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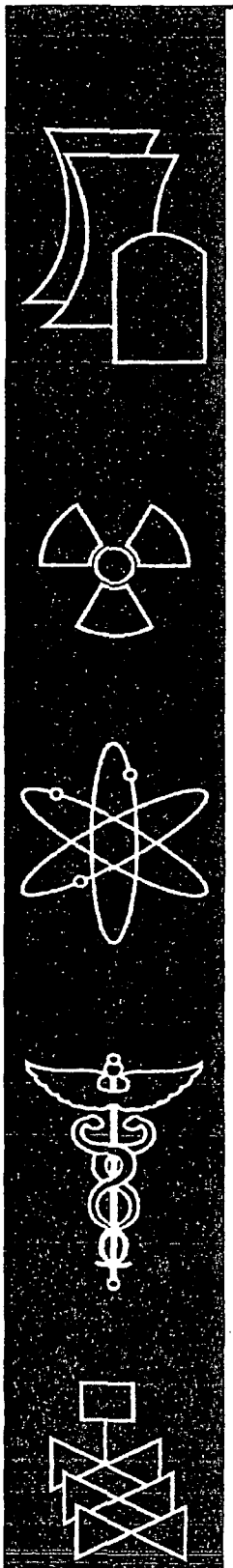

External Regulation of Department of Energy Nuclear Facilities

A Pilot Program

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

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A Pilot Program

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ABSTRACT

In this report, the U.S. Nuclear Regulatory Commission (NRC) Task Force on External Regulation of DOE Nuclear Facilities presents its views on the major issues related to external regulation of the U.S. Department of Energy (DOE) nuclear facilities. These views are based on the results of a pilot program designed to test regulatory concepts through simulated regulation by evaluating each pilot facility against the standards that NRC believes would be appropriate for this type of facility. The pilot projects chosen by DOE for FY 1998 were Lawrence Berkeley National Laboratory, the Oak Ridge National Laboratory Radiochemical Engineering Development Center, and the Savannah River Site Receiving Basin for Offsite Fuels. Significant issues included the potential scope of NRC regulatory authority, enforcement, the methods of regulation, and the question of who would be the regulated entity.

The overall conclusion of the NRC task force is that most of the technical, policy, and regulatory issues involved in NRC oversight of DOE nuclear facilities studied as part of the pilot program could be handled adequately within the existing NRC regulatory structure. In fact, there was precedent in NRC policy and practice for resolving many of the issues raised during the pilot program.

The NRC would take a risk-informed, performance-based approach to DOE nuclear facilities, and would make efficient use of what DOE has already accomplished in its regulation of itself. External regulation will eliminate the inherent conflict of interest arising from self-regulation, lead to a safety culture comparable to the safety culture in the commercial industry, and allow DOE to focus on its primary missions.

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EXECUTIVE SUMMARY

In this report, the U.S. Nuclear Regulatory Commission (NRC) Task Force on External Regulation of DOE Nuclear Facilities presents its views on the results of the onsite work of the pilot program on external regulation carried out at three DOE nuclear facilities from October 1997 to January 1999. The overall conclusion of the NRC task force is that most of the technical, policy, and regulatory issues involved in NRC oversight of the DOE nuclear facilities studied as part of the pilot program could be handled adequately within the existing NRC regulatory structure. There was precedent in NRC policy and practice for resolving many of the issues raised during the pilot program. Additional issues examined during the pilot program, i.e., decommissioning, potential conflict of interest, and funding are being addressed by NRC and DOE in other regulatory and licensing actions. For example, many of these issues were addressed in licensing the TMI-2 Independent Spent Fuel Storage Installation (ISFSI).

This pilot program was designed to test regulatory concepts through simulated regulation by evaluating each pilot facility and its standards, requirements, procedures, practices, and activities against the standards that NRC believes would be appropriate for this type of facility. The objectives of the pilot program were set forth in a Memorandum of Understanding (MOU) between DOE and NRC. These objectives are to:

1. Determine the value added by NRC regulation.
2. Test regulatory approaches.
3. Determine the status of a set of DOE facilities.
4. Determine the costs of regulation.
5. Evaluate alternative regulatory relationships.
6. Identify issues that would arise in the transition to NRC regulation.
7. Identify legislative and regulatory changes.
8. Evaluate stakeholder involvement.

Major issues examined include the potential scope of NRC regulatory authority, enforcement, the methods of regulation, and the question of who would be the regulated entity.

The pilot program was expected to last two years, and to include between 6 and 10 facilities. In the view of the NRC staff, the three pilot facilities examined to date, although providing useful information on a per-site basis, do not necessarily represent the wide variety of issues existing within the DOE complex. For instance, the completed pilot facilities do not include a reactor, a large accelerator, or a large contaminated site such as Hanford, the complete Savannah River Site, or all of Oak Ridge National Laboratory (ORNL). In addition, the three facilities selected by DOE were largely in compliance with existing DOE requirements prior to the pilot program.

The three pilot sites examined thus far include: Lawrence Berkeley National Laboratory (LBNL), the Oak Ridge National Laboratory Radiochemical Engineering Development Center (ORNL/REDC), and the Savannah River Site Receiving Basin for Offsite Fuels (SRS/RBOF).

PRINCIPAL FINDINGS OF THE TASK FORCE

Although the pilot sites selected were not representative of the entire DOE complex, in the view of the task force, the following conclusions could be drawn regarding the three pilot sites investigated.

- A majority of the technical, policy, and regulatory issues, including safety, safeguards and security, encountered during the pilot program could be handled adequately within the existing NRC regulatory framework. There are precedents, in NRC policy and practices, for resolving many of the issues raised during the pilot program.

- Few, if any changes in facilities, procedures, drawings, calculations, administrative process controls, safety programs, and safety documentation (including safety analysis reports) would be necessary. DOE initiatives such as WorkSmart Standards and Integrated Safety Management Systems could continue to be used under an NRC regulatory framework.

- Because few changes to DOE facilities or procedures would be needed under NRC external regulation, NRC believes that DOE's cost estimates for making the transition to external regulation are considerably higher than NRC believes is justified. Precise estimates of resources required are difficult to develop for the standard DOE facilities when based solely on the three pilot sites investigated, and without having established the mechanism to be used for regulation.

- A number of the issues, such as conflict of interest, National Environmental Policy Act (NEPA) requirements, Price-Anderson indemnification, and decommissioning timeliness and financial assurance requirements involve conflicting or overlapping statutory or regulatory requirements. Legislation or rulemaking or both could resolve these types of issues.

- It appears more efficient to regulate an entire site than a single facility within a complex site, because such facilities depend on the shared-site infrastructure for many of the key elements of safe operation.

- DOE sites contain legacy materials as buried materials, abandoned buildings, and contaminated buildings currently in use. Some of these legacy materials have been in place for a very long time and constitute large volumes requiring remediation. Current NRC decommissioning requirements do not recognize DOE's unique situation or DOE's role as the ultimate custodian of radioactive waste in the United States. (Objective 3, 5, 6, and 7).

- With respect to the regulated entity, NRC could regulate DOE, the DOE contractor, or both, according to circumstances, rather than using a "one size fits all" approach. NRC has precedents for making all three work. In the LBNL and

ORNL/REDC pilot reports, the NRC team expressed a preference for licensing the contractor only. In the SRS/RBOF pilot report, the NRC team stated that it had no preference regarding the selection of the regulated entity.

- If Agreement States regulated DOE facilities, including accelerators and naturally occurring and accelerator-produced radioactive material (NARM), NRC would still regulate reactors and greater-than-critical-mass quantities of special nuclear material (SNM) at DOE facilities, resulting in multiple regulators. 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 limited circumstances, and granting this waiver for Agreement State regulation of DOE would result in DOE regulation being inconsistent with the regulation of other Federal facilities.

- NRC procedures, by law and regulation, provide substantial means for stakeholder participation in the agency's standard-setting, licensing, and enforcement. For any new regulatory mechanism other than licensing or rulemaking, such as certification, NRC may need to develop other stakeholder processes.

- NRC processes lend themselves to more public scrutiny than routine DOE practices, and therefore add credibility as well as providing opportunity for stakeholder involvement.

- The Independent Offices Appropriation Act prohibits the NRC from charging fees to DOE under 10 CFR Part 170 for licensing and inspection costs. To avoid including these costs in annual fees assessed to other licensees in the event DOE is the applicant/licensee, legislation is needed to authorize NRC to charge 10 CFR Part 170 fees to DOE.

VALUE ADDED

The NRC would take a risk-informed, performance-based approach to DOE nuclear facilities, and would make efficient use of what DOE has already accomplished in its regulation of itself. External regulation will eliminate the inherent conflict of interest arising from self-regulation, lead to a safety culture comparable to the safety culture in the commercial industry, and allow DOE to focus on its primary missions.

TASK FORCE RECOMMENDATIONS

Based upon the pilot program, the Task Force makes the following recommendations regarding the three pilot sites investigated.

- Contingent on adequate funding, staffing resources, and a clear delineation of the authority the NRC will exercise over facilities, NRC could be the sole external regulator of DOE nuclear and radiological safety.

- If NRC becomes the external regulator of DOE nuclear and radiological safety, NRC regulatory authority should be extended to include DOE accelerators and Naturally Occurring and Accelerator-Produced Material (NARM).
- With respect to State regulation of DOE facilities, sovereign immunity should not be waived and the States should not regulate DOE facilities.
- The current MOU between NRC and the Occupational Safety and Health Administration should be extended to include the DOE sites that are subject to external regulation.
- NRC should regulate an entire site rather than a single facility within a site complex.
- Implementing legislation that clearly states responsibilities for NRC, DOE, and other Federal agencies should be developed to resolve many of the issues that have arisen in the pilot program, such as conflict of interest, NEPA requirements, and Price-Anderson indemnification.
- Consideration should be given to developing a new regulation that addresses major issues affecting DOE facilities and that specifically addresses such issues as accelerators and fissile material that is not SNM.
- Under NRC regulation of DOE facilities, the Environmental Protection Agency (EPA) should rescind the National Emissions Standards for Hazardous Air Pollutants requirements for DOE facilities, as it has for other NRC-regulated facilities.
- NRC should regulate safeguards issues at DOE facilities just as NRC regulates them at other facilities.
- Until legislation is enacted giving NRC responsibility for regulating nuclear safety at DOE facilities, the costs for NRC's participation in the pilot program for external regulation of DOE activities should be funded from general fund appropriations. If legislation providing NRC with regulatory authority over DOE facilities is enacted, such NRC regulation of DOE facilities should be funded through direct appropriations and the costs recovered through 10 CFR Part 170 and 10 CFR Part 171 fees assessed to the DOE facility applicants/licensees, the same as NRC does with other applicants and licensees.
- NRC could apply virtually the same licensing, inspection, and enforcement mechanisms to DOE radiological facilities as now apply to existing NRC Federal Government licensees.
- The cost to DOE of NRC regulating DOE nuclear facilities could be minimized, potentially resulting in a net savings, by reducing the level of DOE oversight of the regulated activities to a level consistent with a corporate oversight model. If DOE does not decrease its oversight activities, costly, burdensome, dual regulation may well result. Precise resource estimates are difficult to develop for the standard DOE facilities when based solely on the three pilot sites investigated, and without having established the mechanism to be used for regulation.

ABBREVIATIONS

AEA	Atomic Energy Act
ANL	Argonne National Laboratory
BNL	Brookhaven National Laboratory
CAAS	criticality accident alarm system
CEQ	Council on Economic Quality
CFR	*Code of Federal Regulations*
CNWRA	Center for Nuclear Waste Regulatory Analyses
COI	conflict of interest
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DOJ	Department of Justice
EA	environmental assessment
EIS	environmental impact statement
EPA	Environmental Protection Agency
FRERP	Federal Radiological Emergency Response Plan
FTE	full-time equivalent
INEEL	Idaho National Engineering and Environmental Laboratory
ISA	integrated safety assessment
ISFSI	independent spent fuel storage installation
LBNL	Lawrence Berkeley National Laboratory
LMER	Lockheed Martin Energy Research
MC&A	material control and accounting
M&O	maintenance and operating
MOU	memorandum of understanding
NARM	naturally occurring and accelerator-produced radioactive material
NEPA	National Environmental Policy Act
NCS	nuclear criticality system
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NRC	U.S. Nuclear Regulatory Commission
NTLF	National Tritium Labeling Facility

NWPA	Nuclear Waste Policy Act of 1982, as amended
OBRA-90	Omnibus Budget Reconciliation Act of 1990
OMB	Office of Management and Budget
ORNL	Oak Ridge National Laboratory
OSHA	Occupational Safety and Health Administration
PAAA	Price Anderson Amendments Act
PP	physical protection
QA	quality assurance
RBOF	Receiving Basin for Offsite Fuels
REDC	Radiochemical Engineering Development Center
RP	radiation protection
RSC	radiation safety committee
RSO	radiation safety officer
RWA	radiation work authorization
RWP	radiation work permit
SAR	safety analysis report
SER	safety evaluation report
SLAC	Stanford linear accelerator
SNM	special nuclear material
SRP	Standard Review Plan (NUREG-1520)
SRS	Savannah River Site
SSA	sealed source authorization
SSNM	strategic special nuclear material
TMI-2	Three Mile Island Unit 2
TSR	technical safety requirement
UC	University of California
WESF	Waste Encapsulation Storage Facility

INTRODUCTION

In this report the U.S. Nuclear Regulatory Commission (NRC) Task Force on External Regulation of DOE Nuclear Facilities presents its views on the major issues related to external regulation of U.S. Department of Energy (DOE) nuclear facilities. In the staff requirements memorandum on COMSECY-96-053 (March 1997), the Commission asked the task force to take an independent look at the major issues related to external regulation of DOE nuclear facilities, such as the potential methods of regulation and the issues that will affect the transition from DOE to NRC. This discussion is based on the onsite work of the Pilot Program on External Regulation carried out at three DOE facilities from October 1997 to January 1999, as well as on insights derived from current NRC activities involving regulation of DOE. Some of the contents of this paper also appear in one or more of the reports on the pilot project.[1]

The overall conclusion of the NRC task force is that most of the technical, policy, and regulatory issues involved in NRC oversight of DOE nuclear facilities studied as part of the pilot program could be handled adequately within the existing NRC regulatory structure. In fact, there was precedent in NRC policy and practice for resolving many of the issues raised during the pilot program. Other issues examined during the pilot program, such as decommissioning, potential conflict of interest, and funding are being addressed by NRC and DOE in other regulatory and licensing actions. For example, many of these issues were addressed in licensing the TMI-2 Independent Spent Fuel Storage Installation (ISFSI).

DOE defense program facilities are not covered by this report. These facilities were specifically excluded from the pilot program on external regulation, though, as noted below, a DOE Advisory Committee and a DOE internal working group had, in 1996, recommended eventual external regulation of defense program facilities.

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[1] "Report on the Pilot Project on External Regulation of DOE Facilities at Lawrence Berkeley National Laboratory" (Volumes 1–3), U.S. Department of Energy, March 31, 1999; "Report on the Pilot Project on External Regulation of DOE Facilities at Receiving Basin for Offsite Fuels Facility, Savannah River Site" (Volumes 1–2), Department of Energy, March 31, 1999; "Report on the Pilot Project on External Regulation of DOE Facilities at Radiochemical Engineering Development Center (REDC) Oak Ridge National Laboratory," draft for comment, April 1999.

BACKGROUND

Under existing law, DOE is largely exempt from regulation by NRC and historically has self-regulated the safety of its facilities through implementation of DOE orders, directives, regulations, and contractual arrangements. However, other agencies have limited jurisdiction over certain DOE facilities; e.g., the Defense Nuclear Facilities Safety Board (DNFSB) and the Environmental Protection Agency (EPA). By statute, NRC already has or will have an oversight role at a number of DOE activities, including spent fuel storage facilities at Fort St. Vrain and at the Idaho National Engineering and Environmental Laboratory, the planned mixed-oxide fuel fabrication facility, and the DOE high-level waste repository. NRC also monitors and advises DOE on some activities, such as the West Valley Demonstration Project.

In 1994, legislation was proposed to externally regulate certain additional DOE nuclear facilities. Although no legislation was enacted, DOE created an Advisory Committee on External Regulation of Department of Energy Nuclear Safety (advisory committee) to give advice and make recommendations on whether and how new and existing DOE facilities and operations might be regulated to better ensure nuclear safety. In its final report, issued in December 1995, the advisory committee recommended that all DOE nuclear facilities be regulated externally, and it named the NRC and the DNFSB as the two potential safety regulators. The final report by the advisory committee,[2] identified eight criteria that should be satisfied by external regulation: safety, credibility, stability, accountability, efficiency, focus, flexibility, and practicality.[3]

Upon receiving the recommendations of the advisory committee, the Secretary of Energy at that time, Hazel O'Leary, created the DOE Working Group on External Regulation (working group). In December 1996, after further study by the working group, Secretary O'Leary announced that the administration would introduce legislation to give NRC responsibility for regulating nuclear safety at DOE facilities, including defense facilities, phased in over a 10-year period. This scope would cover only those facilities that were operating and were expected to continue to operate beyond the 10-year period.

Contingent on adequate funding, staffing, resources, and a clear delineation of the authority that NRC would exercise over DOE facilities, the Commission endorsed the concept of NRC oversight of DOE facilities based on the DOE announcement and the public comments received on the NRC Strategic Assessment and Rebaselining Initiative,[4] which favored NRC oversight of DOE nuclear facilities. However, many legal, policy, and technical issues needed to be resolved before the NRC could assume such oversight. Consequently, at a meeting in June 1997, the Secretary of Energy at that time, Federico Peña, and NRC Chairman Shirley Ann Jackson agreed to establish a pilot program to examine NRC regulation of a set of DOE nuclear facilities.

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[2] "Improving Regulation of Safety at DOE Nuclear Facilities," final report by the Advisory Committee on External Regulation of Department of Energy Nuclear Safety, December 1995.

[3] These criteria are discussed in detail throughout the report. On the basis of the three pilots projects, the members of the task force believe NRC could substantially meet these criteria if NRC were chosen as the external regulator.

[4] NRC Strategic Assessment and Rebaselining Initiative, Direction-Setting Issue No. 2: Oversight of the Department of Energy.

THE PILOT PROGRAM

A memorandum of understanding (MOU) between DOE and NRC established the pilot program to determine the feasibility of NRC regulation of certain DOE facilities and to support a decision on whether to seek legislation to authorize external oversight of these facilities by NRC or its Agreement States. The pilot program was designed to test regulatory concepts through simulated regulation by evaluating each pilot facility and its standards, requirements, procedures, practices, and activities against the standards that NRC believes would be appropriate for this type of facility. The MOU described a two-year pilot program to include between 6 and 10 facilities.

OBJECTIVES

The following objectives of the pilot program were identified in the MOU:

1. Determine the value added by NRC regulation.
2. Test regulatory approaches.
3. Determine the status of a set of DOE facilities.
4. Determine the costs of regulation.
5. Evaluate alternative regulatory relationships.
6. Identify issues that would arise in the transition to NRC regulation.
7. Identify legislative and regulatory changes.
8. Evaluate stakeholder involvement.

SITE-SELECTION PROCESS

At the outset of the pilot program, NRC developed a list of DOE facilities as candidate sites to provide diversity in geography, DOE program offices, maintenance and operating (M&O) contractors, regulatory mechanisms, and facility types. Appendix A contains a list of facilities that were considered by NRC in the initial stages of the pilot program.

The three facilities chosen by DOE for FY 1998 for conducting the pilot program (see Appendix B) were Lawrence Berkeley National Laboratory (LBNL), the Oak Ridge National Laboratory Radiochemical Engineering Development Center (ORNL/REDC), and the Savannah River Site Receiving Basin for Offsite Fuels (SRS/RBOF). The SRS/RBOF was not part of the original list of facilities considered by DOE. DOE has not identified any future sites for the pilot program.

DOE used the following criteria in choosing these sites:

- The facility would be similar to current NRC-licensed facilities.
- The existing NRC regulatory program could potentially be applied to the site.
- The facility was expected to operate for 10 or more years.
- The facility contractor was willing to participate in a pilot project.
- The facility was a non-defense facility.

LBNL and REDC clearly met these criteria and the pilot experiences produced many insights; however, in retrospect, RBOF was a marginal choice because it is a low-risk, uncomplicated facility and DOE does not expect it to operate for more than 10 years. In addition, DOE now maintains that nothing from RBOF could be extrapolated to external regulation of the Savannah River Site (SRS) or the DOE complex. However, the RBOF pilot project yielded unique and important insights in that the assessment of the safety and safeguards program revealed significant uncertainty about the documented versus real special nuclear material (SNM) content of fuel received and stored there. Consequently, there are safeguards and safety issues and implications that could be extended from RBOF to other DOE facilities.

PRINCIPAL FINDINGS OF THE TASK FORCE

Although the pilot sites selected were not representative of the entire DOE complex, in the view of the Task Force, the following conclusions could be drawn from the three pilot sites investigated.

- A majority of the technical, policy, and regulatory issues, including safety, safeguards, and security, encountered during the pilot program could be addressed within the existing NRC regulatory framework. There are precedents in NRC policy and practices for resolving many of the issues raised during the pilot program. (Objectives 3 and 6)
- Few, if any, changes in facilities, procedures, drawings, calculations, administrative process controls, safety programs, and safety documentation (including safety analysis reports) would be necessary. DOE initiatives such as WorkSmart Standards and the Integrated Safety Management System could continue to be used under an NRC regulatory framework. (Objective 3)
- Because few changes to DOE facilities or procedures would be needed under NRC external regulation, NRC believes that DOE's cost estimates for making the transition to external regulation are considerably higher than NRC believes is justified.
- A number of the issues, such as conflict of interest, National Environmental Policy Act (NEPA) requirements, Price-Anderson indemnification, and decommissioning timeliness and financial assurance requirements involve

conflicting or overlapping statutory or regulatory requirements. Legislation or rulemaking or both could resolve these types of issues. (Objective 7)

- It appears more efficient to regulate an entire site than a single facility within a complex site, because such facilities depend on the shared-site infrastructure for many of the key elements of safe operation. (Objectives 2 and 3)

- DOE sites contain legacy materials as buried materials, abandoned buildings, and contaminated buildings currently in use. Some of these legacy materials have been in place for a very long time and constitute large volumes requiring remediation. Current NRC decommissioning requirements do not recognize DOE's unique situation or DOE's role as the ultimate custodian of radioactive waste in the United States. (Objective 3, 5, 6, and 7).

- With respect to the regulated entity, NRC could regulate DOE, the DOE contractor, or both, according to circumstances, rather than using a "one size fits all" approach. NRC has precedents for making all three work. In the LBNL and ORNL/REDC pilot reports, the NRC team expressed a preference for licensing the contractor only. In the SRS/RBOF pilot report, the NRC team stated that it had no preference regarding the selection of the regulated entity. (Objectives 2 and 5)

- If Agreement States regulated DOE facilities, including accelerators and naturally occurring and accelerator-produced radioactive material (NARM), NRC would still regulate reactors and greater-than-critical-mass quantities of SNM at DOE facilities, resulting in multiple regulators. 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 of DOE would result in DOE regulation being inconsistent with the regulation of other Federal facilities. (Objective 5)

- NRC procedures, by law and regulation, provide substantial means for stakeholder participation in the agency's standard-setting, licensing, and enforcement. For any new regulatory mechanism other than licensing or rulemaking, such as certification, NRC may need to develop other stakeholder processes. (Objectives 1 and 8)

- NRC processes lend themselves to more public scrutiny than routine DOE practices, and therefore add credibility as well as providing opportunity for stakeholder involvement.

- The Independent Offices Appropriation Act prohibits the NRC from charging fees to DOE under 10 CFR Part 170 for licensing and inspection costs. To avoid including these costs in annual fees assessed to other licensees in the event DOE is the applicant/licensee, legislation is needed to authorize NRC to charge 10 CFR Part 170 fees to DOE. (Objective 7)

MAJOR ISSUES

The DOE working group and the Commission identified a number of major issues that would affect potential NRC jurisdiction over DOE nuclear and radiological facilities. These issues include the potential scope of NRC regulatory authority, enforcement, the methods of regulation, and the question of who would be the regulated entity, funding, stakeholders, and transition issues. As shown in the "Matrix of Issues To Be Considered for NRC-DOE Identified Objectives" (Appendix C), each memorandum of understanding (MOU) objective included one or more of the issues identified by the Commission and the DOE working group. This matrix elaborated upon the MOU objectives and presented a road map for the onsite teams to follow in conducting their analyses. The matrix formed an integral part of the work plans for each pilot facility. Appendix C shows the extension of the matrix to include site-specific conditions for the ORNL-REDC pilot. Similar documents were prepared for each pilot work plan.

SCOPE OF NRC REGULATORY AUTHORITY

The scope of NRC regulatory authority encompasses questions of who should be the regulator as well as what should be included within this regulation. In approaching the question "Who should be the regulator?" it is important to keep in mind that this issue has already been exhaustively addressed by Federal agencies with the benefit of substantial stakeholder input. The Advisory Committee on External Regulation of Department of Energy Nuclear Safety was created in January 1995 by DOE with support from the White House Council on Environmental Quality. It represented a cross-section of the public, Federal, State, tribal, industrial, union, and academic sectors. The committee unanimously agreed that DOE nuclear safety should be externally regulated, and that the external regulator should be either the NRC or the Defense Nuclear Facilities Safety Board (DNFSB).

In response to this recommendation, DOE created its own Working Group on External Regulation. In its December 1996 report,[5] DOE accepted the advisory committee's recommendations and proposed two implementation options:

1. Maintain and strengthen current DNFSB authorities and expand NRC authorities to regulate DOE nuclear facilities that are not overseen by DNFSB; and

2. Establish full NRC regulation of DOE nuclear facilities in three phases, and phase out DNFSB over 10 years, with its staff merging with NRC in the last phase.

At about the same time, the British Government brought its Atomic Weapons Establishment under external regulation by the Nuclear Safety Directorate of the Health and Safety Executive. See the Atomic Weapons Establishment Act 1991 Amendment Order 1997 (Statutory Instrument 1996 No. 1396).

The Secretary of Energy at that time was Hazel O'Leary, who selected the second option—phasing in full NRC regulation of DOE nuclear facilities. Consequently, at the outset, both DOE and NRC assumed that NRC would be the regulator. The pilot program was intended to

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[5] U.S. Department of Energy, "Report of Department of Energy Working Group on External Regulation," DOE/US-0001, December 1996.

examine the issues raised by NRC regulation of DOE. However, during the pilot program, the question of who should be the regulator came up again. Several other potential regulators and co-regulators of DOE facilities were proposed during the pilot program, including the States, the Occupational Safety and Health Administration (OSHA), and the DNFSB.

The scope of NRC regulation today is defined by the Atomic Energy Act of 1954, as amended (AEA) to include the protection of public health and safety and the environment and to assure adequate safeguards in the use of special nuclear material, source material, and byproduct material. As outlined below, the appropriate scope of NRC regulation was examined during the pilot program, including accelerators and NARM, safeguards, radiological worker protection, nuclear defense facilities, and legacy waste issues.

Appropriate Division of Regulatory Responsibility

Discussion

NRC retains authority over AEA materials used by Federal agencies in Agreement States. In order for Agreement States to regulate DOE facilities, legislation would have to be passed to waive sovereign immunity. If Agreement States had regulatory authority over DOE facilities, they could delegate such authority to local governments.

The Agreement States have experience in regulating materials licensees that are similar to certain DOE facilities, such as those at LBNL. This experience was demonstrated during the LBNL pilot project where staff from the State of California Department of Health and staff from the NRC worked closely in developing a simulated broad-scope license. The NRC and State teams agreed on the results of this simulated licensing review.

States would not be able to regulate DOE facilities without a legislative waiver of sovereign immunity. This type of waiver has been granted under an environmental law, the Federal Facility Compliance Act of 1992. However, this waiver has not been granted for Federal facilities under the AEA. Granting such a waiver for DOE would mean that the regulation of DOE would be inconsistent with the regulation of other Federal agencies. In addition, NRC regulation of these facilities would provide a single regulator for similar DOE facilities across the DOE complex and would be consistent with the focus that DOE is seeking to promote a consistent framework for regulation. Furthermore, many of the facilities in the DOE complex handle a critical mass of special nuclear material (SNM). The AEA does not authorize the NRC to discontinue its authority over these amounts of SNM and transfer this authority to an Agreement State.

Federal and State Jurisdiction

Advantages of NRC Regulation

- NRC regulation is consistent with the way in which AEA materials at other Federal agencies are regulated.
- Many DOE facilities are engaged in activities that are not authorized to be regulated by Agreement States under the AEA (e.g., reactors, critical masses of SNM).

- One regulator for all nuclear activities would minimize the regulatory burden.

- The working group indicated in its report that a single external regulator would improve safety and health, public confidence in DOE, stability, accountability, and efficiency, and would promote a consistent and clearly focused framework for regulation of the entire DOE establishment.

Disadvantages of NRC Regulation

- For DOE facilities that have accelerators and NARM (see Item B, which follows), NRC would need additional authority, regulations, and training.

Advantages of State Regulation

- The States could regulate DOE facilities that have accelerators without the need for additional training or regulatory framework.

- Some States and DOE contractors have expressed an interest in State regulation of DOE facilities and believe they should be regulated in the same way as non-Federal facilities.

- Some stakeholders have stated a preference for State regulation, particularly because it leaves open the possibility that a State could delegate its responsibility to local authorities.

Disadvantages of State Regulation

- There would be a need to waive sovereign immunity without a clear benefit.

- Because DOE facilities are located in many States, State regulation would result in multiple regulators across the DOE complex.

- NRC would still regulate reactors and greater-than-critical-mass quantities of SNM at DOE facilities, resulting in multiple regulators.

Recommendation

NRC should be the sole external regulator of DOE nuclear and radiological safety for the following reasons:

- From a potential risk viewpoint, reactors and critical mass quantities of SNM pose a greater risk and require more complex regulations than NARM or accelerators.

- The regulatory burden should be lower with one regulator for each site and a common regulatory approach across the complex.

- No waiver of sovereign immunity is needed.
- DOE would be treated no differently than other Federal licensees.

Issues To Be Included Under NRC Jurisdiction

Regulation of Accelerators and NARM

Discussion

NRC authority does not extend to accelerators and NARM, which are regulated by the States. If NRC is given the authority to regulate DOE facilities, its mandate could be extended to cover accelerators and NARM at DOE facilities. This approach would provide a single regulator for radiation safety for all DOE activities and would help identify safety trends throughout the DOE complex. Other options are that accelerators and NARM could continue to be self-regulated by DOE or could be regulated by the States, or by OSHA as they are at other Federal facilities (see below).

There are accelerators and NARM at DOE sites that are single-purpose sites, such as the Stanford linear accelerator (SLAC); sites that are like materials licensees, such as LBNL; and at large multipurpose sites that include reactors and critical mass facilities, such as ORNL, Brookhaven National Laboratory (BNL), and Argonne National Laboratory (ANL).

Advantages of NRC Regulation of Accelerators and NARM

- Having one regulator would meet the working group's objective to promote a consistent and clearly focused framework for regulation of the entire DOE establishment.
- The fundamental safety issues and principles related to the regulation of accelerators and NARM are not significantly different from those related to the regulation of AEA material.

Disadvantages of NRC Regulation of Accelerators and NARM

- NRC regulatory authority would extend beyond that authorized by the AEA and into an area that is currently regulated by the States for non-Federal facilities. This might raise the question of whether authority should be extended to include non-DOE users of accelerators and NARM.
- There would be some cost to developing a regulatory framework and training an NRC task force.

Recommendation

NRC should regulate accelerators and NARM at DOE facilities.

Worker Radiological Safety

Discussion

NRC regulates worker radiation safety at facilities under its jurisdiction, and OSHA has statutory responsibility for the regulation of overall worker safety. The regulatory authority of OSHA is pre-empted where another Federal agency exercises particular overlapping statutory authority. NRC and OSHA individually have regulatory authority for certain aspects of worker safety and health and have addressed the regulatory interface between the agencies through MOUs signed in 1988 and 1996. Through these MOUs (1) OSHA primarily addresses occupational (industrial) safety and radiological workplace conditions not covered by the NRC (e.g., x-ray equipment and accelerators); (2) both OSHA and NRC apply their respective standards to hazards that present both radiological and nonradiological hazards; and (3) when the NRC identifies a non-radiological hazard while inspecting a facility, it reports the hazard to OSHA. The National Academy of Public Administration has recommended that, except in certain cases, such as those involving the potential for criticality, OSHA be given responsibility for radiation protection of workers at DOE facilities.

If NRC's authority were extended to include DOE x-ray equipment and accelerators, it could also regulate radiological workplace conditions that are now regulated by OSHA at non-DOE facilities. Conversely, OSHA could regulate all aspects of worker safety at DOE facilities, including radiological safety, although it would need to expand and modernize its regulatory framework and would need extensive additional resources and training to do so.

Recommendation

The current NRC-OSHA MOU should be extended to include the DOE sites that are subject to external regulation as was done for the recently licensed TMI-2 ISFSI. This will be more efficient and less costly because OSHA would not have to develop the significantly larger infrastructure for radiation safety that the NRC currently possesses. In addition, this would focus on a single regulator the responsibility for all issues involving nuclear and radiation safety. It would also result in the regulation of DOE facilities being consistent with the regulation of other similar facilities.

Environmental Protection

Discussion

Because the pilot projects that were covered in the first year of the pilot program have no environmental remediation or other specifically environmental issues, NRC is unable to assess all environmental regulatory overlaps that could occur if NRC regulated the DOE complex. The pilot sites that NRC visited did not lend themselves to a study of regulatory overlap with such environmental laws as the Resource Conservation and Recovery Act or the Comprehensive Environmental Response, Compensation, and Liability Act.

On the basis of what was reviewed during the pilot program, the major dual-regulation issue centered on the "National Emissions Standards for Hazardous Air Pollutants" (NESHAPS) regulations, under the Clean Air Act. The Environmental Protection Agency (EPA) has authority, under Section 112(d)(9) of the Clean Air Act, to rescind its NESHAPS regulations for

sources licensed by the NRC, if it determines that the NRC regulatory program "provides an ample margin of safety to protect public health." The EPA has rescinded its regulations for NRC and Agreement State licensees to prevent dual regulation. The EPA did not rescind the concurrent regulation that it promulgated for the DOE sites since DOE sites are not subject to dual regulation at this time.

Recommendation

In the interest of efficiency and cost reduction, if DOE facilities become subject to NRC regulation, these facilities should be subject to a single regulator in this area and the EPA should rescind the NESHAPS requirements for such facilities as it has for other NRC-regulated facilities.

Defense Programs

Discussion

The DNFSB is an independent executive branch entity responsible for oversight, advice, and recommendations regarding public health and safety issues at DOE defense nuclear facilities. DNFSB provides oversight and issues recommendations requiring a response. It does not, however, regulate DOE facilities in the traditional sense, and has no enforcement authority. The DOE working group report recommended, and the Secretary of Energy agreed, that NRC be given full regulatory authority over DOE nuclear facilities in three phases over a 10-year period, with the DNFSB being phased out at the end of that period.

In Chairman Jackson's letter dated January 15, 1999, to the DNFSB, she states the following:

> NRC has focused on non-defense program facilities, maintaining a bright line to clearly designate that defense nuclear facilities are not included in the pilot program. I have emphasized this, both in my letter to you dated July 12, 1998, and in my September 23, 1998, letter to Secretary Richardson, which stated that: "The Nuclear Regulatory Commission (NRC) has focused on non-defense program facilities and does not currently have any plans to provide external regulation to the defense program facilities. However, we accept the working group's position that all DOE nuclear facilities, including defense programs facilities, would ultimately be subject to full regulation by the NRC."

Recommendation

No recommendation is made since the pilot projects provided no insight into defense programs.

Regulatory Authority Over Safeguards

Discussion

The safeguards program includes material control and accounting (MC&A) and physical protection, principally for controlling risks concerning the loss, diversion, or theft of SNM. The safeguards program can have a significant effect on the control of safety-related hazards and risks to workers, the public, and the environment. Many of the authorized operating safety bases at DOE facilities depend upon the MC&A program to ensure the accurate characterization (elemental and isotopic composition) of the materials handled at the facility. The physical protection program limits access to safety hazards and their controls at the facility.

Options

1. NRC regulation of safeguards at DOE facilities as NRC regulates them at other facilities.

   Advantage

   - Allows the NRC to employ its traditional safety and safeguards regulatory methods, accommodating safety/safeguards interface issues under a unified regulatory framework.

   Disadvantage

   - Broadens an NRC regulatory role beyond that originally envisioned for the external regulation pilot program.

2. NRC regulation of safeguards at DOE facilities only to the extent that these programs have an impact on safety.

   Advantage

   - This approach would limit NRC's regulation of DOE safeguards to only those portions of the safeguards program that had an impact on safety. NRC would focus on safety activities and DOE would limit the independent regulatory scrutiny of its safeguards program, portions of which are site-wide and even complex-wide.

   Disadvantage

   - There is a high potential for NRC and DOE to expend resources negotiating jurisdictional boundaries and arrangements, rather than concentrating on actual safety and safeguards issues within the complex.

3. No NRC regulation; continued DOE oversight of safeguards.

Advantage

- This model would allow NRC to concentrate fully on safety and DOE would continue to implement and control its safeguards program, complex-wide, without dealing with an independent regulator.

Disadvantage

- This model ignores the safety-safeguards interface issue. In those instances in which DOE uses safeguards material information as an input to criticality safety, radiological protection, source terms, or considerations of timely operator access, the NRC would be crossing the interface boundary to assess the validity of safeguards information. From a practical standpoint, this model would quickly evolve into the second option, as described.

Recommendation

Because of the depth and complexity of safety-safeguards interface issues, NRC should regulate safeguards issues at DOE facilities as NRC regulates them at other facilities.

Legacy Issues

Discussion

Legacy issues pertain to the widespread contamination that exists at many DOE facilities, as well as to facilities that were built to older standards and requirements and, therefore, would not meet current NRC requirements. If NRC were given comprehensive oversight of DOE nuclear and radiological facilities, regulations would be needed to cover legacy issues. These regulations would need to be sufficiently flexible to cover material on a site-by-site, facility-by-facility basis, because the legacy issues vary widely from one DOE site and facility to another.

For example, the unused sources stored in the "pit room" at LBNL are considered legacy material and are being handled as part of the routine radiation protection programs at the site. This material could easily be included in NRC's regulatory approach to a broad-scope materials license. Conversely, the widespread contamination at ORNL is not included in the currently operating program. Much of the remediation of this contamination is covered under existing DOE cleanup agreements with EPA and the States. This material should not be included on the NRC license that would authorize the current operations at ORNL. NRC is not expected to regulate DOE facilities that have ceased operation or are expected to shut down within the next 10 years.

Recommendation

The pilot projects were very limited in this area and comprehensive insight into this issue from pilot activities was not obtained.

METHODS OF REGULATION

NRC regulations were promulgated for facilities within its jurisdiction and are, therefore, not necessarily congruent with the wide variety of conditions encountered at DOE facilities. The NRC currently uses a variety of regulatory methods: licensing, certification, monitoring, and advising. In many cases, existing DOE facilities were designed, constructed, and operated without considering the need to comply with NRC regulations. Accordingly, the NRC licensing model may not be practical to apply to these facilities. In this case, other options are certification, monitoring, and advising. Legislation authorizing NRC oversight could allow NRC the flexibility to choose the more appropriate regulatory model.

Licensing

Licensing is the preferred regulatory model for a facility that closely matches current NRC requirements. The LBNL pilot project demonstrated that licensing is the appropriate mechanism for sites that are similar to NRC materials licensees. This approach would be efficient and cost effective because, except for the need to develop regulatory requirements for accelerators, current regulations and procedures could be used for licensing these sites. In addition, requirements for accelerators could be developed efficiently using existing State guidance as a model. It might also be possible to develop, by rulemaking, categories of general licenses for certain materials or activities at DOE facilities. By statute, NRC already regulates, or will regulate, a number of DOE activities, including the TMI-2 ISFSI, the spent fuel storage facilities at Fort St. Vrain and the Idaho National Engineering and Environmental Laboratory, the planned mixed-oxide fuel fabrication facility, and the DOE high-level waste repository.

Advantages

- Licensing is a well-established process with well-defined public participation, judicial review, and enforcement mechanisms.
- DOE facilities would be regulated on the same basis as civilian and other government facilities.
- Contractors working at DOE facilities would be working under the same regulatory requirements as at civilian and other government facilities. This might reduce DOE's training costs because its contractors would be trained to work at either DOE or commercial facilities.

Disadvantages

- Public intervention through the hearing process could delay the construction of new facilities.

- Costs would be incurred by the need for DOE to develop a license application and for the NRC to review it.[6]

Certification

Certification could be used for DOE facilities that were built before current NRC requirements were applicable but that have been operated safely (e.g., gaseous diffusion plants).

Advantages

- The regulatory requirements may be more readily tailored to fit an existing facility.
- A less complicated hearing process can be developed.

Disadvantages

- Certification may be perceived by the public as applying less stringent requirements and avoiding a more difficult regulatory process.
- Certification would require new regulations and procedures.
- Costs, except for major upgrades, are essentially the same as those for licensing, rather than less, as was expected.

Monitoring

Monitoring has been used as a regulatory approach at West Valley, New York. The West Valley Demonstration Project Act (P.L. 96-368) (act) requires that DOE "afford the Commission access to the [West Valley site] to enable the Commission to monitor the activities under the project for the purpose of assuring the public health and safety." This monitoring provision is largely implemented through periodic inspections of West Valley site activities, but without enforcement authority.

Other provisions in the act require NRC interaction with DOE on topics such as high-level waste shipping casks, decommissioning and decontamination criteria for project facilities, and high-level waste forms. This interaction is extensive and allows NRC to act as an independent safety regulator without formal licensing and enforcement authority. Each agency maintains a degree of flexibility to expend its resources on the most safety-significant issues and activities.

Another provision of the same act requires DOE to "submit to the Commission safety analysis reports and such other information as the Commission may require to identify any danger to public health and safety which may be presented by the project." This provision essentially calls for a licensing review with the preparation of an NRC safety evaluation report (SER), but not a license. Public involvement is informal, through document availability and meetings but without adjudicatory hearings.

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[6] This disadvantage might be lessened by development of rulemaking for categories of general licenses for certain materials or activities.

Advantages

- No new regulations, requirements, or guidance would be required, because DOE requirements would be considered adequate. Thus, this option would be less costly for DOE and NRC.
- Reduced transition costs because DOE and its contractors are already familiar with DOE requirements.

Disadvantages

- Because no enforcement mechanisms are available, the public may criticize it as a much weaker form of regulation.
- NRC could be perceived as responsible for the safety of DOE activities although it lacked enforcement authority.

Advising

The Naval Reactors divisions of the Department of Energy and the Department of the Navy have maintained a relationship with NRC for many years, during which the Navy submits safety analysis reports of reactor and spent fuel shipping cask designs to NRC for independent safety review. These reviews are documented in SERs. No license is issued and there is no NRC inspection of Naval Reactors' design, procurement, construction, or operational activities. Essentially, NRC's role is that of an independent safety advisor on the adequacy of reactor and shipping cask designs. This level of NRC interaction with Naval Reactors is appropriate because of Naval Reactors' strict control of its activities, the security classification of its information, its very high level of safety performance over many decades, and the military necessity for nuclear-powered submarines and surface ships.

Advantages

- Least costly and burdensome on both agencies.
- Could be a model for external regulation of defense program activities, wherever these activities consistently meet standards as high as the Navy's.

Disadvantage

- Due to the classified nature of these activities, public involvement is greatly limited.

Recommendation

The decision on the type of regulation to be chosen should be made on a site-specific basis, using a cost-benefit analysis.

SELECTION OF REGULATED ENTITY

Discussion

For many years, DOE has contracted with M&O contractors to operate DOE facilities. An M&O contract creates a special, close, long-term relationship between the contractor and DOE, whereby the contractor operates, maintains, or supports, on DOE's behalf, a government-owned facility wholly or principally devoted to one or more major programs of DOE, the contracting Federal agency. M&Os perform at least some of DOE's statutory duties and responsibilities. This is a form of contracting unique to DOE.

Because DOE facilities are managed by outside contractors, the question arose during the pilot program as to whether DOE or the contractor would appear on the license. Four possible models were identified for issuing a license for DOE facilities:

- DOE-only license
- contractor-only license
- joint DOE/contractor license
- dual DOE and contractor licenses

NRC could regulate DOE, the DOE contractor, or both, according to circumstances, rather than using a "one size fits all" approach. In the LBNL and REDC pilot reports, the NRC team expressed a preference for licensing the contractor only. In the RBOF pilot report, the NRC team stated that it had no preference regarding the selection of the regulated entity. Typically, NRC licenses the entity that owns the facilities and materials, which is usually the entity carrying out licensed activities. DOE usually owns the facilities, materials, and land at DOE sites and contracts for the operation and management of the facilities.

The extent to which DOE, the owner, can delegate safety functions to the M&O contractor without circumventing NRC's regulations is an issue. Typically, NRC holds its licensees responsible for all licensed activities, even if some activities are carried out by contractors. Depending on the type of contracting arrangement and the level of control given to the contractor by the licensee, the issue becomes whether the contractors have assumed such significant authority for licensed activities that the contractors should be added to the license or even be the sole licensee. Applying the principle of who makes the final decisions in particular licensing matters would, at many DOE sites, limit the extent to which DOE could delegate responsibility to the contractor without the contractor becoming a licensee.

The choice of licensee determines the responsibilities for establishing administrative procedures to assure command and control of procurement, creation, and use of licensed materials. The options vary in the extent to which DOE would have to increase its managerial and technical functions, thereby offsetting the benefits of external regulation. In all cases in which the contractor would be named on the license, NRC would have to transfer the license to a new contractor, should DOE decide to change contractors. Such a transfer could be accomplished under normal NRC processes without undue delay and should not interfere with a smooth transition in the DOE site operations.

DOE Only

Under this option, a license or certificate would be issued to DOE, which would be ultimately responsible for the principal safety functions at the facility. This is the most common form of current NRC regulation in which the owner is the operator. NRC licensing of DOE spent fuel activities, such as the independent spent fuel storage facilities at Fort St. Vrain and TMI-2 spent fuel, and DOE custodial care for uranium mill tailings piles are examples of this option.[7] In each of the pilot projects, DOE has expressed a preference to be the licensee.

Advantages

- Could facilitate a change of contractor without triggering a license amendment.
- Whichever option is chosen, DOE, as the owner of the facilities and materials, would be the ultimate responsible party.
- DOE would be responsible for requesting and allocating funding to ensure safe operations.
- DOE could reduce its headquarters functions for the development of regulatory requirements. A feasible way to do this was discussed extensively in the DOE working group's report in 1996.

Disadvantages

- Might require DOE to develop additional technical and safety expertise to direct contractor activities.
- If DOE did not reduce its safety oversight over the contractor, NRC would add another layer and DOE oversight levels would remain the same. This would increase the cost to DOE of external regulation.

Contractor

Under this option, a license would be issued to the contractor alone. DOE should not be performing any safety functions and should limit its oversight to corporate-style audits of the contractor. DOE would retain ownership responsibilities and would provide funds to the contractor while having limited input with respect to license conditions and requirements and responses to NRC regulatory actions. The NRC has licensed contractors, rather than owners, in situations such as byproduct materials decontamination service licensees. An NRC license would be issued to a contractor only if, among other things, the contractor is qualified, has adequate equipment, and has established administrative controls and provisions relating to organization and management, procedures, record keeping, material control and accounting, and management reviews necessary to ensure safe operations.

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[7] For a comparison of this and other issues related to the TMI-2 spent fuel licensing and the LBNL pilot project report, see Appendix D.

Having the contractor as the licensee would allow DOE to focus its efforts on executing its mission. It would enable DOE and its contractors to foster a cooperative relationship that is focused on conducting research. Now, DOE is in the position of both serving as the regulator of the contractor and working with the contractor to achieve its mission. This arrangement can cause conflicting goals.

During the course of the pilot program, DOE contractors also expressed views on this issue. Although no view was expressed by the contractor at RBOF, NRC found that the contractors at LBNL and REDC preferred to hold the licenses issued by NRC. Their primary argument is that the contractor is charged with the day-to-day operations of the DOE facility and that this is the most effective and cost-efficient means to implement external nuclear safety regulatory standards.

Advantages

- NRC would deal directly with the operator of the facility with regard to regulatory actions.
- DOE would not have to develop additional technical and safety expertise to direct contractor licensed activities.
- DOE could reduce its oversight personnel if it were not responsible for the safety of the facility.

Disadvantage

- If DOE wished to change contractors, it would require a license transfer approval, with applicable review and opportunity for an informal hearing and the attendant commitment of resources by both applicant and NRC to support the application review and any hearing on the application.

Joint or Dual Licenses for DOE and Contractor

Under this option, NRC would issue either a single license to DOE and the contractor, or two separate licenses, in which their respective roles and responsibilities would be specified. DOE would be responsible for maintaining a contractor qualified to comply with NRC safety requirements, and the contractor would be responsible for carrying out all operating and safety functions. DOE could limit its oversight role to corporate-style audits. However, because of concerns about joint and several liability (i.e., the possibility that DOE would be held liable for civil penalties even though the license assigned operating responsibility functions to the contractor), DOE might take a much more active role in technical and managerial oversight, moving closer to dual regulation of the contractor, which is undesirable. It is unclear, however, whether with separate licenses, DOE might be less concerned about joint and several liability and might, therefore, take a less active role in technical and managerial oversight. NRC has licensed owners and operators jointly for several commercial nuclear reactors; e.g., South Texas.

Advantages

- This arrangement is most consistent with current NRC licensing practice and experience with large facilities (i.e., reactor regulation program in situations with non-operating owners).
- Provides direct accountability of the entity in charge of day-to-day operations and accountability of the entity responsible for funding, long-term oversight, and decommissioning.

Disadvantages

- It is uncertain whether DOE would have to possess or develop the technical and safety expertise to direct contractor licensed activities.
- It would still require a license transfer application and review and an opportunity for a hearing, with the attendant commitment of applicant and NRC resources to support the application review process, if DOE wished to change contractors.

Recommendation

The NRC task force has no preference. The NRC has licensees and certificate holders with all of the above arrangements. Site circumstances may determine the best arrangement. Where there is a longstanding contract, such as at LBNL, licensing the contractor may be most efficient. Where there have been relatively frequent contractor changes or new activities, a joint license or DOE-only license may be better.

ENFORCEMENT

The application of enforcement is affected by the selection of the regulated entity. If NRC, were to regulate a DOE contractor, instead of DOE, the same enforcement mechanisms would be used as are used for current NRC licensees. If it were to regulate DOE, NRC could also apply virtually the same enforcement mechanisms to a DOE radiological facility as now apply to existing NRC licensees. Enforcement mechanisms for existing NRC licensees include notices of violation; orders that can amend, suspend, or revoke a license, or direct that an individual be barred from participating in licensed activities; civil penalties (authorized by Section 234 of the AEA); and referral to the Department of Justice (DOJ) for criminal prosecution under Sections 222 and 223 of the AEA, among other statutory provisions. The NRC's use of such mechanisms is intended to deter violations, emphasize the importance of compliance with requirements, and encourage prompt identification and comprehensive correction of violations.

With regard to NRC regulation of DOE, it should be noted that the NRC has a history of successful enforcement against other large Federal agencies, including imposition of civil penalties and orders. From the viewpoint of the overall U.S. budget, a civil penalty imposed by NRC on a Federal agency may appear to be only a transfer of money from one Government account to another.

However, from the viewpoint of the Federal licensee, the civil penalty is a transfer out of some account of the Federal licensee, a transfer that must be compensated for by increased

appropriations, by work forgone, or by decreased profit that the facility (contractor) would make on the DOE work. In each case, the effect of the penalty on the Federal licensee is very much the same as the effect of a similar penalty on a private licensee. The penalty is also a measure of the seriousness of the issue and increases the public's attention.

Two significant issues arise in connection with possible NRC enforcement against DOE that do not arise in connection with NRC enforcement against private licensees.

First, with regard to some of the contractors that operate DOE national laboratories such as the University of California (UC) at LBNL, the contractor is not now subject to civil penalties for violations of DOE safety standards at LBNL. Section 234A of the AEA generally authorizes DOE to impose civil penalties on contractors indemnified by DOE under the Price-Anderson Act (see Section V on Stakeholders for more discussion), but exempts certain named contractors that run national laboratories from such civil penalties. Furthermore, if DOE were to be the licensee, it would not be subject to NRC civil penalties under Section 234 of the AEA, because it is explicitly excluded from the definition of "person" in the AEA .

Second, NRC enforcement against a Federal licensee is subject to a legal doctrine called the "unitary executive theory," which can affect the forum in which differences between NRC and the licensee are resolved. This doctrine, which has been adhered to for many years, holds that all agencies in the executive branch of government constitute a single party in any Federal court and that, therefore, one Federal agency should not sue another in Federal court. Thus, NRC should not seek a court injunction against DOE and should not sue to force DOE to pay a civil penalty. Differences between the two agencies would have to be resolved at the Department of Justice (DOJ). Part of the basis for the theory is purely practical: if NRC and DOE were in court against each other, DOJ would have to represent both agencies. This issue arises in connection with NRC enforcement against all Federal licensees.

This theory has had no real effect on the agency's enforcement against a Federal licensee. The NRC can still impose civil penalties and orders on Federal licensees, and they in turn can challenge those actions in hearings before NRC judges. The theory affects the regulator and the regulated only when the dispute between NRC and the licensee persists beyond final agency enforcement action. At that point, under the theory, the Federal licensee should not seek judicial review of NRC action, and NRC should not seek judicial enforcement of the final action. Instead, the dispute is resolved by DOJ.

The difference in forum can affect members of the public also, to the extent that they do not have statutory rights of participation in DOJ's resolution of the issues. They would have such rights in the judicial review of a regulator's modification, suspension, or revocation of a license, or action against an individual (though not in a court case involving a civil penalty). However, in the almost 25 years of NRC's existence, the theory has had virtually no effect on the public, because only once has a conflict between NRC and a Federal licensee gone far enough to require that DOJ resolve the conflict, and in that case, DOJ upheld the NRC position.

Nonetheless, some stakeholders have argued that the theory is cause for (1) giving the States a role in regulating DOE facility safety (because the States are not subject to the theory), but the Federal Government would have to waive sovereign immunity, and (2) amending the AEA to provide for citizen suits against DOE so that citizens would have access to a judicial forum in which the decisionmaker had the power to force DOE to comply with applicable law.

ADDITIONAL ISSUES

Additional light was shed on some issues during the pilot program: funding, cost to regulate, stakeholder processes, conflict of interest, Price-Anderson indemnification, NEPA-EIS, decommissioning, co-located workers, shared-site issues, and value added.

FUNDING

Any approach for funding NRC regulation of DOE facilities should be structured so that NRC's current licensees do not pay for it. The Omnibus Budget Reconciliation Act of 1990 (OBRA-90), as amended and extended through FY 1999, requires that NRC recover approximately 100 percent of its budget authority through the assessment of fees, less the amount appropriated from the DOE-administered Nuclear Waste Fund. These fees are assessed to applicants and licensees under 10 CFR Part 170 (fees for licensing, inspection, and other services for identifiable recipients) and 10 CFR Part 171 (annual fees assessed to NRC licensees). For example, because there was no mechanism available for NRC to charge DOE 10 CFR Part 170 fees, the cost for the licensing action on the transfer of the TMI-2 ISFI to DOE was recovered through annual fees assessed to NRC licensees.

NRC received FY 1997 funding for the pilot program, which did not involve direct NRC regulation of any DOE facility, through reimbursements from DOE. NRC is required to request appropriations directly from Congress for activities in support of its statutory responsibilities, and funding through reimbursable agreements would not be an acceptable funding method for regulation of DOE facilities by NRC, once NRC receives statutory authority to regulate DOE facilities.

For NRC's FY 1998 and FY 1999 activities in support of the pilot program, the Congress appropriated funds directly to NRC that are excluded by the agency's appropriation legislation from license fee recovery. The President's FY 2000 budget also contains funding for the pilot program within the general fund portion of the requested appropriation.

Funding of NRC's regulation of DOE could also be excluded from fee recovery in this manner. Under this approach, NRC would request funds required for its regulation of DOE facilities in its annual budgets submitted to the Office of Management and Budget (OMB) and Congress as general fund appropriations. This funding method has several strengths. It assures existing NRC licensees that they will not pay for the costs of a program that does not directly benefit them. In addition, DOE (or its contractors) would not have to obtain funding to pay NRC fees. Finally, NRC avoids the administrative costs of collecting additional fees from DOE.

Appropriations excluded from license fee recovery have some disadvantages for the NRC. NRC's flexibility in reprogramming funds excluded from license fee recovery has, in the past, been subject to greater restrictions than NRC's general funding. Further, additional financial reporting and oversight are required for funds excluded from license fee recovery.

Alternatively, the costs could be recovered through fees assessed to DOE or its contractors or both. Given this approach, the DOE facility applicant/licensee would pay fees, just as other applicants and licensees do. NRC would request funds required for NRC regulation of DOE facilities in its annual budgets submitted to OMB and Congress as direct appropriations subject to fee recovery. This approach is consistent with the funding for other NRC mission

responsibilities. If it is determined that the applicant/licensee for a specific DOE facility is the DOE contractor, the licensing and inspection costs would be recovered through fees assessed by NRC to the contractor under 10 CFR Part 170. If it is determined that DOE is the applicant/licensee, specific legislative authority would be required to allow NRC to charge 10 CFR Part 170 fees to DOE to recover the licensing and inspection costs.

Once a facility is licensed, annual fees would be assessed to the licensee (DOE or its contractor) in accordance with 10 CFR Part 171 to recover generic costs and other costs not recovered under 10 CFR Part 170. Existing legislation does not bar NRC from imposing annual fees on Federal agencies that hold NRC licenses. The recovery of NRC's costs through the assessment of Part 170 and Part 171 fees would be consistent with NRC's cost recovery for other applicants and licensees.

Recommendation

Until legislation is enacted giving NRC responsibility for regulating nuclear safety at DOE facilities, the costs for NRC's participation in the pilot program for external regulation of DOE activities should be funded from general fund appropriations. Once legislation giving NRC regulatory authority over DOE facilities is enacted, NRC regulation of DOE facilities should be funded through direct appropriations and the costs should be recovered through 10 CFR Part 170 and 10 CFR Part 171 fees assessed to the DOE facility applicants/licensees, the same as for other NRC applicants and licensees. During the transition, a combination of these two funding methods may be appropriate.

COST TO REGULATE

The cost of external regulation would include the NRC cost to regulate, the cost of the contractor to meet NRC requirements, and the cost/savings to DOE to provide safety oversight.

There are two different types of costs associated with regulation of DOE: the transition costs and the long-term costs. The transition costs to NRC and DOE will involve developing new regulations, modifying existing regulations, developing new policies and procedures, and conducting the inspection and review of facilities and documents in order to license (or otherwise regulate) the facilities. In addition, there will be costs for training NRC staff in any unfamiliar technologies encountered at DOE facilities. The extent of the transition costs will be determined by the scope and timing of the transition to NRC regulation. Costs associated with the NRC staff review of the safety bases of DOE facilities prior to being regulated can be held to the minimum required for safety if the reviews are performed using a risk-informed and performance-based approach, taking credit that is justified by the design features, the operating history, and the results of previous DOE reviews.

Long-term costs to NRC include the ongoing costs of the inspection programs as well as the maintenance of an appropriate regulatory structure for DOE activities, just as the NRC provides for other classes of facilities in the NRC-regulated community.

The cost of changing regulators could be minimized, potentially resulting in a net savings, by reducing the level of DOE oversight of the regulated activities to a level consistent with a corporate oversight model. If DOE does not decrease its oversight activities, costly, burdensome, dual regulation may well result.

Focusing the pre-regulation review of the DOE facilities on the most risk-significant areas and recognizing the validity of prior DOE analyses will permit NRC to provide its independent oversight at a cost that the public will likely accept. Precise resource estimates are difficult to develop for the standard DOE facilities when based solely on the three pilot sites investigated and without having established the mechanism to be used for regulation.

As the transition to NRC regulation of the USEC gaseous diffusion facilities showed, at some facilities, especially those with some of the "legacy" issues discussed earlier, the greatest cost of external regulation, and arguably a good demonstration of its usefulness, will be the cost of bringing those facilities into compliance with DOE's own longstanding requirements. For the pilot program facilities, few changes to DOE facilities or procedures would be needed under NRC regulation. Consequently, NRC believes that DOE's cost estimates for making the transition to external regulation are considerably higher than NRC feels is justified. NRC anticipates that the cost to DOE of making the transition will be small, for the facilities examined during the pilot program.

The following table summarizes the cost estimates for the three pilots projects. Due to the uncertainties related to enactment of legislation authorizing NRC to assess Part 170 fees to DOE, and the annual fees to be assessed at some future date when DOE is regulated, no fee estimate is included here.

Pilot Project Cost Estimates (1999 dollars)

Pilot	NRC costs (FTE)		Site/facility transition costs		Site/facility annual costs	
	Transition	Annual	DOE Estimate	NRC Estimate	DOE Estimate	NRC Estimate
LBNL	1	0.2	169K plus new license fee	139K plus new license fee	86K plus annual fees	83K plus annual fees
REDC	2.8 plus 200K for technical assistance	0.3 with an extra 1.0 for first few years	694–9255K plus new license fee	704–844K plus new license fee	640K plus annual fees	380K plus annual fee
RBOF	2.5 plus100K for technical assistance	0.3	5300–12,800K plus new license fee	1,025K plus new license fee	1125–2825K plus annual fees	225K plus annual fees

STAKEHOLDER PROCESSES

The NRC procedures, by law and regulation, provide substantial means for stakeholder participation in the agency's standard-setting, licensing, and enforcement. In standard-setting, the NRC is obligated to provide notice of proposed rules (or amendment or repeal of existing rules) and an opportunity to comment on those rules (5 USC 553). The NRC is obligated to entertain petitions for rulemaking (10 CFR Part 2 Subpart H). The final rulemaking decisions of the agency are subject to judicial review (Section 189b of the AEA).

Under Section 189a of the AEA, members of the public are offered an opportunity for a hearing on the granting or amending of an NRC license. Federal law provides for judicial review of final

orders in adjudicatory proceedings on the granting or amending of licenses (Section 189b of the AEA).

Section 189a also provides an opportunity for a hearing in any case involving the suspension or revocation of an NRC license. Section 2.205 of 10 CFR permits an NRC licensee to ask for a hearing on any civil penalty imposed on it. Final agency action in such hearings is judicially reviewable (Section 189b of the AEA). Section 2.206 of 10 CFR permits members of the public to petition the NRC to take enforcement action against an NRC licensee. However, NRC denial of such a petition is generally not subject to judicial review.

The Advisory Committee on External Regulation of Department of Energy Safety recommended that the regulator's procedures should allow the public to petition the regulator to take enforcement action. As noted above, the NRC's regulations at 10 CFR 2.206 permit such a petition. However, the recommendation went further to advocate the addition of the option of citizen suits against the DOE or NRC to compel compliance with or enforcement of compliance with regulatory requirements. During the course of the pilot program, NRC did not discover any additional information that would support changes (such as including citizen suits) to the existing provisions for stakeholder involvement. For any regulatory mechanism other than licensing or rulemaking, such as certification, NRC would need to develop a specific stakeholder process, as it did in the case of certification of USEC's gaseous diffusion facilities. See, e.g., 10 CFR 76.39.

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, which created the NRC, encouraged NRC to use the DOE laboratories on a non-competitive 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.

However, 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, because there is no specific provision in Section 170A of the AEA with regard to NRC's use of DOE laboratories. This section also provides 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 experiencing such COI. In such cases, the COI will be mitigated to the maximum extent practicable.

One of the impacts of NRC's potential regulation of additional DOE facilities is that DOE may not be in a position to render impartial or objective assistance to NRC in light of DOE's other activities. DOE has the ability to control all work performed at DOE laboratories, including work supporting NRC's exercise of regulatory authority over DOE activities. Consequently, if DOE becomes a licensee, a potential for COI exists for NRC's use of DOE laboratories not only for

review of DOE's applications as a licensee, but also for analysis and recommendations for regulations and policies that may be applied to DOE as a licensee. In this situation, NRC would also have difficulty maintaining a dedicated base of private-sector commercial support should its private-sector contractors compete for and win large DOE contracts, creating another potential for COI.

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. 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, no DOE facility can review any DOE license application materials. In addition, as NRC becomes more involved in the licensing 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.

It should be noted that some DOE laboratory capabilities, such as criticality assessments, may simply not be available from any other source in the U.S. Similarly, certain essential facilities, such as hot cell facilities, are unlikely to be available commercially, or if they are available, would be licensed by NRC, which would produce a similar COI concern.

In SECY-99-043, the staff informed the Commission of the extent to which alternate sources are available to assist the NRC in meeting its mission in the event that organizational conflict-of-interest considerations substantially inhibit its ability to use the DOE laboratories for such support. If the scope of DOE activities licensed by NRC is significantly expanded, the task force has concluded that legislative changes would likely be needed.

The COI issue was resolved in the case of the TMI-2 ISFSI by use of the Center for Nuclear Waste Regulatory Analysis (Center). Since the Center was established to provide NRC with an alternate source of analyses on high-level waste associated with the Yucca Mountain repository, it was not difficult to establish a connection between the power reactor spent fuel stored at the TMI-2 ISFSI and the repository likely to store it in the future. For those DOE facilities not containing high-level waste, it might be more difficult to justify the use of the Center.

For a comparison of this and other issues related to TMI-2 spent fuel licensing and the LBNL pilot, see Appendix D.

PRICE-ANDERSON INDEMNIFICATION

The Price-Anderson Act was enacted in 1957 to provide a system of indemnification for legal liability resulting from a nuclear incident. The act was most recently amended in 1988 by the Price-Anderson Amendments Act (PAAA) to mandate 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. This indemnification (1) provides omnibus coverage of all persons (except DOE or NRC) who might be legally liable, (2) indemnifies all legal liability up to the statutory limit, (3) covers all DOE contractual activity that might result in a nuclear incident in the United States, (4) is not subject to availability of funds, and (5) is mandatory. Currently, DOE contractor nuclear activities that may pose a risk to the public are indemnified by DOE pursuant to the PAAA, with such coverage granted by incorporation of the nuclear hazards indemnity clause.

Although DOE's indemnification of all 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 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, while DOE's indemnification limit is approximately $9 billion. As noted above, DOE is not required to indemnify contractors whose activities are subject to NRC financial protection requirements or agreements for indemnification. Therefore, 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 Part 50.

The PAAA (Section 170 of the AEA) expires in August 2002. DOE and NRC recently submitted reports to Congress recommending that Price-Anderson indemnification should be continued. If it were repealed, DOE would not be able to include such indemnification in contracts awarded after 2002.

In 1997, DOE established a PAAA task force to examine the contractor indemnification issue and sought comments from the public, contractors, and the nuclear industry on this question. One issue discussed by the PAAA task force is whether DOE should recommend continued indemnification for privatized activities and externally regulated activities where NRC indemnification does not apply. Critics of continued DOE indemnification argue that where DOE has little control over the activities performed by a contractor and/or little or no enforcement authority, DOE should not be compelled to indemnify. Rather, DOE indemnification should be within its own discretion.

On the other hand, proponents of continued mandatory coverage argue that returning to the discretionary system (before the 1988 PAAA) imposes significant administrative burdens on DOE field offices to determine indemnity for each contractor. Moreover, they argue, because DOE self-insures for claims for nuclear incidents, DOE incurs no out-of-pocket costs for insurance.

Regarding indemnification of DOE contractors for activities that may be subject to NRC regulation in the future, the NRC report to Congress recommended that any legislation that may assign to NRC new regulatory authority for DOE activities or facilities should also address any Price-Anderson indemnification implications of the new regulatory responsibility. NRC did not recommend any changes associated with DOE facilities in its report to Congress on the PAAA.

NATIONAL ENVIRONMENTAL POLICY ACT–ENVIRONMENTAL IMPACT STATEMENT (NEPA–EIS)

NEPA established national policies and goals for the protection of the environment. Section 102(2) contains certain procedural requirements directed toward the attainment of such goals. In particular, all Federal agencies are required to give appropriate consideration to the environmental effects of their proposed actions in their decisionmaking and to prepare detailed environmental statements on recommendations or reports on proposals for legislation and other major Federal actions that may significantly affect the quality of the human environment.

If DOE decides to propose legislation authorizing external regulation of its nuclear radiological facilities, it will have to perform an environmental analysis to evaluate its responsibilities under NEPA, the Council on Environmental Quality (CEQ) regulations, and DOE's implementing regulations. That analysis might conclude that the DOE has to prepare an environmental impact statement (EIS) or an environmental assessment (EA). It is DOE's view that this would likely include an EIS to consider the environmental impacts from external regulation of the entire DOE complex, as opposed to specific analysis of the complex based upon the individual pilot projects. An analysis of the entire DOE complex would be costly.

Regarding the need to prepare an EIS for operating DOE facilities for the transition to NRC regulatory oversight, although DOE appears to believe an EIS may be necessary, NRC does not necessarily agree. The duty to prepare an EIS is triggered only where there is a proposal to change the status quo in such a way that the environment is unfavorably affected. If the facilities are currently operating and have been operating for many years, unless NRC's regulations significantly relax the standards applicable to DOE facilities (an unlikely situation), subsequent regulation by NRC will not change the status quo in such a way as to create a new unfavorable environmental impact. The NRC's licensing action (the Federal action under review) would at worst preserve the status quo and could conceivably create fewer, rather than more, adverse environmental effects.

It would appear that in order to comply with NEPA, there would be a need at most to prepare a brief EA explaining why the licensing action does not constitute a major Federal action with a significant impact on the environment. The EA could then be used as the basis for a finding of no significant impact.

In order to resolve the potentially conflicting interpretations of NEPA responsibilities, the legislation giving NRC regulatory authority could include a provision stating that licensing by the NRC of a DOE facility is not to be considered a major Federal action requiring the preparation of an EIS for the purposes of NEPA. This would address the entire problem of potentially duplicative NEPA responsibilities between DOE and NRC.

With regard to existing NEPA responsibilities, DOE has promulgated implementing regulations under the CEQ and NEPA mandates that are codified in 10 CFR Part 1021. NRC has also promulgated implementing regulations that are codified in 10 CFR Part 51. 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. In such a situation, CEQ regulations provide guidance. The CEQ regulations encourage early inter-agency cooperation. This would include collaboration to reduce duplication of the NEPA process. To facilitate agency cooperation, the CEQ regulations introduce the concept of a "lead

agency," which supervises the environmental analysis and documentation required by NEPA. Other agencies that participate in this process are designated as cooperating agencies.

Proposed actions for DOE sites regulated by NRC may require that both agencies prepare a NEPA analysis. As an example, DOE might prepare an EIS or an EA for a major Federal action involving DOE facilities regulated by NRC. NRC could adopt the DOE NEPA analysis document as its own for purposes of NRC regulation if NRC were satisfied that the analysis was legally sufficient under NEPA and its implementing regulations. If proposed actions come within a categorical exclusion from the requirement to prepare an EIS or EA because the actions do not individually or cumulatively have a significant effect on the human environment, the agencies could apply the appropriate categorical exclusion.

Accordingly, if new DOE facilities were to be externally regulated, there appear to be methods under existing law and regulations to coordinate NEPA compliance of NRC and DOE. For instance, under existing NRC authority to license the DOE's proposed construction and operation of an independent spent fuel storage installation (ISFSI) to store TMI-2 spent fuel at the Idaho National Engineering and Environmental Laboratory, NRC recently issued a final EIS. After NRC staff conducted an independent review of DOE's NEPA documentation, the NRC adopted portions of the DOE EA and a DOE programmatic EIS. The NRC EIS was able to be tiered in substantial measure on the DOE environmental analyses. For a comparison of this issue and others related to TMI-2 licensing and the LBNL pilot, see Appendix D. See also, 10 CFR 76.35(c) for the handling of DOE's EIS and EAs for the gaseous diffusion facilities.

Although there are existing methods for coordinating DOE and NRC NEPA activities for licensing, it would also be possible 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.

DECOMMISSIONING

NRC regulations resulted, in part, from the fact that spiraling waste disposal costs placed financial burdens on private sector licensees with limited resources that resulted in an inability to adequately decommission facilities. Much of this resulted from licensee decisions to "mothball" facilities rather than promptly decommission them. DOE is unique both in the scope of its decommissioning activities and its role as the ultimate custodian of the Nation's radioactive waste.

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. In the DOE pilot program reports, DOE expresses doubt that NRC would approve an alternate schedule, but 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. NRC 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 for the Nation.

The TMI-2 ISFSI is not comparable to the pilot projects regarding decommissioning requirements because it is a new facility. The major concern for DOE under external regulation is for those closed facilities for which DOE has no future mission. The TMI-2 ISFSI developed decommissioning plans before completion of construction similar to other NRC licensees. The only unusual issue regarding the TMI-2 ISFSI was decommissioning funding. If Congressional action causes funding restrictions, DOE must so inform NRC.

CO-LOCATED WORKERS

In performing an accident analysis for an individual facility at a DOE site, DOE has traditionally treated all workers at that facility and workers at other facilities within the site (co-located workers) as general employees who may receive an occupational exposure. NRC would treat all workers outside the facility as members of the public, unless they have been given appropriate radiation safety training (10 CFR Part 19, which is similar to the training required by DOE regulation 10 CFR Part 835 for general employees). DOE has expressed a concern that if NRC treated co-located workers as subject to the public dose limit, it might need to substantially revise many of its accident analyses.

However, if DOE complies with Part 835 by giving radiation training to its general employees, including its co-located workers, and making provisions to evacuate visiting members of the public, there should be no difference between NRC and DOE positions.

SHARED-SITE ISSUES

DOE facilities today have multiple regulators, and external regulation would introduce additional regulators with jurisdiction for shared-site areas, roadways, railways, facilities, activities, and people. Because DOE may retain oversight responsibility for some facilities at a site that has been otherwise placed under NRC regulation, several issues will arise from this "shared-site" situation. First, there will likely be site-wide risk control programs, such as radiation protection, safeguards and security, fire protection, emergency response, and others that may be implemented both at facilities subject to NRC regulation and at those that are still subject to DOE oversight. Second, the operation of NRC-regulated facilities may pose risks to those facilities that are subject to DOE oversight, and vice versa. Third, DOE may privatize some facilities at a site and the impact of these privatized facilities on the NRC-regulated facilities must be evaluated.

Under NRC risk-informed and performance-based regulation, NRC would focus on assuring that the regulated entity performs appropriate risk determinations rather than specifying the means used to perform the work. Similar to NRC regulatory oversight at other facilities, NRC can be party to agreements among co-regulators (DOE, OSHA, EPA, and States) concerning organizational roles and responsibilities to avoid regulatory gaps, minimize duplication, and facilitate the safe conduct of operations on site.

These issues can best be handled at a shared site by an MOU between NRC and DOE that addresses the issues described above. An example of such an MOU is the "Memorandum of

Understanding Between the Nuclear Regulatory Commission and the Department of Energy on Cooperation Regarding the Gaseous Diffusion Plants," published in the *Federal Register* on November 5, 1997 (62 FR 59910).

VALUE ADDED

The DOE working group defined the key advantages to external regulation to be that it would allow DOE to focus on its primary missions, eliminate the inherent COI arising from self-regulation, enhance safety and stability, lead to a safety culture comparable to the safety culture in the commercial industry, be consistent with domestic and international safety management practices, enhance DOE credibility by an open process, and enhance public confidence in DOE. On the basis of its participation in the pilot activities, the NRC task force concludes that the value added of NRC regulation of DOE activities is the following:

First, NRC regulation would impart an enforced discipline on both the DOE and its contractors that would require adherence to a single set of standards and requirements. This situation would help foster a safety culture that is comparable to the safety culture in the rest of the nuclear industry. The standards of safety to which the DOE currently holds its contractors reflect a similar approach to risk as that of the NRC. For example, the worker radiological protection standards in the DOE regulation 10 CFR Part 835 are comparable to the corresponding provisions in the NRC regulation 10 CFR Part 20. However, the difference in having NRC be the regulator is the discipline that comes from an external regulator enforcing these risk-based requirements rather than from self-policing.

The presence of a technically competent regulator, who has enforcement powers and who conducts business in the public's view, would strongly motivate DOE personnel to consistently emphasize safety and public and worker protection. The nature and extent of NRC's licensing and inspection inquiries would foster a healthy questioning attitude by DOE facility personnel concerning their activities and decisions. A small number of NRC employees can achieve great leverage on a large nuclear organization such as DOE's.

Second, DOE would be able to re-program resources from safety oversight to its primary missions. These savings would only be made if DOE were wiling to adopt a corporate level of safety oversight and permit NRC to be the independent regulator.

Third, the inherent COI arising from self-regulation would be eliminated. This change should result in a more open process and possibly enhance DOE credibility with its stakeholders among the Congress, the States, and public.

NRC would implement its current risk-informed approach to regulation if it assumes regulatory jurisdiction over DOE facilities. Although there may be instances in which the DOE approach to a safety issue differs from what would be expected under current NRC regulations, and this has been found in the pilot projects, NRC would not require DOE to change its approach to these safety issues unless NRC determines that the DOE approach results in an unacceptable level of risk. If the level of risk is acceptable, NRC would either modify its own requirements, such as by establishing a set of requirements tailored to DOE, or would use a cost-benefit approach to enforcing NRC requirements, granting exemptions where appropriate.

Much of DOE's concern about NRC regulation has centered on the fear that NRC will impose a "one size fits all" approach to safety that will result in higher costs with little or no increase in safety benefit. However, NRC would take advantage of this opportunity to demonstrate that it can take a risk-informed approach to regulation and impose new requirements on DOE only when those requirements are necessary for safety. 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 many cases, produced a safety envelope that is comparable to what is produced by NRC regulation. Taking credit for the fact that many of these facilities have been operating safely for decades will reduce the transition costs of licensing DOE. There is no reason, from a risk-informed viewpoint, to treat all DOE facilities as though they had never been subject to safety oversight. The extent to which previous DOE evaluations of a facility may be credited will vary on a facility-by-facility basis, but the approach to regulating these facilities would be risk informed and would focus resources on the dominant risks.

NRC, in reviewing existing operating DOE facilities for external regulation, would conduct a licensing safety review that (1) recognizes that facility aging must be addressed for many DOE facilities; (2) addresses existing safety-related facilities, activities, and authorized safe-operating-basis documents such as the safety analysis report and the EIS, and (3) considers the operating history of the facility and the facility's established performance. This review would consist of a horizontal slice of the existing DOE facilities, activities, and safety programs, and a vertical slice review of any areas that raise licensing concerns, typically involving the dominant risks and risk controls for that facility. The focus of this risk-informed review would be the identification of the nuclear risks at the facility that could have a deleterious effect on the health and safety of the public and workers and protection of the environment, as well as the assurance that adequate controls are available and reliable to prevent or mitigate the potential consequences. The public would benefit by having a safety watchdog, independent of the operation of a facility, without paying the price of a complete re-review of the entire DOE complex of facilities, many of which have been operating safely for many years.

NRC's public process is well established. Licensing meetings are open to public observation. Selected inspection and enforcement meetings are also open. Development of rules and guidance includes obtaining and resolving public comments. Licensing proceedings can include hearings, with participation from intervenors. Members of the public may petition the NRC for rulemaking and enforcement action. Certain other licensing proceedings for materials licensees are informal and simplified, but still involve participation of intervening parties. The NRC employs a variety of regulatory techniques, such as interviews, observation of activities, examination of hardware, review of records, independent sampling and measurement of radiological parameters, independent design calculations, and other means to independently ascertain the adequacy of facility design, construction, and safety and the operational performance of the facility and its staff. DOE managers at the pilot sites have stated that they have already gained fresh and pertinent insight from their contacts with NRC staff. Should external regulation become more widespread, this important benefit will spread throughout the DOE complex.

The collective effect of NRC-DOE interactions can only serve to stimulate DOE's performance to a consistently high level that is more easily demonstrable.

TASK FORCE RECOMMENDATIONS

- Contingent on adequate funding, staffing resources, and a clear delineation of the authority the NRC will exercise over facilities, NRC could be the sole external regulator of DOE nuclear and radiological safety.

- If NRC becomes the external regulator of DOE nuclear and radiological safety, NRC regulatory authority should be extended to include DOE accelerators and Naturally Occurring and Accelerator-Produced Radioactive Material (NARM).

- With respect to State regulation of DOE facilities, sovereign immunity should not be waived and the States should not regulate DOE facilities

- The current MOU between NRC and the Occupational Safety and Health Administration should be extended to include the DOE sites that are subject to external regulation.

- NRC should regulate an entire site rather than a single facility within a site complex.

- Implementing legislation that clearly states responsibilities for NRC, DOE, and other Federal agencies should be developed to resolve many of the issues that have arisen in the pilot program, such as conflict of interest, NEPA requirements, and Price-Anderson indemnification.

- Consideration should be given to developing a new regulation that addresses major issues affecting DOE facilities and that specifically addresses such issues as accelerators and fissile material that is not SNM.

Based upon the pilot program, the Task Force makes the following recommendations regarding the three pilot sites investigated.

- Under NRC regulation of DOE facilities, the Environmental Protection Agency (EPA) should rescind the National Emissions Standards for Hazardous Air Pollutants requirements for DOE facilities, as it has for other NRC-regulated facilities.

- NRC should regulate safeguards issues at DOE facilities just as NRC regulates them at other facilities.

- Until legislation is enacted giving NRC responsibility for regulating nuclear safety at DOE facilities, the costs for NRC's participation in the pilot program for external regulation of DOE activities should be funded from general fund appropriations. If legislation providing NRC with regulatory authority over DOE facilities is enacted, such NRC regulation of DOE facilities should be funded through direct appropriations and the costs recovered through 10 CFR Part 170 and 10 CFR Part 171 fees assessed to the DOE facility applicants/licensees, the same as NRC does with other applicants and licensees.

- NRC could apply virtually the same licensing, inspection, and enforcement mechanisms to DOE radiological facilities as now apply to existing NRC Federal Government licensees.

- The cost to DOE of NRC regulating DOE nuclear facilities could be minimized, potentially resulting in a net savings, by reducing the level of DOE oversight of the regulated activities to a level consistent with a corporate oversight model. If DOE does not decrease its oversight activities, costly, burdensome, dual regulation may well result. Precise estimates of resources required are difficult to develop for the standard DOE facilities when based solely on the three pilot sites investigated, and without having established the mechanism to be used for regulation.

APPENDIX A:
PROPOSED PILOT SITES

Proposed Pilot Sites					
Facility	**Type**	**M&O Contractor**	**Pot'l Broad Scope ?**	**Prg Off**	**Region**
Ames Laboratory (complete)[1]	R&D Lab	ISU	Maybe	ER	3
Brookhaven Medical Research Reactor	Test/Res Reactor	(AUI)		NE	1
Brookhaven High Flux Beam Reactor	Test/Res Reactor	(AUI)		NE	1
Brookhaven Plutonium Storage Bldg 912	Fissile Stor	(AUI)		EM	1
Brookhaven Whole Body Neutron Irradiation Facility (Bldg 490)	R&D Lab	(AUI)	Maybe	ER	1
Environmental Measurements Laboratory (complete) [1]	R&D Lab	?	Maybe	ER	1
Hanford 100K Irradiated Fuel Storage Basins	Fissile Stor; HLW Stor	Fluor		EM	4
Hanford Grout Facility, including grout disposal facility	LLW Stor	Fluor	Maybe	EM	4
Hanford 340 Building Waste Handling	LLW Stor	Fluor	Maybe	EM	4
Hanford B Plant WESF Facility	Waste Trmt	Fluor		EM	4
Lawrence Berkeley Laboratory National Tritium Labeling Facility (NTLF) (Bldg 75) [1]	R&D Lab	Univ of Cal	Maybe	ER	4
Lawrence Berkeley Laboratory Radiation Assessment Calibration Laboratory [1]	R&D Lab	Univ of Cal	Maybe	ER	4
Oak Ridge Fissile Materials Storage Bldg SC-9	Fissile Stor	Lock. Mar		ER	2
Oak Ridge Special Nuclear Material Vault Bldg 3027	Fissile Stor	Lock. Mar		ER	2
Oak Ridge Radiochemical Engineering Center Bldg 7920	Fuel Fab	Lock. Mar		NE	2
Oak Ridge Irradiation Fuels Examination Lab	R&D Lab	Lock. Mar	Maybe	ER	2
Oak Ridge High Radiation Level Radiochemical Lab	R&D Lab	Lock. Mar	Maybe		2
Oak Ridge High Flux Isotope Reactor Bldg 7900	Test/Res Reactor	Lock. Mar		NE	2
Sandia Hot Cell Facility (TA-5, Bldg 6580)	Fuel Fab	Lock. Mar		DP	4
Sandia Storage Igloos Bldgs. 7055, 7057, 7063, 7078	Fissile Stor	Lock. Mar			4
Sandia Annular Core Research Reactor (TA-5, Bldg. 6588)	Test/Res Reactor	Lock. Mar		NE	4

[1] Denotes those sites suggested in Commissioner Diaz's 3/13/97 meeting.

APPENDIX B:
FINDINGS OF ONSITE WORK

LAWRENCE BERKELEY NATIONAL LABORATORY

Conclusion

The NRC team assessed the radiation safety program at LBNL during the pilot project and found it adequate to protect public and worker health and safety at the site. No safety issues requiring prompt corrective actions were identified during the pilot project. LBNL can be granted a broad-scope byproduct materials license.

Discussion

During the simulated licensing effort, the existing LBNL procedures, particularly the "Radiation Protection Program," Revision 4, were reviewed using the criteria in NRC draft Regulatory Guide 10.5, Revision 3 (June 1994), "Standard Review Plan for Applications for Licenses of Broad Scope." No actual license application was submitted as part of the mock licensing effort. This review concluded that the program and facilities at LBNL are very similar to those materials licenses of broad scope already regulated by the NRC and Agreement States.

The NRC team assessed the roles of the radiation safety committee (RSC) and radiation safety officer (RSO) and the implementation of audit programs. They assessed management involvement and oversight and the effectiveness of communications among management, the RSC, the RSO, and personnel using radioactive materials. The NRC expectation for a licensee of this type would be that the radiation safety program would be managed in accordance with the requirements found in 10 CFR Part 33. The radiation work authorization (RWA), sealed source authorization (SSA), and radiation work permit (RWP) programs at LBNL are comprehensive and appear to provide sufficient oversight for the possession, use, and transfer of radioactive material at the LBNL site.

The LBNL procedures for maintaining the security of radioactive materials would need modification before a license could be issued. Currently, most radioactive materials and sources of radiation are secured while unattended. However, the NRC team determined that some of the individual laboratories and a storage facility at LBNL were used to store small quantities of radioactive materials at times when these facilities were not secured. Therefore, LBNL's practices for securing radioactive material do not meet the NRC requirements in 10 CFR 20.1801 and 10 CFR 20.1802, which require that a licensee secure from unauthorized removal or access all licensed materials that are stored in controlled or unrestricted areas. In addition, some LBNL sources (e.g., legacy material) are not completely characterized. LBNL has designated resources to complete the identification, characterization and, where appropriate, the disposal or reuse of these legacy sources. Although some of this material has not yet been fully characterized, the materials are adequately secured and monitored to ensure safety in the interim.

The LBNL Bevatron facility (Building 51) cannot operate and has not operated for more than two years. LBNL has discussed designating the Bevatron facility for deactivation and decommissioning, but the building is currently being used for administrative activities and may be useful for some future technical purpose. Under the NRC timeliness rule, if no principal activities have been conducted in a building or separate outdoor area for 24 months and if residual radioactivity is present that precludes the facility's release for unrestricted use, the licensee must, within 60 days, inform the NRC in writing that the principal activities have

ceased. In accordance with 10 CFR 30.36(h), the Commission may approve a request for an alternate schedule for completion of decommissioning of the site or separate building or outdoor area if the Commission determines that the alternate is warranted.

If LBNL were to be regulated by NRC, the financial assurance requirements for decommissioning in 10 CFR 30.35 would apply to LBNL. The NRC possession limit needed for a license to cover the complete scope of activities at LBNL would require LBNL to submit to the NRC a decommissioning funding plan, including a cost estimate and a description of the method of assuring funds for decommissioning. Because the licensee for LBNL would be either DOE (a Federal agency) or University of California (UC) (a State agency), a statement of intent containing a cost estimate for decommissioning and indicating that funds for decommissioning would be obtained when necessary would be an acceptable method for providing the financial assurance under NRC regulations. DOE believes that this issue may still need to be addressed, possibly in legislation, to make it clear that DOE (and not the contractor) would be responsible for decommissioning funding.

The NRC team recommended that (1) NRC be given the authority to regulate LBNL, (2) the legislation not waive sovereign immunity consistent with the treatment of other Federal facilities under the AEA, and (3) NRC jurisdiction be extended to include DOE accelerators and NARM because doing so would result in a single, unified regulatory approach.

NRC costs to create a regulatory framework for LBNL include the cost of developing the regulations and guidance, possible training of NRC staff in areas new to NRC, and application reviews and approvals. Because of the work completed during the pilot, the review of the initial application would require about 0.05 FTE for the first year. Should NRC regulation of LBNL involve radiation-producing machines and accelerator-produced radioactive materials, a one-time cost should be allocated to train NRC personnel. A rough estimate of the cost would be about 0.95 FTE, or an initial total first-year cost of 1 FTE.

The annual cost to regulate LBNL can be estimated at 0.2 FTE, as follows: annual routine inspection effort, about 0.12 FTE; annual routine licensing effort, about 0.04 FTE; and budgeted annual reactive inspection effort, about 0.04 FTE.

DOE has prepared cost estimates for the effect of NRC regulation on LBNL. The following table shows the elements of cost identified by DOE, the DOE estimate for the transition and annual cost for each, the NRC evaluation of each cost item, and the NRC estimate of the cost. The NRC cost estimates are only approximations and reflect, in most cases, an NRC view as to the necessity of a particular cost item, rather than an independent, detailed cost estimate.

Comparison of Cost Estimates for LBNL[1] (1999 dollars)					
Categories	NRC Evaluation	Transition Costs		Annual Costs	
		DOE Estimate	NRC Estimate	DOE Estimate	NRC Estimate
License application preparation	DOE estimate appears reasonable	5K	5K	0	0
Modifications to radiation safety committee	DOE estimate appears reasonable	1K	1K	27K	27K
Radiation protection training	DOE estimate appears reasonable	58K	58K	0	0
Facilities and equipment	Needed to secure laboratories against unauthorized access; DOE estimate appears reasonable	6K	6K	0	0
Changes to radiation protection program	DOE estimate appears reasonable	12K	12K	2K	2K
Changes to meet requirements of 10 CFR Part 35 (medical uses)	DOE estimate appears reasonable	12K	12K	12K	12K
Radiological evacuation plan	Not needed for this license	30K	0	3K	0
License fees	Due to the uncertainties in determining the fees for regulation of DOE facilities, no estimate is included here	-	-	-	-
Records	DOE estimate appears reasonable	12K	12K	0	0
Accelerator interlocks	DOE estimate appears reasonable	23K	23K	12K	12K
NEPA	DOE estimate appears reasonable for minor costs dealing with NEPA questions that may arise	10K	10K	0	0
DOE site office impacts	The cost is for DOE staff to handle NRC interactions; DOE estimate appears reasonable	0	0	30K	30K
TOTAL		**169K**	**139K**	**86K**	**83K**

[1] DOE estimates are from the DOE March 31, 1999, publication version of the LBNL report. NRC estimates were made by the NRC task force.

OAK RIDGE NATIONAL LABORATORY RADIOCHEMICAL ENGINEERING DEVELOPMENT CENTER (ORNL/REDC)

Conclusion

NRC assessed the safety program at REDC during the pilot project and found it adequate to protect public and worker health and safety at the site. No safety issues requiring prompt corrective actions were identified during the pilot project. REDC can be licensed like an NRC-regulated facility that possesses and processes more than a critical quantity of special nuclear material.

Discussion

The NRC assessment focused on (1) all aspects of REDC nuclear and radiological operations, including programmatic activities, waste management, environmental monitoring, and decontamination and decommissioning and (2) preparation of a mock license for NRC regulation of radioactive materials.

Many of the elements of radiological control and facility safety at REDC are provided by other ORNL organizations, either through "matrix support" (such as health physics and analytical chemistry personnel) or "services" (such as waste management, emergency response, and environmental monitoring). Therefore, NRC believes that an assessment of REDC effectively provided a vertical slice review of many of the ORNL organizations that would be externally regulated under an ORNL site-wide NRC license. In fact, NRC and DOE consider it impractical to license REDC as a standalone facility because of the heavy dependence upon the ORNL infrastructure for many of the key elements associated with safe radiological operations.

During the assessment, the NRC task force reviewed the implementation and maintenance of ORNL's nuclear material control and accounting (MC&A) program as applied to REDC. Although the primary focus of the pilot project was on safety regulation, MC&A was included in the simulated licensing review to determine if the REDC MC&A program could be licensed and to identify any incompatibility between the DOE and NRC MC&A programs.

During the simulated licensing effort, the REDC facility and procedures were reviewed to assess the viability of licensing REDC in accordance with existing NRC requirements. No actual license application was submitted as part of the mock licensing effort. With the exception of radiation protection and environmental protection, which were reviewed by staff from the State of Tennessee, the mock licensing review was conducted by the NRC task force. The mock licensing effort included an evaluation of the REDC documented safety basis.

On the basis of the limited extent of its review during the pilot program, the task force tentatively found that REDC's documented safety basis provides adequate assurance of safety. REDC is currently implementing more recent DOE guidance on the preparation of safety analysis reports (SARs). Generally, the methods used for this safety analysis are very similar to what NRC considers acceptable for an integrated safety assessment (ISA). The consequence and likelihood criteria for evaluating acceptable risk are very similar to those being considered by the NRC in the new Part 70 rulemaking. For this reason, the SAR hazard, process hazard analysis, and accident analysis should meet NRC ISA expectations. However, a detailed

review of the adequacy of safety controls for high-risk accident sequences would have to be conducted to reach a definitive evaluation of acceptability.

REDC is a facility that has low inherent risk of inadvertent nuclear criticality due to the absence of sufficient fissionable material. The criticality safety program administration, hardware, and technical practices are, in principle, if properly implemented, acceptable under NRC regulations, provided exemption from the full criticality alarm requirements of 10 CFR 70.24 is granted, which seems appropriate. However, both DOE and the contractor, Lockheed Martin Energy Research (LMER), remain concerned that this exemption would not be granted by NRC and they have calculated very large cost estimates for meeting these criticality alarm requirements.

DOE and NRC have different MC&A requirements for the types and quantities of SNM at REDC. Generally, DOE's requirements are less stringent than those stated in NRC regulations and guidance. NRC does, however, have the flexibility to modify and adapt its requirements to the conditions and materials at facilities based on the risks of theft or diversion associated with processing and storing the material. The differences between the NRC and DOE approaches are primarily based on different perceptions of the cost and value of requiring additional safeguards measures for the types and quantities of materials involved.

In addition to SNM and source material, REDC has other nuclear materials that are not currently controlled as SNM by NRC. These materials include californium-249 and -252, berkelium-249, curium-244, neptunium-237, and americium-241, -242, and -243. Under current NRC regulations, these materials would be regulated as byproduct materials. However, these materials are fissionable and some are fissile. Consequently, additional safeguards measures would probably be needed for them.

NRC regulations specify that all isotopes of plutonium are to be treated the same in calculating the strategic value of the SNM on hand. The strategic value associated with the quantity and type of material is the basis for determining which NRC MC&A requirements are applicable. Most of the plutonium at REDC is plutonium-242, which poses much less of a risk from the point of view of theft or diversion than plutonium-239 and -241. NRC would need to determine whether credit could be given for the fact that the dominant isotope of plutonium at REDC is plutonium-242 and if appropriate changes should be made to its regulations or guidance. Note that the resolution of this issue also affects physical protection and safety regulation because NRC's requirements in Parts 70 and 73 also do not distinguish among plutonium isotopes in determining appropriate controls.

A substantial portion of the SNM at REDC is highly irradiated (greater than 1 rem per hour at 3 feet). Such high levels of radiation diminish the risk of successful theft and diversion and increase the likelihood of detection. However, such high-level activity sources could be more attractive targets for radiological sabotage. DOE has minimal MC&A requirements for such material, but there is no similar reduction in NRC requirements. NRC would need to determine whether NRC's MC&A requirements should be reduced at REDC for highly irradiated materials.

In addition to the pilot project review of the REDC facility and associated activities, other ORNL facilities were reviewed to identify significant technical, legal, or administrative issues potentially impacting external regulation. This is referred to as the "horizontal slice" review and was of a bounding and self-revealing nature rather than a comprehensive NRC licensing or certification review. The horizontal slice review involved about one-and-a-half workdays of effort averaging

about one hour per facility. Overall, the horizontal slice review findings were similar to those for REDC and indicate that the REDC pilot review could be extrapolated to consider NRC licensing of the other non-defense facilities at ORNL.

NRC would regulate REDC rather than relinquishing regulatory responsibility to an Agreement State because the scope and types of activities at REDC involving the storage of quantities of SNM greater than those required under 10 CFR 150.10 for a critical mass are not included among those activities that have been relinquished for regulation by Agreement States.

The rulemaking required to develop a regulatory approach for activities at ORNL is estimated to cost another 2 FTEs and $100K during the 2-year transition period. The rulemaking would likely apply to other DOE facilities that might become subject to NRC regulation. Therefore, a fraction, perhaps one-fifth, of the rulemaking costs should be applied to REDC. Thus, the cost to initially license REDC would be about 3.2 FTE and $220K for technical assistance, not factoring in uncertainties about the overall status of the existing REDC facilities.

On the basis of NRC observations during the pilot project, NRC estimated the cost to regulate REDC by issuing a broad-scope Part 70 license that would authorize radioactive material usage in buildings 7920 and 7930. The pilot project licensing review of REDC cost about 0.5 FTE of NRC review effort. A review that probed into more detail would have evaluated the information submitted in an application, and would have involved resolution of substantive issues identified during the course of the review. On the basis of this experience, NRC estimates that approximately 2.8 FTEs and about $200K in technical assistance would be required to complete the licensing reviews for the two buildings (7920 and 7930) associated with REDC. These estimates assume that no environmental impact statement or environmental assessment would be required. This effort would be expended during the transition period subsequent to Congressional authorization of NRC regulation.

Following the initial licensing reviews and rulemakings during the transition period, NRC effort would be reduced to periodic inspections by specialists and occasional reviews of license amendment applications. The steady-state licensing, inspections, and amendment reviews are estimated at 0.3 FTE per year. However, until NRC and LMER gain additional experience in the regulation of ORNL, the NRC task force believes the aforementioned estimate should be increased by 1.0 FTE for several years to reflect a project manager spending one-half time on REDC and the ORNL safety and safeguards programs that apply to REDC, augmented with in-house technical expertise.

DOE has prepared cost estimates for the effect of NRC regulation on REDC. The following table shows the elements of cost identified by DOE, the DOE estimate for the transition and annual cost for each, the NRC evaluation of each cost item, and the NRC estimate of the cost. The NRC cost estimates are only approximations and reflect, in most cases, an NRC view as to the necessity of a particular cost item, rather than an independent, detailed cost estimate.

Comparison of Cost Estimates for REDC[1] (1999 dollars)					
Categories	NRC Evaluation	Transition Costs		Annual Costs	
		DOE Estimate	NRC Estimate	DOE Estimate	NRC Estimate
1 Records/information management (facility)	NRC regulation should introduce no additional costs in this area.	50-300K	0	10K	0
2 Radiation protection (RP) program procedure changes (lab wide)	Radiation protection under DOE regulation 10 CFR Part 835 is essentially the same as under NRC regulation 10 CFR 20.	25-300K	25K	10K	0
3 RP program change training (lab wide)	DOE estimate appears reasonable for site-wide training.	4-30K	4-30K	0	0
4 RP program sign changes (lab wide)	Lower end of DOE estimate appears reasonable.	1-30K	1K	0	0
5 Annual audit RP program (lab wide)	DOE estimate appears reasonable.	0	0	10K	10K
6 Criticality accident alarm system (CAAS) installation (facility)	No CAAS will be required.	0-4000K	0	0	0
7 CAAS maintenance	No CAAS will be required.	0	0	60K	0
8 New facility procedures	Facility procedures appear acceptable.	30-200K	30K	10K	0
9 License application preparation	Facility and documentation including procedures appear acceptable.	310-840K	310K	0	0
10 License fee	No fee estimate is included here[2]	-	-	-	-
11 Decommissioning plan	DOE estimate appears reasonable.	5-50K	5-50K	0	0
12 Modify emergency procedures	Minor costs are attributable to NRC notification and coordinating exercise requirements	3-100K	3K	0	25K

[1] DOE estimates are from the DOE March 31, 1999, revision 5 version of the REDC report. NRC estimates were made by the NRC task force.

[2] No cost is included here due to the uncertainties related to enactment of legislation authorizing NRC to assess Part 170 fees to DOE, and the annual fees to be assessed at some future date when DOE is regulated.

Comparison of Cost Estimates for REDC[1] (1999 dollars)					
Categories	NRC Evaluation	Transition Costs		Annual Costs	
		DOE Estimate	NRC Estimate	DOE Estimate	NRC Estimate
13 Drawing verification and upgrade	No NRC requirement for drawing verification and upgrades[3]	0-1650K	0	100K	0
14 Facility EA/Site EIS (facility)	No EA or EIS should be required for the transition of REDC to NRC regulation.	0-500K	0	0	0
15 Prepare new nuclear criticality system (NCS) evaluation and approval (facility)	Some changes to NCS evaluation and approval appear reasonable as a transition cost.	25-125K	25K	45K	0
16 Implement revised NCS controls (facility)	Some changes to NCS controls and approval appear reasonable.	50-650K	50K	100K	100K
17 NCS program procedure change (facility)	Lower end of DOE estimate appears reasonable as a transition cost.	50-150K	50K	50K	0
18 Material control & accounting (facility)	DOE estimates appear reasonable.	140-200K	140-200K	240K	240K
19 Revise radiation safety committee (facility)	DOE estimates appear reasonable.	1-10K	1-10K	5K	5K
20 Revised SAR and TSR (facility)	Mid-range of DOE estimate appears reasonable	0–120K	60K	0	0
TOTAL		**694–9255K**	**704–844K**	**640K**	**380K**

[3] It is assumed that REDC currently matches its safety basis and that DOE itself would require risk-significant deviations to be corrected.

SAVANNAH RIVER SITE RECEIVING BASIN FOR OFFSITE FUELS (SRS/RBOF)

Conclusion

NRC assessed the safety and safeguards programs at RBOF during the pilot project and concluded that RBOF, as it currently exists, can be regulated by NRC. However, the pilot assessment revealed safeguards issues in which RBOF would not be fully compliant with NRC regulations. No safety issues requiring prompt corrective actions were identified during the pilot project. RBOF can be licensed as a storage facility for non-power reactor fuel.

Discussion

Task force reviews at RBOF focused on dominant safety, safeguards and security risks, engineered and human controls to make risk acceptable, and the availability of those risk controls. Although all aspects of the safety, safeguards, and security programs at RBOF were reviewed, only those findings that were deemed to be of compelling safety significance and that have a direct bearing on the purpose of this assessment are discussed. During the simulated licensing effort, the NRC task force reviewed the RBOF programs using the guidance in the Standard Review Plan for the new 10 CFR Part 70. The team reviewed the safety analysis report (SAR) documenting an extensive analysis of RBOF operations that appears to fully meet the DOE standards for such safety analysis. The SAR reviews the following elements: site, facility, and process descriptions; hazards analysis performed by ISA teams; systematic accident sequence identification; consequence evaluation; frequency evaluation; risk acceptance by use of a risk matrix; and identification of safety controls. These elements would constitute an integrated safety analysis (ISA) meeting the acceptance criteria of the NRC draft fuel cycle Standard Review Plan (SRP, NUREG-1520).

The RBOF pilot included a review of safeguards at RBOF. The safeguards program includes MC&A and physical protection, principally for controlling risks concerning the loss, diversion, or theft of SNM. Engineered and human controls have been established to control these risks during normal, off-normal, and emergency conditions.

A decision has not yet been made as to whether the DOE safeguards program would be subject to external regulation. In this regard, the RBOF pilot is intended to provide insights for such decisionmaking if it occurs in the future. Some important considerations with regard to RBOF are as follows: (1) the need for improvement of fissile material safeguards has been identified in earlier DOE studies; (2) commensurate with available resources, DOE has identified the need for safeguards improvements, some of which are already completed, while others are either ongoing or planned; (3) if NRC were to regulate DOE safeguards, DOE would retain responsibility to conduct a program to safeguard its assets.

The RBOF physical protection program and its implementation were reviewed to determine whether they satisfy the 10 CFR Part 73 requirements, which are imposed on NRC regulated entities by reference in Part 70. Pilot review findings indicate that the RBOF safeguards physical protection program and its implementation lend themselves to regulation under Part 70 (i.e., Part 73) with little if any modification.

The MC&A program and its implementation were reviewed to determine whether they satisfied 10 CFR Part 74 requirements, which are imposed on an NRC-regulated entity by reference in

Part 70. NRC requires high confidence that SNM characterizations (elements, isotopes, types, form, and quantity) are complete, accurate, and timely.

Review findings indicate that the MC&A program and its implementation at RBOF would not fully comply with current NRC regulations for multiple reasons. Despite these problems, planned DOE improvements in RBOF fissile MC&A could result in the RBOF SSNM MC&A satisfying NRC requirements.

Safeguards (MC&A and physical protection) and security programs are applied generically across the entire SRS including the "H-Area" in which RBOF is very closely collocated with DOE areas and facilities concerned with defense and non-defense activities involving hazardous materials, SSNM, and classified/sensitive matters. Consequently, there are inextricable safeguards and safety interfaces and impacts between RBOF and other DOE SRS areas, facilities, and activities. Similarly, there are interfaces involving security for protection of classified and sensitive information, materials, facilities, and areas. These interfaces require a clear understanding and agreement concerning each regulator's jurisdiction, expectations, and coordination before regulatory jurisdiction for RBOF can be transferred from DOE.

NRC should regulate RBOF rather than relinquishing regulatory responsibility to an Agreement State because the scope and types of activities at RBOF involving the storage of masses of SNM greater than those required for a critical mass are not included among those activities that have been relinquished for regulation by Agreement States. Section 150.10 limits Agreement State licenses for SNM to quantities not sufficient to form a critical mass.

It should be noted that RBOF is a facility with very small risks compared to the rest of the Savannah River site and that no "horizontal slice" of other SRS facilities was performed to determine the extent to which the RBOF findings can be extrapolated to the rest of SRS.

On the basis of NRC observations during the pilot project and comparisons with NRC experience in regulating civilian nuclear facilities, NRC estimated the cost to externally regulate the safety, safeguards, and security aspects of RBOF and its associated activities. NRC cost was divided into two components: (1) transition cost subsequent to Congressional authorization for NRC regulation and (2) steady-state cost after licensing/certification. The pilot project provided NRC an opportunity to directly observe RBOF facilities and associated activities, provide NRC with an understanding of RBOF operations, distinguish between RBOF and overall H-Area activities, assess the current regulatory status of RBOF, and evaluate the extent to which economies of scale relate to shared-site activities.

NRC estimated the cost to regulate RBOF by issuing a Part 70 license or certificate. The pilot project licensing/certification review of RBOF cost about 0.5 FTE of NRC effort. An actual review would have probed into more detail, evaluated the information submitted in an application, and involved resolution of substantive issues identified during the course of the review. On the basis of this experience, NRC estimates that approximately 2.5 FTEs and about $100K in technical assistance would be required to complete the licensing/certification review and initial and transitional inspections for RBOF. These estimates assume that no environmental impact statement or lengthy environmental assessment would be required. This effort would be expended during the transition period subsequent to Congressional authorization of NRC regulation.

The rulemaking required to appropriately tailor NRC requirements to adopt a risk-informed regulatory approach for RBOF is estimated to cost another 0.2 FTE during the 2-year transition period. The small cost is due to the likelihood that the rulemaking would apply to other DOE facilities that might become subject to NRC regulation under Part 70 so that no one facility would bear the full cost of rulemaking. Thus, the NRC cost for rulemaking and initial licensing/certification and initial inspection concerning RBOF would be about 2.7 FTE or $327K plus $100K for technical assistance with no factoring for uncertainties about the status of RBOF. These estimates, although comparable to those for similar facilities NRC normally licenses, may not encompass all of the costs to license/certify RBOF.

Following the RBOF initial licensing/certification review and rulemakings during the transition period, NRC regulatory effort would be reduced to periodic inspections by specialists and occasional reviews of license amendment applications. The steady-state inspections and license/certificate amendment reviews are estimated at 0.3 FTE or $36K per year plus an annual fee of $283K.

DOE has prepared cost estimates for the effect of NRC regulation on RBOF. The following table shows the elements of cost identified by DOE, the DOE estimate for the transition and annual cost for each, the NRC evaluation of each cost item, and the NRC estimate of the cost. The NRC cost estimates are only approximations and reflect, in most cases, an NRC view as to the necessity of a particular cost item, rather than an independent, detailed cost estimate.

Comparison of Costs Estimates for RBOF[1 2 3 4] (1999 dollars)					
		Transition Costs		Annual Costs	
Categories	NRC Evaluation	DOE Estimate	NRC Estimate	DOE Estimate	NRC Estimate
1A RBOF safety analysis	Responses to NRC queries after SAR/license submission should be minor because current SAR meets NRC requirements.	50-250K	50K	0-25K	0
1B Technical responses to NRC questions on RBOF authorization basis	Unnecessary because RBOF authorization basis meets NRC criteria (part of 1A).	50-250K	0	0	0
2 Radiation safety	Current radiation safety program is acceptable.	Minor[5]	0	Minor[5]	0
3 Nuclear criticality safety	Current criticality safety program is acceptable.	Minor[5]	0	Minor[5]	0
4 Chemical process safety	Current chemical safety program is acceptable.	Minor[5]	0	Minor[5]	0
5 Fire safety	Current fire safety program is acceptable.	Minor[5]	0	Minor[5]	0
6 Emergency management	Minor costs are attributable to NRC notification and coordinating exercise requirements	50-200K	50K	25-200K	25K

[1] One FTE is equivalent to approximately $100K, according to the Savannah River Site (SRS). This refers to FTE spent by DOE at SRS.

[2] DOE estimates of costs attributed to NRC regulation of RBOF do not follow RBOF review findings. Except for SNM MC&A, RBOF facilities, activities, documentation, and staffing were found to satisfy NRC requirements with little if any modification. Nevertheless, DOE characterizes the RBOF transition costs as from $5.3 to 13.2 million which roughly equates to 53 to 132 FTE. This is in addition to roughly 150 FTE currently at RBOF which has an annual operating cost of $20 million. DOE characterized the annual cost directly attributable to NRC regulation after transition as ranging from $1.1 to $3.2 million, which roughly equates to 11 to 32 FTE.

[3] DOE believes that it would have to track and be aware of NRC inspection activities that might be extensive at the outset. On the basis of the interactions that DOE-SR has had with the Defense Nuclear Facility Safety Board (DNFSB) over the past years, DOE estimates that approximately 4 to 5 FTE effort would be required during the transition period as well as in the following 2 to 3 years. Once DOE is well versed in the NRC requirements, and NRC is well versed in the facility and its associated documentation, it is anticipated that the level of effort would drop to approximately 1 to 2 FTEs. NRC believes that, given that the facilities, activities, hazards, staffing, and documentation match the authorized operating basis that is acceptable to the NRC, inspection findings, if any, will likely be few.

[4] DOE estimates that decommissioning this facility will cost between $39.8 million to $46.6 million. While it appears unreasonable that it would cost DOE approximately $40 million after the fuel has been removed and there is little contamination in the facility, nevertheless, costs to decommission RBOF is not to be associated with the transfer to external regulation. NRC regulations would permit the deferral of this decommissioning.

[5] See "Administration" (category 26 in this table).

Comparison of Costs Estimates for RBOF[1 2 3 4] (1999 dollars)					
		Transition Costs		Annual Costs	
Categories	NRC Evaluation	DOE Estimate	NRC Estimate	DOE Estimate	NRC Estimate
7 Environmental protection	No changes are needed in environmental protection program.	250-2000K	0	0	0
8 Decommissioning	Minor modification of current DOE plans to de-activate RBOF. DOE is terminating RBOF in 2006.	200-400K	25K	0	0
9 Management control systems	Current management control system, including the corrective action program and performance indicators, is acceptable. DOE has identified no backlogged safety-related corrective actions.	200-400K	0	50-100K	0
10 Configuration management	Current configuration management program is acceptable.	0-500K	0	0	0
11Maintenance	Current maintenance program is acceptable.	Minor[6]	0	Minor[6]	0
12 Quality assurance	Current QA program is acceptable with the exception of audits (see item 16 below).	Minor[6]	0	Minor[6]	0
13 Training and qualification	RBOF will continue to implement current risk-related operating procedures so staff training costs should be low.	250-500K	50K	100-200K	0
14 Procedures	Current risk-related procedures are acceptable so only minor modifications should be required.	1500-2000K	100K	50-100K	0
15 Human-system interfaces	No changes resulting from NRC regulation.	Minor[6]	0	Minor[6]	0
16 Audits and assessments	Implementation of QA audits	50-200K	50K	0-400K	50K
17 Incident investigations	No changes resulting from NRC regulation.	Minor[6]	0	Minor[6]	0
18 Records management	No changes resulting from NRC regulation.	Minor[6]	0	Minor[6]	0
19 Waste management	No changes resulting from NRC regulation.	Minor[6]	0	Minor[6]	0
20 Transportation	No changes resulting from NRC regulation.	Minor[6]	0	Minor[6]	0

[6] See "Administration" (category 26 in this table).

Comparison of Costs Estimates for RBOF[1 2 3 4] (1999 dollars)					
		Transition Costs		Annual Costs	
Categories	NRC Evaluation	DOE Estimate	NRC Estimate	DOE Estimate	NRC Estimate
21 Material control and accounting (MC&A)	MC&A costs: acceptable baseline inventory and annual inventory thereafter	1000-2000K	300K	500-1000K	100K
22 Protection of classified material	No changes resulting from NRC regulation.	Minor[7]	0	Minor[7]	0
23 Physical security	Minor costs due to shared-site aspects of physical security	100-400K	50K	0-300K	50K
24 Year 2000 computer program problems	None	Minor	0	Minor	0
25 Employee concern program	Modified program to involve NRC in addition to DOE; no risk-related concerns currently exist.	100-200K	50K	100K	0
26 Administration	Current safety documents including procedures are acceptable so only minor modifications are needed to acknowledge NRC.	750-1500K	100K	100-200K	0
27 License application preparation	Since the current facility staffing and documentation including procedures meet NRC requirements, the costs to prepare the application should be minimal.	500-1500K	100K	200K	0
28 License fee	No fee estimate is included here.[8]	-	-	-	-
29 Transition plan	There are no backlogged risk-related corrective actions; transition should require no backfitting of facilities or documentation.	250-500K	100 K	0	0
TOTAL		**5300-12,800K**	**1025K**	**1125-2825K**	**225K**

[7] See "Administration" (category 26 in this table).

[8] No fee is included here due to the uncertainties related to enactment of legislation authorizing NRC to assess Part 170 fees to DOE, and the annual fees to be assessed at some future date when DOE is regulated.

APPENDIX C:
ISSUES TO BE CONSIDERED FOR NRC-DOE IDENTIFIED OBJECTIVES

ISSUES TO BE CONSIDERED FOR NRC-DOE IDENTIFIED OBJECTIVES

Issues To Be Considered for NRC-DOE Identified Objectives		
Objective	**Issue**	**Issue Description**
1 Determine the value added by NRC regulatory oversight of activities at a pilot set of DOE nuclear facilities.	Potential benefits	Will external regulation provide increased: discipline and accountability; credibility and openness; stability and predictability; efficiency and effectiveness of operations; greater assurance of safety?
2 Test regulatory approaches that could be used by NRC in overseeing activities at a pilot set of DOE nuclear facilities. Prepare mock license applications and mock registration applications for NRC regulation of radioactive materials.	Regulatory mechanism	What are the potential methods (e.g. licensing, certification) of regulating the identified DOE activities? How can risk-informed, performance-based regulatory approaches be applied in the pilot program? How would a mock license (or other appropriate regulatory document) be prepared? How will NRC regulation affect on-going DOE initiatives?
	Enforcement	By what means will the NRC regulatory framework be enforced; fines, compensatory measures - liability of Federal managers, shutdown, flexibility to allow balancing with national security requirements. How has DOE been enforcing? How does DOE translate requirements into contract terms and into implementation? To what extent does EPA have an enforcement program that is applicable to this pilot facility? How well does it work?
	State regulation/ NARM/ accelerators	What is the most appropriate division of regulatory responsibilities between the NRC, the States, and DOE? To what extent does NRC have the necessary expertise to regulate accelerators? What are the State regulations governing accelerators?
3 Determine status of DOE facilities with respect to meeting existing NRC requirements, or acceptable alternatives, and to identify any significant safety issues.	Facility identification	What are the DOE facilities and activities that would be subject to NRC regulation? What quantities of radionuclides does the pilot facility possess?
	Identify significant safety issues	Using the pre-licensing interaction model, determine the extent of significant departures from NRC requirements, DOE requirements, or any other applicable requirements?
	Maintain safety focus	How will NRC maintain uniform standards, and avoid degradation of oversight of current NRC licensees? How will NRC maintain credibility and have an immediate positive effect?

Issues To Be Considered for NRC-DOE Identified Objectives		
Objective	**Issue**	**Issue Description**
4 Determine the costs (to DOE and NRC) related to NRC regulation of the pilot facilities and other DOE facilities that might be in a similar class and condition.	Resources needed FTE/money	What are the financial and personnel resource needs for external oversight for both the ramp-up phases and for the long term after transition to full external regulation is complete?
	How to obtain funding	What are the various methods of funding external oversight?
	Funding analysis	What are the costs to DOE, NRC, the State and the pilot facility?
5 Evaluate alternative regulatory relationships between NRC, DOE, and DOE contractors at the pilot facilities. Identify DOE contract changes that would be needed to provide for NRC oversight of contractor operations.	Other Federal agencies (OSHA, EPA, etc.)	What relationships should the external regulator have with other regulators of DOE facilities? What MOUs or other arrangements are needed with such regulators and other oversight organizations such as OSHA, EPA, States, and the DNFSB?
	Lead agency concept	Should DOE's "lead agency" concept be put into practice and if so, how?
	Role of Agreement States/ consistency	What role will Agreement States have in the regulation of DOE nuclear facilities within their borders? If there are many State regulators, how will significant differences among their regulatory requirements be avoided?
	Regulated entity	Who should be the regulated entity: DOE, the contractor, or both?
	Contract changes	What contract changes would be necessary to implement external regulation?

Issues To Be Considered for NRC-DOE Identified Objectives		
Objective	**Issue**	**Issue Description**
6 Identify issues and potential solutions associated with a transition to NRC oversight of DOE nuclear facilities.	Impact and transition schedule	What is the potential schedule for transition of the identified facilities and activities to external oversight?
	DOE order system	How will the transition be made from the current DOE order system, implemented by contract clauses, to an external framework? What is the process to identify and reconcile differences between DOE and NRC requirements?
	Security/ safeguards	Should DOE retain regulatory authority over security and safeguards and if so, for how long?
	Decontamination & decommissioning	What role should NRC or the Agreement States have in decontamination and decommissioning of DOE nuclear facilities? How will DOE facilities meet the NRC financial assurance requirements for decommissioning?
	Inspector General jurisdiction	How can dual jurisdiction of two inspectors general be avoided?
	Conflict of interest	(§170A): How would NRC regulation of DOE affect NRC's ability to fund activities at DOE laboratories to support regulation of commercial or DOE nuclear operations?
	Price-Anderson	Which agency's Price-Anderson coverage should apply, and what becomes of the Price-Anderson Amendments Act's enforcement provisions?
	Low-level waste	What is the impact of external regulation on DOE and State responsibilities under the Low-Level Radioactive Waste Policy Amendments Act?
	Transportation	What impact would NRC regulation of DOE have on DOE's "self-certifications"?
	Emergency preparedness	Should this area be regulated externally? Would external regulation affect Federal emergency response responsibilities (e.g., FRERP)?
	Defense-related issues	Are there dual-use facilities at the pilot site? Should "nuclear explosives safety" be excluded from external regulation? Who regulates defense facilities when/if DNFSB is dissolved?
	NEPA issues	Under NEPA, which agency—DOE or the NRC—would prepare EISs and EAs? Would new or additional EA or EIS be required?

Issues To Be Considered for NRC-DOE Identified Objectives		
Objective	**Issue**	**Issue Description**
7 Identify legislative and regulatory changes necessary or appropriate to provide for NRC regulatory oversight of DOE nuclear facilities.	Appropriate organizational structure for NRC	How should the NRC be organized to fulfill its new responsibilities?
	Legislative language	Develop legislative language laying out scope and extent of NRC authority, relationship with other regulatory agencies, and consider the effect of existing statutes on NRC oversight of DOE facilities.
	Regulations	What parts of 10 CFR would be applicable? To what extent should 10 CFR be amended? Should NRC propose a new regulation to cover the DOE situation?
8 Evaluate how stakeholders should be involved if the NRC assumes broad authority over DOE nuclear facilities.	Reg relationships/ stakeholder involvement	How will the public, local government, and tribal governments be involved other than through 2.206 petitions or citizen's suits?
	Public involvement (other than 2.206 petitions)	Are hearings needed? If so, what would be their nature and timing?
	2.206/ citizen suits	Should legislation allow "citizen' suits" against the external regulator or DOE on facility safety questions, as the environmental statutes do on environmental questions?

APPENDIX D:
COMPARISON OF ISSUES ADDRESSED IN THE LBNL PILOT PROJECT REPORT AND THE THREE MILE ISLAND UNIT 2 INDEPENDENT SPENT FUEL STORAGE INSTALLATION

The Three Mile Island Unit 2 (TMI-2) spent fuel independent spent fuel storage installation (ISFSI) was licensed by the NRC in March 1999. This appendix describes how a number of issues that arose during the pilot project at Lawrence Berkeley National Laboratory (LBNL) were resolved during the licensing of the TMI-2 ISFSI.

WHO IS THE REGULATOR?

LBNL Pilot Project

DOE preferred that the State of California should be the potential regulator for both Atomic Energy Act (AEA) material, naturally occurring accelerator-produced radioactive material (NARM), and accelerators.

The NRC team recommended that (1) NRC be given the authority to regulate LBNL, (2) consistent with the treatment of other Federal facilities under the AEA, the legislation not waive sovereign immunity, and (3) NRC jurisdiction be extended to include DOE accelerators and NARM because doing this would result in a single, unified regulatory approach. NRC also recommended that the existing memorandum of understanding (MOU) between NRC and the Occupational Safety and Health Administration (OSHA) regarding worker safety be continued.

TMI-2 ISFSI License

Because this facility handles more than a critical mass amount of special nuclear material (SNM), and because, in any case, there is no waiver of sovereign immunity, NRC is the regulator. In addition, the existing MOU between NRC and OSHA regarding worker safety is considered to apply to this facility.

NATIONAL ENVIRONMENTAL POLICY ACT

LBNL Pilot Project

It is DOE's view that NRC could determine that there are "special circumstances" that would require that it prepare an environmental impact statement (EIS) or environmental assessment (EA) for non-accelerator activities at LBNL .

It was the NRC's view that the issuance of a broad-scope license for LBNL would be covered by the categorical exclusion in 10 CFR 51.22(c)(14)(v) and so neither an EIS nor an EA would be required.

TMI-2 ISFSI License

Part 72 requires that a spent fuel facility not built on the same site of a Part 50 licensed reactor, must have an EIS. If this ISFSI had been built on the site of a commercial power reactor, only an EA would have been required. Under the TMI-2 ISFSI, NRC adopted the site-wide EIS but wrote an ISFSI-specific EIS using the data in DOE's EIS.

LEGACY WASTE ISSUES

Legacy waste issues were not of concern at the TMI-2 ISFSI because it was a newly built facility with no waste in place.

WHO IS THE LICENSEE?

LBNL Pilot Project

It is DOE's view that DOE should be the licensee at LBNL because (1) DOE owns the facilities, materials, and equipment in question; (2) DOE is also responsible for funding operations, including any corrective actions and facility upgrades in response to external regulatory action; and (3) DOE is ultimately responsible to Congress and the taxpayer for the mission and operations at LBNL, a responsibility that cannot be delegated. In addition, DOE states that it must be able to effect a transfer of the operating contract from one contractor to another without triggering what may be a protracted license transfer process.

NRC took the position that it could regulate DOE facilities or the DOE contractor, or both, according to circumstances, rather than using a "one size fits all" approach. However, at LBNL, the NRC agreed with the State of California, which is the DOE-preferred regulator of LBNL, and the University of California (UC), which is the DOE contractor at LBNL, that UC is the preferred licensee at LBNL. This is the surest approach to avoiding dual layers of oversight.

TMI-2 ISFSI License

DOE is the licensee at the TMI-2 ISFSI. NRC and DOE thoroughly discussed the issue, and NRC and DOE jointly agreed to make DOE the licensee. In this particular situation, naming DOE as the licensee was determined to be the most efficient and cost effective. NRC concluded that the lessons learned through this process did significantly improve the DOE's ability to ensure worker health and safety.

FUNDING

LBNL Pilot Project

Any approach for funding NRC regulation of DOE facilities should be structured so that NRC's current licensees do not pay for such regulation. NRC would request funds required for its regulation of DOE facilities in its annual budgets submitted to OMB and Congress as general fund appropriations. Alternatively, the costs could be recovered through fees assessed to DOE and/or its contractors. Given this approach, the DOE facility applicant/licensee would pay fees, just as other applicants and licensees do. NRC would request funds required for NRC regulation of DOE facilities in its annual budgets submitted to OMB and Congress as direct appropriations subject to fee recovery. This approach is consistent with the funding for other NRC mission responsibilities. If it is determined that the applicant/licensee for a specific DOE facility is the DOE contractor, the licensing and inspection costs would be recovered through fees assessed by NRC to the contractor under 10 CFR Part 170. If it is determined that DOE is the applicant/licensee, specific legislative authority would be required to allow NRC to charge 10 CFR Part 170 fees to DOE to recover the licensing and inspection costs. In the LBNL

report, NRC specifies that legislative authority would be required to allow NRC to collect 10 CFR Part 170 fees.

TMI-2 ISFSI License

There is no mechanism identified for NRC to charge DOE with 10 CFR Part 170 fees. Because of this, the TMI-2 ISFSI licensing was charged to NRC overhead, an unsatisfactory situation since the commercial licensees then pay for DOE's license through a portion of their fees.

CONFLICT OF INTEREST

Although there was no potential conflict of interest identified during the LBNL pilot project, there are potential conflict-of-interest activities at other DOE facilities, which could arise if DOE were regulated by NRC and NRC continued to use DOE laboratories for research and analyses. The conflict-of-interest issue was resolved for the TMI-2 ISFSI by the use of the Center for Nuclear Waste Regulatory Analyses (CNWRA). Since the CNWRA was established to provide NRC with analyses on high-level waste associated with the repository at Yucca Mountain to prevent a conflict of interest associated with high-level waste, it was not difficult to establish a connection between the TMI-2 ISFSI which will store spent fuel preceding potential disposal at Yucca Mountain. For those DOE facilities not containing high-level waste, it would be difficult to justify the use of the CNWRA.

PRICE-ANDERSON INDEMNIFICATION

LBNL Pilot Project

NRC has no plan to seek change to current Price-Anderson Act indemnification, which requires DOE to continue to indemnify its contractor.

TMI-2 ISFSI License

The existing arrangement in which DOE indemnifies the contractor is continued.

DECOMMISSIONING

LBNL Pilot Project

DOE states in the LBNL report (see footnote 1 on page 1) that NRC could require decommissioning of closed facilities immediately, which would be costly. In the LBNL pilot report (p. xiv), DOE describes a "worst case" cost scenario that "could be as much as $80 million, with most of the cost associated with decontamination and decommissioning of the Bevalac."

It is the NRC's view that its regulations permit an alternate schedule for decommissioning and that this cost is unrealistic and is not, in any case, associated with a transition to external regulation.

TMI-2 ISFSI License

The TMI-2 ISFSI is not comparable to the LBNL pilot as far as decommissioning requirements because it is a new facility. Of major concern to DOE under external regulation are those closed facilities for which DOE does not currently have decommissioning plans. DOE developed decommissioning documentation for the TMI-2 ISFSI, just as every NRC licensee does; and DOE recognizes the usefulness of this action for other new facilities. The only major decommissioning issue that arose during the TMI-2 ISFSI licensing was related to the funding of the decommissioning. If DOE experiences funding restrictions during the decommissioning phase due to Congressional action, DOE must inform NRC.

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10 SUPPLEMENTARY NOTES

11 ABSTRACT *(200 words or less)*

The NRC task force presents its views on the major issues related to external regulation of DOE nuclear facilities. These views are based on the results of a pilot program designed to test regulatory concepts through simulated regulation by evaluating each pilot facility against the standards that NRC believes would be appropriate for this type of facility. The pilot projects chosen were Lawrence Berkeley National Laboratory, Oak Ridge National Laboratory Radiochemical Engineering Development Center, and Savannah River Site Receiving Basin for Offsite Fuels. Significant Issues included the potential scope of NRC regulatory authority, enforcement, the methods of regulation, and the question of who would be the regulated entity.

The overall conclusion is that most of the technical policy and regulatory issues involved in NRC oversight of DOE nuclear facilities studied as part of the pilot program could be handled adequately within the existing NRC regulatory structure. In fact there was precedent in NRC policy and practice for resolving many of the issues raised during the pilot program.

The NRC would take a risk-informed, performance-based approach to DOE nuclear facilities, and would make efficient use of what DOE has already accomplished in its regulation of itself. External regulation will eliminate the inherent conflict of interest arising from self-regulation, lead to a safety culture comparable to the safety culture in the commercial industry, and allow DOE to focus on its primary mission.

12 KEY WORDS/DESCRIPTORS *(List words or phrases that will assist researchers in locating the report.)*

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