

**STATEMENT FOR THE RECORD
PRESENTATION TO THE U.S. NUCLEAR REGULATORY COMMISSION
STATUS OF THE CIVILIAN RADIOACTIVE WASTE
MANAGEMENT PROGRAM**

**BY
LAKE H. BARRETT, ACTING DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
May 15, 1997**

Introduction

Chairman Jackson and Members of the Commission:

When Dan Dreyfus spoke with you last September, the Civilian Radioactive Waste Management Program was in the early stages of implementing the revised Program Plan we published in June 1996. Congress endorsed the plan in the 1997 Appropriations Act, and the President's 1998 budget request for the Program supports its continued implementation. With adequate funding, we will complete the Yucca Mountain Site viability assessment next year and maintain momentum toward geologic disposal as set forth in the Nuclear Waste Policy Act of 1982, as amended.

The near-term management of commercial spent fuel remains an important issue to utilities and others. On December 17, 1996, the Department formally notified standard contract holders that it would be unable to begin accepting their spent nuclear fuel at either a repository or an interim storage facility by January 31, 1998. Our letter invited contract holders to provide their views on how the delay could best be accommodated. In response to the Department's letter, a group of states and electric utilities filed a petition in the U.S. Court of Appeals for the District of Columbia earlier this year. In this petition, the utilities seek authorization to suspend payments to the Nuclear Waste Fund and a court order requiring the Department to develop a program that will enable it to begin accepting spent nuclear fuel from utilities by January 31, 1998.

Secretary Peña recently met with representatives of the utility industry, environmental organizations, and state public utility commissions for constructive discussions of ways to mitigate the impacts of the anticipated delay. The Department is proceeding with the following dual-track approach to address the anticipated delay in accepting spent fuel:

- First, we are planning to begin a process with contract holders to determine what actions under the standard contract would be appropriate to address the anticipated delay.
- Second, the Secretary has committed the Department to continuing discussions simultaneously with representatives of the utilities, States, and other stakeholders to seek mutually-agreeable solutions to the delay. Options that have been suggested for

consideration include financial compensation and the Department taking title to some fuel at the reactor sites.

The new Congress has also taken-up legislation addressing the near-term management of spent fuel. The Senate has passed a bill, similar to legislation that it passed last year, that calls for construction of an interim storage facility on the Nevada Test Site near Yucca Mountain after the 1998 repository viability assessment, with alternate provisions if the President decides the site is not suitable. The House is considering legislation that would direct the Department to begin waste acceptance for storage at an interim storage facility at the Nevada Test Site by January 2000, regardless of the results from the viability assessment. On April 29, 1997, the Energy and Power Subcommittee of the House Commerce Committee held a hearing on this legislation, at which both the Chairman and I testified. The prospects for enacting legislation during this Congressional session are uncertain.

The Administration opposes both the bills being considered and the President has indicated that he would veto either bill if presented in its current form. The Administration opposes the proposed legislation, because it would effectively designate a specific site for an interim storage facility before the viability of a permanent geologic repository at Yucca Mountain has been completed. Such legislation could undermine public confidence that a repository evaluation will be objective and technically sound. The House bill also includes unrealistic deadlines for licensing, construction, and operation of an interim storage facility. Further, the initiation of a large scale interim storage program in the current budget environment could thwart our progress toward completing site characterization and a license application for a geologic repository.

Despite its opposition to the current legislation, the Administration remains committed to resolving the complex and important issue of nuclear waste management in a timely and sensible manner, consistent with sound science and the protection of public health and safety, and the environment. Secretary Peña has stated his willingness to work cooperatively with Congress on nuclear waste disposal issues within the confines of the President's policy. Whatever the outcome, the Federal government's longstanding commitment to permanent geologic disposal should remain the centerpiece of the nation's high-level radioactive waste management policy.

Geologic disposal is essential not only for commercial spent fuel, but also to facilitate clean-up of the nuclear weapons complex and to support our nuclear Navy's national defense mission. From a global perspective, decisions we make in the U.S. will have impacts throughout the international community. Our continuing endorsement of the international consensus on geologic disposal sets an example for the high standards of environmental protection and nuclear safeguards we wish to promote worldwide, as well as furthering our international nuclear non-proliferation goals

Program Budget Request

The President's 1998 budget requests \$380 million for the Program to continue implementation of our revised Program Plan. Of this amount, \$325 million will be directed toward completing the scientific testing, performance assessment, and design activities associated

with the viability assessment and continuing the environmental impact statement and license application activities at Yucca Mountain. Of the remaining funds, \$10 million is earmarked for the Waste Acceptance, Storage, and Transportation Project. These funds will be used to continue our efforts to develop plans and processes for the orderly transfer of spent nuclear fuel and high-level waste into a federal waste management system and to continue non-site-specific planning for a potential interim storage facility and the transportation of spent fuel. The remainder of the President's budget request provides funding for program management activities, which include federal salaries, quality assurance, information technology and other related activities.

Viability Assessment

Over the past several years, the Yucca Mountain Project has focused on addressing the major unresolved technical issues associated with the design and overall performance of a repository. This focus led to the identification of the viability assessment and its four constituent components as a principal near-term milestone for the program. The completion of these components constitutes a logical convergence point at which all participants, including the Commission, will have a better comprehension of the repository endeavor and the significance of the data then available. The viability assessment will also give policy makers key information regarding geologic disposal at Yucca Mountain. The Administration has stated that this assessment should also be available to inform any decision concerning the site for a Federal interim storage facility. Pending legislation also recognizes the assessment as a significant milestone for the program.

When completed, the viability assessment will be an early step in support of the site recommendation in 2001 and a license application for submittal to the Commission in 2002. The description of repository design and operations contained in the viability assessment components is essential for the rational completion of site characterization. The insights gained from the viability assessment will focus the remaining site investigations and design activities on the important uncompleted work and unresolved issues. These insights will also help us update the regulatory framework for the repository by identifying those issues critical to the protection of public health and safety for a Yucca Mountain repository.

The viability assessment is a management tool for the program that will guide the completion of work required for a Secretarial site recommendation to the President. This site recommendation is the consequential decision point formally required by the Nuclear Waste Policy Act, as amended. The viability assessment information will also be useful in the development of an environmental impact statement and a license application. The viability assessment is not expected to be sufficient for the site recommendation and licensing. Indeed, the viability assessment will include a plan for additional site investigations and design work necessary for preparing a license application.

It is important that this context remain clear in considering the adequacy and sufficiency of the viability assessment. If expectations incorrectly elevate the viability assessment into a final "go" or "no-go" decision on the repository, or as the agency action needed for a site recommendation, then the decision will be premature and not meet the requirements of the

Nuclear Waste Policy Act, as amended. I seek the assistance of the Commission and other knowledgeable groups in maintaining the distinction between the viability assessment and the Site Recommendation.

The viability assessment will provide our staffs with a frame of reference to conduct the precicensing interactions necessary to facilitate the timely submittal and review of a license application. The primary objective for our interactions with the Commission and its staff in the near-term is to ensure that all parties have similar expectations with regard to the information that will be available for the initial license application and that these expectations are consistent with the realities of the policy process. We expect that the information contained in the viability assessment design and performance components, together with the additional information that will be obtained as a result of the work described in the license application plan, will provide an adequate technical basis for a license application. The Commission's views regarding the acceptability of our approach to licensing as set forth in the license application plan will be a key input to the decision regarding continuation of the geologic disposal program.

To carry out an efficient and cost-effective geologic disposal program, it is important that we have a mutual understanding of the emerging repository concept and the associated licensing requirements. Eventually, this understanding will provide a basis for the Commission's preliminary comments on the adequacy of our site characterization analysis and design for inclusion in a license application. In the near term, it should provide the Commission the basis to conclude that completion of an acceptable license application is feasible within the budget and time frame contemplated by the Department, based on the information available and plans for additional site investigations and design work.

The Annual Progress Reports and Issue Resolution Status Reports that your staff intends to prepare could aid in developing this mutual understanding. We have reviewed the first Progress Report, which was issued on January 15, 1997. This report is well-written and effectively communicates the staff's current thinking and concerns on key technical issues. We are concerned, however, with the staff's prioritization of the key technical issues and the relationship of the key technical issues to the regulatory framework. Regardless of our concerns, we believe that the Issue Resolution Status Reports will help us improve the viability assessment and provide insights that will help us prepare more effective regulatory documents.

Updating the Regulatory Framework

Our revised Program Plan recognized the need to update the regulatory framework for the repository to reflect the policy changes since the enactment of the Nuclear Waste Policy Act, the realities of the budget constraints on the program, and, in particular, the understanding gained in more than a decade of site investigations. We have considered these factors in the proposed amendments to our siting guidelines. It is similarly important that these factors be considered by the Environmental Protection Agency and the Commission, respectively, in developing radiation protection standards and revising the licensing criteria for a repository at Yucca Mountain. The Department believes that the resulting regulations and the licensing process should focus on issues

central to protecting public health and safety and the environment, and not require a degree of proof that is beyond what science and engineering can reasonably provide.

We suggest emphasizing overall system performance as the basis for decisions about site suitability and repository development. Performance assessment has long been recognized as an important tool for evaluating the acceptability of a geologic repository. It is important, however, that regulations consider the inherent limitations of performance assessment and the significant uncertainty associated with analyses of repository performance. Although these analyses provide meaningful insights into the potential performance of the repository system and the consequences of disruptive events, the results should not be viewed as predictions of actual repository performance. Used as a tool to organize and evaluate the technical information obtained during site characterization, performance assessment can help all parties understand the potential benefits and consequences of geologic disposal. This understanding is essential to informed regulatory decisions.

Unlike the engineered systems and comparatively short performance periods considered in reactor safety analyses, the repository analyses must consider the substantial but uncertain contribution of the natural system and a performance period well beyond anything previously considered in a licensing environment. The repository performance assessment will not support a licensing process that tends to compound extreme conservatism in the assumptions made for each factor affecting the performance of the system and then seeks to compare the resulting bounds of system performance to a stringent quantitative standard. The repository safety case we present in licensing will use reasonably conservative estimates of the parameters significant to repository performance to describe the likely performance of the repository system. The safety case will also describe the sensitivity of this performance to variations of these key parameters. This information can then be used to compare the potential range of system performance to the applicable standard. If the licensing review forces the simultaneous selection of bounding values for many or all of the key parameters, however, the compounding of conservatism could cause the analysis to lose its useful insight and its value in regulatory decision-making.

In December 1996, we published a notice of proposed rulemaking to revise our repository siting guidelines as they would be applied in evaluating the suitability of the Yucca Mountain site. This proposal is intended to be consistent with the 1987 Amendments Act and the intent of the 1992 Energy Policy Act, which focused characterization activities and the regulatory framework solely on the evaluation of a repository at Yucca Mountain. The approach we propose focuses on overall system performance as the basis for decisions about site suitability and repository development. We believe that at this point in the Program, the most logical and understandable measure of the suitability of the Yucca Mountain site is its ability to host a repository design that will meet the applicable standards for the protection of public health, safety, and the environment. The suitability decision need not and should not depend on individual attributes of the site outside the context of an assessment of the performance of the proposed engineered repository in the specific geologic setting.

The public comment period on the proposed rule ends on May 16, 1997. We will evaluate all the comments received, including those from the Commission staff. When our evaluation is

complete, we will prepare a revised draft and submit it to the Commission. We have reviewed the SECY paper prepared by the staff regarding options for the Commission's review of the revised guidelines. We support the staff's recommendation that the Commission issue a "no objection" statement to our use of the revised guidelines, provided that we have accommodated the Commission's comments and concerns. We believe that this option will facilitate a timely and effective rulemaking process.

We continue to follow with interest discussions by your staff regarding potential changes to the Commission's licensing requirements being considered in response to the direction provided in the 1992 Energy Policy Act. We believe that changes that would result in a simple, risk-based rule are particularly appropriate. We feel that the reconsideration of defense-in-depth and subsystem performance criteria in the context of an overall strategy for revisions to Part 60 is also appropriate. The experience gained in recent years has identified the difficulties associated with the evaluation of subsystem performance against specified, quantitative criteria. Our discussions regarding the interpretation and required analysis for compliance with the groundwater travel time criterion certainly support this observation. In particular, we support the use of sensitivity studies and uncertainty analyses for individual repository components in the context of a single, quantitative system performance criterion. This more manageable approach for considering the potential contribution of multiple barriers would provide reasonable assurance that the system performance objective will be met.

We understand that the staff intends to provide the Commission with options for possible revisions to Part 60 later this year. We support the staff's position, presented at the March meeting of the Advisory Committee on Nuclear Waste, that the Commission's consideration of possible revisions to its licensing requirements should not be on the critical path for the Department's revision of its siting guidelines or for any assessment of the viability of the Yucca Mountain site. To support preparation of a license application, however, it is important that the key requirements of Part 60 be clear by the time we initiate the final phase of license application design, which is currently scheduled for July 1999.

Along with the Commission, we are awaiting the Environmental Protection Agency's proposed radiation protection standard for a repository at Yucca Mountain. We remain concerned that the Agency could promulgate standards for geologic disposal that would contain both individual protection and groundwater protection criteria that are inconsistent with the realities of geologic disposal. We specifically agree with the view expressed recently by Chairman Jackson that incorporation of a separate groundwater criterium would not enhance public safety. In addition, we believe that such a standard may not be implementable and could result in the rejection of any potential geologic disposal site even though public health and safety and the environment would be protected.

Recent Developments

I am pleased to report that, within our existing authorities, we have made significant progress since we last reported to the Commission. We are implementing a credible plan that maintains progress toward a national decision on geologic disposal.

Geologic Disposal

Excavation of the 7,900-meter (five-mile) loop of the exploratory studies facility at Yucca Mountain was completed on April 25, 1997. Construction of this facility, which began in late 1994, has been a major undertaking for the Program. Over the past two years, it has provided the opportunity to substantially increase our knowledge and understanding of the natural system. It has also enhanced our ability to design and construct a repository that will perform effectively in this setting. From this point forward, work in this facility will focus primarily on thermal and hydrologic testing, and on the confirmation of our understanding of the characteristics of the rock within which the repository would be constructed.

Focus on underground exploration and testing

Our thermal testing program is well underway. The three tests that are underway or planned will allow us to explore how the rock and fluids in the repository system will behave in the presence of heat generated by the emplaced waste. Initial data from the in-situ thermal testing program will be available for the viability assessment and a more robust data set will be available for any subsequent site recommendation and repository license application.

The single heater test that was initiated in August 1996 is continuing. The heat-up cycle is scheduled to end later this month, followed by monitoring of system response during the cool-down period. The preliminary results from this test are generally consistent with model predictions of temperature, rock displacement, and moisture movement. However, the measured temperatures near the heater are higher and the volume of rock heated above the boiling point of water is larger than predicted. It is too early to determine the exact causes of the differences between the model predictions and the actual results. Some differences are expected, and their study will give us an opportunity to gain greater understanding. The results from both the heating and cooling cycles will be available for consideration in the viability assessment and will lead to improved modeling of thermal-hydrologic behavior for licensing.

The large-block heater test began in February 1997. This test is being conducted in an outcrop of representative rock that has been mapped in detail. The use of an isolated block allows us to more closely control and monitor the key parameters of the test. This test will enable us to assess instrumentation and provide information that will aid in evaluating the impacts of coupled thermal, hydrologic, chemical, and mechanical processes on waste package materials and radionuclide transport.

Excavation of the alcove for the drift-scale heater test was completed in February 1997. Test setup is in progress and should be complete by November 1997. Testing is scheduled to begin in December 1997. The drift-scale test is one of the most ambitious of its type ever fielded and is designed to approximate conditions in a portion of an actual emplacement drift. This test will provide information on coupled processes at a scale that is more representative of repository conditions, and will also test repository ground support and waste package materials. The information will be considered in the design and performance evaluations that will be used in licensing.

In August 1996, we completed initial construction of the Northern Ghost Dance Fault Alcove. This alcove is the first of two that provide access to the Ghost Dance fault, a major geologic feature of the repository setting. Initial testing of the fault zone prior to penetration by the alcove was completed in March 1997. The final phase of construction, which crosses the fault zone, was completed in April 1997. If construction and hole-drilling targets are achieved, further testing in the finished alcove will begin this month. Initial excavation of the second alcove, the Southern Ghost Dance Fault Alcove, was completed earlier this year and probing for the fault zone is underway. Testing in these alcoves will help to determine the flow properties and chemistry of water in the fault zone. Initial results from testing and pneumatic monitoring indicate that the fault is more permeable than the surrounding rock and is a preferred pneumatic pathway through the overlying rocks.

We intend to construct an additional small-diameter, exploratory drift to investigate the geologic and hydrologic characteristics of the potential emplacement area to the west of the main tunnel in 1998. Construction of this drift was identified as a 1999 contingency option in our revised plan. Our oversight groups have strongly advocated that we accelerate construction of an east-west exploratory drift and we are planning how best to complete this drift in calendar year 1998. The information obtained will help to improve our understanding of the rock characteristics and hydrologic processes that are important to the design, construction, and performance of a repository at Yucca Mountain. Information from this activity should be available prior to any site suitability determination supporting site recommendation. We are currently conducting a systematic analysis of our data needs to determine the most effective approach for the design and construction of this smaller diameter excavation.

Characterizing hydrologic uncertainty

The flow of fluid contacting the waste packages is an important factor in determining the long-term performance of the repository system. This flow depends directly on the percolation flux of water in the unsaturated host rock for the proposed repository. The rate of transport of the radionuclides from the waste package to the water table, after some of the waste packages are degraded, also depends on the flow. Although not all details of the flow system in the unsaturated zone at Yucca Mountain are understood at this time, there is accumulating evidence that water percolates down through the proposed repository host rock predominantly through the fractures in that rock. The evidence includes evaluations of net infiltration and data from studies of fracture coatings, perched water, temperature profiles, and environmental isotopes, such as chlorine-36. The picture emerging from this evidence is that infiltration above the repository and percolation flux through the repository vary spatially and temporally over the site, and that the current average percolation flux in the potential host rock is in the range of 2 to 15 millimeters per year, which is substantially higher than our earlier estimate of less than 1 millimeter per year. Even higher percolation fluxes may be possible, since precipitation could increase under future climatic conditions.

As we reported to you last September, levels of chlorine-36 well above the expected natural background were detected at five locations within the exploratory studies facility. This information was obtained as part of an ongoing comprehensive sampling program to assess the

potential for preferential flow-paths that could allow more rapid water movement from the surface through portions of the repository. A total of 189 samples, covering more than 6,800 meters (22,300 feet) of the exploratory tunnel, have now been analyzed for chlorine-36 and other isotopes. Elevated levels of chlorine-36 were found at eight locations, including the five previously identified. These levels are sufficiently above natural background to suggest that some water containing chlorine-36 generated by atmospheric testing of nuclear weapons has rapidly moved from the surface to the repository horizon. All the locations are either in the northern access ramp or the northern half of the main exploratory tunnel, and all generally correlate with known faults that cut the bedded tuff above the repository level.

The new data are consistent with the earlier results and appear to support some general conclusions about the preferential flow of water at some points through the mountain. Rapid penetration of surface water to repository depth appears to require a fault that cuts the bedded tuff overlying the repository host rock. The amount and distribution of the chlorine-36 found at depth seem to depend on the rate of surface water infiltration into the mountain and on the presence of features that cause the downward percolating water to be spread laterally.

Recent results from our investigation of flow and transport characteristics in the saturated zone below the water table have also added substantially to our understanding of the site. This new information is significant to our evaluation of performance since the saturated zone is the primary pathway for transport of radionuclides to the accessible environment. We conducted hydraulic testing of flow-producing zones at our C-well complex, located to the southeast of Yucca Mountain, to better understand ground water flow in the aquifer that underlies the potential repository. We also completed testing with tracers in the most productive flow zone in order to assess transport characteristics and processes. Additional tracer tests are planned at the C-wells in zones of lower flow which are closer to the water table elevation. Preliminary results from this testing indicate that processes affecting transport in the saturated zone may contribute significantly to waste isolation by retarding and diluting radionuclides released from the repository.

We completed sensitivity analyses of our 1995 performance assessment to evaluate the significance of various natural and engineered barrier components. These analyses incorporated the latest revision of our unsaturated zone model, with higher percolation fluxes, and a revised model for the saturated zone, based on new information on factors affecting transport. Using the revised models in the analyses indicates that the magnitude and time of peak dose are very sensitive to assumptions about flux in both the unsaturated and saturated zones and the effectiveness of retardation processes in the saturated zone.

We recently allocated additional funding, beginning in this fiscal year, for new scientific investigation activities intended to focus on the current uncertainties associated with characterizing flow in the unsaturated zone and transport in the saturated zone. The uncertainties associated with these processes directly relate to key attributes of the natural system in our waste containment and isolation strategy and strongly influence the results of performance analyses. The additional activities, together with those already planned, should help us bound the characteristics of percolation flux in the unsaturated zone and the nature of preferential flow-paths that could

focus the movement of this water. We will also supplement our investigation of the saturated zone to enhance our understanding of transport and dilution. The information obtained will contribute to the design and performance assessment work that supports the viability assessment, the site suitability determination, and the preparation of the environmental impact statement, site recommendation, and license application.

The new tests planned for the unsaturated zone will take place primarily within the exploratory studies facility and will entail the excavation of small rooms, as well as drilling and instrumentation of a number of boreholes in these underground workings. Studies involving analysis of environmental isotopes such as chlorine-36 will continue, as will related testing in the alcoves that provide access to the Ghost Dance fault. In addition to continued monitoring of surface boreholes, an additional hole will be drilled to the water table in the western part of the repository block to provide supplementary information for the geologic model of the site as well as data on hydrologic parameters in both the unsaturated and saturated zones.

Additional hydrologic and tracer tests to evaluate transport characteristics in the saturated zone are being planned for the C-well complex. Aquifer testing will be conducted in existing watertable boreholes to develop information on the hydrologic properties of the saturated zone at various locations. Water chemistry data will be obtained from existing wells to help better define the conditions that control the concentrations of radionuclides in the ground water.

Performance Assessment

Significant progress is being made toward the total system performance assessment, which will support the viability assessment. A multitiered effort is underway for review of the major process-level modeling inputs to this performance assessment.

A peer review group has been established to monitor and review the preparation of this iteration of performance assessment and to review the product. The first meeting of this group was held in February 1997. The comments and recommendations available from the early stages of this peer review will be incorporated, as appropriate, in the total system performance assessment as it is developed for the viability assessment. The comments and recommendations from later review cycles will be incorporated into the assessment that supports the site recommendation and preparation of the license application.

A formal expert elicitation on the unsaturated zone flow and transport model for the site was completed in April 1997. Given recent information regarding the potential range of percolation flux and the existence of preferential flowpaths in the unsaturated zone, this will be one of the most important process-level models in terms of its influence on the evaluation of overall system performance. Additional elicitations in critical areas are being planned on waste package degradation and saturated zone flow modeling. A team from Atomic Energy of Canada Limited is conducting a review of our geologic framework model and additional reviews may be conducted during the next year.

A series of ten process-model abstraction and testing workshops is in progress to determine the state-of-the-art in terms of modeling and to identify additional information that may be needed and can be obtained to support the performance assessment effort. The goal of these efforts is to identify and establish bounds on uncertainties in the models and the input data, and to identify areas of potential strength and weakness in the models and the supporting data. Nine of these workshops have already taken place. The remaining one should be completed by early June 1997. Members of your staff have attended these workshops as observers.

Design

We worked on critical elements of a repository and waste package design, and on obtaining the information needed as input to the design process. Repository design activities addressed thermal management, performance confirmation design, waste handling emplacement and retrieval, development of systems, structures, and components important to safety that have little or no regulatory precedent, and Design Basis Event analyses. Preliminary recommendations from these activities will contribute to the viability assessment design process. Waste package design activities addressed criticality analysis methodology development, preliminary thermal, structural and shielding analyses, containment barrier fabrication, closure feasibility analyses, and conceptual invert design and material selection. Integrated design and performance assessment activities addressed waste package material process model development and model abstraction. These efforts will support preliminary designs for components of an engineered barrier system that contributes to isolation and retardation of radionuclides.

This work will support completion of the repository design, concept of operations, and cost estimates, which are key components of the viability assessment. We will complete Phase I work for the repository and waste package in the fall of 1997. The Phase I work will provide definition of the design features that will be considered as part of the total system performance assessment and in developing the cost estimate for the viability assessment.

Interactions with the Nuclear Regulatory Commission

Since Dan Dreyfus last addressed the Commission, our organizations have continued to interact and make progress in a number of areas. I hope that we can continue to build on this progress as we implement our revised program approach and complete the viability assessment.

In February 1997, our staffs met to discuss progress toward agreement on issues related to the potential for igneous activity. The main outcomes of the meeting were the identification of points of agreement and a proposed path to resolution of the remaining issues associated with the probability of disruption by an igneous event. In accordance with our path forward, we will describe how the results of our expert elicitation will be used in performance assessment and how sensitivity studies will be conducted. We understand that the staff has committed to completing an Issue Resolution Status Report on the probability of future igneous activity by November 1997.

As you are aware, assessments of repository performance over unprecedented time frames will require the use of expert judgement to supplement available knowledge. Expert judgement will be an important part of the technical basis for our license application. Therefore, we are committed to performing and documenting our expert elicitations consistent with the guidelines authored by the Commission staff. We recognize that the Commission staff will independently review the results of our assessments on issues such as volcanic hazards. While disagreements in judgement among experts are to be expected, such disagreements should not invalidate a properly conducted elicitation or jeopardize the utility of future applications of expert judgement that are planned by the Department.

We are continuing to develop our risk-based criticality analysis methodology. An Appendix 7 meeting was held on February 5, 1997, with your staff to discuss our proposed approach and to identify areas for further development emphasis. Further detailed discussion followed with an Appendix 7 meeting earlier this month. A topical report describing our proposed methodology for analyzing postclosure criticality will be submitted to your staff by the end of fiscal year 1998. The intent is to continue our dialogue on this important issue.

The licensing support system was intended to meet the Commission's requirements for access to the comprehensive documentation required for the licensing proceedings before submittal of an application. We are reviewing the suggested changes to 10 CFR Part 2, Subpart J, and working with your staff to resolve any comments we may have. In light of the significant advances in computer technology and connectivity that have occurred since these requirements were last revised in 1991, the proposed change in the Commission's rule appears most appropriate. We encourage the Commission to continue its efforts to move toward electronic filing of documents and support the use of Web technology. We appreciate the open process for cooperation on these issues and will continue to interact with your staff as it explores new approaches to system development. We have begun the reprocessing of our records into image and text formats that can be accessed through the Internet. This activity is expected to be complete by the end of fiscal year 1999. We have also developed a prototype format for licensing documents that provides a link from the document to supporting information in our records system or other sources.

Repository Environmental Impact Statement

An environmental impact statement must accompany the Secretary's site recommendation to the President and the license application to the Commission. We published a Notice of Intent in the Federal Register in August 1995, initiating the public comment period on the proposed scope of the repository environmental impact statement. The public comment period closed in December 1995, but further action was deferred because of the reduced funding for fiscal year 1996. We have since resumed work toward preparation of the statement. The comments received during scoping have been evaluated and a comment summary document should be completed this year. The draft environmental impact statement is scheduled to be issued for comment in 1999.

Waste Acceptance, Storage, and Transportation

Our Waste Acceptance, Storage, and Transportation Project is focused on the planning and long-lead time activities that must precede the removal of spent nuclear fuel from reactor sites, once a Federal facility becomes available. These activities are consistent with the Administration's policy on siting an interim storage facility. Action by the Commission's staff on our submittals for a generic storage facility design and for use of burnup credit is likely to be important to our ability to receive fuel, because licensing and certification processes are expected to be on the critical path for storage and transportation activities if new authorizing legislation should be enacted.

During the past year, we developed a market-driven approach that will rely on maximum use of private industry capabilities, expertise, and experience to provide the necessary services and equipment required to accept and transport commercial spent nuclear fuel to a Federal facility. We are presently working to establish a competitive procurement process to award fixed-price, multi-year, performance-based contracts. The proposed approach is consistent with our responsibilities as set forth in the Nuclear Waste Policy Act and in the Standard Contract.

We issued a draft request for proposals for public review and comment in December 1996 and held a presolicitation conference in February of this year. The comment period on the draft solicitation ends today. This draft solicitation represents a preliminary step that will support the release of a final request for proposals in a timely manner if a decision is made to proceed.

The intent is to develop a market infrastructure to foster competition and innovative approaches to waste acceptance and transportation. The contractors would accept spent fuel from its owners and generators and supply casks and equipment for transporting spent fuel to a designated Federal facility. The contractors would work with the owners and generators and the Commission to determine the best way to service a site and the preferred transportation routes to a Federal facility. The phased approach to contract implementation would allow flexibility and would include sequential development of business and servicing plans that would describe each contractor's general approach, how it might acquire casks and equipment, and its approach to transportation operations.

Our market driven strategy requires the waste acceptance and transportation services contractors to develop and implement quality assurance programs consistent with your requirements. We recognize, however, that we retain our quality assurance responsibilities as stewards of the Federal waste management system. Accordingly, we will review our contractors' quality assurance plans prior to initiation of spent fuel shipments and will conduct audits and surveillances throughout operations.

To address long-lead-time requirements related to centralized storage, we completed a non-site-specific design for a centralized interim storage facility and submitted a topical safety analysis report for this design to the Commission's staff on May 1, 1997. Submittal of this report was preceded by a series of interactions with the staff to present our approach and to discuss potential issues. The feedback that we received proved valuable in finalizing our design and

completing the report. We believe that the staff's acceptance and successful review of this report will reduce the time required for subsequent preparation of a license application and for staff review of a site-specific design and related safety considerations. We will support your staff's review of this topical safety analysis report, and we will continue prelicensing discussions with the staff to address, on a non-site specific basis, the procedural aspects of licensing a centralized interim storage facility.

We are continuing our work on the development and demonstration of the capability for dry transfer of spent fuel. Your staff has accepted our topical safety analysis report for a dry transfer system for review. This stand alone system could be used at both utility and federal sites. Acceptance of this system may help to resolve a concern raised by the staff on our generic interim storage facility design with respect to enhanced confidence in the ability to recover from off-normal events.

We are in the process of completing a revision of our topical report on actinide-only burnup credit for packages containing spent fuel from pressurized water reactors. We are also finalizing responses to the request by your staff for additional information and developing supporting technical reports to assist in the review of our topical report. Future revisions to the report and our responses to the request for additional information have been discussed in recent meetings with Commission staff. Feedback from the staff at these meetings has been useful and has been considered in revising the report. The revised report will be submitted shortly. We look forward to working with your staff to facilitate their review. Acceptance of partial burnup credit and its use in transportation safety analyses for large-capacity casks will result in fewer shipments than would otherwise be necessary under current practice.

We have continued our work that will prepare us to manage and dispose of not only commercial spent fuel, but also the high-level waste from reprocessing operations and spent nuclear fuel from production, research, and naval reactors. By 2035, there is expected to be about 2,500 metric tons of spent fuel in storage at three DOE sites. This inventory will include the spent fuel from Fort St. Vrain and the core debris from Three Mile Island. The Department faces many new challenges in safely storing this spent fuel and preparing it for disposal.

We are working closely with the Office of Environmental Management to ensure that near-term decisions related to the stabilization and the storage of this spent fuel are compatible with the configurations required for disposal, as we know them at this time. We believe that we can safely dispose of the Department's inventory of spent fuel, along with commercial spent fuel and high-level waste, in full compliance with your licensing requirements. We intend to enhance our interactions with your staff on our plans for the management of this inventory and to identify potential technical and licensing issues associated with its disposal that may require early resolution.

Quality Assurance

We recently evaluated the structure of the Quality Assurance (QA) organizations of the major program participants. This evaluation indicated significant redundancy in activities

performed by the participating organizations as well as excessive levels of infrastructure. As a result, in October 1996, we acted on a recommendation by the Director of our Office of Quality Assurance to consolidate the quality assurance functions for the project. Consolidation of the quality assurance functions under the Office of Quality Assurance is expected to:

- Enhance involvement by the Department as the potential licensee, which improves QA independence and provides for the uniform interpretation of QA Program requirements;
- Strengthen communications and management effectiveness;
- Eliminate redundancy associated with multiple levels of QA involvement; and
- Increase efficiency and reduce cost by consolidating program activities, streamlining infrastructure, and reducing indirect costs

The consolidation of verification activities (audits and surveillance) was completed in February. The remaining quality assurance activities currently being performed by participating organizations will transition to the Office of Quality Assurance in June 1997.

Conclusion

Through implementation of our revised plan we have focused the program on the key issues and maintained the momentum of the repository program. Within the next 18 months we will complete the viability assessment which will serve as a significant benchmark for the program. The products associated with the viability assessment will provide all parties, including the Commission, a better understanding of geologic disposal at Yucca Mountain and the significance of the data then available. It will also help inform the ongoing revisions to the regulatory framework and guide the completion of site characterization. We intend to keep you and your staff apprised of our progress and look forward to a constructive dialogue as we carry out our mutual responsibilities.

Thank you for the opportunity to brief the Commission. I would be happy to answer any questions you may have.