



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

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DEC 14 1989

MEMORANDUM FOR: Chairman Carr

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: DOE BRIEFING ON HLW PROGRAM

DOE is scheduled to brief the Commission on the status of the civilian high level waste program on December 20, 1989. Enclosed for your information are questions in areas where the staff believes clarification and elaboration on DOE plans would be useful.

James M. Taylor
James M. Taylor
Executive Director
for Operations

Enclosure:
As stated

cc: Commissioner Roberts
Commissioner Rogers
Commissioner Curtiss✓
Commissioner Remick
SECY
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GPA

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POSSIBLE QUESTIONS FOR DOE
(During Briefing on December 20, 1989)

1. The November 1989 Report to Congress is the response to Congress' request for a report "which describes in detail how the Department plans to respond to the...concerns [of the House Committee on Appropriations]..." The November Report describes a significantly revised action plan for the Civilian Radioactive Waste Management Program, with some significant milestones occurring in 1990: Is the DOE now operating on this revised Plan?
2. DOE has identified several key near-term steps to restructure their program. For example:
 - a. The independent review of the program organization structure and processes (January 1990).
 - b. Streamlining and consolidating contractors.How will the Commission get visibility of the results from these steps?
3. Will the new Office of Civilian Radioactive Waste Management (OCRWM) Director report to the Secretary of Energy? What priority and attention will the Secretary of Energy give to the OCRWM program relative to other high priority programs (identified in DOE's Environmental Restoration and Waste Management Five-Year Plan, August 1989), such as the Waste Isolation Pilot Plant (WIPP)?
4. At times in the past, the U.S. Department of Energy (DOE) has been reluctant to provide the U.S. Nuclear Regulatory Commission (NRC) staff with direct access to the scientific and technical work being done by DOE laboratories and contractors and to interact with the staff as they are planning their work. Will the proposed restructured program change this and if so, how will it be changed? When can DOE give NRC a specific schedule of reviews and interactions needed to support the near-term schedules?
5. The DOE schedules show the OCRWM Quality Assurance (QA) program in place by about September 1990. How has DOE factored into their schedule the NRC reviews/audits and time for DOE to resolve potential NRC concerns? Also has this schedule considered contingencies or is it based on no significant problems being identified during audits? How is DOE planning to resolve NRC's Site Characterization Analysis (SCA) QA objection, specifically the lack of an approved QA program for the DOE Nevada Project Office? Will restructuring DOE and its contractors impact getting a QA program in place?

DOE QUESTIONS

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6. There has been some controversy over the applicability of the NRC's QA requirements to earth science types of investigations. What actions are you planning to take to resolve this concern?
7. How is DOE planning to resolve NRC's SCA objection on the exploratory shaft facility (ESF) design process and design? Specifically, how does DOE plan to interact with NRC early in its evaluation of ESF design alternatives to assure that NRC's concerns are adequately considered?
8. DOE's report to Congress indicates the deferral of major site-specific repository design activities. What repository design activities in addition to preparing a Repository Program Plan will be conducted and when? How is DOE planning to integrate ESF design and early surface-based testing with repository design activities?
9. In the report to Congress, DOE states that it will continue to follow an iterative scientific approach using both surface-based and underground tests combined with continuing evaluation of the data (through performance assessments) to address site suitability. How soon and how frequently does DOE plan to conduct and report on total system and subsystem performance assessments?
10. How will DOE report on progress in resolving NRC's comments on DOE's Site Characterization Plan?
11. What is being done to resolve the question of what existing site data (or data from ongoing site investigations) are qualified to support a license application?
12. Are there any aspects of NRC's regulations which DOE considers unnecessarily hindering the HLW management program?
13. Does DOE anticipate the Nuclear Waste Negotiator to be actively seeking another potential repository site? What is DOE's view on NRC's involvement with this process?
14. Does the DOE envision the use of currently designed and certified storage systems for the earlier MRS proposed, i.e., the Simple Receiving Facility?

PRESENTATION TO THE NUCLEAR REGULATORY COMMISSION

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By Leo P. Duffy

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of Environmental Restoration and
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DECEMBER 20, 1989

The purpose of this presentation is to brief the Nuclear Regulatory Commission on the present status of the Civilian Radioactive Waste Management Program, including recent accomplishments, new initiatives, and specific recommendations to enhance our interactions.

As will be discussed later in more detail, the Department believes that some progress has been made in the program over the past year. However, we do continue to be impeded by the State of Nevada's refusal to process our permit applications so we can get on with the job of characterizing the Yucca Mountain site, as required by the Nuclear Waste Policy Act, as amended. Nevertheless, progress is being made. But, before discussing specific program accomplishments, we would first like to address the new initiative recently undertaken by the Secretary of Energy with respect to the refocusing of this program.

1. SECRETARY'S REVIEW OF THE PROGRAM

The Secretary of Energy has recently completed an extensive review of the Civilian Radioactive Waste Management Program and has concluded that the program cannot be effectively executed in its present form. The Secretary recognizes that the program is technically and institutionally unprecedented. Consequently, the Secretary is committed to ensuring that a thorough and iterative scientific investigation be the focal point of the program to ensure that the results are technically sound and uncoupled from a scheduling process that constrains the time required for gathering sufficient information.

As a result of his review, the Secretary has initiated a management action plan consisting of five major elements:

- o Formalizing the schedule.
- o Restructuring of the Office of Civilian Radioactive Waste Management.
- o Initiatives to gain access to the Yucca Mountain site to continue the scientific investigations needed to

evaluate the site's suitability for a repository.

- o An initiative for establishing integrated monitored retrievable storage (MRS) with a target for spent fuel acceptance in 1998.
- o Accountability for performance.

The principal elements of this plan are outlined in a report that the Department recently submitted to the Congress. A draft schedule of the revised program was also submitted with the report for comment. Copies of the report and draft schedules were also provided to the Nuclear Regulatory Commission, to the State of Nevada, and various other stakeholders in the program. The essence of this program was announced a few weeks ago by Deputy Secretary Henson Moore at the ANS/NEF meeting in San Francisco on November 28, 1989. The implementation of the plan will be described in a revised Mission Plan, which the Department plans to issue in draft form by June 1990. The following sections describe the plan in more detail.

1.1 MANAGEMENT

The Department has taken a number of steps to establish an improved management structure and procedures for the Office of Civilian Radioactive Waste Management (OCRWM).

1.1.1 NEW OCRWM DIRECTOR

The OCRWM has been headed by acting directors for the past two years. The Secretary has chosen a candidate for the OCRWM Director and has submitted his nomination to the White House. It is expected that the nomination will be submitted to the Senate for confirmation when the Congress reconvenes in January 1990.

1.1.2 DIRECT-LINE REPORTING

The Department has recently established direct-line reporting from the Yucca Mountain Project Office to OCRWM. Previously, the Project Office manager received policy guidance and technical direction from Headquarters but reported administratively to his Operations Office manager, who reports to the Under Secretary. Direct reporting will bring together authority, responsibility, and accountability, and facilitate coordination and communication.

1.1.3 QUALITY ASSURANCE PROGRAM

A quality assurance program that meets the requirements of the Nuclear Regulatory Commission has been established. Much effort this year has been devoted to the preparation and issuance

of quality assurance procedures, the training of DOE and contractor staff, and qualification audits performed to determine ability to implement the procedures. In this effort, the Department has been working closely with the NRC staff, including bimonthly meetings. As a result, more than 1,000 persons working for eight major program participants have received the required training and are now working under NRC-accepted program plans. When the remaining qualification audits of Los Alamos National Laboratories (LANL), Yucca Mountain Project Office (YMPO), and Office of Civilian Radioactive Waste Management are completed by August 1990, a quality assurance program that has been fully qualified and accepted by the NRC will be in place. Additional details regarding program accomplishments in the quality assurance area will be discussed later in this presentation (Section 2).

1.1.4 ESTABLISHMENT OF BASELINES

Technical, cost, and schedule baselines are being established to define the criteria and objectives against which program performance and progress can be measured, thus facilitating effective program control. The technical baseline, which is currently under revision, includes the functional and technical requirements at the program level. These requirements are being put into final form for issuance over the next several months. This will eventually lead to the development of specifications and designs for system elements and subsystems, evaluations of the specifications and designs against the requirements, and the refinement of the requirements.

1.1.5 DEVELOPMENT OF A REALISTIC SCHEDULE

The Secretary's comprehensive program review has included a detailed reevaluation of the overall program schedule--that is, the schedule for the repository, the MRS facility, and the transportation program. This effort consisted of a detailed examination of the duration postulated for each specific activity with emphasis on critical-path, near-critical-path, and other major activities. The results of this reevaluation are summarized in Figure 1. In addition to this summary figure, the report to Congress included two attachments showing more detailed schedules. One is a schedule showing significant milestones through the submittal of the license application for the repository, and the other is the near-term decision plan, which extends through 1990. The Department has asked for comment on these schedules, and will be particularly interested in the Commission's comments. This represents the first formal modification of the program schedule baseline since mid-1987.

1.1.5.1 Schedule for the repository

The Secretary's review of the program has led to the

development of a more realistic schedule that is based on past experience and on the detailed information developed for the Site Characterization Plan. This detailed information led to a more complete understanding of the activities to be conducted during site characterization and how long they are likely to take. As a result, the date for submitting the repository license application to the NRC is now October 2001, nearly seven years later than the previously scheduled submittal date of January 1995, and the start of repository operations is revised from the year 2003 to 2010.

1.1.5.1.1 Assumptions

The milestones in the schedule have been defined as rigorously as possible, but it must be recognized that certain activities are beyond our control. In the case of these milestones, certain assumptions were made. One such assumption was the date for obtaining the permits necessary for new scientific investigations to begin. It was assumed that these surface-disturbing new scientific investigations would begin in January 1991. This date assumes that the Department will be successful in the options it has decided to pursue to gain access to the site.

1.1.5.1.2 New focus

A cornerstone of the repository schedule is a new focus on the early evaluation of the suitability of the Yucca Mountain site. Instead of beginning site characterization with a total system approach directed at evaluating the performance of engineered barriers as well as the site and based to a large extent on underground testing, this evaluation will focus first on certain particular features of the site that can be investigated through surface-based testing. The revised schedule also recognizes that the duration of the scientific investigations, especially the later investigations conducted in the exploratory shafts and the underground testing facility, will be considerably longer than previously expected, thereby resulting in the revised license application submittal date of 2001, assuming the site is suitable.

1.1.5.1.3 Initiatives for improving the schedule

The Department remains committed to seeking ways to improve the schedule while satisfying all technical and regulatory requirements. With this objective in mind, the Department has initiated a study of alternative strategies for complying with the NRC requirements in 10 CFR Part 60. Each alternative licensing strategy will consist of an approach to determining site suitability, a general plan for meeting the licensing requirements, and priorities for testing to support the site suitability determination. It is too early to discuss these

strategies in any detail, but the Department intends to work closely with the NRC and others in their development.

During the pre-licensing phase, the Department intends to continue and to intensify its interactions with the NRC in order to reduce the number of unresolved issues, which should enhance confidence that the license application can be reviewed in three years, as called for in the Nuclear Waste Policy Act. Some DOE thoughts are offered later on how the NRC/DOE interactions can be improved.

1.1.5.2 Schedule for the MRS facility

The reference schedule for the MRS facility assumes that a site will be obtained through the efforts of the Nuclear Waste Negotiator and that the statutory linkages, specified in the Nuclear Waste Policy Amendments Act between the MRS facility and the repository are modified. Under these assumptions, it is estimated that waste acceptance at an MRS site could begin, on a limited basis, as early as January 1998; and a full-capability MRS facility that would store spent fuel as needed, for subsequent shipment to the repository, would be available in the year 2000.

If a site cannot be obtained through the Negotiator but is selected through a DOE-directed siting process and the current statutory linkages are modified, it is estimated that about 2 more years would be added, with the full-capability MRS facility starting operations in 2002. If the current statutory linkages to the repository are maintained, an additional delay of 5 years would result, with startup estimated at 2007 for the full-capability MRS facility. As is discussed later, the Department intends to pursue an initiative aimed at modifying the linkages.

There are a number of approaches we are considering to expedite spent fuel acceptance at the MRS facility. One way is to start operations with the use of transportable storage casks. These casks would be loaded at the reactor site, used to transport the spent fuel to the MRS site, and also used to provide temporary storage at the MRS site. The same casks might then be used for transportation of spent fuel to the repository once it is available. If this approach were implemented it would require NRC certification of the design of the casks under the transportation regulations in 10 CFR Part 71 and also to license their use for storage under 10 CFR Part 72. A review of these two regulations is needed to ensure compatibility and to see if the licensing process could be streamlined. The Department is examining a number of options for expediting spent fuel acceptance at the MRS facility. Key to acceptance in 1998 will be expedited licensing of the simplest possible MRS facility. Again, as our plans mature, we will discuss the various approaches we are considering with the NRC.

1.1.6 NUCLEAR WASTE NEGOTIATOR

The Secretary is working in close cooperation with the White House to facilitate the appointment of the Nuclear Waste Negotiator as provided for in the Amendments Act. The Negotiator is expected to provide valuable assistance in siting the MRS facility and facilitating the repository program.

1.2 SCIENTIFIC INVESTIGATION OF YUCCA MOUNTAIN

1.2.1 SITE ACCESS

An important factor in the near-term plans for scientific investigations at Yucca Mountain is the willingness of the State of Nevada to process the DOE applications for environmental permits. However, on November 1, 1989, the State Attorney General issued an opinion that the State had disapproved the site within the meaning of Section 115 of the Nuclear Waste Policy Act and that State agencies considering environmental permits should disregard such applications from DOE. While cooperation and direct negotiation with the State of Nevada is the preferred approach to expediting scientific investigations, the Department will pursue all available options to facilitate the timely determination of site suitability. Accordingly, the Secretary has requested that the Department of Justice initiate litigation to declare Nevada's actions invalid. Furthermore, the Department is hopeful that the permitting process could be expedited through the efforts of the Negotiator once he or she is appointed.

1.2.2 DELAY IN SHAFT CONSTRUCTION

As mentioned before, the Department has decided to focus initially on surface-based testing aimed specifically at evaluating whether the site has any features or conditions so adverse to performance that the site would not likely be able to meet the DOE's and NRC's requirements and would therefore not be suitable for a repository. Accordingly, the construction of exploratory shafts is delayed until at least 1992. This will allow the Department to carefully reevaluate, in accordance with all applicable quality assurance and NRC requirements, the locations chosen for the two exploratory shafts, the method chosen (drilling and blasting or mechanical mining) for the construction of the shafts, the means of access (ramps or shafts) to the repository horizon, the need for additional exploratory drifts, and the design of the shafts and other components of the exploratory shaft facility. Concerns regarding the shaft location and designs have come from the NRC staff, while the suggestions to reconsider the means of access, the shaft construction method, and the need for additional drifts came from the Nuclear Waste Technical Review Board. Due to this reevaluation effort, it is not expected that detailed design of

the exploratory shaft facility can start until at least in early 1991.

1.2.3 DEFERRAL OF MAJOR SITE-SPECIFIC DESIGN ACTIVITIES

Major activities related to the design of a repository at the Yucca Mountain site and the waste package are being deferred. The objective is to proceed with surface-based tests for evidence of site unsuitability, and to proceed with design, if appropriate. This approach will conserve resources and allow the Department to concentrate its efforts on scientific investigations.

1.3 MONITORED RETRIEVABLE STORAGE

In its November 1, 1989 report to the Congress, the MRS Review Commission found that "cumulatively the advantages of an MRS would justify the building of an MRS if: (1) there were no linkages between the MRS and the repository; (2) the MRS could be constructed at an early date; and (3) the opening of the repository were delayed considerably beyond its presently scheduled date of operation." The MRS Review Commission recommended that the Congress authorize the construction of a Federal Emergency Storage facility with a capacity limit of 2,000 metric tons of uranium; authorize the construction of a User-Funded Interim Storage facility with a capacity limit of 5,000 metric tons of uranium; and reconsider the need for additional interim storage in the year 2000. Thus, the Department and the MRS Review Commission agree as to the necessity for a facility that would provide storage before permanent geologic disposal, but we differ on the storage capacity required and the appropriate funding mechanism.

The Department considers that an integral MRS facility is critical to achieving timely acceptance of spent fuel and to meeting other strategic objectives, such as timely disposal, schedule confidence, and system flexibility. The Department recognizes that the advantages of the MRS facility would be more fully realized if the linkages to the repository were modified. The Department has also expressed preference for an MRS facility sited through the efforts of the Negotiator, especially if these siting negotiations lead to modified linkages.

The importance of an integral MRS facility to the waste-management system is underscored by schedule delays and the uncertainties inherent in the development of a geologic repository. As already stated, an MRS facility could start operations as early as 1998 and is a key component in the strategy for building confidence in the program.

Accordingly, the Department is pursuing several courses of action that we believe are consistent with the conclusions of the

MRS Review Commission. First, the Department will work with the Congress to modify current linkages and constraints on the MRS facility. The Amendments Act prohibits the selection of an MRS site through a DOE-directed site-survey process until the repository site is selected. However, the Amendments Act allows for expedited siting to proceed via the Negotiator. How rapidly a negotiated MRS facility can come on line and how much spent fuel it can store will depend on the negotiated agreement, which must be approved by Congress. In principle, a negotiated agreement represents an effective way of developing the facility and should allow the MRS advantages to be more fully realized. Moreover, a negotiated site could address the institutional issues earlier and more completely than were it to be associated with a siting process directed by the DOE. The Department will be ready to do whatever is necessary to help the Negotiator to respond quickly to offers from potential volunteer states, to ensure that the program can be adapted, with minimum cost and delay, and to gain approval by the Congress. However, because there is no assurance that the Negotiator will be successful, the Department is considering proceeding with DOE-initiated MRS siting in coordination with the Negotiator efforts, subject to the constraints of the Nuclear Waste Policy Act.

2. PROGRAM ACCOMPLISHMENTS SINCE DECEMBER 1988

We will now provide a brief overview of program accomplishments since the last briefing by the Acting Director, OCRWM, to the Commission on December 20, 1988. On December 28, 1988 the Department of Energy published, and submitted to the Commission for review and comment, the Site Characterization Plan for the Yucca Mountain site, as required by the Nuclear Waste Policy Act, as amended. This plan provides the framework for the surface-based testing and underground investigations needed to assess the suitability of the site for a geologic repository.

In February, 1989, DOE submitted the ESF Title I Design Acceptability Analysis (DAA) to complement the Site Characterization Plan for Yucca Mountain. The DAA was prepared as part of a technical assessment review of the ESF, and in response to a suggestion made by the NRC staff in November 1988, that it would constitute an acceptable approach for demonstrating the acceptability of the ESF Title I design.

On July 31, 1989, the NRC published its Site Characterization Analysis (SCA). The SCA included two objections, 133 comments, and 62 questions. The two objections concerned (1) the Quality Assurance program, and (2) the design control process applicable to the ESF Title I design. DOE has an active program underway to resolve these concerns.

In the QA area, the OCRWM QA Requirements Document and QA Program Description Document and the Yucca Mountain Project QA

Requirements Document have been accepted by DOE and NRC. The Quality Assurance Program Plans of the contractors participating in the Yucca Mountain site characterization (F&S, H&N, REECO, SNL, LLNL, USGS, and LANL) have been accepted by DOE and NRC; the implementation of all of these plans with the exception of LANL has been audited by DOE and found acceptable. The NRC staff has witnessed these audits, has issued their evaluations for the audits conducted of F&S, H&N, SNL, and LLNL, and is evaluating their observations for the remainder. LANL will be scheduled for a re-audit in the near future. The qualification audits for the Yucca Mountain Project Office and OCRWM are currently scheduled for June and July, 1990, respectively. While the Department still has some work to do in this area as noted above, progress has been made toward a fully qualified QA program. New site characterization will not be initiated until the quality assurance for that activity is in place.

The DOE and NRC staffs have met several times during the last year to discuss the ESF design control process. The DOE has invited the NRC staff to observe the ESF Title II design process at several review points. We have found this kind of pre-licensing cooperative working relationship highly beneficial to both parties in the past, and encourage its continuation in the future.

In addition to the two objections, the SCA included a number of other comments. Many of them will be addressed in later reports, such as the Site Study Plans. Others will be addressed in the ESF Title II design. Some will be subjects for discussion in open technical interactions. In any case, the Department is considering each one of them in the course of its design and site characterization activities. As has been agreed to by the NRC and DOE staffs, the Site Study Plans are submitted to the NRC for review and comment. Eight study plans have been sent to the NRC and two have been accepted and completed the NRC's Start-Work Review, which indicates that the staff has no objection to DOE proceeding with those studies. A Detailed Technical Review by the NRC Staff is still in progress on these two study plans.

The Department has also received comments on the Site Characterization Plan from the State of Nevada. Although their comments were received substantially after the extended public comment period, the Department is reviewing, and is carefully considering, their comments. In general, the Nevada comments have been found to be similar to those of the NRC staff. The Department also has received comments on the SCP from the Edison Electric Institute (EEI), representing the nuclear utilities, as well as from other government agencies and from private citizens. All these comments are being carefully reviewed by the DOE staff.

The Nuclear Waste Policy Amendments Act created the Nuclear

Waste Technical Review Board (TRB), which consists of a Full Board and various panels covering specific technical areas. Since their establishment, the Department has made approximately 10 presentations to both the Board and its Panels. These have been in-depth technical presentations, sometimes lasting several days. The NRC staff has observed some of those meetings, and the Department suggests that they do so more frequently to augment their understanding of the DOE program.

The Technical Review Board has recommended more extensive underground exploratory drifting than had been planned for the initial period of site characterization. In addition, the Geotechnical Panel has recommended the use of tunnel boring machines for the construction of underground openings in the repository block, and the evaluation of alternate exploratory shaft construction techniques. The TRB also urged the Department to consider replacing one of the exploratory shafts with a ramp, and to raise-bore the other shaft in order to minimize disturbance of the repository block. The Department is presently evaluating all these recommendations, and has underway a more detailed study of the ESF alternatives. Since the Department's plans had been strongly influenced by the NRC's regulatory requirement for minimal disturbance of the repository block, these evaluations will consider excavation and testing with regard to satisfying information needs, regulatory concerns, and the waste isolation capabilities of the site. In addition to these TRB recommendations, the NRC staff, the Advisory Committee on Nuclear Waste, EEI, and the State of Nevada have suggested extensive surface-based exploration prior to underground excavations.

With respect to interactions between the NRC and DOE, there have been approximately 45 over the last year, including interactions with the Commission, ACNW, and the Staff, and covering several areas of interest to both agencies. The Department has worked with the NRC staff to establish three general types of interactions: technical meetings, technical exchanges, and site visits. During technical meetings the staffs discuss the respective positions of the two agencies and agreements may be reached and action items and/or commitments taken. Technical meetings were held during the past year on topics such as the ESF design control, quality assurance, and tectonics. Technical exchanges are the mechanism for openly discussing the views of our respective technical staffs to come to a better technical understanding of a particular subject matter, but no official positions are taken or agreements reached. Technical exchanges were held during the past year on topics such as substantially complete containment, waste container materials, a series of tectonics issues, and 10 CFR 60 flowdown to DOE requirements documents. Site visits provide a forum for the NRC staff to view first hand the characteristics of the site or a particular activity. Site visits were held during

the past year on topics such as volcanism, prototype core drilling, tectonics, and hydrology. We have found all these different types of interactions to be quite useful to the program. Furthermore, the State of Nevada and the units of local government have always been invited to attend and participate in all these interactions.

3. REGULATORY FRAMEWORK FOR REPOSITORY AND MRS

During this prelicensing period that has now extended to the year 2001 for the repository, the Department believes there is a unique opportunity and challenge for both the Commission and the Department, and for that matter, all the stakeholders in the program.

Stated simply, there is a need for a fresh look at the regulatory framework in the program. The fact that we both must face is that neither the Department nor the Commission has ever licensed a repository, or for that matter predicted the performance of a facility for 10,000 years into the future. We believe that if both our agencies are to be successful, the Department and the Commission must have a prelicensing relationship that represents the best that our respective agencies have to offer, namely, the Commission to guide us in understanding and interpreting the regulatory requirements and protecting the health and safety of the public, and the Department to implement, with Commission overview, the scientific investigations needed to give us all a proper understanding of the site and its suitability for isolation of the waste. This means, as noted earlier, a fresh look and an open and objective development of our prelicensing relationship. In this regard, the Department has several near and longer term suggestions, including an approach to joint development of regulatory criteria, where appropriate, during this prelicensing phase of the program. This approach to appropriate joint development of criteria is an initiative on collaborative interaction that we are proposing to the Commission for consideration. It will require an approach for this process that will assure there is no perceived compromise of NRC objectivity by the public. This will be discussed in more detail later (Section 3.3), but in summary it is an opportunity for experts from the NRC, DOE, industry, and others to come together to develop criteria that are reasonable and with which we will all be able to live in the future.

The following are some regulatory actions that the Department considers are needed:

3.1 NEED FOR NRC REGULATORY ACTION, SUPPORTED BY RULEMAKING

3.1.1 PETITION FOR RULEMAKING ON ACCIDENT-DOSE GUIDELINE

Unlike other NRC regulations, such as those pertaining to

er reactors or to independent spent fuel storage facilities. CFR Part 60 lacks a so-called design-basis accident dose guideline. The DOE requires such a dose guideline to determine the need for, and the adequacy of, structures, systems, and components provided to prevent accidents or to mitigate their consequences. A description and analysis of these structures, systems, and components is to be included in the safety analysis report for the repository. The absence of the dose guideline creates uncertainty about how adequacy is to be established. The Department plans to petition the Commission to establish such a dose guideline by rule. The petition will propose that the accident-dose guideline be a 5-rem effective dose equivalent. This guideline would apply to any individual at the boundary of a newly defined "preclosure control area" at any time until the repository is permanently closed. The proposed guideline is generally consistent with the NRC accident dose guidelines for similar activities. Discussions have been held with the NRC staff and the proposal has been presented to the Advisory Committee on Nuclear Waste, generally with favorable reception. The petition will be sent to the Commission in the very near future.

3.1.2 EMERGENCY PLANNING

The Department understands that the NRC is planning a rulemaking on emergency planning criteria for the repository. These criteria will be needed for the design of the repository, and the Department agrees that the rulemaking process is the appropriate vehicle for this purpose. The Department recommends that the rule generally adopt the criteria contained in the final rule on emergency preparedness (54 FR 14051), published April 7, 1989, for certain fuel cycle facilities and other radioactive material licensees, licensed under Parts 30, 40, and 70, because the facilities licensed under those Parts are of the same general kind as the geologic repository. These types of facilities are not a nuclear-fueled power generating station and do not pose the same risk to the public, so that evacuation plans and drills are not required. It is suggested that conforming amendments be issued by rule for Part 60 as well as for Part 72.

3.1.3 IMPLEMENTATION OF THE EPA STANDARD

The EPA recently released a working draft of the proposed revised standard for the disposal of transuranic and high-level waste (40 CFR Part 191), and the NRC staff has recommended a process to the Commission which will result in an amendment that will conform Part 60 to the EPA standard. We agree that such an amendment is needed. However, the Department understands that the Commission is considering proceeding in parallel with the EPA schedule for promulgation of the EPA standard. This is of concern to the Department because it may result in two different standards that could lead to potential regulatory uncertainties.

3.2 TOPICS REQUIRING ADDITIONAL CONSIDERATION

The NRC's regulatory strategy paper, SECY-88-285, identified several topics that the Department agrees require regulatory action but which it believes are more appropriate for NRC regulatory guides or DOE topical reports rather than rulemakings, or that need to be considered further before deciding whether rulemaking is appropriate. The Department provided comments to the Commission in this regard in a letter (R. Stein, DOE to R. Browning) dated August 18, 1989. In 10 CFR 60 the NRC deliberately provided a regulation that is generally not prescriptive, recognizing that a repository has never been built and operated before. The Department agrees fully with that philosophy. This is not the time to reverse it. The Department believes it is prudent to retain the flexibility to propose alternative approaches to demonstrating compliance with the regulations, rather than being required to meet specific interpretations established by rule at this time in the exploratory stage of compliance. As indicated earlier, some of the uncertainties associated with demonstrating compliance with requirements that span several thousands of years into the future make it unrealistic to be able to close on certain issues until we have a better understanding of the site characteristics. The Department, therefore, suggests that further discussions be held on the need for rulemaking on these topics and that an alternative approach or approaches be evaluated.

3.2.1 AMPLIFICATION OF REGULATORY TERMS

In particular, the Department's concern here is with the NRC staff's plans to use rulemaking to provide further amplification of the following terms in the NRC regulations: "anticipated and unanticipated processes and events," "disturbed zone," "substantially complete containment," and "pre-waste-emplacement ground-water travel time." We believe that it is premature at this point in time to proceed to rulemaking on these topics. A better approach would be to let the definitions evolve as we move forward in our scientific investigations and learn more about the site. In view of the complexity of the concepts to which these terms pertain, any regulatory direction for their interpretation would require considerable discussion, especially to clarify in detail the various circumstances for the use of the subject material. Being a formal process for promulgating regulatory requirements, rulemaking is inappropriate for expounding nuances in the meanings of specific terms. The resultant rule may not provide the flexibility needed to address the variety of circumstances that may be encountered in the repository program.

In contrast, a DOE topical report, for example, or approaches developed under a process similar to that used to develop industry standards, and after having been reviewed and

accepted by the NRC, would contain the needed guidance, provide the needed flexibility, and require considerably less in the way of resources. While draft NRC staff technical positions have already been issued for three of these topics, the Department does not believe that such staff guidance or rules are appropriate in these cases. In addition, the Department has specific concerns on these draft positions and has submitted comments, some of which will be discussed below. If the NRC staff chooses to develop guidance in these areas, the Department prefers such guidance to be in the form of regulatory guides, because of the more rigorous internal review process.

3.2.2 METHOD FOR DEMONSTRATING COMPLIANCE WITH EPA STANDARDS

NRC's strategy paper indicates that NRC plans a rulemaking on the topic of demonstrating compliance with the EPA standards. The Department feels that this topic does not require a rulemaking because 10 CFR Part 60 will be revised to reflect the EPA standards. Furthermore, the Department feels that a DOE topical report or other guidance document would be a better vehicle for addressing specific methods for demonstrating compliance. A prescriptive methodology might be too restrictive and, at this point in the program, might limit alternative means of demonstrating compliance with the standard. The Department appreciates any guidance the staff might recommend, but also recommends that such guidance not be codified in the regulation. In addition, the Department suggests that certain regulatory requirements that may be overly restrictive and conservative when compared to the EPA standard, such as the subsystem performance objectives, be made regulatory guidance instead.

3.2.3 ENGINEERED BARRIER SYSTEM

The Department believes it would be particularly useful to allow credit for an improved engineered barrier system (EBS) in the regulatory analysis to show compliance with the EPA total system performance standard. Specifically, credit should be allowed for the waste package for a life greater than 1000 years. While it is understood that the present waste package performance requirements in 10 CFR Part 60 could be subject to varying interpretations, it appears that they preclude such a consideration. As stated earlier, it is premature to provide such prescriptive subsystem requirements until such time as we learn more about the capabilities of the entire waste isolation system, particularly the site.

3.2.4 CONTENT OF LICENSE APPLICATION

Part 60 outlines the information the NRC staff believes is needed to determine whether the construction authorization for a repository and the license to receive and possess radioactive waste should be granted. Obviously, the regulation does not

provide detailed annotation. Since the detailed regulatory guidance for the content of the license application is likely to be extensive, the Department recommends providing it in a regulatory guide rather than by rulemaking. The regulatory guide approach has been successfully used to provide guidance for the license applications of nuclear facilities, and we recommend the same approach for the repository. In fact, as you know, the NRC staff is presently developing such a regulatory guide for the repository.

3.2.5 GREATER-THAN-CLASS-C WASTE

The revision to 10 CFR Part 61 recognizes that, according to the Low-Level Radioactive Waste Policy Amendments Act of 1985, the Department has the statutory authority to select the method for the disposal of greater-than-Class-C (GTCC) low-level waste. Alternative disposal options are presently being evaluated. Development of the criteria for disposal is one of the regulatory activities on which DOE, NRC, and others could work more closely together to formulate future regulatory guidance. For example, prior to the NRC proposing rulemaking on the criteria for GTCC waste disposal, a group of waste disposal experts from the Federal government, industry, and State could be put together to prepare draft guidance that would serve to support a potential rulemaking in the future, if it were determined that it was needed. This guidance, and eventually the regulation, would include criteria for the containment of the waste in a facility, including suggested methods of packaging for emplacement in a disposal facility, of handling releases from the package, and for stabilization.

3.2.6 OTHER AREAS OF CONCERN

There are several other areas of concern the Department would like to address. First, the technical ones.

3.2.6.1 Definition of Anticipated Processes and Events

Part 60 defines anticipated processes and events as "those natural processes and events that are reasonably likely to occur during the period the intended performance objective must be achieved." As already mentioned, the NRC staff's interpretation of this definition is included in a draft technical position and is planned to become part of a proposed rulemaking action. The Department strongly disagrees with the staff's interpretation of the regulation, which would require the DOE to consider any Quaternary event--that is, any event that has occurred in the past 1.8 million years--as being anticipated. Considering the span of the waste isolation period, which is on the order of 10,000 years, the Department finds this interpretation unreasonable. Here again, the DOE, NRC, and others might work together to formulate future regulatory guidance.

should be probabilistic
not deterministic

3.2.6.2 Application to repository of criteria from 10 CFR 100

Appendix A

The NRC staff has proposed, in a draft technical position, the use of 10 CFR 100, Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants," for the geologic repository. In the Department's opinion, the criteria may be useful in screening reactor sites, but they are inappropriate for a repository. The response of a complex above-ground rigid structure, like a reactor building, to the energy from a seismic event is completely different from the response expected from a deep underground facility, and the safety risks are quite different. Nor is it appropriate for the surface fuel handling facilities of the repository, when one considers the relative risks associated with a reactor as compared to a repository. Moreover, the methodology in Appendix A is not considered to be present state-of-the-art. The seismic design of the repository should be addressed in a continuing dialogue between the NRC and DOE staffs, industry, and State.

3.2.6.3 Schedule for the Licensing Support System

The LSS Administrator has proposed actions supporting the early development of the LSS. The Department generally agrees with overall approach, such as the development of a prototypical LSS, and the identification of priorities for document categories to input in the system. The Department, consistent with budget limitations, will work closely with the LSS Administrator to have the LSS developed at the earliest possible time to ensure the system will be ready to support the repository licensing process when it is needed. As indicated in the Supplementary Information accompanying the final negotiated rule on LSS (10 CFR Part 2, Subpart J), issued on April 14, 1989, a Memorandum of Understanding (MOU) between the NRC and DOE to delineate responsibilities for system development and operation and to specifically identify the relationship between the LSS Administrator and the DOE needs to be prepared as a first priority. This MOU should also establish the general process by which document backlog will be controlled prior to system availability. Presently, OCRWM has in place a records management system to capture the records developed in this program. A subset of these records will eventually be input to the LSS. To the extent practicable, we have assured that the computerized index is compatible with the expected LSS indexing scheme.

3.2.6.4 Resources Available to the Advisory Committee on Nuclear Waste

The constructive criticism of the Advisory Committee on Nuclear Waste has been helpful and beneficial to the program, and their comments have been appreciated. The Department is concerned, however, that the Committee does not have the

resources to review, usually on short notice, the extensive reports generated in our program, such as the eight-volume Site Characterization Plan, the very detailed Study Plans, and the future topical reports. During the recent SCP and SCA reviews, the members and the expert consultants available to the Committee depended primarily on NRC staff briefings, a practice which limits their ability to receive separate and independent detailed briefings of the DOE work by the DOE staff and its contractors. We believe that because of the competence and regulatory perspective of the ACNW, these interactions can be beneficial to both the NRC and the DOE in providing a more comprehensive perspective of the issues.

3.3 INITIATIVE ON COLLABORATIVE INTERACTION

As indicated earlier, the Department believes that we both have a unique opportunity here to take a fresh look at the regulatory framework for this program, and have suggested that our staffs continue to work closely together to reach a better understanding of such framework. As we all know, the technical challenges that this program has to offer are not simple ones. However, we believe that the program as a whole has the requisite expertise to overcome these hurdles. Rather than proceeding down separate paths and potentially diverging, we think that it is time to start using our collective resources more effectively to work towards a common end goal. Consequently, the Department proposes an initiative for collaborative interaction that would not only involve our two staffs, but would also bring in the expertise from other Federal agencies, the nuclear industry, the Nuclear Waste Technical Review Board, the ACNW, the State of Nevada, and others. For example, a group of waste disposal experts from these organizations could come together to prepare a draft document, similar to the approach used for the development of a technical standard by a national standards committee (e.g., ANSI, ANS, ASME, etc.). This is an approach that has been used effectively throughout the nuclear industry and has been quite successful in European countries. This joint effort would include the development of technical and regulatory criteria as well as interpretation of regulations.

We firmly believe that such a process will allow all of us to take full advantage of the prelicensing consultation period and that it will contribute significantly to developing a better understanding amongst all parties of the technical/regulatory issues with which we will all have to deal during the licensing process.

4. CONCLUSION

The Department of Energy asks the Commission's continued cooperation and support as the site characterization and other elements of the repository program outlined by the Secretary are

implemented. The Department specifically solicits the Commission's help in resolving the issues raised here and requests that careful consideration be given to our initiative on collaborative interaction. The Department also asks for the Commission's support for MRS and transportation strategies that are designed to satisfy the increasing need for timely spent fuel storage.

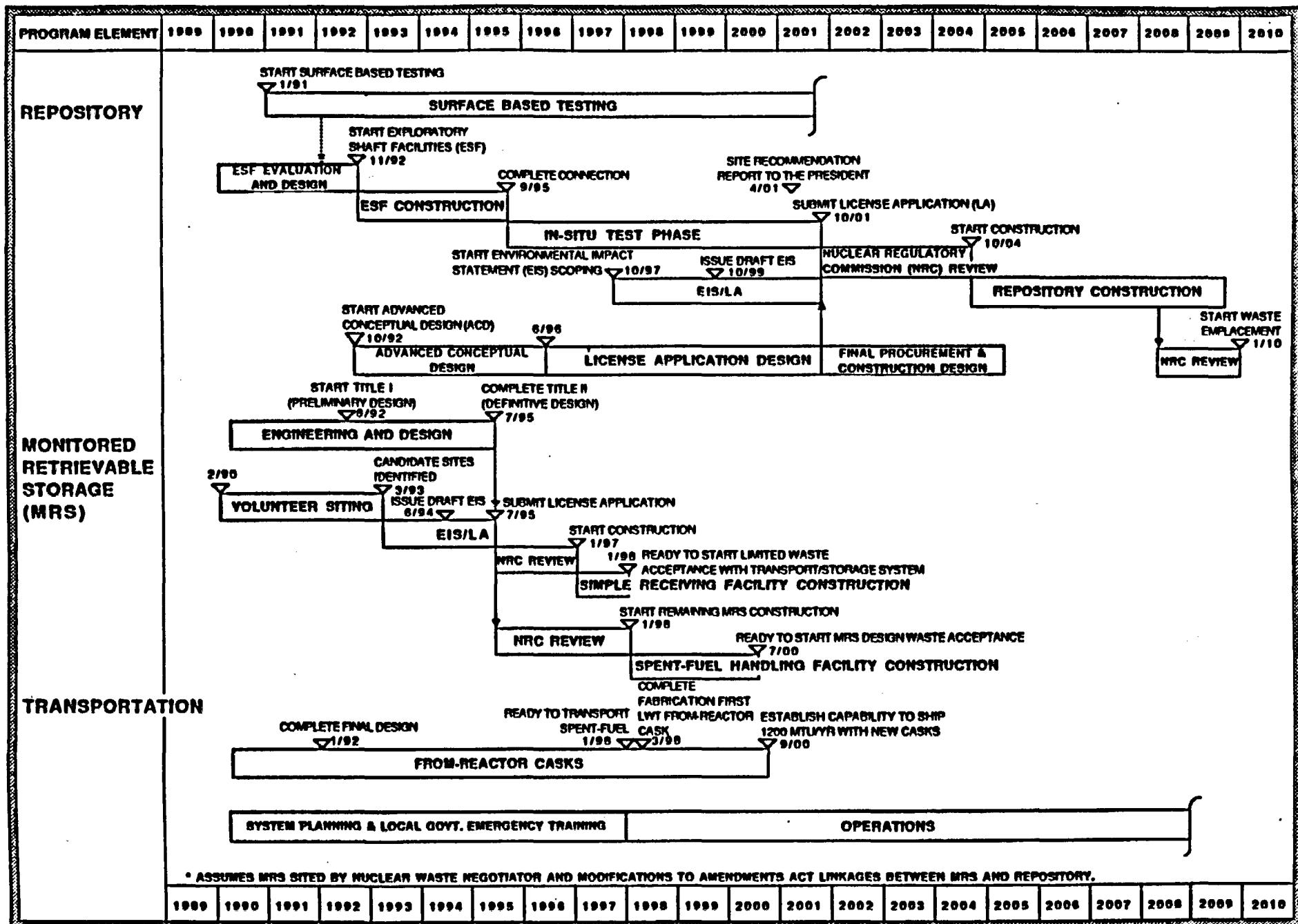


FIGURE 1. REFERENCE SCHEDULE FOR RESTRUCTURED PROGRAM *