

September 12, 1997

SECY-97-206

FOR: The Commissioners

FROM: L. Joseph Callan /s/
Executive Director for Operations

SUBJECT: STATUS REPORT OF THE NUCLEAR REGULATORY
COMMISSION TASK FORCE ON OVERSIGHT OF
THE DEPARTMENT OF ENERGY, IN
RESPONSE TO
COMSECY- 96-053 - DSI 2

PURPOSE:

The purpose of this paper is to inform the Commission of the status of the work of the Nuclear Regulatory Commission Task Force formed to identify, in conjunction with the Department of Energy (DOE), the policy and regulatory issues needing analysis and resolution, before seeking NRC oversight responsibility for DOE nuclear facilities.

BACKGROUND:

In 1994, legislation was introduced in the House of Representatives, that would have subjected new DOE facilities to immediate external regulation by the NRC and would have created a Congressional Commission to study possible external regulation of existing facilities. As an alternative to such a Commission, Hazel O'Leary, the Secretary of Energy at that time, in January 1995 created the Advisory Committee on External Regulation of DOE Nuclear Safety (hereafter, Advisory Committee). The Advisory Committee was charged with providing advice and recommendations on whether and how new and existing DOE facilities and operations might be regulated to ensure nuclear safety.

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In its December 1995 report, *Improving Regulation of Safety at DOE Nuclear Facilities*, the Advisory Committee recommended, among other things, that essentially all aspects of safety at DOE's nuclear facilities should be externally regulated. Secretary O'Leary accepted and endorsed the Advisory Committee's report; she further created the DOE Working Group on External Regulation (hereafter, Working Group) to provide her with recommendations on implementing the Advisory Committee report. The recommendations made by the Working Group in its December 1996 report were: (1) NRC should be the external nuclear safety regulator, and (2) the move to external regulation should be phased-in over several years. Both the Advisory Committee and the Working Group concluded that the transition to NRC regulation would involve significant legal, financial, technical and procedural adjustments for both agencies.

In September 1996, NRC published for comment a series of Direction Setting Issue (DSI) Papers under the Strategic Assessment and Rebaselining initiative. One of the issue papers, DSI 2, addressed options for NRC's position on the regulation of DOE facilities. In March 1997, after considering public comments, as well as the December 1996 DOE decision to seek transfer of oversight to NRC, the Commission endorsed seeking the transfer to NRC of responsibility for the regulatory oversight of certain DOE nuclear facilities, contingent on adequate funding, staffing and a clear delineation of the authority NRC would exercise over these facilities. In addition, the Commission directed the staff to convene a high-level NRC Task Force to identify, in conjunction with DOE, the policy and regulatory issues needing analysis and resolution.

At a meeting in June 1997, both DOE Secretary Peña and NRC Chairman Jackson agreed to pursue NRC regulation of DOE nuclear facilities, on a pilot program basis.

DISCUSSION:

The original DOE Working Group proposal for NRC external regulation assumed a phased-in approach over a ten-year period, with Congressional authorization occurring in fiscal year (FY) 1999. The transition from DOE regulation to NRC regulation of DOE Nuclear Energy and Energy Research nuclear programs and activities was to be completed during the first five years (FY 2000-2004), with transition to NRC regulation of DOE Environmental Management nuclear programs and activities during the second five-year period (FY 2005-2009). NRC would not regulate Defense Programs facilities until FY 2009. However, NRC and DOE now believe that a pilot program of simulated regulation, in which regulatory concepts are tested, should be conducted before seeking legislation. Currently, the Task Force plans to conduct a pilot program of simulated regulation at three facilities, in FY 1998. In FY 1999, additional pilot sites/facilities of a different nature will be added to this program.

STATUS OF MEMORANDUM OF UNDERSTANDING

The DOE and NRC Task Forces are developing a draft Memorandum of Understanding (MOU) to establish the overall framework for cooperation in a pilot program of NRC simulated regulation at selected DOE nuclear facilities. The August 13, 1997, draft MOU was submitted to the Commission for comment on August 19, 1997. The working version of the MOU defines "simulated regulation" and describes the scope and objectives of the pilot program, including

stakeholder and public interactions. NRC and DOE have no significant disagreements regarding the contents of the MOU. However, because of the need for extensive coordination among DOE Headquarters, field offices, and contractors, the MOU will not be ready for formal Commission and Secretary of Energy review for a few weeks.

STATUS OF THE INTERAGENCY AGREEMENT FOR FY 1997

DOE and NRC are drafting an Interagency Agreement for reimbursement of NRC costs, incurred in FY 1997, for NRC Task Force activities associated with preparing the MOU and creating a pilot program plan. The Agreement is being patterned after similar agreements between NRC and DOE, and is expected to be signed by September 30, 1997.

STATUS OF PILOT PROGRAM

The objectives of the pilot program are to determine the desirability of NRC regulatory oversight of DOE nuclear facilities and to support a decision on whether to seek legislation to authorize NRC regulation of DOE nuclear facilities. This program is designed to gather quantitative and qualitative information on external regulation, upon which to base a legislative decision. The pilot program will, wherever applicable, use risk-informed, performance-based concepts to focus the pilot program on the areas of greatest significance. The base case will be the existing requirements placed on the facility. The staff will attempt to use the principles and methodologies contained in draft Regulatory Guide DG-1061 ("An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis") to determine the value (or lack thereof) of making changes to conform to NRC requirements. Further, the staff will use risk insights to help focus the pilot program on those areas most important to safety.

The pilot program will test regulatory concepts at certain DOE nuclear facilities, through simulated regulation, by evaluating a facility and its standards, requirements, procedures, practices, and activities against the standards that NRC believes would be appropriate to ensure safety at that pilot facility. Implementation details for pilot facilities will be negotiated by DOE, NRC, and DOE contractors, in individual work plans for each pilot facility. However, each plan will contain a consistent set of core questions and issues that need to be addressed for all facilities, to make the broader decision on whether to seek regulatory jurisdiction over DOE nuclear activities.

The pilot program will begin in FY 1998, with three DOE pilot facilities selected by DOE and NRC. The objective is to complete between six and ten tests of simulated regulation by the end of the two-year pilot program. Pilot facility evaluation will be staggered throughout the two-year period, but must be completed within two years.

The three sites proposed for the first year of the pilot program are: Lawrence Berkeley National Laboratory (LBNL); the Spent Fuel Dry Transfer and Storage Facility (for DOE spent fuel), at Idaho; and the Radiochemical Engineering Development Center (REDC) at Oak Ridge National Laboratory. (See Attachment 1 for a description of the nature of activities at these facilities.) Because of potential scheduling difficulties, DOE is reconsidering whether to include the Idaho facility within the pilot program. However, if DOE does not include the Idaho facility, the NRC would expect DOE to provide a replacement facility. The LBNL site will provide NRC

experience in testing the broad-scope license approach at a complex DOE laboratory; the Idaho storage facility will provide NRC experience with regulating a wide variety of fuels that are not in the commercial sector; the REDC will give the NRC experience with hot cells for processing, storing, and packaging very heavy elements that are somewhat rare. The proposed sites were selected based on the following criteria: 1) Limit the pilot program in FY 1998 to three non-Defense Programs facilities; 2) use facilities similar to current NRC licensees; 3) use facilities where NRC has existing regulatory requirements and guidance that could be applied through a program of simulated regulation; and 4) use facilities that would be operated for a long time or new facilities; and 5) use facilities that are willing to participate in the pilot program.

STAKEHOLDERS

Although there will be a modest effort to provide notification to stakeholders on a national level about the overall plan for the pilot, stakeholder involvement activities will focus on the stakeholders at the location of the pilot facilities. To the extent practicable, the existing DOE institutional structure for stakeholder involvement at each pilot facility (for example, DOE Site Specific Advisory Boards or similar institutions), will be used to coordinate the public involvement effort. A key issue for the pilot project, and for the external regulation of DOE generally, is the appropriate role of the State government in that process. Staff efforts to involve States in the pilot projects will generally focus on consultation with the State where the facility is located. The nature of this consultation will be tailored to such factors as the type of facility involved, and the existing relationship between the DOE facility and the State agency.

Agreement State jurisdictions do not extend to Federal government licensees, such as Veterans Administration hospitals, or military licensees. For example, even though some physicians at the University of California at Los Angeles (a California licensee) also practice medicine at an adjacent Veterans Administration hospital (an NRC licensee), the State of California is not involved with the latter and this two-license approach is working. Agreement States do not have jurisdiction over nuclear reactor licensees, although NRC does allow Agreement State representatives to accompany NRC on inspections of the reactors. This model, coupled with periodic consultations with the pilot-facility host State, is currently the approach NRC and DOE intend to take in the pilot program for DOE facilities.

The Task Force will contact the Organization of Agreement States, the Conference of Radiation Control Program Directors, and State representatives in the States where DOE facilities are located to define a role for the States during the pilot program.

RESOURCES

The staff estimates that it will require approximately \$1 million and 5 FTEs to carry out the pilot activities in FY 1998. On July 16, 1997, the Senate passed the FY 1998 Energy and Water Development Appropriations Bill (S.1004). In the report accompanying the Bill, the Senate Committee noted with interest the DOE/NRC joint efforts to develop a small pilot program to test regulatory concepts for DOE nuclear activities and facilities, and recommended five objectives for the program. The Committee further noted its belief that the work would be performed under a reimbursable arrangement from DOE to NRC. The Committee recommendation included \$1 million within DOE's appropriations for these activities.

On July 25, 1997, the House of Representatives passed H.R. 2203, FY 1998 Energy and Water Development Appropriations Bill. According to the accompanying Committee report, FY 1998 appropriations to NRC include \$1 million to provide the resources needed to evaluate the costs and benefits of establishing independent oversight of certain DOE nuclear facilities. In August 18, 1997, letters to the Senate and House Subcommittees on Energy and Water Development, the Chairman requested that the \$1 million for the NRC activities in support of the pilot be included in the NRC appropriation as was done in H.R. 2203. In either case, the agency's FY 1998 FTE ceiling does not include the 5 FTEs for this work. These FTEs will be identified in the paper being submitted to the Commission on reimbursable business-like activities.

The FY 1999 resources to add additional pilot sites/facilities to the program are being requested from OMB based upon the Commission's decisions on the Executive Council's July 15, 1997, FY 1999-2001 Budget Proposal.

STATUS OF TASK FORCE

In a Staff Requirements Memorandum (SRM) dated March 28, 1997 (on DSI 2), the Commission recognized that there are likely to be many significant legal, procedural, and technical issues that must first be identified, thoroughly evaluated, and resolved before seeking oversight responsibility for any DOE facility. To implement this SRM, a Task Force was formed in April 1997, and a work breakdown structure and Gantt Charts with tasks, assignments, and schedules, were prepared. At that time, about 26 individuals were assigned to the Task Force, with the expectation that most individuals would need to devote only a limited amount of time to Task Force activities in their area of expertise, whereas a few individuals would be essentially full-time. In June of this year, the NRC and DOE Task Forces began to focus specifically on the MOU and the pilot program. NRC and DOE now believe that a pilot program, in which regulatory concepts are tested, should be conducted to address the identified issues prior to seeking legislation. Thus, the NRC Task Force has been scaled back to approximately 2 FTEs in FY 1997 and 5 FTEs in FY 1998. The primary focus of the Task Force in FY 1998 will be on the pilot program. Preparation of issue papers on actual regulation of DOE facilities will be postponed until FY 1999. The schedule for completing the analysis of issues in the March 28, 1997, SRM is given in Attachment 2. The budget request for FY 1999 includes resources to address these issues. The staffing estimates for FY 97 and 98 were based on starting work on all three pilot facilities in late FY 97 or early FY 98. However, the schedules included in Attachment 1 would stagger the start dates of the pilot plants. Therefore, the staff FTE estimates for FY 98 will need to be reevaluated.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

The Office of the Chief Information Officer (CIO) has no objection to this paper. The CIO notes that an assessment of the information management activities will be needed during the pilot program.

The Office of the Chief Financial Officer has reviewed this Commission Paper for resource implications and has no objections.

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- Attachments:
1. Nature of Activities ongoing at Facilities Proposed for Pilot Program
 2. Schedule for Completing Analyses of Tasks in 3/28/97, SRM

NATURE OF ACTIVITIES ONGOING AT FACILITIES PROPOSED FOR PILOT PROGRAM

LAWRENCE BERKELEY NATIONAL LABORATORY

This summary was submitted by the Department of Energy (DOE) Berkeley Site Office. Because of the dynamic variety of research conducted at Lawrence Berkeley National Laboratory (LBNL), broad categories of tasks are identified. A specific commitment has been made not to possess, handle, or store critical mass quantities of fissile special nuclear material (SNM). This commitment precludes operation of high risk facilities, such as power reactors, and precludes classified Department of Defense projects involving critical mass quantities of fissile SNM at LBNL.

Since its establishment in 1931 as a single-purpose accelerator-based University research facility, LBNL has evolved into a multi program national laboratory with a mission to:

- Perform leading multi-disciplinary research in the energy sciences, general sciences, and biosciences in a manner that ensures employee and public safety and the protection of the environment. The energy sciences include materials research, chemistry, earth sciences, and energy and environmental research. The general sciences include nuclear and high-energy physics and accelerator research. The biosciences include the life sciences and structural biology research.
- Develop and operate unique national experimental facilities, for use by qualified investigators from around the world. These facilities include the Advanced Light Source, the 88-inch Cyclotron, the National Center for Electron Microscopy, and the National Tritium Labeling Facility.
- Educate and train future generations of scientists and engineers. Over 440 graduate students pursue research at LBNL, with about 100 students receiving advanced degrees each year. Pre-college programs are conducted for science educators and students.
- Foster productive relationships with industry. The Center for Advanced Materials, the Center for X-Ray Optics, and the California Institute for Energy Efficiency are examples of collaborations with industry. Technology transfer programs promote the application of research results.

To support the national infrastructure for fundamental science and engineering research, LBNL provides a range of unique research facilities and centers to investigators from industry, universities, and government. In fiscal year (FY) 1992, LBNL had over 200 facility users and signed 43 user agreements, for a total of \$3.3 million. The major national facilities available to qualified users include:

- The Advanced Light Source (ALS) which provides photon beams of unprecedented brightness and coherence and with picosecond time structure. The Injector was commissioned in FY 1992 and the storage ring was commissioned in FY 1993. The facility began operation in the fall of 1993.
- The 88-inch Cyclotron provides light ions, polarized protons and deuterons, and intense and high-charge-state beams of heavy ions (up to krypton) at energies up to about 35 MeV per nucleon. The cyclotron facility has experimental areas for conducting nuclear science experiments, as well as research in other areas such as life sciences, atomic physics, and radiation damage in semiconductors.
- The National Center for Electron Microscopy consists of the High Voltage Electron Microscope which operates at up to 1.5 MeV (the highest energy in the United States); the Atomic Resolution Microscope offers 1.5-angstrom resolution; and analytical microscopes and support facilities. An upgrade of the facility is planned.
- The National Tritium Labeling Facility provides advanced instrumentation to investigators needing high-specific activities of tritiated compounds as tracers in chemical and biomedical research.

In addition to these national facilities, other research facilities involved in collaborative research include the Center for Computational Seismology, the Sky Simulator, the Mobile Window Thermal Test Facility, and the Low Background Counting Facility. The Laboratory has established programmatic research centers with the specific objectives of fostering collaborative research with industrial and educational institutions. These Centers include, for example, the Center for Advanced Materials, the Human Genome Center, the Center for X-Ray Optics, the Center for Computational Seismology, the Center for Building Sciences, and the Center for Isotope Geochemistry. In addition, at LBNL, radiochemical and radiobiological studies are performed in many laboratories in a controlled environment and typically research projects use extremely small (millicurie) quantities of a large number of radionuclides. At the accelerator facilities, radiation fields are well characterized and controlled.

- A new Hazardous Waste Handling Facility (HWHF) has replaced the existing HWHF. The new HWHF is located at the east end of the site and is built to meet the latest waste management requirements incorporating improved facility safety design for worker and environmental protection and complete multiple waste-stream capability.

Some examples of anticipated future activities and facilities at LBNL include:

a. Human Genome Laboratory

The Human Genome Laboratory will be a large three-story building located near the Biomedical Laboratory and the Cell Culture Laboratory. This state-of-the-art molecular genetics research facility will contain open laboratory areas furnished with modular wet benches and desks. Support facilities, including cold rooms, darkrooms, cell tissue rooms, autoclaves, and laboratories for radiological work, robotics, instrumentation and computation, will be adjacent to the laboratory area.

b. Chemical Dynamics Research Laboratory

Located in a new three-story large building adjacent to the ALS, the Chemical Dynamics Research Laboratory (CDRL) will be a state-of-the-art national facility for chemical-dynamics research using laser and synchrotron radiation. The laboratory includes an infrared free-electron laser, ALS beamlines optimized for chemical sciences research, advanced lasers and molecular-beam apparatus, universal-particle mass detectors, computer-based modeling systems, and auxiliary instrumentation. The building includes eight support laboratories, and 40 offices.

c. Building Technology Initiative

A new light laboratory and office building, the Energy and Environment Facility, will support Energy and Environment Division programs in building energy conservation, solar heat technologies, electrochemical energy storage, and thermal energy storage. In progress is a conceptual design for a building to provide offices and laboratory space for Environmental Protection; Occupational Safety; Radiation Assessment; Environmental Health and Safety (EH&S) Training, and EH&S Division Administration.

The pilot program at LBNL will begin one week after the Memorandum of Understanding is signed.

RADIOCHEMICAL ENGINEERING DEVELOPMENT CENTER

The Radiochemical Engineering Development Center (REDC) is the production, storage, and distribution center for the DOE heavy-element research program. The facility, composed of two buildings adjacent to the High Flux Isotope Reactor, processes irradiated fuel elements and targets for DOE programs. Base funding comes from Energy Research, with supplemental funding coming from Defense Programs and Environmental Management. The Transuranium Element Program processes irradiated targets to chemically separate and purify berkelium, californium, einsteinium, and fermium for shipment to the research community and other end users. The Mark 42 Processing Program entails processing ten Mark 42 assemblies, which were irradiated at the Savannah River Site in the early 1980s, to recover plutonium-242, americium-243, and curium-244. One assembly per year is processed, with the radionuclides being shipped to Los Alamos National Laboratory for a classified end use. One of the two-story buildings contains three hot cells dedicated to target fabrication, four for chemical processing, and one each for analytical sample analysis and waste-handling. The other building contains

six heavily shielded hot cells, one unshielded hot cell, and a water-filled pool, used as a storage basin for fabricated neutron sources.

The pilot program at REDC will begin five months after the start of the LBNL pilot, in order to take advantage of the experience gained at the latter facility.

IDAHO SPENT FUEL DRY TRANSFER AND STORAGE FACILITY

The Idaho Spent Nuclear Fuel Program provides safe interim storage for a wide variety of fuel. The program is currently focused to provide interim dry storage of spent nuclear fuel (SNF) at the Idaho National Engineering and Environmental Laboratory (INEEL). The program will place fuel into road-ready containers suitable for interim storage in Idaho followed by eventual shipment to an off-site location as required by a court settlement agreement with the State of Idaho.

The Idaho DOE fuel is currently in a variety of storage configurations. DOE plans to place all SNF in a central, NRC licensed dry storage facility, once a regulatory framework allows the NRC to regulate DOE fuel. DOE is evaluating several facilities for the NRC external regulation pilot program to conduct simulated regulation on DOE generated SNF. An earlier candidate was found to be unsuitable due to the commercial nature of the SNF currently included in the scope of that project. Fuel at the INEEL range from well-characterized, dry fuel, with cladding intact, to breached, saturated fuels that have been previously canned. Well-characterized DOE fuel, with quantities that minimize licensing issues with the NRC, are being sought for the scope of the pilot program candidate.

DOE has two applications submitted to NRC. One for a license to store TMI-2 fuels at the INEEL and another for the license transfer to DOE to operate the Fort St. Vrain dry storage facility in Colorado. The TMI-2 facility license is an important part of meeting the requirements of the settlement agreement between DOE and the State of Idaho. The pilot program will be scheduled such that it will not interfere with the active license process underway and in accordance with DOE's schedule.

SCHEDULE FOR COMPLETING TASKS REQUIRED BY MARCH 28, 1997, STAFF
REQUIREMENTS MEMORANDUM

SRM1 FY97 MOU/IAG (Tasks 18, 24)*

In fiscal year (FY) 1997, initiate development of a Memorandum of Understanding (MOU) and Interagency Agreement (IAG) with the Department of Energy (DOE) to establish framework and obtain necessary budgetary resources from DOE.

SRM2 FY97 Budget/FTE (Tasks 46,31)

Seek to obtain budgetary resources from DOE and relief from personnel full-time equivalents (FTEs) ceilings from the Office of Management and Budget.

SRM3 FY97- Inform Commission

Periodically inform the Commission and seek approval and guidance; DOE & Nuclear Regulatory Commission staff brief the Commission.

SRM4 FY99 - Legislative Language (Tasks 142,134)

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.

SRM5 FY97 - Facility Identification

Carry out an initial identification of DOE facilities' activities that would be subjected to NRC regulation

SRM6 FY97-99 - Identify Regulatory Relationship/Stakeholder Involvement (Task 109)

Analyze the relationship with other regulators of DOE facilities, including the need for MOU's with the Occupational Safety and Health Administration, the Environmental Protection Agency, the Defense Nuclear Facilities Safety Board, and the States. Discuss the "lead agency" concept.

SRM7 FY 99 Transition Schedule (Task 157)

Consider the potential schedule for transition of the identified facilities and activities to NRC regulation.

*Task numbers in parentheses refer to the May 13, 1997, detailed schedule.

SRM 8 **FY 99 Assess Resources (Task 37)**

Provide a realistic assessment of the financial and personnel resource needs for NRC oversight.

SRM9 **FY 97-99 Assess Funding (Task 46)**

Assess methods of funding NRC oversight (e.g., direct appropriations, fees paid by DOE contractors, etc.).

SRM10 **FY 99 Issues/Approach (Tasks 65-95)**

Consider technical/regulatory issues related to external regulation, and potential methods (licensing, certification) of regulation and the transition from current DOE order system, implemented by contract clauses, to the NRC regulatory framework.

SRM11 **FY 99 Working Group Report (Tasks 62-69)**

Assess the details of the DOE Working Group Report and advise the Commission on policies, procedures, and approaches to the issues.

SRM12 **FY 97-99 Maintain Credibility (Task 95+)**

Describe how NRC will maintain credibility and have an immediate positive effect.

SRM13 **FY 97-99 Agreement State Consistency (Task 87)**

Describe how consistency among the Agreement States will be ensured.

SRM14 **FY 99 Enforcement (Task 85)**

Describe how NRC will effectively enforce its requirements.

SRM15 **FY 97-99 Maintain Safety Focus (Task 95+)**

Describe how NRC will maintain high standards, avoid degradation of safety performance and dual standards.

SRM16 **FY 99 Security/Safeguards (Task 77)**

Consider DOE proposal to retain regulatory authority on security and safeguards.

SRM17 **FY 99 D & D (Task 78)**

Consider NRC role in decontamination and decommissioning (D & D) of DOE facilities.

SRM18 **FY 99 Use of 10 CFR 2.206 (Task 89)**

Consider whether to use the 10 CFR 2.206 petition mechanism, or to use “citizen suits.”

SRM19 **FY 99 NARM (Task 81)**

Consider possible regulation of naturally occurring and accelerator-produced radioactive materials.

SRM20 **FY 99 Accelerators (Task 80)**

Consider regulation of accelerators.

SRM21 **FY 99 MOU Legislative Phase (Task 151)**

Develop MOU with DOE for the legislative phase.

SRM22 **FY 99 Resource Legislative Phase (Tasks 31-57)**

Develop a plan for obtaining resources for the legislative phase of the project.