and Public Works Committee, United States Senate. From 1977 to 1979, he was Assistant Attorney General, State of Washington. From 1974 to 1977, he was a law clerk for the Washington State Attorney General; for the Senate Judiciary Committee, Oregon State Legislature, 1975; and United States Attorney for Oregon, 1977.

Mr. Davenport participated in the development and drafting of the Nuclear Waste Policy Act of 1982 and in the U.S. Senate consideration of various low-level radioactive waste regional compacts. He has represented the State of Nevada in

litigation against the United States Department of Energy in the Ninth Circuit Court of Appeals regarding development of a high-level nuclear waste repository.

He also represented the State of Nevada in the Nuclear Regulatory Commission Petition for Rulemaking 60-1 (regarding NRC concurrence in 10 C.F.R. 960, DOE Guidelines for siting high-level nuclear repositories); Petition for rulemaking 60-2, 2A (regarding application of National Environmental Policy Act to NRC licensing of high-level nuclear waste repositories). Mr. Davenport participated as a negotiator in the Nuclear Regulatory Commission negotiated rulemaking on the submission and management of records and documents related to the licensing of a geologic repository for the disposal of high-level radioactive waste. He is a member of the National Association of Attorneys General, High Level Nuclear Waste Committee, and Atomic Energy Act Working Group.

#### **DR. E. LYNN DRAPER JR.**

Dr. E. Lynn Draper Jr. is Chairman, President and Chief Executive Officer of American Electric Power Company, Inc. He is also Chairman, President and Chief Executive Officer of the American Electric Power Service Corporation, the management and technology arm of the AEP System.

He became president of AEP and the Service Corporation in March 1992, following 13 years with Gulf States Utilities Company in Beaumont, Texas, where he served as chairman, president and chief executive officer. He became chairman, president and chief executive officer of AEP in May 1993.

Dr. Draper is also president of Ohio Valley Electric Corporation and its subsidiary, Indiana-Kentucky Electric Corporation. OVEC provides electric energy for the U.S. Department of Energy's uranium-enrichment facility in Piketon, Ohio.

He joined Gulf States Utilities in 1979 as technical assistant to the chairman of the board, then became vice president of nuclear technology in 1980 and senior vice president - engineering and technical services in 1981.

In 1982, he was elected senior vice president - external affairs, then was elevated to executive vice president - external affairs and production in 1985. He was named vice chairman, president and chief operating officer in 1986. Later the same year, he became vice chairman, president and chief executive officer, and in 1987 he was elected chairman, president and chief executive officer.

Before joining Gulf States Utilities, he had served on the faculty and administration at the University of Texas, where he had been an associate professor and director of the Nuclear Engineering Program.



He holds a bachelor of arts degree from Rice University, a bachelor of science degree in chemical engineering from the same institution, and a doctorate in nuclear science and engineering from Cornell University. He is a registered professional engineer in the state of Texas.

In February 1992, Dr. Draper was elected a member of the National Academy of Engineering, one of the highest distinctions for a professional engineer. He is a past president and former member of the board of directors of the American Nuclear Society. He is a member of the board of directors of the U.S. Council of Energy Awareness and Pacific Nuclear Systems, Inc. In addition, he has been a member of the board of directors of the Texas Commerce Bank - Beaumont and Southeast Texas, Inc., as well as a member of the Lamar University Board of Regents and the University of Texas Engineering Foundation Council. He presently serves as chairman of the board of directors of the Nuclear Management and Resources Council. He has also served as chairman of the Utility Nuclear Waste Management Group a consortium of 43 electric utilities.

Dr. Draper has edited books on nuclear power and the engineering aspects of fusion reactors and has written many major technical papers. He has been a frequent speaker on behalf of industry groups such as the Edison Electric Institute and the Atomic Industrial Forum.

#### **EMMIT J. GEORGE, JR.**

Emmit J. George, Jr. joined the three-member Iowa Utilities Board on May 1, 1991. Commissioner George was appointed by Governor Terry Branstad to a six-year term and confirmed by the Iowa Senate.

Commissioner George was named to the Electricity Committee of the National Association of Regulatory Utility Commissioners (NARUC) in November 1991. As a member of this committee, he will assist in formulating national energy policy on such issues as transmission access and electricity generation. He serves as Vice Chair of the NARUC Subcommittee on Nuclear Issues-Waste Disposal; NARUC Representative on Advisory Council to the Board of Directors of the Nuclear Electric Insurance Limited (NEIL); NARUC Representative to the International High-Level Radioactive Waste Management Conference.

Commissioner George received a J.D. degree from the University of Iowa in 1974. His undergraduate degree was from Central College in Pella, Iowa, where he majored in political science. Commissioner George practiced law in Iowa City for sixteen years. He has served as a part-time county judicial magistrate and an ad hoc mediator with the Iowa Public Employees Relations Board.

### CHARLES J. HAUGHNEY

Mr. Haughney is chief of the NRC's Storage and Transport Systems Branch. He is assigned responsibility for the safety review and the licensing of spent fuel storage systems and transportation packages. His licensing responsibilities would include the Monitored Retrievable Storage (MRS) facility.

His earlier NRC responsibilities have included reactor operating event analysis, safety review licensing and fuel cycle facilities, and management of the NRC's Headquarters Team Inspection Program for operating reactors. He has additional staff level experience as a reactor inspector, in emergency preparedness, fire protection inspector, quality assurance, and as a reactor construction inspector. He has also worked on safety reviews of plutonium fuel fabrication plants, and the West Valley reprocessing plant.

He served on active duty in the Naval Nuclear Program for 11 years including assignments as an instructor at the nuclear power school and the Chief Engineer of a nuclear attack submarine. There he received the foundation for his principle skills in reactor operations, maintenance, training and modifications.

### DR. JUDITH H. JOHNSRUD

Dr. Judith Johnsrud, State College, Pennsylvania, holds degrees in the field of Geography from Northwestern University, University of Wisconsin, and The Pennsylvania State University. Her doctoral research and subsequent specialization for twenty-five years have been in the Geography of Nuclear Energy. She has taught at Wayne State University, Southern Illinois University, State University of New York, Bucknell and Penn State.

Dr. Johnsrud is Director of the Pennsylvania-based Environmental Coalition on Nuclear Power, founded in 1970, and represents it on the Pennsylvania Advisory Committee on Low-Level Waste (but does not speak for the committee) and formerly on the Governor's Energy Council Advisory Committee. She has served as legal representative for citizens in the licensing of several power reactors, including Three Mile Island, Unit 2, in the NRC's Waste Confidence proceedings, and has litigated issues of radiation protection standards for radon. She has been a consultant for citizens' organizations on issues of "low" and high-level waste and "spent" fuel storage. She has served on the Boards and Science Advisory Boards of a number of public-interest environmental and public health organizations, including the Center for Atomic Radiation Studies and the Childhood Cancer Research Institute, and chaired the Board of Directors of the National Solar Lobby. Dr. Johnsrud has twice visited Chernobyl, co-leading the U.S. delegation to the International Conference "EuroChernobyl-2" in Kiev on the fifth anniversary of the accident.

### **DR. ANDREW C. KADAK**

Dr. Kadak is President and Chief Executive Officer of the Yankee Atomic Electric. In this capacity, he is responsible for overseeing all Yankee operations, including the Yankee plant in Rowe, Massachusetts, and engineering services to the Vermont Yankee Nuclear Power Station, Maine Yankee, Seabrook and other clients worldwide.

The Yankee plant was built in 1957 and started commercial operation in 1960. Its 32 year record of safe and economic operation set a standard for the nuclear industry. The Yankee plant was permanently shutdown by the owners in February 1992 and will be decommissioned in the future.

Dr. Kadak has spent his entire career in the nuclear energy field. He is a graduate of Union College '67 and received his masters and doctorate degrees in nuclear engineering from the Massachusetts Institute of Technology. He also received a master's degree in Business Administration from Northwestern University in 1983.

Dr. Kadak is quite active in the nuclear energy arena serving on many boards aimed at improving technology, regulatory processes and solving problems of the industry. He is a member of the Board of Directors of the American Nuclear Society, American Nuclear Energy Council, the New England Council and the American Committee on Radwaste Disposal.

### **RICHARD B. PRIORY**

Rick Priory is Executive Vice President of the power generation group for Duke Power Company, in Charlotte, N.C. The power generation group includes those departments responsible for operating and maintaining Duke's power plants. His responsibilities also include two of Duke's subsidiaries, Duke Engineering & Services, Inc. and Duke/Fluor Daniel.

He is a member of the board of directors of Duke Power Co.; chairman of the board of directors of Duke Engineering and Services, Inc.; president of Claiborne Energy Services, Inc.; a member of the boards of directors of Duke Energy Corporation and J. A. Jones Applied Research Company; chairman of the management committee of Louisiana Energy Services; and a member of the management committee of Duke/Fluor Daniel Company.

The Lakehurst, N.J., native graduated, magna cum laude, from West Virginia Institute of Technology with a bachelor of science degree in civil engineering and from Princeton University with a master of science degree in engineering. He is a graduate

of the University of Michigan's Public Utility Executive Program and Harvard University's Advanced Management Program.

Before joining Duke Power, Priory was a design engineer and project engineer at Union Carbide Corporation from 1969 to 1972, and an assistant professor of structural engineering at the University of North Carolina at Charlotte from 1973 to 1976. He served as a consultant to Duke Power from 1974 to 1976.

Mr. Priory joined Duke Power as a design engineer in 1976 and was promoted to senior engineer in 1977. He held progressively senior positions and was named senior vice president - generation and information services in 1988. Priory was elected to Duke Power's board of directors in 1990. In November 1991, he was elected executive vice president, power generation group.

He is a member of the board of directors of the Nuclear Management and Resources Council, the Power Generation committee of the Association of Edison Illuminating Companies, American Society of Civil Engineers, Charlotte Engineers Club, and Edison Electric Institute's Utility Nuclear Waste Executive Committee.

He is also a member of the board of visitors of the University of North Carolina at Charlotte and chairman of the board of the Charlotte-Mecklenberg Education Foundation. Mr. Priory served as president of the board of trustees of Discovery Place, Inc. for the 1992/93 term and has just completed a three-year term on the Charlotte-Mecklenberg Public Broadcasting Foundation. He served as vice chairman of the 1990 campaign drive for United Way of Central Carolina, Inc. and is a member of Calvary Church in Charlotte.

#### LYNN SHISHIDO-TOPEL

Lynn Shishido-Topel assumed Commissionership on the Illinois Commerce Commission in October 1989 and her current term extends until January 1995. Commissioner Shishido-Topel is Chairman of the Illinois Commerce Commission's Electric Policy Committee and is a member of the ICC Telecommunications, Water, and Economic Development Committees. She is a member of the National Association of Regulatory Utility Commissioners. She serves as Vice-Chairman of NARUC's Committee on Electricity and is Chairman of its Nuclear Waste Subcommittee. She was appointed to the Electric Power Research Institute's advisory council in 1991 and to the advisory council for the Institute of Nuclear Power Operations in 1992. Commissioner Shishido-Topel has represented the Illinois commerce Commission before the Federal Energy Regulatory Commission and the Nuclear Regulatory Commission.

Commissioner Shishido-Topel earned a Bachelor's degree in Economics from the University of Hawaii and a Masters and Ph.D. in Economics from UCLA. She was a

Visiting Assistant Professor in Economics at UCLA (1985-1986); and an Economist at Lexacon, Inc., Chicago (1986-1989).

### **DONALD A. STORM**

Commissioner Donald Storm was reappointed to a new term and to the Chair of the Minnesota Public Utilities Commission on January 6, 1992. This term will expire January 5, 1998. Prior to joining the Commission on December 6, 1991, Commissioner Storm served as a Minnesota State Senator (Assistant Minority Leader for Operational Management and Personnel, Caucus Chair of Redistricting Committee); a CEO in Human Service Management and Small Business; and Partner in International Trade and Development venture; Consultant in Program Development and Futures Planning. Commissioner Storm received a bachelor of arts degree from Lakeland College and a B.D. from the United Theological Seminary.

### **JIM SULLIVAN**

Commissioner Jim Sullivan was appointed President of the Alabama Public Service Commission in 1983-84 by then Governor George C. Wallace. He was elected to this position in 1984-88, and reelected in 1988-92 and 1992-96. With a B.S. degree in Business Administration from the University of Mississippi and a Masters in Banking and Finance and a Law degree from the University of Alabama, Commissioner Sullivan transformed the Commission into one of the top five state regulatory agencies in the United States. During his administration, Commissioner Sullivan has established the reputation in Alabama and our nation's capitol as an innovative leader in utility regulation, industry development and education.

Commissioner Sullivan was instrumental in developing incentive regulation, Rate Stabilization & Equalization (RSE) for the largest of Alabama's utilities. This innovative form of regulation has transformed the regulatory environment in Alabama from one of costly confrontation to cooperation and has been responsible for eleven rate decreases totalling \$119,000,000.00 for South Central Bell since 1986, while maintaining the company's financial integrity. RSE is now being used in other states after its notable success in Alabama.

Commissioner Sullivan is a member of the Alabama State Bar Association; a Board Member of Andalusia City Schools; Ex Officio Director, Alabama Liquefied Petroleum Gas Board; Member, National Association of Regulatory Utility Commissioners Electricity Committee/Subcommittee on Nuclear Waste; Member, Argonne National Laboratory Integral Fast Reactor Review Committee, Idaho Falls, Idaho; and a member of the Council of Chief State School Officers Distance Learning Steering Committee, Washington, D.C.

## **RONALD WATKINS**

Ron Watkins is President and Chief Executive Officer of the Nebraska Public Power District. He joined the NPPD in May 1989 from San Diego, Calif., where he was president of University Energy Company. Previously, he spent a year as an independent energy consultant. He has 20 years of utility management experience with San Diego Gas & Electric. He holds a bachelor's degree in mechanical engineering from West Virginia University and has taken several graduate courses at Stanford University and San Diego State University.

## **EVAN W. WOOLLACOTT**

Evan W. Woollacott is Commissioner and Vice Chairman, Connecticut Department of Public Utility Control. He assumed Commissionership May 14, 1991 to fill an unexpired term and subsequently assumed a full term, which will end June 30, 1995. He holds a bachelor's degree from Trinity College and a Masters of Business Administration from the Wharton School, University of Pennsylvania. Previously, he served as a First Lieutenant in the U.S. Army Nuclear Weapons Program; Vice President of Manufacturing, Combustion Engineering Nuclear and Fossil Steam Supply Systems; former Selectman, Deputy First Selectman and Town Meeting Moderator, Town of Simsbury; author; President, Simsbury Historical Society; former Chairman and member Connecticut State Advisory Council on Special Education; and Director of Learning Disabilities Association of Connecticut.