UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

July 22, 1980

The Honorable Jennings Randolph
Chairman, Committee on Environment
and Public Works
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

Enclosed are our responses to the questions on spent fuel storage and high-level waste disposal contained in your letter to me dated July 9, 1980. Thank you for this opportunity to express our views on these areas. We will be pleased to provide any additional information you require.

Sincerely,

John F. Ahearne

Enclosure:
Responses to Questions

Question 1: Please quote the substantive health and safety standard under which the proposed technical criteria for the disposal of high-level radioactive waste were issued. Is this the same standard under which the Commission contemplates acting upon applications to construct a geologic repository, to emplace radioactive waste therein and to decommission the facility? If not, please clarify.

The information follows:

The procedural requirements and the technical criteria would be issued under the same substantive health and safety standards. The authority is derived from section 202 of the Energy Reorganization Act of 1974, 42 U.S.C. 5842, which extends to the Commission "licensing and related regulatory authority pursuant to chapters 6, 7, 8, and 10 of the Atomic Energy Act of 1954, as amended, as to the following facilities of the Administration:

"(3) Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed under such Act.

"(4) Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Administration, which are not used for, or are part of, research and development activities."

The relevant provisions of the Atomic Energy Act include, most importantly;

"Chapter 6. Special Nuclear Material

"Sec. 53 Domestic Distribution of Special Nuclear Material (42 U.S.C. 2073)

"b. The Commission shall establish, by rule, minimum criteria for the issuance of specific or general licenses for the distribution of special nuclear material depending upon the degree of importance to the common defense and security or to the health and safety of the public of--

(1) the physical characteristics of the special nuclear material to be distributed;
(2) the quantities of special nuclear material to be distributed; and
(3) the intended use of the special nuclear material to be distributed.

"e. Each license issued pursuant to this section shall contain and be subject to the following conditions --

(7) special nuclear material shall be distributed only pursuant to such safety standards as may be established by rule of the Commission to protect health and to minimize danger to life or property."

"Chapter 7. Source Material

"Sec. 63 Domestic Distribution of Source Material (42 U.S.C. 2093)

"b. The Commission shall establish, by rule, minimum criteria for the issuance of specific or general licenses for the distribution of source material depending upon the degree of importance to the common defense and security or to the health and safety of the public of--

(1) the physical characteristics of the source material to be distributed;

(2) the quantities of source material to be distributed; and

(3) the intended use of the source material to be distributed.

"Chapter 8. Byproduct Material

"Sec. 81 Domestic Distribution (42 U.S.C. 2111)

"...The Commission shall not permit the distribution of any byproduct material to any licensee, and shall recall or order the recall of any distributed material from any licensee, who is not equipped to observe or who fails to observe such safety standards to protect health as may be established by the Commission or who uses such material in violation of law or regulaton of the Commission or in a manner other than as disclosed in the application therefor or approved by the Commission..."

The rulemaking authority of the Commission is further described in Chapter 14. General Authority as follows:

"Sec. 161. General Provisions. 42 U.S.C. 2201. In the performance of its functions the Commission is authorized to --

"b. Establish by rule, regulation, or order, such standards and instructions to govern the possession and use of special nuclear material, source material, and byproduct material as the Commission may deem necessary or desirable to promote the common defense and security or to protect health or to minimize danger to life or property.

"i. Prescribe such regulations or orders as it may deem necessary...(3) to govern any authority authorized pursuant to this Act, including standards and restrictions governing the design, location, and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property.

"o. Require by rule, regulation, or order, such reports, and the keeping of such records with respect to, and to provide for such inspections of, activities and studies of types specified in section 31 and of activities under licenses issud pursuant to sections 53, 63, 81, 103, and 104, as may be necessary to effectuate the purposes of this Act, including section 105; and

" p. Make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this Act."

The authority to prescribe the contents of license applications is further set forth in section 182 of the Act, 42 U.S.C. 2232, as follows:

"a. Each application for a license hereunder shall be in writing and shall specifically state such information as the Commission, by rule or regulation, may determine to be necessary to decide such of the technical and financial qualifications of the applicant, the character of the applicant, or any other qualifications of the applicant as the Commission may deem appropriate for the license..."

Additionally, our regulations and licensing decisions must be consistent with standards established by the Environmental Protection Agency in accordance with Reorganization Plan No. 3 of 1970, 5 U.S.C., App. at 827 (1976). That Plan transferred to EPA:

"The functions of the Atomic Energy Commission under the Atomic Energy Act of 1954, as amended, administered through its Division of Radiation Protection Standards, to the extent that such functions of the Commission consist of establishing generally applicable environmental standards for the protection of the general environment from radioactive material. As used herein, standards mean limits on radiation exposures or levels, or concentrations or quantities of radioactive material, in the general environment outside the boundaries of locations under the control of persons possessing or using radioactive material."

Question 2: Given the content of the proposed technical criteria mentioned above, would enactment of the following statutory standard for high-level waste repository construction, waste emplacement, and repository decommissioning delay final promulgation beyond January 1, 1982?

> "(1) such issuance would present no unreasonable risk to public health and safety or the common defense and security,
>
> (2) facility operation would conform to all applicable general environmental standards promulgated by the Administrator of the Environmental Protection Agency pursuant to authority under existing law, and
>
> (3) the facility would incorporate multiple independent barrier design that provides reasonable assurance each such barrier will contain the waste for the period determined by the Commission to be necessary to comply with paragraph (1) of this subsection."

The information follows:

Enactment of such a standard will not delay promulgation of the technical criteria beyond January 1, 1982. If a standard is to be promulgated, we recommend the following alternative language for item (3):

> "the facility would incorporate multiple independent barriers designed to provide reasonable assurance that each such barrier will contain the waste for the period determined by the Commission to be necessary to comply with paragraph (1) of this subsection."

Question 3: Please discuss the potential usefulness of an express statutory design requirement such as the one delineated in item (3) of the standard set out above in support of the Commission's defense-in-depth regulatory philosophy and the similar formulation in section 60.111(c) of the proposed technical criteria.

The information follows:

We do not feel that an express statutory design requirement would be useful at this time.

Under the Atomic Energy Act of 1954, as amended, licensing criteria for private activities are the promotion of common defense and security, protection of health, and minimization of danger to life and property. Together with our responsibilities under the National Environmental Policy Act, we believe that the Commission has enough discretion to assure that waste disposal facilities are technically sound, operationally safe, and environmentally acceptable.

Our existing authority is adequate and clear. We are concerned that the expression of new criteria or design specifications, to be applied at the time we are to exercise authority under Chapters 6, 7, and 8 of the Atomic Energy Act, will require the use of multiple (and possibly conflicting) standards in our adjudications.

The staff is currently responding to public comments on the Advanced Notice of Proposed Rulemaking (ANPR) on the technical rule that was published on May 13, 1980 (45FR31393). The purpose of the ANPR is to inform the public of the status of our efforts to develop technical criteria to invite their comments on our approach and technical considerations. Our defense-in-depth regulatory philosophy provides the foundation and framework for the technical criteria, and we are most interested in the comments of the public on this. Following our consideration of comments on this early draft, we will prepare the Proposed Rule for public review and comment. Our final position on this will be developed after full consideration of these comments.

Question 4: Does the Commission view an express statutory empowerment as desirable to clarify the Commission's authority to require the submission of a site characterization report, as contemplated by section 60.11 of the proposed licensing procedures, in advance of acting upon the in-depth characterization of a potential repository site? Please elaborate.

The information follows:

Yes. While we believe our existing authority (including section 14 of P.L. 95-601) does support the requirement that DOE submit site characterization reports, clarifying legislation should eliminate disputes and litigation that could otherwise complicate the regulatory process.

Question 5: Please comment on the effectiveness of the mechanisms provided by section 5 of the Subcommittee bill to assure that the pilot program established by that provision does not jeopardize national security interests. Specifically address the restrictions on implementing regulations imposed by subsection (e) and the Presidential suspension mechanism established by subsection (i).

The information follows:

The mechanisms provided by section 5 of the Subcommittee bill to assure that the pilot program established by that provision does not jeopardize national security interests are:

(1) the specific determination as part of the pilot program of whether such activities can be conducted in a manner to assure adequate protection of national security interests, (Subsection (b)(3));

(2) the requirement for the promulgation of regulations to include provisions for such assurance (Subsection (e)); and

(3) the provision for suspension of pilot program activities by Presidential Order if he determines that the common defense and security will be jeopardized (Subsection (i)).

The provisions of Subsection (i) provide a Presidential mechanism, and we believe this to be a reasonable approach.

Concerning Subsection (e), Chairman Ahearne and Commissioner Hendrie note that:

- In recommending a pilot program, the previous Commission recognized the difficulty of developing the system proposed in Subsection (e). Therefore it recommended not using defense waste. If the Senate approach were consistent with that position, rulemaking could be undertaken based on the results of the pilot program.

- The time provided for this rulemaking (one year after the date of enactment) is inadequate; the NRC staff advised that it would take approximately three years to promulgate a final regulation.

Commissioners Bradford and Gilinsky believe that the restrictions on implementing regulations imposed by Subsection (e) sensibly and effectively deal with the national security concerns that could be associated with regulation of defense wastes. A procedure to prevent unauthorized disclosures of restricted data or other national security information for NRC adjudicatory proceedings are already included in existing regulations, 10 CFR Part 2, Subpart I. As for the comment above concerning the views of the "previous Commission" regarding defense wastes, it should be noted that in the attached testimony delivered before the Congress on June 14, 1978, the Commission approved making defense wastes subject to NRC regulation.

Since his colleagues seem to try to imply some uncertainty in his views by the above remark, Commissioner Hendrie notes that his conclusion on whether the pilot program should include defense wastes, taken in concurrence with Chairman (then Commissioner) Ahearne and Commissioner Kennedy, followed a careful and detailed balancing of the issues involved and considerable discussion with the Department of Energy more than a year after the June 1978 testimony.

STATEMENT OF DR. JOSEPH M. HENDRIE, CHAIRMAN
UNITED STATES NUCLEAR REGULATORY COMMISSION
BEFORE THE SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
WEDNESDAY, JUNE 14, 1978

Mr. Chairman and members of the Subcommittee, I would like to begin by thanking you for this opportunity to discuss legislative approaches to the critical issue of nuclear waste management. Accompanying me today are Commissioners Gilinsky and Bradford.

As a preliminary observation I would like to express the Commission's view that the present statutory framework for regulating the waste management aspects of nuclear activities in the United States could be considerably improved. Federal agencies responsible for waste management must have clear legal authority to take whatever steps are necessary to continue to protect the public health and safety. Therefore, we believe that legislative changes in the Atomic Energy Act and Energy Reorganization Act would be desirable to ensure that waste management practices are regulated in accordance with a consistent set of standards.

NRC's Present Regulatory Authority Over Waste

Before addressing specific legislative proposals being considered here, I think it would be helpful to provide some

perspective for the discussion by briefly reviewing the NRC's present regulatory authority in the area of waste management. NRC authority to regulate radioactive waste is derived from three statutes: the Atomic Energy Act of 1954, the National Environmental Policy Act of 1969, and the Energy Reorganization Act of 1974.

The Atomic Energy Act authorized the NRC's predecessor -- the Atomic Energy Commission -- to license and regulate the possession and use of source, byproduct, and special nuclear material. AEC facilities and certain defense activities were exempted from this regime. The Act did not explicitly authorize regulation of radioactive waste facilities per se. Therefore, the Commission's authority to regulate waste under the Act is derived from its authority over licensable byproduct materials.

Under the National Environmental Policy Act, the Commission has additional implied authority over nuclear waste management associated with licensed activities. The Act permits the Commission to impose license conditions on waste management activities to minimize their environmental impacts.

Title II of the Energy Reorganization Act of 1974 transferred the AEC's licensing and regulatory authority to the NRC. The

Energy Research and Development Administration, now a part of the DOE, was exempted from NRC licensing authority, except as provided in Section 202 of the Act. Section 202 provides the only explicit statutory authority for NRC licensing of DOE waste management facilities. However, because waste facilities are neither production nor utilization facilities as defined by the Atomic Energy Act, waste facility licensing is currently implemented via licensing the possession of materials. Such licensing does not focus on the predominant licensing interest which is the purpose of the facility. Thus, the Commission believes that licensing of repositories intended to handle a significant amount of waste should be done on a facility basis rather than a materials licensing basis. Accordingly, the statute should be amended to establish waste management facilities as a third category in addition to production and utilization facilities and materials, subject to direct licensing by the Commission. Establishment of a third class of licenses would allow the Commission to develop a suitable licensing procedure.

Section 202, subsection (3) specifically requires an NRC license for any DOE facility used primarily for the receipt or storage of high-level radioactive waste resulting from activities licensed by the NRC. In our view this NRC authority

extends to DOE temporary storage of commercially produced irradiated nuclear fuel because spent reactor fuel should be regarded as high-level waste. Storage of spent fuel involves similar technical problems and levels of radiation hazard similar to those associated with the storage of high-level waste. Therefore, the Commission believes that any DOE away-from-reactor spent fuel facility (usually known by the acronym AFR) would require an NRC license under the present statutory scheme. However, as I will note later, we would welcome statutory language in any bill which is adopted that would make this authority unmistakably clear.

Subsection 202(4) of the 1974 Act provides for NRC licensing of DOE facilities authorized for the express purpose of long-term storage of high-level radioactive waste generated by DOE activities. However, the long-term storage or disposal of DOE-generated high-level waste in a DOE research or development facility currently does not require an NRC license, although such action may present similar potential health and safety problems.

High-level waste and spent fuel are not the only forms of waste which present the possibility of significant long-term health hazards. Trans-uranic wastes (TRU) also present a potential long-term radiation hazard. Under the current,

long-standing interpretation used by the Commission, TRU has not been categorized as high-level waste. In view of this interpretation, the Commission could not clearly assert statutory authority over TRU wastes at DOE facilities. Uranium mill tailings produced in the initial stages of the uranium fuel cycle are also a subject of growing concern because of the hazard associated with long-term radon emissions. Yet the Commission currently lacks statutory authority over uranium mill tailings except indirectly through the licensing of milling operations. I will return to these issues at a later point in my testimony.

Under Section 274 of the Atomic Energy Act, the NRC may transfer some regulatory authority over byproduct, source and special nuclear material to the states by means of a formal agreement process. Pursuant to such agreements, several states currently license commercially operated burial sites for low-level radioactive waste, uranium milling operations, and decommissioned facilities.

Revising the Regulatory Framework for Waste Management

The brief statutory outline I have just presented illustrates the disjointed nature of the NRC's current authority over nuclear waste management. In the future, as wastes accumulate, this uneven pattern of authority could lead to confusion about

the exercise of effective regulatory control over several potentially hazardous waste management activities. Therefore, it is appropriate for Congress to review the current regulatory situation and to adopt a regulatory framework which will not only be logical and coherent, but will also be flexible enough to reflect the realities of the nuclear industry and to accommodate future advances in technology.

In formulating views about the proper scope of NRC jurisdiction over current and future waste management activities the Commission has been guided by two primary considerations. The first is that nuclear wastes which have comparable properties and hazard levels should be dealt with in ways which provide comparable levels of public protection. The nation would be ill-served by any regulatory scheme which would permit hazardous materials of a similar character to be governed by widely differing measures of protection, merely as a result of fragmented institutional arrangements.

The second consideration which has shaped the Commission's view of NRC's appropriate role concerning waste management rests on our belief in the value of the regulatory process in assuring the public health and safety. When it enacted the Energy Reorganization Act of 1974, Congress established a basic principle that continued development of nuclear

energy should be subject to the separate scrutiny of an independent regulatory agency. To give body and meaning to this principle, activities associated with the nuclear fuel cycle which may involve significant, long-term risks to the public health and safety should, in our view, be subject to the kind of scrutiny typically afforded by NRC licensing and regulation. We see two principal benefits in such NRC involvement. First, the independent perspective and institutional competence of the Commission can make an important contribution to assuring that all aspects of an activity which may impact upon the public health and safety are thoroughly and objectively analyzed. Second, the regulatory process provides a structured means of involving concerned members of the public in decisionmaking on issues affecting their interests.

In view of this need to revise the regulatory framework for waste management, the Commission believes that legislation strengthening or clarifying NRC's statutory authority in this area would be desirable. For convenience, I have divided the following discussion of the Commission's specific recommendations into three categories. First, I will list several activities where NRC should possess clear licensing authority. Second, there are activities where licensing

may not always be practical or appropriate, but where NRC should have a combination of licensing authority and expanded regulatory involvement. Third, there are other major issues arising from the legislative proposals before you which I will address in the final portion of my remarks.

Activities Warranting Expanded NRC Authority

We think that an important initial legislative judgment which must be made in connection with the bills currently before this Committee is the extent to which the Commission's regulatory authority should be enlarged -- especially with regard to DOE facilities. The Commission has identified several specific areas which it believes require clear NRC licensing authority.

° Waste Isolation Pilot Plant

Under current DOE plans, the Waste Isolation Pilot Plant (WIPP) will be the first federal radioactive waste facility for the disposal of trans-uranic and some high-level wastes. We agree with the conclusion of the DOE Task Force for Review of Nuclear Waste Management that NRC licensing of WIPP is appropriate because of the potential health and safety hazards arising from the long time periods associated with the wastes it will receive. These hazards have justifiably led the public to expect NRC review as part of the government's licensing

procedure. In addition, NRC licensing will provide important experience for future Commission licensing actions of other disposal facilities.

° Away-From-Reactor Storage

As already mentioned, we believe that a fair reading of the Energy Reorganization Act of 1974 grants the Commission authority to license AFRs. However, because AFRs present health and safety hazards similar to those associated with the commercial storage of spent fuel which is licensed by the Commission, we would welcome statutory language which would make this authority unmistakably clear.

° Trans-Uranic Contaminated Wastes

Trans-uranic contaminated wastes contain quantities of long-lived radioactive material which remain hazardous for very long periods of time. Thus, their safe disposal requires that they remain isolated from the biosphere for very long time periods. We believe that the viability of such long-term isolation will be enhanced by subjecting disposal facilities for trans-uranic wastes to NRC licensing.

° Waste Solidification Facilities

Waste solidification facilities should be subject to full NRC licensing because they are closely associated with NRC-licensed waste repositories. The final product from a waste

solidification facility must be in an acceptable form and of high enough quality to satisfy NRC disposal requirements. The necessary compatibility between final waste form and repository design can best be achieved by continuous NRC monitoring of the waste solidification process in an NRC-approved solidification facility.

In addition to those activities which we believe should be subject to NRC licensing, the Commission has identified other waste management activities for which a combination of regulation and licensing would be more appropriate in light of existing conditions.

- High-Level Waste Tanks

The storage of DOE-generated high-level liquid waste in surface tanks presents what is perhaps the most significant current health and safety hazard involving nuclear wastes. However, for reasons I will detail shortly, licensing of these existing facilities would not be meaningful. Instead, the Commission believes that a specifically tailored method of regulatory oversight by the NRC would be a more sensible and realistic alternative for protecting public health and safety. Such regulation would include four main elements. NRC should possess authority to: require DOE to supply all information requested; review the health and safety aspects

of existing facilities; make recommendations for resolving any identified problems; and concur in any DOE plans for remedial action concerning problems identified by the NRC.

Unlike existing tanks, it might be reasonable to make new DOE surface storage tanks subject to NRC licensing, like any other new facility. In considering whether the Commission should be given this authority, the unique role of these tanks in the defense-related processing chain should be kept in mind. Regulatory oversight may provide sufficient protection to the public here because new tanks will be located on relatively isolated federal installations, and will be built and operated by another federal agency with extensive experience and expertise in the field. On the other hand, the potential hazards associated with these tanks could justify their licensing by NRC whenever practical.

° Low-Level Wastes

Currently the NRC has no regulatory authority over DOE low-level waste disposal sites. Several of these facilities are inactive. Others, though active, already contain substantial quantities of low-level wastes in shallow land-burial facilities. These passive existing facilities are not amenable to licensing for reasons which I will detail later. Therefore, the Commission believes that the more limited regulatory oversight already

discussed for existing waste tanks would also be appropriate here.

New DOE low-level waste facilities and existing DOE facilities used for the disposal of commercially generated low-level waste can and should be subjected to full NRC licensing authority for the same health and safety reasons which support NRC licensing authority over commercially generated low-level waste facilities.

For the most part, NRC licensing authority over commercially operated low-level waste facilities has been transferred to the states under the Agreement States program. Under that program, the Commission can reassert its authority only if it finds that public health and safety requires termination or suspension of a State Agreement. The Commission believes that this standard is too strict to be effective. We recommend amending Section 274 of the Atomic Energy Act to authorize the Commission to set minimum standards for facility operation, and to permit the Commission to reassert its authority if states fail to comply with those standards.

Uranium Mill Tailings

The Commission supports the provisions in S. 3146 which would extend the Atomic Energy Act's definition of licensable by-product material to include uranium mill tailings. We note

that S. 3146 would also specifically amend Section 274 to permit regulation of mill tailings by the states, pursuant to a suitable agreement which provides that NRC standards shall be met or exceeded. The Commission endorses the concept of requiring that mill tailings be disposed of in a manner that meets or exceeds national standards set by the NRC. We note with regard to a related legislative proposal by the Department of Energy that the proposed remedial action programs in cooperation with the states at abandoned tailings sites will, as we have urged, be made subject to review and concurrence by the NRC as a way of assuring uniformity of treatment. There are, however, aspects of S. 3146 as it affects the states which require clarification. At present, the states exert control over tailings piles through their inherent police power to protect public health and safety. By giving NRC direct authority over tailings, passage of S. 3146 would terminate this state control abruptly through federal preemption. State regulation of tailings would remain preempted until the states enter into new or revised Section 274 agreements. Where a state has shown an active interest in the control of tailings piles and would seek to continue its authority by means of a Section 274 agreement, such a lapse of authority would be unnecessarily unsettling. What is needed is legislative

provision for a transition period which allows for a state role and makes clear what standards shall apply while new Section 274 agreements are being negotiated. The Commission has been working on legislation which would establish Commission control over mill tailings in a manner similar to S. 3146. This proposal provides for a transition period during which the states may continue to regulate mill tailings, pending completion of a modified agreement in accordance with Section 274.

Estimated NRC Resource Requirements

These expanded NRC responsibilities would require substantial additional manpower and budget resources. While no precise estimates are available at this time, we have made a very rough preliminary evaluation of resource requirements necessary to implement the proposed new licensing authority. However, we have not attempted, at this time, to estimate resources which would be required to fully implement the proposed regulatory oversight program because we do not have detailed information concerning the present state of existing facilities. Thus, we cannot estimate the extent of remedial actions they might require, or what NRC resources might be reasonably required to monitor any remedial program. Therefore, at this time the Commission can only estimate the resources

required to review existing conditions in those areas which might be subject to regulatory oversight. In the judgment of the NRC staff, the likely budgetary and staffing impact of the proposed expansion of NRC licensing and regulatory activities discussed in this statement would be the order of 120 persons and $4 to $5 million per year. This estimate is for a program which has reached a fully developed stage.

Other Major Issues

Having discussed possible expansions in NRC licensing or regulatory authority over waste management, I would now like to turn to several other major issues which arise from the bills being considered today.

° Licensing of DOE Research and Development Facilities

S. 3146 would expand NRC jurisdiction over DOE research and development facilities now excluded under Subsection 202(4) of the Energy Reorganization Act. The only exemption would be for facilities subject to a Presidential waiver, a feature of the legislation I will discuss later. S. 2804 would not go as far, and would exempt certain operations at existing federal installations. However, both bills would extend NRC licensing authority to DOE research and development activities

without regard to their scope. The Commission believes that protection of public health and safety does not require NRC licensing of DOE short-term activities or facilities designed for small quantities of waste. NRC licensing of numerous small DOE research and development waste activities would also be impracticable because their diversity would require Commission resources incommensurate with any potential increase in the protection of public health and safety.

Therefore, the Commission recommends that its licensing authority over DOE research and development activities be limited to those facilities which are large enough to present potential public health and safety hazards requiring more than DOE self-regulation. This class should include any sufficiently large facilities intended to demonstrate long-term storage or disposal. The suitable limits on NRC authority in this area could be established by setting a legislative threshold, or by authorizing the Commission to establish by rule or regulation which DOE facilites will be excluded from licensing.

° Licensing of Existing DOE Facilities

The provision in S. 3146 for NRC licensing of existing DOE facilities would present practical difficulties for NRC. These difficulties are readily apparent in the case of the

DOE carbon-steel tanks used to store most of the high-level waste from the defense program. Under S. 3146 the Commission would presumably be called upon to license these tank storage facilities or to determine what remedial actions should be taken to make them licensable. For NRC to issue a license for these tank facilities would carry a clear implication that the tanks meet some reasonably stringent set of standards that might have been established prospectively, had the facilities been subject to licensing at the time they were originally proposed and built.

Alternatively, S. 3146 would require the NRC to specify remedial action either to make the defense waste facilities licensable or somehow to satisfactorily terminate existing operations. The practical difficulty here is that the NRC cannot specify and direct such remedial actions because the necessary technology may not be available, although DOE has suggested several alternative possibilities for managing defense high-level waste.

Many short-term DOE storage facilities are part of DOE reactors and reprocessing facilities which temporarily store waste as part of their ongoing activities. The Commission has no licensing authority over the primary activities of these facilities and did not always perform safety reviews

when these facilities were built. Therefore, the Commission doubts whether it is practical and possible to license only the waste-storage parts of otherwise unlicensed facilities.

° Role of State Governments

S. 2761 provides for state participation in waste facility licensing proceedings and for a state veto over NRC authorization of a waste facility. The Commission believes it appropriate to give statutory recognition to the legitimate concerns of states in which waste facilities may be located. However, provision for a state veto does mean that a relatively small percentage of the American people will be empowered to halt or seriously impede nuclear development throughout the country even if the normal regulatory processes lead to the conclusion that the wastes can be safely stored and disposed of. Therefore, we recommend that any state veto be carefully drafted to clarify the circumstances under which it could be exercised. This would include requiring the state to exercise all reasonable means of resolving its difficulties.

The Commission recommends that emphasis be placed on state participation in the licensing process for waste management activities. Under present regulations, the states are entitled to participate fully as a party to any licensing

proceeding. We believe that state participation should begin with DOE's site selection procedure and continue through the NRC's licensing review process. With the states thus having participated in the licensing process, we think it reasonable to limit the opportunity for a formal state veto to the time at which a final decision is made to fully authorize facility construction.

° Presidential Exemption

S. 3146 provides a Presidential waiver or exemption from NRC licensing of DOE waste facilities if such a course is deemed necessary in the interests of national security. The Commission does not object in principle to such a provision. However, the need for such an exemption would be substantially diminished if the NRC's licensing authority over DOE research and development activities were to be limited as I have suggested in an earlier portion of my remarks.

Furthermore, we believe that any reintroduction of the Executive Branch into the licensing process should be limited to matters directly involving military or national defense activities of the government. Therefore, we recommend a waiver applicable only to the temporary storage of defense-related wastes.

This limited standard would satisfy the national interests in both security and public welfare by recognizing the need for temporary emergency action, while preserving the NRC's authority to regulate hazardous activities.

° Alternative Sites

S. 3146 would require each license application for a waste facility to identify alternative sites and provide whatever information concerning them that the Commission deems sufficient. The Commission, consistent with its responsibilities under the National Environmental Policy Act, already requires power plant license applicants to identify and evaluate alternative sites in accordance with an "obviously superior" standard. Under the standard, a proposed site is compared with alternatives and would be rejected only if another alternative is obviously superior. This is not necessarily the standard that we would apply to all waste facilities, but an alternate site review to at least this level will be done under NEPA.

We also believe that extensive state participation in DOE's site selection process will ensure the consideration of reasonable alternatives. Therefore, we do not see a clear need for an additional explicit statutory directive to consider alternative sites. The Commission would also

observe that it is possible that geologic factors will cause one or a limited number of sites to be particularly well-suited for waste disposal. Therefore, site selection must be somewhat flexible as is already realized by the "rule of reason" interpretation of requirements in the National Environmental Policy Act.

° Study and Report

S. 3146 directs the Commission to undertake a comprehensive study to determine whether sufficient information exists to support a conclusion that a sound method and plan are available for waste disposal. Waste management studies of several types have already been conducted by the American Physical Society and to some extent by the Ford-Mitre Nuclear Energy Policy Study Group. Related efforts, in which the NRC may participate, are being conducted by the Interagency Review Group on Nuclear Waste Management.

A study of the type suggested would require additional resources or divert Commission resources currently devoted to developing a waste management regulatory program. The Commission recommends that, if the NRC is to conduct a study, it should focus on determining the stage of development of various areas of disposal technology, and suggesting areas needing additional examination.

Such a study would enable the Commission to help ensure that effort is being applied to areas needing it.

Question 6: Does the Commission believe the nuclear waste management schedule established by section 7 of the Subcommittee bill is realistic? Please elaborate.

The information follows:

Section 7 would establish the following schedule for developing and licensing a waste repository:

Subsection	Deadline	Action
(a)	1/1/81	EPA to issue generally applicable standards for offsite release of radioactivity from facilities.
(b)	1/1/82	NRC to issue technical criteria applicable to geologic waste facilities.
(c)	1/1/85	DOE to submit to NRC at least four site characterization plans for geologic disposal facilities.
(d)	1/1/89	DOE to apply to NRC for construction authorization.
(e)	1/1/93	NRC to act on DOE application for construction authorization.
(f)	1/1/98	DOE to apply to NRC for authorization to emplace waste.
(g)	1/1/2000	NRC to act on DOE application for authorization to emplace waste.

We believe the dates to be realistic. We suggest that you contact EPA about the deadline to issue their standards by January 1, 1981. The drafts of those standards have not been issued for comment and it normally takes several months after drafts are issued to resolve comments and issue the standards in final form.

The January 1, 1982 date for the NRC regulation is realistic if no hearings are requested on the rulemaking. We hope by involving all interested parties in formulation of the rule to eliminate the need for hearings. To be on the safe side we suggest the date of July 1, 1982 be used in the event a hearing is held.

Question 7: How many of the sites at which commercial nuclear powerplants are currently licensed to operate can accommodate an additional independent spent fuel storage installation?

The information follows:

Any nuclear powerplant site chosen for the site of an independent spent fuel storage installation (ISFSI) would require a technical review to determine its suitability and may require a NEPA review which would include an evalution of alternative sites. Most operating powerplant sites would have sufficient room to accommodate an ISFSI.

Question 8: Would unrestricted eligiblity for a Federal away-from-reactor storage program inhibit utilization of evolving techniques, such as pin compaction, for more efficient storage in on-site spent fuel storage installations?

The information follows:

While we cannot predict the actions of individual reactor licensees, we note that the Department of Energy is encouraging maximizing storage of spent fuel at reactor basins. To this end, the Department of Energy, through its Savannah River Operations and the Nuclear Assurance Corporation (NAC), has evaluated pin compaction. The abstract of the NAC report, "Alternatives for Water Basin Spent Fuel Storage Using Pin Storage (SRO-1051-3, NAC-C-7917, Part III), issued in September 1979 is attached.

ABSTRACT

The Department of Energy has sponsored a project to evaluate nuclear spent fuel storage techniques in support of the International Spent Fuel Storage Program. Pursuant to that project, Nuclear Assurance Corporation has evaluated spent fuel storage using pin storage as part of the study of advanced spent fuel storage methods.

The densest tolerable form for storing spent nuclear fuel is storage of only the fuel rods. This eliminates the space between the fuel rods and frees the hardware to be treated as non-fuel waste. The storage density can be as much as 1.07 MTU/ft^2 when racks are used that just satisfy the criticality and thermal limitations. One of the major advantages of pin storage is that it is compatible with existing racks; however, this reduces the storage density to 0.69 MTU/ft^2. Even this is a substantial increase over the 0.39 MTU/ft^2 that is achievable with current high capacity stainless steel racks which have been selected as the bases for comparison.

Disassembly requires extensive operation on the fuel assembly to remove the upper end fitting and extract the fuel rods from the assembly skeleton. These operations will be performed with the aid of an elevator to raise the assembly where each fuel rod is grappled. Lowering the elevator will free the fuel rod for transfer to the storage canister. A storage savings of $1510 per MTU can be realized if the pin storage concept is

incorporated at a new away from reactor facility. The storage cost ranges from $3340 to $7820 per MTU of fuel stored with the lower cost applying to storage at an existing away from reactor storage facility and the higher cost applying to at reactor storage.

Question 9: In order to minimize the number of spent fuel shipments and their attendant risk to public health and safety, is it advisable to restrict eligibility for Federal away-from-reactor storage capacity to those licensees who are unable through a good faith effort to provide in a timely manner for their own spent fuel storage requirements at the reactor site?

The information follows:

With two exceptions all operating commercial light water reactors in the United States already have increased their reactor basin capacities or have applied to do so. As to restricting eligibility for any Federal away-from-reactor (AFR) storage capacity to licensees who are unable through a good faith effort to provide for their needs, the Department of Energy has already indicated that this will be its policy. The two exceptions noted are San Onofre Unit 1, which plans to utilize space in the pool of Unit 2 now under construction, and Dresden Unit 1, which can utilize the Dresden Unit 2 and 3 basin.

Question 10: In the judgment of the Commission, has the principal impediment to the expansion of the capacity of existing spent fuel storage pools at reactor sites been the length of time required for Commission review and approval, including the opportunity for a public hearing, the uncertainty concerning the availability of Federal away-from-reactor storage, or some other factor? Which of the foregoing factors has been the principal impediment to the on-site construction of new independent spent fuel storage installations?

The information follows:

The Commission is not aware of a serious impediment to the expansion of existing spent fuel storage pools at reactor sites. With two exceptions, all operating commercial light water reactors have expanded or are in the process of seeking authorization to expand their basin capacities. Some have done so more than once. Where difficulties do arise, as noted in the Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel (NUREG-0575) issued in August 1979, it is with older reactors which have already expanded their basin capacities and will need additional storage capacitie. in independent spent fuel storage installations either at reactor or at away-from-reactor sites.

The uncertainty concerning whether or not there will be a Federal away-from-reactor spent fuel storage program has been cited by one licensee, the General Electric Company, in its request for suspension of proceedings in its application to expand pool size at its independent spent fuel storage installation (ISFSI) at Morris, Illinois. While we suspect that this uncertainty may likewise be impacting decisions by utilities considering construction and operation of an at-reactor-site ISFSI, we have no confirmation of this.

QUESTION 11:

Please indicate the number of licensee applications submitted to date to expand the capacity of existing spent fuel storage pools, the number of such applications upon which the Commission has acted, the average period from the submission of an application to the commencement of use of the additional capacity, the average period for Commission review of such applications, the number of such applications on which a public hearing was conducted, and the average length of such a hearing.

The information follows:

The originally intended spent fuel storage capacity of operating reactors may have been modified either during the OL review process by a licensee submittal which contains a revised description of the spent fuel storage pool and supporting analyses, or after the OL is issued by submitting an application to amend the license which also contains a description of the new spent fuel storage pool and supporting analyses. Staff review and action during the OL review is part of the reactor licensing review; it is not a separate action. Staff review after the OL is issued is a separate and distinct action which results in a license amendment.

All of the recently licensed reactor facilities have increased the spent fuel pool storage capacity during the OL review process. In addition, all of the older operating reactors except for Dresden 1 and San Onofre have had one or more applications to increase spent fuel storage capacity submitted to the Commission for review and approval. (Indian Point 1 and Humboldt Bay are shutdown indefinitely and are therefore not considered to be operating reactors). To date, there have been 55 applications to increase the spent fuel storage capacity. Of these 55 applications, 8 applications are for a second expansion of storage capacity. A total of 46 applications have been approved; this number includes 3 of the second time expansions.

The medium time from date of application to approval date is about ten months. We do not know the additional time required by the licensee to install and begin to use the new storage racks, but a licensee has typically taken three to nine months to rerack their spent fuel pool after authorization from NRC has been given. This time depends on (1) how much preparatory work can be done before the authorization to rerack is given, (2) how much work must be done under water, (3) the number and design of the racks - they may be freestanding and easily removed or installed in the pool, or they may be bolted or welded in place, (4) the amount of spent fuel in the pool during the reracking and (5) the method of packaging of the old racks.

Requests for intervention have been received in 14 applications. Hearings were actually initiated in 7 cases. The medium time between initiation of the hearing to initial decision date was about five months for 6 cases. An initial decision on the seventh case has not yet been issued; about 14 months has elapsed since initiation of that hearing. In several instances additional time was taken up by appeal.

Question 12: What is the Commission's projection of the average period from submission of an application to construct an onsite independent spent fuel storage installation to the commencement of facility operation? Please provide a breakdown of this projection, including the period for a public hearing if requested and conducted?

The information follows:

Since the time required for an onsite independent spent fuel installation (ISFSI) to be licensed, constructed and in operation is projected to be less than that for an ISFSI at a new site because some steps will be abbreviated, we will first look at the steps for an ISFSI at a new site and then discuss how these will be affected by locating an ISFSI at the site of an existing facility. Some of the steps shown involve necessary pre-submission activities. Whether one considers them as part of the application-to-operation period or not, they must be accounted for in any assessment of how long it will take to have an operating ISFSI.

We estimate that it would take about 5 years to get a new AFR on line at a new site. The steps involved include: (1) site investigations, (2) facility design, (3) preparation of the license application (Safety Analysis Report and Environment Report), (4) staff licensing review, (5) public hearing, (6) facility construction, and (7) pre-operational testing. The first three steps would likely take at least one year by the applicant. The staff's licensing review, including issuance of a final environmental impact statement, should be completed in about one year followed by an expected public hearing process (pre-hearings, discovery, evidentiary hearing, decision) taking at least 7-8 months, but perhaps two years or more. (Some of this elapsed time would be concurrent with other steps such that the two year period would extend total time only by a net period of a year or so.) Construction should be completed in 18-24 months followed by 2-3 months of pre-operational testing preparatory to receiving the initial spent fuel.

If the independent spent fuel storage facility is proposed for construction on the site of a reactor, the timing could be shortened to about 4 years. Preparation of the application by the applicant would require less time because of available site data and environmental information. Staff licensing review time would be less if an environmental assessment is prepared rather than a full environmental impact statement. Other aspects would be comparable in timing.

Question 13: In light of the discussion in item 10 of Issues Addressed to Public Comments, Enclosure "A", SECY 80-236, and the provisions to streamline Commission review and approval contained in the pending license requirements for independent spent fuel storage installation (10 CFR Part 72), is there a need to further streamline this procedure through legislative enactment? Would such an enactment create further delay and uncertainty given the imminence of final Commission action on 10 CFR Part 72?

The information follows:

We do not believe that legislative action is needed to streamline the procedures discussed in item 10, "One License Application and One Safety Analysis Report," of Enclosure A of SECY 80-236. Such enactment at this time could create delay and uncertainty in the effective implementation of 10 CFR Part 72.

Question 14: Would the approach embodied in pending rules 10 CFR 72.31(b) and 72.34 better serve the health and safety of the public than allowing construction to commence on onsite independent spent fuel storage installations in advance of the opportunity for a public hearing?

The information follows:

The approach embodied in proposed 10 CFR Part 72, Sections 10 CFR Part 72.31(b) and 10 CFR Part 72.34 would better serve the health and safety of the public than allowing construction to commence on onsite independent spent fuel storage installations in advance of the opportunity for public hearing. In the event of overriding circumstances the Commission, under proposed 10 CFR Part 72, section 10 CFR Part 72.7 "Specific Exemptions," could grant an exemption to allow such construction should it determine that an exemption is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest.