PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 13, 1999

The Honorable Ken Calvert, Chairman
Subcommittee on Energy and Environment
Committee on Science
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

Thank you for the opportunity to appear before your Subcommittee on July 22, 1999, to discuss the important issues regarding the "External Regulation of DOE Facilities: Pilot Project Results."

I am enclosing the NRC responses to post-hearing questions. Please contact me if I can be of further assistance.

Sincerely,

Greta Joy Dicus

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Enclosure:
As stated

cc: Representative Jerry F. Costello

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PDR COMMS

Majority Questions and Answers

QUESTION 1. DOE is worried about NRC holding DOE strictly accountable to its regulation, thus creating substantial cost uncertainty. What example can you cite showing NRC flexibility?

ANSWER.

Several examples that demonstrate NRC's flexibility in regulating DOE are shown below:

(1) In the case of licensing the Three Mile Island-2 Independent Spent Fuel Storage Installation (ISFSI), the NRC clearly demonstrated its flexible licensing process by granting DOE an exemption from our generic seismic requirements. DOE applied for this exemption with a well-based safety analysis that allowed the staff to favorably adopt DOE's safety basis and grant the exemption.

(2) For a number of the recent foreign spent fuel shipments, NRC has granted DOE an exemption from the existing requirements that would otherwise delay public notification of the shipments.

(3) During the Radiochemical Engineering Development Center (REDC) pilot project, the NRC found that DOE could readily develop a compelling case for granting an exemption from criticality alarm requirements for a large hot cell.

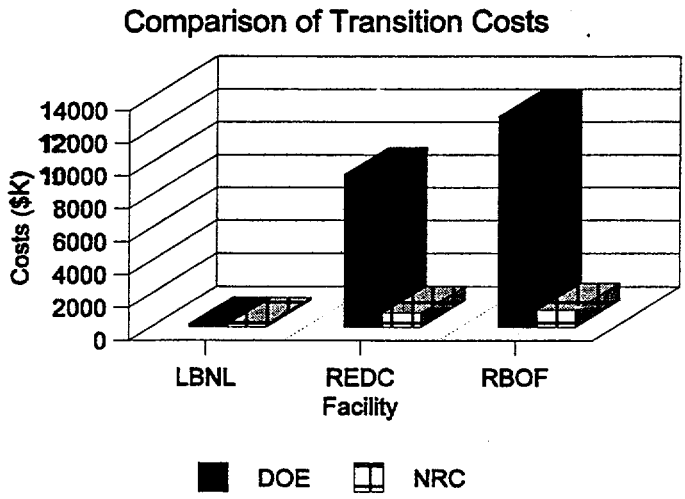
(4) For the Lawrence Berkeley National Laboratory (LBNL) pilot project, NRC stated that under existing regulations, it could approve an alternative schedule for decommissioning the Bevatron, as long as public health and safety are protected.

QUESTION 2. You state in your testimony that NRC believes "that DOE's cost estimates for making the transition to external regulation are considerably higher than is justified." How much higher, and what accounts for the differences?

ANSWER.

The pilot projects provide good examples to compare the cost estimates for external regulation. This comparison is shown in the NRC Report on the Pilot Project on External Regulation of Department of Energy Nuclear Facilities (NUREG-1708, enclosed).

The following graph provides a comparison of the DOE and NRC cost estimates for transitioning the three DOE facilities considered in the Pilot Program, including Lawrence Berkeley National Laboratory (LBNL), the Radiochemical Engineering Development Center (REDC), and the Receiving Basin for Offsite Fuel (RBOF). The graph shows the upper end of the ranges of costs for each facility, as estimated by NRC and DOE.



LBNL

The cost estimates for this facility are similar. The principal cost difference between the DOE and NRC cost estimates on LBNL is that the DOE report includes a discussion of the possible $80 million cost for decommissioning at LBNL as being associated with external regulation. This estimate is not included in the DOE cost total; however, it is included in the DOE report as a possible cost of external regulation. It is NRC's view that the decommissioning of facilities at LBNL would occur regardless of whether DOE were subject to external regulation. Furthermore, existing NRC requirements could allow for an alternate schedule and would take into account the overall DOE decommissioning needs in determining an appropriate schedule. DOE also includes a $30 thousand estimate for a radiological evacuation plan that the NRC has indicated would not be needed under NRC regulation.

REDC

The principal cost differences between the cost estimates in the DOE and NRC reports on REDC are that: (1) DOE included $4 million cost for installing criticality accident alarms that the NRC concluded would not be needed; and (2) DOE included several million dollars in cost for procedural changes (and drawing verification) in areas where the NRC concluded that the current procedures are acceptable.

RBOF

The DOE cost estimate for NRC regulation of RBOF is roughly a factor of 5 to 13 times higher than NRC's cost estimate. NRC is convinced that RBOF can be transferred to NRC regulation for roughly $1 million and thereafter regulated for roughly $250 thousand (plus annual fee) per year or less. The principal differences between the DOE and NRC reported cost estimates are attributable to DOE inclusion of roughly $12 million in changes to RBOF facilities, staffing, documentation, and activities even though NRC determined such changes would not be necessary for NRC regulation of RBOF. Further, DOE has emphasized that its costs for DOE oversight of RBOF have been more than are warranted by RBOF risks. In this regard, NRC regulation of RBOF potentially offers an opportunity for reduction in RBOF regulatory burden (costs) commensurate with acceptable risk.

DOE site representatives reported that decommissioning could be accomplished within weeks because very little contamination remains after nuclear material is removed from the fuel pool and resin exchange process. This suggests that the cost to decommission RBOF would be substantially less than the DOE estimate ($38.6 - 44.6 million). Further, decommissioning costs would be incurred by DOE whether or not RBOF is transferred to NRC regulatory jurisdiction.

Therefore, the cost of decommissioning should not be associated with a transition of RBOF from DOE to NRC regulatory jurisdiction.

DOE estimates the costs for NRC regulation of RBOF safeguards for weapons usable special nuclear material (SNM) to range from $1 to 2.4 million for RBOF transition to NRC jurisdiction and thereafter $0.5 to 1.3 million per year for NRC's continued regulation of RBOF. In this regard, RBOF currently does not satisfy NRC requirements for high assurance that weapons useable SNM (especially SNM from foreign countries) is actually present and therefore not lost, diverted, or stolen. DOE has ongoing and planned corrective actions to resolve this issue appropriately. Therefore, DOE safeguards corrective actions should not be attributed to the cost for NRC regulation. With DOE's appropriate corrective actions implemented, changes in the area of SNM safeguards likely will not be necessary for transition of RBOF SNM safeguards to NRC jurisdiction. Accordingly, NRC estimates the cost for transition of RBOF SNM safeguards to NRC jurisdiction to be roughly $350 thousand and thereafter $150 thousand per year.

Attachment:
NRC Report on the Pilot Project on External Regulation of DOE Nuclear Facilities

QUESTION 3. You also state in your testimony that your "Task Force report identified certain statutory requirements and practical details that would need to be resolved for the NRC to implement an effective and efficient oversight program for DOE nuclear facilities. These issues include resolving potential organizational conflicts of interest, complying with National Environmental Policy Act requirements, providing Price-Anderson indemnification, and resolving decommissioning timeliness and financial assurance issues." Which of these require specific statutory changes?

ANSWER.

If only a small number of DOE facilities are made subject to NRC regulation, none of these issues requires specific statutory changes. There are methods for resolving these issues within the existing statutory framework, for example, using rulemaking, exemptions, or specific license conditions. For instance, all of these issues have been addressed in connection with NRC's licensing of the TMI-2 Independent Spent Fuel Storage Installation at the Idaho National Engineering and Environmental Laboratory. However, if many DOE facilities are made subject to NRC regulation, changes to the Atomic Energy Act of 1954 as amended, as described in the response to question 9 may be required. In addition, it might be more efficient to have legislative clarification of the following issues:

- Organizational Conflict of Interest

The NRC relies on the DOE laboratories for technical expertise and facilities to support NRC's research and regulatory programs. Section 205(c) of the Energy Reorganization Act of 1974, encourages NRC to use the DOE laboratories on a noncompetitive basis. For more than 20 years, the majority of NRC's research and technical assistance programs have been performed by the DOE laboratories. Because NRC did not exercise general regulatory authority over DOE's activities, the organizational conflict-of-interest (COI) restrictions of Section 170A of the Atomic Energy Act of 1954, as amended (AEA) seldom interfered with NRC's ability to draw upon the DOE laboratories for technical assistance and research.

Tasks performed for NRC by DOE laboratories have been treated as subject to the COI restrictions of Section 170A of the AEA. Section 170A of the AEA that NRC may not enter into an arrangement unless, after consideration of relevant information, it finds that it is unlikely that COI would exist or concludes that it is in the best interest of the United States to enter into an arrangement despite the COI. Where work that is vital to an NRC program can only be satisfactorily performed by a contractor whose interests give rise to an organizational COI, the NRC Executive Director for Operations may grant a waiver and permit the work to be performed by a contractor despite the potential COI. In such cases, the COI will be mitigated to the maximum extent practicable.

Work that is not related to the formulation of regulations or related regulatory guidance to be applied to DOE as a licensee may continue to be placed with DOE, if external regulation proceeded. Examples of work that generally does not present a COI when performed at the

DOE laboratories are technical training, administering reactor operator licensing examinations, collecting data (without analyses) on selected technical issues, providing technical assistance and research for commercial power reactors, and reviewing licensee application materials when DOE has no organizational relationship with the licensee and is not subject to the portion of the regulation under which the application is submitted. However, if NRC is granted regulatory authority over certain DOE facilities or programs, DOE laboratories can not assist NRC in the regulatory review of these facilities or programs. In addition, as NRC becomes more involved in the regulation of DOE facilities, DOE laboratories will not be able to provide technical assistance or research for NRC's regulatory activities whenever those activities could affect DOE facilities, absent a COI waiver. In summary, an entity that is subject to a particular NRC regulatory scheme may not assist NRC in interpreting or applying that regulatory scheme to others, absent a COI waiver. If the scope of DOE activities regulated by NRC is significantly expanded, either the waiver process would have to be exercised repeatedly, or legislative changes might be needed to maintain NRC access to unique expertise that is not available from other sources.

- National Environmental Policy Act (NEPA) requirements

Both NRC and DOE have the responsibility to review environmental impacts of their respective agencies' major actions. The responsibilities of both agencies under NEPA create the possibility of some duplication of effort in considering environmental impacts of Federal actions at externally regulated DOE facilities.

As an example, DOE might prepare an Environmental Impact Statement (EIS) or an Environmental Assessment (EA) for a major Federal action involving DOE facilities regulated by NRC. Under existing regulations, in the environmental review for its licensing action, NRC could adopt or use portions of the DOE NEPA analysis document as its own for purposes of NRC regulation if NRC were satisfied that the analysis was legally and substantively sufficient. Although there are existing methods for coordinating DOE and NRC NEPA activities for licensing, to remove any uncertainty or litigative risk, it might be useful to clarify the agencies' respective NEPA responsibilities in legislation similar to the Nuclear Waste Policy Act of 1982, as amended (NWPA). The NWPA provides in Section 114(f)(4) that the EIS prepared by DOE shall be adopted to the extent practicable by the NRC and shall be deemed to satisfy the NRC's NEPA responsibilities.

- Price-Anderson indemnification

The Price-Anderson Amendments Act (PAAA) requires that DOE indemnify its contractors whenever contractual activities involve the risk of a nuclear incident affecting the public, unless the contractors' activities are subject to financial protection requirements or agreements of indemnification imposed by NRC. DOE's indemnification of all such contractors is mandatory. The NRC's mandatory indemnification only applies to production and utilization facilities that it licenses pursuant to the AEA. NRC normally does not exercise its discretionary authority to indemnify or require financial protection for other types of licensees unless the potential liability from licensed activities could exceed commercially available insurance amounts. Furthermore, NRC's indemnification is limited to $500 million and is associated with a requirement for a

primary layer commercial liability insurance, while DOE's indemnification limit is approximately $9 billion and does not require commercial liability insurance.

Under the existing PAAA, if NRC were given authority to license DOE facilities, DOE mandatory indemnification would continue, except for those contractors whose activities are subject to NRC requirements for financial protection and indemnity agreements. (Currently, the facilities subject to these requirements are primarily production and utilization facilities licensed under 10 CFR Part 50.) However, in connection with giving NRC new regulatory responsibilities for DOE facilities, if Congress wishes to clarify or change the indemnification regime, it could modify the AEA accordingly.

- Civil Penalties

While some DOE contractors are currently exempt from DOE civil penalties pursuant to §234A(d) of the AEA, all DOE contractors regulated by NRC would be subject to NRC civil penalties for violations of NRC requirements. An alternate arrangement from such civil penalties would require a change to NRC's requirements. For example, legislation included in the fiscal year 2000 defense authorization bill would subject DOE nonprofit contractors to penalties of up to the amount of their total annual fee for violations of DOE safeguards rules. Should Congress decide that changes are necessary, a similar approach could be followed in the context of NRC safety regulation.

- Decommissioning timeliness and financial assurance

NRC's regulations state that if a facility cannot operate and has not operated for more than two years, and where residual radioactivity is present that would preclude the facility from being released for general use, the licensee is required to begin decommissioning and complete it within 24 months, or to present a plan for decommissioning within 12 months. For several reasons, DOE may prefer to delay decommissioning of a particular facility. Under existing regulations, NRC could approve a request for an alternate schedule and would take into account the overall DOE decommissioning needs in determining an appropriate schedule. DOE would also need to present a statement of intent regarding funding for decommissioning. However, if NRC regulation of many DOE facilities is involved, because of DOE's ultimate responsibility for remediation and disposal for much of the radioactive waste and contaminated materials for the Nation, it might be more efficient to promulgate decommissioning rules specifically applying to DOE facilities, rather than making case-by-case determinations under the existing NRC regulations. Legislation would not be required.

QUESTION 4. Could you please elaborate on your "current risk-informed, performance-based approach to regulation" and how this differs from the DOE approach?

ANSWER.

NRC is moving toward a more risk-informed, performance based approach to regulation, will continue to look for opportunities for performance based regulations and is reviewing its regulations to identify appropriate opportunities to implement these approaches. The risk-informed approach emphasizes the use of risk information to identify and focus on those controls and systems that are most important to safety performance. This approach is described in more detail in the attached White Paper on Risk-Informed, Performance-Based Regulation. NRC is implementing this approach in revisions to existing requirements (e.g., proposed amendments to 10 CFR Part 70), streamlined licensing reviews, and revisions to inspection, assessment, and enforcement procedures.

Both DOE and NRC use a variety of risk assessment techniques to evaluate the safety adequacy of facilities, structures, systems, components, procedures, design changes, and other activities at nuclear facilities. The approaches of both agencies are similar. The pilot projects demonstrated that, at each of the three pilot sites, DOE's approach to safety is largely sufficient to satisfy NRC requirements.

Attachment:
White Paper on Risk-Informed,
Performance-Based Regulation

QUESTION 5. Could you please elaborate on what you mean by "potential organizational conflicts of interest"?

ANSWER.

The NRC relies on the DOE laboratories for technical expertise and facilities to support NRC's research and regulatory programs. Section 205(c) of the Energy Reorganization Act of 1974, encouraged NRC to use the DOE laboratories on a noncompetitive basis. For more than 20 years, the majority of NRC's research and technical assistance programs have been performed by the DOE laboratories. Because NRC did not exercise general regulatory authority over DOE's activities, the organizational conflict-of-interest (COI) restrictions of Section 170A of the AEA seldom interfered with NRC's ability to draw upon the DOE laboratories for technical assistance and research.

Tasks performed for NRC by DOE laboratories have been treated as subject to the COI restrictions of Section 170A of the AEA of 1954, as amended. Section 170A of the Atomic Energy Act states that NRC may not enter into an arrangement unless, after consideration of relevant information, it finds that it is unlikely that COI would exist or concludes that it is in the best interest of the United States to enter into an arrangement despite the COI. Where work that is vital to an NRC program can only be satisfactorily performed by a contractor whose interests give rise to an organizational COI, the NRC Executive Director for Operations may grant a waiver and permit the work to be performed by a contractor despite the potential COI. In such cases, the COI will be mitigated to the maximum extent practicable.

Work that is not related to the formulation of regulations or related regulatory guidance to be applied to DOE as a licensee may continue to be placed with DOE, if external regulation proceeded. Examples of work that generally does not present a COI when performed at the DOE laboratories are technical training, administering reactor operator licensing examinations, collecting data (without analyses) on selected technical issues, providing technical assistance and research for commercial power reactors, and reviewing licensee application materials when DOE has no organizational relationship with the licensee and is not subject to the portion of the regulation under which the application is submitted. However, if NRC is granted regulatory authority over certain DOE facilities or programs, DOE laboratories can not assist NRC in the regulatory review of these facilities or programs. In addition, as NRC becomes more involved in the regulation of DOE facilities, DOE laboratories will not be able to provide technical assistance or research for NRC's regulatory activities whenever those activities affect DOE facilities. In summary, an entity that is subject to a particular NRC regulatory scheme may not assist NRC in interpreting or applying that regulatory scheme to others, absent a COI waiver. If the scope of DOE activities regulated by NRC is significantly expanded, either the waiver process would have to be exercised repeatedly, or legislative changes might be needed to maintain NRC access to unique expertise that is not available from other sources.

QUESTION 6. In the LBNL and ORNL/REDC Pilot Projects, NRC expressed a preference for licensing the contractor, whereas DOE believes it should be the licensee. One of DOE's reasons for this stance is that it must be able to effect a transfer of the operating contractor to another without triggering what may be a protracted license transfer process. How valid is DOE's concern? How much time would such a license transfer process take?

ANSWER.

The selection of the licensee varies based on such considerations as responsibility for safety operations and knowledge of operations. However, NRC believes that its regulatory framework and process is sufficiently flexible to accommodate DOE's concern. The time to process a transfer of a license from one contractor to another would depend on the ability of the new contractor to provide evidence that it could operate the facility safely. Presumably demonstrated in the DOE contracting process. Such a transfer could be accomplished under normal NRC processes promptly and should not interfere with a smooth transition in the DOE site operations. NRC has not had experience in transferring a specific license from one DOE contractor to another. Therefore, there is no basis to provide more specific time information for such a transfer at this time. However, NRC does have experience in transferring licenses for commercial nuclear power plants and the review for such transfers typically take three to six months to complete. If a member of the public requested a hearing on the proposed license transfers, the Commission's recently promulgated procedures for license transfers at 10 CFR Part 2, Subpart M would provide a streamlined process for addressing these matters, and have worked well thus far in reactor license transfers. However, the Congress may wish to consider

legislatively waiving the hearing opportunity for license transfers at DOE facilities on the grounds that during the DOE contracting process an NRC staff review would ensure that any new contractor would be able to operate the facility properly.

QUESTION 7. In your Task Force report on External Regulation of Department of Energy Nuclear Facilities, it is stated on page 5 that "to permit Agreement States to regulate DOE, sovereign immunity would have to be waived. Sovereign immunity has not been waived for other Federal facilities, except in certain circumstances, and granting this waiver for Agreement State regulation for DOE would result in DOE regulation being inconsistent with the regulation of other Federal facilities." First, what are implications of waiving sovereign immunity, and second, which Federal facilities have received such a waiver?

ANSWER.

The principle of sovereign immunity, which holds that absent a specific Congressional waiver, States may not regulate the Federal government, has been established by the Supremacy Clause of the Constitution and judicial interpretation. Under the Atomic Energy Act of 1954, as amended (AEA), there has been no such waiver for any Federal facilities. However, under certain environmental statutes, such as the Clean Air Act, there have been explicit waivers of sovereign immunity to allow States to regulate all Federal facilities pursuant to the specific environmental statutes.

Waiving sovereign immunity under the AEA to allow State regulation of DOE facilities: 1) would be inconsistent with AEA regulation of other Federal facilities and would introduce different State regulators for various DOE facilities, rather than one regulatory regime; moreover, because many of the facilities in the DOE complex handle critical masses of special nuclear material (SNM), or

have reactors, these facilities would still need an NRC license in addition to a State license (the AEA does not authorize the NRC to relinquish its authority over critical mass quantities of SNM or reactors).

QUESTION 8. The NRC Task Force report on External Regulation of Department of Energy Nuclear Facilities, recommends - on page 9 - that NRC should regulate accelerators and naturally occurring and accelerator produced radioactive material (NARM). What is the current situation with non-DOE accelerators, such as those operated by the private sector or by university-based accelerators funded by NSF?

ANSWER.

Private sector accelerators are regulated by State authorities and the Food and Drug Administration (radio-pharmaceuticals produced for sale or distribution), since the Atomic Energy Act does not grant NRC the authority to license accelerator-produced radiation. Absent a specific grant of authority to NRC, it is likely that accelerations and naturally occurring and accelerator produced radioactive material (NARM) at DOE facilities and at all other Federal facilities will continue to be self-regulated.

QUESTION 9. What specific legislative changes are needed for NRC to externally regulate DOE facilities? Please provide specific legislative language.

ANSWER.

The minimum legislative changes that would be required are the following:

1. Amendment of section 110 of the AEA, in order to obviate the effect on external regulation of DOE facilities of the exclusions listed in subsection a. of that section, particularly the exclusion that nothing in chapter 10 of the Act (regarding licensing of production and utilization facilities) shall be deemed to require a license for "the construction or operation of facilities under contract with and for the account of the Commission." (In this and many other provisions of the Act, "Commission" is read as a reference to both DOE and NRC.)

2. Amendment of section 202 of the Energy Reorganization Act of 1974, which states that despite the exclusions of section 110 a. or any other provisions of the Atomic Energy Act, NRC shall have regulatory authority under chapters 6, 7, 8, and 10 of the Atomic Energy Act with respect to certain listed types of facilities. Consistent with the proposed amendment of section 110 of the Atomic Energy Act, the proposed amendment of section 202 of the Energy Reorganization Act would provide NRC with specific authority to regulate any facility, other than a defense facility, constructed or operated under contract with and for the account of DOE.

While it could reasonably be asserted that, even without the amendment of section 110 of the AEA, the amendment of section 202 of the Energy Reorganization Act would provide all the authority that NRC requires for external regulation, we believe that it would be better not to create such an overt inconsistency between the language of the two statutes. Drafts of these amendments are enclosed with this answer.

3. We also include a revision of section 15 of H.R. 1656. It covers a number of issues, most important among them what agency would regulate radiation protection at the facilities covered by the Section. Our revision provides that NRC would regulate these facilities. We wrote to Representatives Calvert and Sensenbrenner in May that we thought that providing OSHA the authority to enforce NRC's radiation regulations was not an efficient use of Government resources, because the OSHA is not as well equipped as the NRC is to exercise the responsibility for enforcing those regulations, and would require a considerable amount of time to hire and train additional staff to implement NRC's already well-developed program. Since its inception, NRC has regulated the health and safety of workers with respect to exposure to radiological materials, and non-radiological hazards to the extent necessary to prevent a regulatory gap.

Another important issue covered in the attached revision of H.R. 1656 is NRC funding. Again, as we noted in the May letter to Representatives Calvert and Sensenbrenner, Section 15 provides additional funds to OSHA but makes no provision for meeting NRC's resource requirements. Although our pilot studies at the Lawrence Berkeley National Laboratory show that the annual NRC costs of regulating that facility are a

fraction of an FTE, it is not likely that the same will be true at all the other facilities covered by the bill, and the costs NRC will bear during the transition to NRC regulation will be higher than the costs NRC will bear once the transition is over. NRC's budget is at an historic low, and the agency has needed additional general fund appropriations just to conduct the pilot studies. As a largely fee-based agency, NRC should not divert fees collected from private sector licensees to fund the costs of regulating DOE facilities. The agency cannot take on these added responsibilities without adequate funding and staffing, and a clear delineation of authority.

The attached revision also clarifies the Section's granting NRC discretion to determine whether DOE or its contractor or both will be a licensee at a given site, and the revision moves the effective date to January 1, 2001. We are not sure what the boundaries of the frequently recurring phrase "federally owned or operated nonmilitary energy laboratory" are, but we have left it in unchanged in the attached and have used it in the proposed amendments to §110 of the AEA and 202 of ERA. One possible alternative to the phrase would be to use a term such as "covered facility" and then to define "covered facility", either by describing the category, or by identifying the specific facilities covered by the term.

There are other provisions of the AEA that may require legislative amendment if the Congress provides authority to the Commission to determine that, with respect to certain of the DOE facilities, it would be more feasible to certify the compliance of the facility with standards issued by the Commission, rather than to license the facility. This is because many of the provisions of the AEA -- those having to do with penalties, hearings, judicial review, for example -- refer to a

"license" or "licensee" and do not reference or have clear applicability to certified facilities. As a result, it is likely that most (perhaps all) issues could be resolved by rulemaking to the extent that the DOE facilities would be licensed. The response to Question 3 discusses other areas where legislative changes may be desirable. However, given the uncertainty about the scope of the legislation that might be enacted, it would seem premature to develop any further amendments at this time.

LEGISLATIVE LANGUAGE FOR NRC REGULATION OF DOE FACILITIES

Section ___. EXCLUSION FROM LICENSING OF CERTAIN FEDERAL FACILITIES

Section 110 of the Atomic Energy Act of 1954 (42 U.S.C. 2140) is amended to read as follows:

"Sec. 110. Exclusions. --

"a. Except as provided in subsection b., nothing in this chapter shall be deemed --

"(1) to require a license for (A) the processing, fabricating, or refining of special nuclear material, or the separation of special nuclear material, or the separation of special nuclear material from other substances, under contract with and for the account of the Commission; or (B) the construction or operation of facilities under contract with and for the account of the Commission; or

"(2) to require a license for the manufacture, production, or acquisition by the Department of Defense of any utilization facility authorized pursuant to section 91, or for the use of such facility by the Department of Defense or a contractor thereof.

"b. The exclusions provided in subsection a.(1) shall not apply to licensing or certification by the Nuclear Regulatory Commission of any federally owned or operated nonmilitary energy laboratory.

Section ___. LICENSING, CERTIFICATION AND RELATED REGULATORY FUNCTIONS RESPECTING CERTAIN FACILITIES

Section 202 of the Energy Reorganization Act of 1974 (42 U.S.C. 5842) and the heading for section 202 are amended to read as follows:

"LICENSING, CERTIFICATION, AND RELATED REGULATORY FUNCTIONS

RESPECTING SELECTED ADMINISTRATION FACILITIES

"Sec. 202. Notwithstanding any exclusions provided for in section 110 a.(1) of the Atomic Energy Act of 1954 (42 U.S.C. 2140(a)(1)), or any other provisions of the Atomic Energy Act of 1954, the Nuclear Regulatory Commission shall--

"(a) except as otherwise specifically provided by section 110 a.(2) of the Atomic Energy Act of 1954 (42 U.S.C.2140(a)(2)), or other law, have licensing and related regulatory authority pursuant to chapters 6, 7, 8, and 10 of the Atomic Energy Act of 1954 as to the following facilities of the Administration:

"(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

"(2) Other demonstration nuclear reactors -- except those in existence on the effective date of this Act -- when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

"(3) Facilities used primarily for the receipt and storage of high-level radioactive waste 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.

"(b) with respect to any federally owned or operated nonmilitary energy laboratory, have authority to license the facility or to certify the compliance of the facility with standards issued by the Commission, whichever it determines to be appropriate."

Attachment:
H.R. 1556

REVISED REVISION OF H.R. 1656

SEC. 15. EXTERNAL REGULATION.

(a) AUTHORITY-

(1) ELIMINATION OF DEPARTMENT OF ENERGY AUTHORITY-Except as provided in paragraph (2), effective January 1, 2001, the Department shall have no regulatory or enforcement authority, through rules, regulations, orders, and standards, or reporting requirements, with respect to Federal, State, and local environmental, safety, and health requirements at any federally owned or operated nonmilitary energy laboratory.

(2) EXCEPTION-Notwithstanding paragraph (1), the Department shall retain regulatory or enforcement authority described in paragraph (1) at any federally owned or operated nonmilitary energy laboratory to the extent that no other Federal, State, or local governmental agency has such regulatory or enforcement authority.

(b) NUCLEAR REGULATORY COMMISSION AUTHORITY-

(1) ENFORCEMENT RESPONSIBILITIES-Effective January 1, 2001, the Nuclear Regulatory Commission shall assume the regulatory and enforcement responsibilities of the Department under the Atomic Energy Act of 1954 with regard to federally owned or operated nonmilitary energy laboratories, including such responsibilities with respect to accelerator-produced radioactive material and ionizing radiation generating machine.

(2) LICENSED ENTITY-For the purposes of carrying out at any federally owned or operated nonmilitary energy laboratories regulatory and enforcement responsibilities described in paragraph (1), the Nuclear Regulatory Commission may, in its discretion, regulate and license or provide certification for the Department, the Department's contractor, or both.

(3) DECOMMISSIONING-A contractor operating a federally owned nonmilitary energy laboratory shall not be responsible for the costs of decommissioning the facility. No enforcement action may be taken against such contractor for any violation of Nuclear Regulatory Commission decommissioning requirements, if such violation is the result of a failure of the Department to authorize or fund decommissioning activities. The Nuclear Regulatory Commission and the Department shall, not later than July 1, 2001, enter into a memorandum of understanding establishing decommissioning procedures and requirements for federally owned and operated nonmilitary energy laboratories.

(c) OCCUPATIONAL SAFETY AND HEALTH-

(1) OSHA JURISDICTION-Notwithstanding any other provision of law, effective January 1, 2001, the Occupational Safety and Health Administration shall assume the regulatory and enforcement responsibilities of the Department relating to non-radiological safety and health matters covered by the Occupational Safety and Health Act of 1970 with regard to all federally owned and operated nonmilitary energy laboratories. The Department's contractor or contractors operating those laboratories shall be considered employers for purposes of the Occupational Safety and Health Act of 1970.

(2) The Nuclear Regulatory Commission shall exercise regulatory and enforcement authority with respect to radiological safety and health hazards and nuclear safety at the federally owned or operated nonmilitary energy laboratories

(3) The Occupational Safety and Health Administration and the Nuclear Regulatory Commission shall jointly exercise regulatory and enforcement authority with respect to safety and health hazards that contain both a non-radiological component and shall coordinate their regulatory and enforcement activities pursuant to a Memorandum of Understanding required by paragraph (4).

(4) MEMORANDUM OF UNDERSTANDING-The Nuclear Regulatory Commission and the Occupational Safety and Health Administration shall, within 90 days after the date of the enactment of the this Act, enter into a memorandum of understanding to govern the exercise of their respective authorities over occupational safety and health hazards at federally owned or operated nonmilitary energy laboratories.

(d) TRANSFER OF FUNDS-

For the purposes of carrying out this section, and for conducting pilot programs and other activities necessary to prepare for and effect the transition of regulatory and enforcement responsibilities for federally owned or operated nonmilitary energy laboratories from the Department, the Secretary shall transfer $1,000,000 from the appropriation made pursuant to section 3(a)(4) to the Occupational Safety and Health Administration: and $xxxxx.xx from the appropriation made pursuant to section 3(a)(4) to the Nuclear Regulatory Commission.

(e) CIVIL PENALTIES-

The Department's contractor operating a federally owned or operated nonmilitary energy laboratory shall not be liable for civil penalties under the Atomic Energy Act of 1954 or the Occupational Safety and Health Act of 1970 for any actions taken before October 1, 2001, pursuant to the transfer of regulatory and enforcement responsibilities required by this section.

(f) INDEMNIFICATION-

The Secretary shall continue to indemnify federally owned or operated nonmilitary energy laboratories in accordance with the provisions of section 170d. of the Atomic Energy Act of 1954.

(g) DEPARTMENT OF ENERGY REPORTING REQUIREMENTS-

By October 31, 2000, the Secretary shall transmit to the Committee on Science and the committee on Appropriations of the House of Representatives, and the Committee on Energy and Natural Resources and the Committee on Appropriations of the Senate, a plan for the termination of the Department's regulatory and enforcement responsibilities for federally owned or operated nonmilitary energy laboratories required by this section. The report shall include--

(1) a detailed transition plan, drafted in coordination with the Nuclear Regulatory Commission and the Occupational Safety and Health Administration, giving the schedule for termination of self-regulation authority as outlined in subsection (a), including the activities to be

coordinated with the Nuclear Regulatory Commission and the Occupational Safety and Health Administration;

(2) a description of any issues remaining to be resolved with the Nuclear Regulatory Commission, the Occupational Safety and Health Administration, or other external regulators, and a timetable for resolving such issues before January1, 2001;

(3) an estimate of--

(A) the annual cost of administering and implementing self-regulation of environmental, safety, and health activities at federally owned or operated nonmilitary energy laboratories;

(B) the number of Federal and contractor employees administering and implementing such self-regulation;

(C) the cost of external regulation based on the pilot project of simulated Nuclear Regulatory Commission regulation which has already been conducted; and

(D) the extent and schedule by which the Department and laboratory staff will be reduced as a result of implementation of this section; and

(4) a description of regulatory or enforcement authorities the Department determines it will be required to retain pursuant to subsection (a)(2).

Enclosure for Question 4

Risk-Informed and Performance-Based Regulation

The NRC has established its regulatory requirements, in both reactor and materials applications, to ensure that "no undue risk to public health and safety" results from licensed uses of Atomic Energy Act (AEA) materials and facilities. The objective of these requirements has always been to assure that the probabilities of accidents with the potential for adversely affecting public health and safety are low. For reactors, these probabilities were not quantified in a systematic way until 1975 when the Reactor Safety Study (WASH-1400) was published. For non-reactor activities, the situation is more complex. In some areas, high-level waste disposal and transportation, risk assessment has been in use since the 1970s; in others, such quantification is still evolving. Consequently, most of NRC's regulations were developed without the benefit of quantitative estimates of risk. The perceived benefits of the deterministic and prescriptive regulatory requirements were based mostly on experience, testing programs and expert judgment, considering factors such as engineering margins and the principle of defense-in-depth.

There have been significant advances in and experience with risk assessment methodology since 1975. Thus, the Commission is advocating certain changes to the development and implementation of its regulations through the use of risk-informed, and ultimately performance-based, approaches. The Probabilistic Risk Assessment (PRA) Policy Statement (60 FR 42622, August 16, 1995) formalized the Commission's commitment to risk-informed regulation through the expanded use of PRA. The PRA Policy Statement states, in part, "The use of PRA technology should be increased in all regulatory matters to the extent supported by the state of the art in PRA methods and data, and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy."

The transition to a risk-informed regulatory framework is expected to be incremental. Many of the present regulations are based on deterministic and prescriptive requirements that cannot be quickly replaced. Therefore, the current requirements will have to be maintained while risk-informed and/or performance-based regulations are being developed and implemented.

To understand and apply the commitment expressed in the PRA Policy Statement, it is important that the NRC, the regulated community, and the public at large have a common understanding of the terms and concepts involved; an awareness of how these concepts (in both reactor and materials arenas) are to be applied to NRC rulemaking, licensing, inspection, assessment, enforcement, and other decision-making; and an appreciation of the transitional period in which the agency and industry currently operate.

1. **Risk and Risk Assessment:** This paper defines risk in terms that can be applied to the entire range of activities involving NRC licensed use of AEA materials. The risk definition takes the view that when one asks, "What is the risk?" one is really asking three questions: "What can go wrong?" "How likely is it?" and "What are the consequences?" These three questions can be referred to as the "risk triplet." The traditional definition of risk, that is, probability times consequences, is fully embraced by the "triplet" definition of risk.

   The first question, "What can go wrong?" is usually answered in the form of a "scenario" (a combination of events and/or conditions that could occur) or a set of scenarios.

   The second question, "How likely is it?" can be answered in terms of the available evidence and the processing of that evidence to quantify the probability and the uncertainties involved. In some situations, data may exist on the frequency of a particular type of occurrence or failure mode (e.g., accidental overexposures). In other situations, there may be little or no data (e.g., core damage in a reactor) and a predictive approach for analyzing probability and uncertainty will be required.

   The third question, "What are the consequences?" can be answered for each scenario by assessing the probable range of outcomes (e.g., dose to the public) given the uncertainties. The outcomes or

consequences are the "end states" of the analyses. The choice of consequence measures can be whatever seems appropriate for reasonable decision-making in a particular regulated activity and could involve combinations of end states.

A risk assessment is a systematic method for addressing the risk triplet as it relates to the performance of a particular system (which may include a human component) to understand likely outcomes, sensitivities, areas of importance, system interactions and areas of uncertainty. From this assessment the important scenarios can be identified.

2. **Deterministic and Probabilistic Analyses:** All safety regulation ultimately is concerned with risk and addresses the three questions discussed in item 1 above. In practice, NRC addresses these three questions through the body of regulations, guidance, and license conditions that it uses to regulate the many activities under its jurisdiction. The current body of regulations, guidance and license conditions is based largely on deterministic analyses and is implemented by prescriptive requirements. As described in the PRA Policy Statement, the deterministic approach to regulation establishes requirements for engineering margin and for quality assurance in design, manufacture, and construction. In addition, it assumes that adverse conditions can exist and establishes a specific set of design basis events (i.e., what can go wrong?). The deterministic approach involves implied, but unquantified, elements of probability in the selection of the specific accidents to be analyzed as design basis events. It then requires that the design include safety systems capable of preventing and/or mitigating the consequences (i.e., what are the consequences?) of those design basis events in order to protect public health and safety. Thus, a deterministic analysis explicitly addresses only two questions of the risk triplet. In addition, traditional regulatory analyses do not integrate results in a comprehensive manner to assess the overall safety impact of postulated initiating events.

   PRA and other risk assessment methods (also described in the PRA Policy Statement) consider risk (i.e., all three questions) in a more coherent, explicit, and quantitative manner. Risk assessment methodology examines systems and their interactions in an integrated, comprehensive manner. Probabilistic analysis explicitly addresses a broad spectrum of initiating events and their event frequency. It then analyzes the consequences of those event scenarios and weights the consequences by the frequency, thus giving a measure of risk.

   Since risk assessment methods were first used to gain a better understanding of the risk associated with some of the activities and facilities that the NRC regulates, substantial event data and increased sophistication and experience in the use of certain risk assessment methods (e.g., Probabilistic Risk Assessment (PRA), Integrated Safety Assessment (ISA), and Performance Assessment (PA)) have been acquired. Accordingly, there is now the opportunity to enhance the traditional approach by more explicitly addressing risk and incorporating the insights thus gained.

   While the traditional deterministic approach to regulation has been successful in ensuring no undue risk to public health and safety in the use of nuclear materials, opportunities for improvement exist. Given the broad spectrum of equipment and activities covered, the regulations can be strengthened and resources can be allocated to ensure that they are focused on the most risk-significant equipment and activities, and to ensure a consistent and coherent framework for regulatory decision-making. The different "risk-informed" and/or "performance-based" approaches to regulation described below, if properly applied singly or in combination, would provide such a framework.

3. **"Risk Insights":** The term "risk insights," as used here, refers to the results and findings that come from risk assessments. The end results of such assessments may relate directly to public health effects as in the Commission's Safety Goals for the Operation of Nuclear Power Plants. For specific applications the results and findings may take other forms. For example, for reactors these include such things as identification of dominant accident sequences, estimates of core damage frequency (CDF)(1) and large early release frequency (LERF)(2), and importance measures of

structures, systems, and components. On the other hand, in other areas of NRC regulation, findings and results include risk curves(3) for disposal facilities for radioactive wastes, frequency of and costs associated with accidental smelting of sealed sources at steel mills, frequency of occupational exposures, predicted dose from decommissioned sites and many others.

Risk insights have already been incorporated successfully into numerous regulatory activities, and have proven to be a valuable complement to traditional deterministic approaches. Given the current maturity of some risk assessment methodologies and the current body of event data, risk insights can be incorporated more explicitly into the regulatory process in a manner that will improve both the efficiency and effectiveness of current regulatory requirements.

4. **"Risk-Based Approach":** Regulatory decision-making is required in both the development of regulations and guidance and the determination of compliance with those regulations and guidance. A "risk-based" approach to regulatory decision-making is one in which such decision-making is solely based on the numerical results of a risk assessment. This places heavier reliance on risk assessment results than is currently practicable for reactors due to uncertainties in PRA such as completeness. Note that the Commission does not endorse an approach that is "risk-based"; however, this does not invalidate the use of probabilistic calculations to demonstrate compliance with certain criteria, such as dose limits.

5. **"Risk-Informed Approach":** A "risk-informed" approach to regulatory decision-making represents a philosophy whereby risk insights are considered together with other factors to establish requirements that better focus licensee and regulatory attention on design and operational issues commensurate with their importance to public health and safety. A "risk-informed" approach enhances the deterministic approach by: (a) allowing explicit consideration of a broader set of potential challenges to safety, (b) providing a logical means for prioritizing these challenges based on risk significance, operating experience, and/or engineering judgment, (c) facilitating consideration of a broader set of resources to defend against these challenges, (d) explicitly identifying and quantifying sources of uncertainty in the analysis (although such analyses do not necessarily reflect all important sources of uncertainty), and (e) leading to better decision-making by providing a means to test the sensitivity of the results to key assumptions. Where appropriate, a risk-informed regulatory approach can also be used to reduce unnecessary conservatism in purely deterministic approaches, or can be used to identify areas with insufficient conservatism in deterministic analyses and provide the bases for additional requirements or regulatory actions. "Risk-informed" approaches lie between the "risk-based" and purely deterministic approaches. The details of the regulatory issue under consideration will determine where the risk-informed decision falls within the spectrum.

6. **"Risk-Informed Approach and Defense-in-Depth":** The concept of defense-in-depth(4) has always been and will continue to be a fundamental tenet of regulatory practice in the nuclear field, particularly regarding nuclear facilities. Risk insights can make the elements of defense-in-depth more clear by quantifying them to the extent practicable. Although the uncertainties associated with the importance of some elements of defense may be substantial, the fact that these elements and uncertainties have been quantified can aid in determining how much defense makes regulatory sense. Decisions on the adequacy of or the necessity for elements of defense should reflect risk insights gained through identification of the individual performance of each defense system in relation to overall performance.

7. **"Performance-Based Approach":** A regulation can be either prescriptive or performance-based. A prescriptive requirement specifies particular features, actions, or programmatic elements to be included in the design or process, as the means for achieving a desired objective. A performance-based requirement relies upon measurable (or calculable) outcomes (i.e., performance results) to be met, but provides more flexibility to the licensee as to the means of meeting those outcomes. A performance-based regulatory approach is one that establishes performance and results as the primary basis for regulatory decision-making, and incorporates the

following attributes: (1) measurable (or calculable) parameters (i.e., direct measurement of the physical parameter of interest or of related parameters that can be used to calculate the parameter of interest) exist to monitor system, including facility and licensee, performance, (2) objective criteria to assess performance are established based on risk insights, deterministic analyses and/or performance history, (3) licensees have flexibility to determine how to meet the established performance criteria in ways that will encourage and reward improved outcomes; and (4) a framework exists in which the failure to meet a performance criterion, while undesirable, will not in and of itself constitute or result in an immediate safety concern. The measurable (or calculable) parameters may be included in the regulation itself or in formal license conditions, including reference to regulatory guidance adopted by the licensee. This regulatory approach is not new to the NRC. For instance, the Commission previously has approved performance-based approaches in 10 CFR Parts 20, 50 (Option B, Appendix J and the Maintenance Rule,10 CFR50.65), 60, and 61. In particular, the Commission weighed the relative merits of prescriptive and performance-based regulatory approaches in issuing 10 CFR Part 60.

A performance-based approach can be implemented without the use of risk insights. Such an approach would require that objective performance criteria be based on deterministic safety analysis and performance history. This approach would still provide flexibility to the licensee in determining how to meet the performance criteria. Establishing objective performance criteria for performance monitoring may not be feasible for some applications and, in such cases, a performance-based approach would not be feasible.

As applied to inspection, a performance-based approach tends to emphasize results (e.g., can the pump perform its intended function?) over process and method (e.g., was the maintenance technician trained?). Note that a performance-based approach to inspection does not supplant or displace the need for compliance with NRC requirements, nor does it displace the need for enforcement action, as appropriate, when non-compliance occurs.(5)

As applied to licensee assessment, a performance-based approach focuses on a licensee's actual performance results (i.e., desired outcomes), rather than on products (i.e., outputs). In the broadest sense, the desired outcome of a performance-based approach to regulatory oversight will be to focus more attention and NRC resources on those licensees whose performance is declining or less than satisfactory.

8. **"Risk-Informed, Performance-Based Approach":** A risk-informed, performance-based approach to regulatory decision-making combines the "risk-informed" and "performance-based" elements discussed in Items 5 and 7, above, and applies these concepts to NRC rulemaking, licensing, inspection, assessment, enforcement, and other decision-making. Stated succinctly, a risk-informed, performance-based regulation is an approach in which risk insights, engineering analysis and judgment including the principle of defense-in-depth and the incorporation of safety margins, and performance history are used, to (1) focus attention on the most important activities, (2) establish objective criteria for evaluating performance, (3) develop measurable or calculable parameters for monitoring system and licensee performance, (4) provide flexibility to determine how to meet the established performance criteria in a way that will encourage and reward improved outcomes, and (5) focus on the results as the primary basis for regulatory decision-making.

The definitions and concepts in this paper have proven suitable for application to nuclear power plants and certain non-reactor activities (e.g., PA of geologic repositories). While different in detail, these activities are similar in terms of system complexity and the application of probabilistic methods to the determination of safety. In simpler situations, the concepts and definitions should prove equally suitable provided that NRC adopts a flexible framework for the implementation of risk-informed, and ultimately performance-based, regulation across the full spectrum of the materials, processes, and facilities regulated by the NRC.

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1. CDF is the frequency of the combinations of initiating events, hardware failures, and human errors leading to core uncovery with reflooding of the core not imminent.

2. LERF is the frequency of those accidents leading to significant, unmitigated releases from containment in a time-frame prior to effective evacuation of the close-in population such that there is a potential for early health effects.

3. Risk curves (also known as Complementary Cumulative Distribution Functions (CCDFs) or Farmer curves) are estimates of the probability that a given consequence will be exceeded.

4. Defense-in-depth is an element of the NRC's Safety Philosophy that employs successive compensatory measures to prevent accidents or mitigate damage if a malfunction, accident, or naturally caused event occurs at a nuclear facility. The defense-in-depth philosophy ensures that safety will not be wholly dependent on any single element of the design, construction, maintenance, or operation of a nuclear facility. The net effect of incorporating defense-in-depth into design, construction, maintenance, and operation is that the facility or system in question tends to be more tolerant of failures and external challenges.

5. Not every aspect of licensed activities can or should be inspected using this approach. For example, if a licensee is unsuccessful in meeting the criteria defined by a performance-based regulation, the inspector should then focus on the licensee's process and method, to understand the root cause of the breakdown in performance, and to understand how future poor performance may be avoided.

NUREG-1708

External Regulation of Department of Energy Nuclear Facilities

A Pilot Program

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Minority Questions and Answers

QUESTION 1. Is the NRC willing to be flexible on decontamination and decommissioning requirements in the event that we move forward to external regulation, in light of the fact that many of the older DOE facilities were built before modern health and safety standards even existed and would therefore have a hard time meeting them without considerable cost?

ANSWER.

Yes, NRC would be flexible with regard to both decontamination and decommissioning and in regulating older DOE facilities as long as public health and safety and the environment are adequately protected. NRC would exercise the flexibility already contained in its regulations and could approve a request for an alternate schedule and would take into account the overall DOE decommissioning needs in determining an appropriate schedule. For example, since 1994 when NRC requirements on the timeliness of decommissioning became effective, fewer than 30 licensees out of several thousand have asked to delay decommissioning activities. NRC initially denied only three of these requests, after which one request was subsequently approved by the NRC and the remaining two were withdrawn by the licensees. NRC has not denied any request to delay decommissioning that was supported with adequate justification. NRC recognizes that its regulations may have to be revised to account for the fact that DOE would ultimately be responsible for remediation and disposal for much of the radioactive waste and contaminated materials generated in the U.S.

It is not clear to the NRC, based on the Pilot Program, that many of the older DOE facilities will have a hard time meeting modern health and safety standards or that such compliance will require substantial expenditures. NRC would only impose new requirements on DOE when necessary for safety or security reasons. Licensing reviews of DOE facilities would take credit for the reviews already performed by DOE. It is evident from the pilot projects that DOE requirements have, in the cases examined, produced a safety envelope that is comparable to what is produced by NRC regulation. NRC's approach to regulating DOE nuclear facilities would be risk informed and would focus resources on the dominant risks.

QUESTION 2. DOE estimates that the cost of decontamination and decommissioning the Bevatron at Berkeley could cost $80 million. Do you agree with that assessment? Why or why not?

ANSWER.

The NRC has no information on which to judge the validity of the DOE cost estimate. The NRC's concern about this cost estimate is that the cost of decontamination and decommissioning should not be associated with a transition of DOE to external regulation. This cost, whatever it may be, will be incurred whether DOE regulates itself or is subject to external regulation.

QUESTION 3. Is NRC willing to adopt NEPA and other authorities and procedures for the purpose of indemnifying the DOE facilities it might one day regulate under the Price-Anderson Act? How hard would it be to make any necessary changes to the statute?

ANSWER.

NRC has regulations implementing the National Environmental Policy Act (NEPA) and regulations implementing the Price-Anderson Amendments Act (PAAA). However, the requirements of the NEPA regulations are related to evaluation of environmental impacts and are not related to indemnification. The current PAAA statutory indemnification provisions require that DOE indemnify all of its contractors unless there is an NRC requirement for NRC indemnification or financial protection. Such NRC requirements are essentially limited to reactor facilities, and include a requirement for a primary layer of commercial liability insurance. Therefore, under the current statute, even with NRC regulation of DOE facilities, DOE would continue to indemnify its contractors, at least for all DOE facilities other than reactors. If Congress desires some other outcome, it would need to modify the PAAA.

QUESTION 4. How hard do you think it would be for the NRC to acquire the expertise necessary to regulate accelerators? Do you think this is an insurmountable barrier to external regulation of DOE civilian facilities?

ANSWER.

The fundamental safety issues and principles related to the regulation of accelerators are not significantly different from those related to the regulation of AEA material. If granted the authority to regulate accelerators, NRC could readily train appropriate staff on the technical and safety aspects of accelerators. NRC already possesses expertise in shielding and safety interlocks, two key components of accelerator safety. We would anticipate the need for certain supplemental training in health physics to account for the differences in the radiation spectrum. While this training will be needed to prepare NRC staff to regulate accelerators, it is readily achievable in transitioning to external regulation of DOE facilities.

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QUESTION 5. Do you agree with DOE's assessment that the cost of licensing the Receiving Basin for Offsite Fuels would be more than $6 million? If so, why would it cost so much? If not, why not?

ANSWER.

No, NRC does not agree with DOE's assessment that the cost of licensing RBOF would be more than $6 million.

The DOE cost estimate for NRC regulation of RBOF is roughly a factor of 5 to 13 times higher than NRC's cost estimate. NRC is convinced that RBOF can be transferred to NRC regulation for roughly $1 million and thereafter regulated for roughly $250 thousand (plus annual fee) per year or less. The principal differences between the DOE and NRC reported cost estimates are attributable to DOE inclusion of roughly $12 million in changes to RBOF facilities, staffing, documentation, and activities even though NRC determined such changes would not be necessary for NRC regulation of RBOF. Further, DOE has emphasized that its costs for DOE oversight of RBOF have been more than are warranted by RBOF risks. In this regard, NRC regulation of RBOF potentially offers an opportunity for reduction in RBOF regulatory burden (costs) commensurate with acceptable risk.

DOE site representatives reported that decommissioning could be accomplished within weeks because very little contamination remains after nuclear material is removed from the fuel pool and resin exchange process. This suggests that the cost to decommission RBOF would be substantially less than the DOE estimate ($38.6 - 44.6 million). Further, decommissioning costs would be incurred by DOE whether or not RBOF is transferred to NRC regulatory jurisdiction.

Therefore, the cost of decommissioning should not be associated with a transition of RBOF from DOE to NRC regulatory jurisdiction.

DOE estimates the costs for NRC regulation of RBOF safeguards for weapons usable special nuclear material (SNM) to range from $1 to 2.4 million for RBOF transition to NRC jurisdiction and thereafter $0.5 to 1.3 million per year for NRC's continued regulation of RBOF. In this regard, RBOF currently does not satisfy NRC requirements for high assurance that weapons useable SNM (especially SNM from foreign countries) is actually present and therefore not lost, diverted, or stolen. DOE has ongoing and planned corrective actions to resolve this issue appropriately. Therefore, DOE safeguards corrective actions should not be attributed to the cost for NRC regulation. With DOE's appropriate corrective actions implemented, changes in the area of SNM safeguards likely will not be necessary for transition of RBOF SNM safeguards to NRC jurisdiction. Accordingly, NRC estimates the cost for transition of RBOF SNM safeguards to NRC jurisdiction to be roughly $350 thousand and thereafter $150 thousand per year.

QUESTION 6. DOE has concerns about specific procedural modifications to radiological protection, material control and accountability and other matters at the Radiochemical Engineering Development Center in Tennessee that would be necessary if NRC were to regulate it. How easy do you think it would be to address those concerns and craft a license or other agreement that reflected the site's unique characteristics?

ANSWER.

While it would take effort on the part of both NRC and DOE to achieve, crafting a license to reflect the REDC's unique characteristics is a task that can be accomplished. In fact, the NRC developed an example license as part of the REDC pilot (reference pilot report). It is the NRC's view that a majority of the technical, policy, and regulatory issues at the REDC could be adequately resolved within the existing NRC regulatory framework. Furthermore, based on the pilot, few changes in the REDC or its procedures appear necessary under NRC regulation.

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QUESTION 7. DOE concluded that there would be no improvement to operational safety at the Radiochemical Engineering Development Center in Tennessee if NRC were to regulate it that would justify the cost of doing so. Do you agree with that assessment? Why or why not?

ANSWER.

It is true that a transition of the REDC to NRC regulation would not, by itself, improve the operational safety at the facility. This result is not surprising since DOE considers REDC to be one of its top facilities. NRC assessed the current safety program at REDC during the pilot project and found it adequate to protect public and worker health and safety at the site. However, having independent oversight by NRC would provide the discipline that comes from an external regulator, rather than from self-policing. The NRC believes that this external oversight provides an increased assurance of safety in the long run.