



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

DEC 23 1990

MEMORANDUM FOR: James L. Blaha, Assistant for Operations
Office of the Executive Director
for Operations

FROM: Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

SUBJECT: COMMISSION QUESTIONS FOR THE DECEMBER 18, 1990
U.S. DEPARTMENT OF ENERGY (DOE) BRIEFING ON THE
HIGH-LEVEL WASTE REPOSITORY PROGRAM

Enclosure 1 is a list of questions developed by the Office of Nuclear Material Safety and Safeguards for use by the Commission during the subject briefing. These questions cover topics in areas related to overall program management as well as technical aspects of DOE's high-level waste repository program. In addition to the questions, the staff is also providing in Enclosure 2 a copy of a recent interview of Dr. John Bartlett in the American Nuclear Society's Nuclear News. Dr. Bartlett is the Director of DOE's Office of Civilian Radioactive Waste Management. This article may be helpful for gaining insight into how Dr. Barlett will be running the program. Finally, Enclosures 3 and 4 are copies of the staff's comments on DOE's preliminary draft and final draft Project Decision Schedule. This information may be useful as background.

Robert M. Bernero, Director
Office of Nuclear Material
Safety and Safeguards

Enclosures: As stated

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ENCLOSURE 1

Enclosure 1

Question Category: Programmatic Documents

In this category, the staff has identified questions that probe the U.S. Department of Energy (DOE) on its plans for submitting major programmatic documents. The staff's reactive review program is centered on evaluating these programmatic documents. Therefore, in order for the staff to be able to plan its activities, it is important that DOE be able to provide insight into when it will provide these documents.

Question 1

What is DOE's approach to resolving the Site Characterization Analysis (SCA) concerns? When will DOE respond formally to the SCA?

Question 2

During this year, DOE had reported that it would be issuing a revised Mission Plan in the Spring of 1990. However, the revised Mission Plan has yet to be issued. When does DOE intend to issue a revised Mission Plan that would reflect the November 1989 restructuring of the repository program?

Question 3

By letters dated April 13, 1990 and October 1, 1990, the staff provided DOE with comments on its proposed draft and final draft Project Decision Schedule (PDS). Although the staff raised several issues related to the ongoing DOE program and the milestones and schedules proposed in the two versions of the draft PDS, DOE has not issued the final document. When does DOE plan to issue its final PDS? Has it addressed all of the staff's comments, or has it considered them without making any changes to the PDS?

Question 4

How many study plans does DOE now project it will transmit to the staff in Fiscal Year 1991? Is a detailed schedule available to allow for adequate NRC planning for timely review of these plans? If so, would you please provide the schedule.

Question 5

In its November 1989 report to Congress on the assessment of its program, DOE stated that it would be evaluating alternative licensing strategies. These alternatives would explore ways to improve the schedule for receipt of spent nuclear fuel at a licensed repository. What is DOE's schedule for completing its alternative licensing strategies? What type of alternatives are being considered? How will these alternatives affect the NRC/DOE regulatory interface?

Question Category: NRC/DOE Interface and Regulatory Issues

This category of questions will allow the Commission to gain insight into how DOE believes its interactions with the staff are going.

Question 1

The staff has been interacting with DOE headquarters, the Yucca Mountain Project Office, and DOE contractors. Does DOE consider these pre-licensing consultations to have been effective and worth pursuing? How does DOE view the interactions between the Department and the NRC staff? What improvements or shifts in focus would you like to see, if any?

Question 2

In its last Quarterly Progress Report to the Commission, the NRC staff noted that its interactions with DOE had shown an improvement in that DOE had become more candid in discussing how it is addressing the challenges it faces in the site characterization program. What do you think can make the NRC/DOE technical exchanges more effective, particularly with respect to coming to closure on SCA issues?

Question 3

In addition to its petition on the need to establish a design basis accident dose limit, has DOE identified any other areas of 10 CFR Part 60 where it feels changes are warranted?

Question Category: Planning and Budget

The questions in this category focus on issues affecting DOE's overall program planning as well as budget impacts. They are intended to get at issues over which DOE has control, or must take action to resolve. In addition, the questions explore several policy areas for DOE.

Question 1

When DOE submitted its Site Characterization Plan (SCP) to the staff for review, the SCP was structured to support the characterization of the Yucca Mountain Site. Recently, DOE has refocused its program, and the current approach is to emphasize investigations of site suitability issues early. Given this recent restructuring of the DOE program, what types of changes does DOE anticipate to the program given in the SCP? What other changes do you foresee in the DOE program, and how will they affect DOE's interaction with the NRC? When do you anticipate DOE will have all of the changes made you envision for the program?

Question 2

What are DOE's plans for executing iterative performance assessments and how will that information be factored into other program activities, such as site characterization and performance allocation?

Question 3

What is the current status of the cold qualification runs at the Defense Waste Processing Facility and the West Valley Demonstration Project? Where does DOE stand on getting the glass producers programs coordinated with the Office of Civilian Radioactive Waste Management (OCRWM)? Where does DOE stand with being able to demonstrate that the glass will conform to repository acceptance criteria? It is our understanding that DOE anticipates revising its waste acceptance criteria, when does it plan to submit these revised criteria to the staff?

Question 4

Recently, DOE provided the NRC staff with its System Engineering Improvement Plan, which will be used to guide the overall management of the program. Has DOE begun to implement this plan? When does DOE anticipate the plan will be fully implemented and in effect? What effects has the plan had on the DOE program, and what other changes are expected as the plan becomes fully implemented? How will the SCP be affected?

Question 5

What is DOE's best estimate for beginning site characterization? What problems does DOE face in beginning site characterization?

Question 6

At the September 17 and 18, 1990 National Academy of Science (NAS) symposium on the NAS report, "Rethinking High-Level Radioactive Waste Disposal," DOE indicated it was still evaluating the report. Has anything of significance come out of this evaluation to date? When will DOE's evaluation be completed?

Question 7

What is the status of DOE's efforts to have an integrating contract? When will the contract be signed? What type of work does DOE plan to have the contractor perform? When does DOE expect to have the contractor fully integrated into its program?

Question Category: DOE interactions with the Environmental Protection Agency (EPA)

In this set of questions, the staff is attempting to find out how DOE is working with EPA to address and resolve a number of issues that affect the repository. Some of these issues may not be a direct part of the repository effort, but are related and could impact the program.

Question 1

What type of interactions have DOE and EPA had on the Waste Isolation Pilot Project (WIPP) and what effect do these interactions have on the OCRWM program? What lessons has OCRWM learned from the DOE WIPP experience in implementing the EPA standard?

Question 2

How is DOE working with EPA to address the issue of mixed waste? What experience has OCRWM gained in this area?

Question 3

During the last week of November, DOE participated in a workshop with the NRC and EPA to discuss modification of the EPA standard. What changes to the EPA standard does DOE advocate? What is DOE's position on a probabilistic approach to HLW regulation?

Question Category: Non-Repository Licensing

This set of questions covers topics not directly related to licensing of the repository.

Question 1

At last year's briefing, Mr. Duffy stated that a number of approaches were under consideration to expedite spent fuel acceptance at a monitored retrievable storage facility. One approach mentioned was to start operations with the use of transportation storage casks. Is this, or other approaches, still under consideration by DOE?

ENCLOSURE 2

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Bartlett: Reorganizing the HLW effort

John Bartlett, the new director of the Office of Civilian Radioactive Waste Management (OCRWM) at the U.S. Department of Energy, holds a BScE degree from the University of Rochester. His MSChE and PhD are from Rensselaer Polytechnic Institute. He has served on the faculty in the Chemical Engineering Department of the University of Rochester, as a Fulbright Professor of Nuclear Engineering at the Istanbul (Turkey) Technical University, and as a design engineer for the prototype of the U.S.S. *Bainbridge* reactor at Knolls Atomic Power Laboratory. He has been a Presidential Exchange Executive at the National Bureau of Standards and has served in numerous offices of the American Nuclear Society, including two terms on the Executive Committee of the Fuel Cycle and Waste Management Division.

Before coming to the DOE in 1989 as a consultant, Bartlett directed energy and environment works for the Analytic Sciences Corporation in Reading, Mass., and before that was manager of System Studies in the Nuclear Waste Technology Program Office at Battelle Northwest Laboratories.

In his current position, Bartlett is responsible for developing the nation's waste disposal system for spent nuclear fuel and high-level radioactive waste as mandated by the Nuclear Waste Policy Act of 1982 and the Nuclear Waste Policy Amendments Act of 1987.

This interview was conducted by John Graham, Washington correspondent of *Nuclear News*.

GRAHAM: *Of all the jobs in Washington, this one—director of the Office of Civilian Radioactive Waste Management—almost surely guarantees that the incumbent will lose friends and alienate people. Almost everyone, it seems, thinks that this is a thankless, no-win/sure-lose kind of position, and you must have known all this. So tell me, why did you take the job?*

BARTLETT: Why did I take it? Because I have had an 18-year dedication to the program; because I am a strong believer in the value of nuclear power; and because I thought I could make a contribution as a result of my experience and knowledge of the program. It's really as simple as that.

In addition, I considered my personal circumstances—my children are all grown and I was mature in my previous position. This allowed me personally to consider this position, and it all just happened to come together at the right time.

GRAHAM: *That's it? You weren't frightened by the task? Others before you have gone out into the country to be slaughtered. That didn't bother you?*

BARTLETT: No! As you probably know, I've held elective offices.

GRAHAM: *No, I didn't know that. So, tell us more about the offices you have held and how they helped prepare you for this job.*

BARTLETT: While I was employed by Battelle Northwest Laboratories, I served two terms on the Richland, Wash., school board and two terms on the City Council.

Serving as an elected official gives you the experience with the kinds of things the public can bring to bear and the intensity involved. All this gets you used to the enormous diversity—and, as I said, enormous intensity—in the opinions, pressures, and concerns that can be brought to bear on any issue.

For example, while I was on the school board one year, the so-called special levy failed. This is a tax imposed on the voters by themselves. It is in addition to the money allocated by the



“ . . . I have started to restructure the program so it will fit the requirements imposed by the amendments act.”



state for education, and it amounted to almost 30 percent of the school system's budget. And the voters voted it down twice. So, all of a sudden, the school system was left with an enormous shortfall in terms of their funds available for the year, and the school board had to deal with this, making cuts here and there. When you sit up on the stage and there are 1000 angry citizens out there wanting to know what are you going to do—and with great intensity—it prepares you for all sorts of things.

GRAHAM: *Whom do you report to directly here at the DOE? Who is your boss?*

BARTLETT: By definition—by the law—I report to the Secretary; operationally, I report to the Secretary through John Luck, the Undersecretary.

GRAHAM: *You don't report to Leo Duffy—the Waste Czar?*

BARTLETT: Oh, no. We have parallel programs.

GRAHAM: *In the past few months, I have received DOE notices of a number of changes and reorganizations that you have made as director of OCRWM, but I must confess that I didn't understand them very well, because they made pretty dull reading and have none of the sex appeal that a reporter looks for. Also, they sound like they were written by a business school graduate. Can you tell our readers in plain language some of the things you have been doing?*

BARTLETT: Two things pop into my mind. Fundamentally, in terms of things that lack sex appeal, the program in its operational structure and strategies has never responded to the amendments act [Nuclear Waste Policy Amendments Act of 1987]. There had been no reorganization as required by the act; there was no change in the way the program operates; and the program was previously set up for three sites for characterization. It was not focused on Yucca Mountain and the needs for evaluating the site's suitability.

Basically, I have started to restructure the program so it will fit the requirements imposed by the amendments act. Doing that has involved reorganization and restructuring our requirements from regulatory agency regulations to DOE responsibilities to everything else that the program must accomplish—the rigorous structure that's a basis for management.

So, those are the basic things—essentially getting our house together internally as a basis for going forward with the pro-

gram activities and mission. That's really what it amounts to. So, we have labels for specific actions. Reorganization is one of them.

Another one is the so-called management systems improvement strategy, and that has to do with getting documentation structure—the documents we use as a basis for management. We have had inconsistencies as a result of the fact that Yucca Mountain had been, more or less, on its own as one of the three characterization projects, and the program was not focused on this single site. And the program was not focused on the evaluation of this site's suitability. So that was a tool for the restructuring, the reorganization, and the focus of the operation of the entire program.

Now, the other thing that I have done, which is largely invisible, is to make a major effort toward communicating with our constituents. Telling them what we are doing; telling them my views of the program; where I see it going; how we are fixing up the program, and so forth.

GRAHAM: *Who are your constituents?*

BARTLETT: Congress; utilities; the Department; and Nevada—those are the principal ones, along with environmental and other interested groups. We put a lot of effort into going out and communicating with these people. Local governments in the state of Nevada should also be mentioned as constituents.

GRAHAM: *When you walked in the door, did you say, "Oh my God, this place must be changed from top to bottom!"?*

BARTLETT: Well, as I said, I've been affiliated with the program for 18 years, and I knew its strengths and weaknesses about as well as anybody outside it could. But when I got here I was just astonished at how much I didn't know—essentially about how the bureaucracy, the role of the program, and how

the federal government affects what's done, how it's done, and the scope of all this. I mean that's totally invisible to anybody on the outside. That was a big surprise. And so I have been learning for five months and trying to incorporate that learning into how we get the program tracking on the revised or refocused mission.

GRAHAM: *Have you been able to articulate the changes that you have wanted to make, and have you made them rather easily? Or, have you been confronted with significant bureaucratic obstacles?*

BARTLETT: No, the changes have not come easily. There are all kinds of things. First of all, there is bureaucracy, and it has to be dealt with. Now, one of my findings is that the bureaucracy is there to protect individuals, to protect rights, to ensure that some political hack doesn't come in and make arbitrary and capricious changes, and to provide consistency and completeness on the part of the government. In that sense, I don't object to it—it's just something that you have to deal with.

For example, reorganization is not an event, it's a process, because a lot of people are concerned with it. And that's okay. It does have its complications, but it's something you respect and deal with.

The other aspect is coming in with a strategy and an objective with respect to the program direction and trying to communicate that to the staff and to get them going in those directions rather than thinking of other things out of the past. That's another matter, and it will take some time.

GRAHAM: *Have you been able to sell your ideas to Secretary Watkins and Mr. Tuck with the kind of success you would like?*

BARTLETT: I think so. So far.

GRAHAM: *Let me redirect my line of questioning. I want to talk about the recent report by the National Academy of Sciences' National Research Council's Board on Radioactive Waste Management. As I recall, that report is called "Rethinking High-Level Radioactive Waste Management," and it recommended changing just about everything in the program, including the law. Will you summarize for our readers what it was at the DOE that the Board thought should be changed, and tell us whether this has had a severe impact on what you are doing?*

BARTLETT: First of all, that is a very important and significant report. It's insightful, and it's comprehensive, because it goes beyond the Department and into the whole network—the Congress and its actions, the regulatory system, and our implementation of the Act. So, it's all in there one way or another.

The second thing is, of course, that the report is based on a snapshot in time at that meeting the board held two years ago. That is very important, because there have been a lot of evolutionary changes since then. The most significant, as an event relative to the changes, was the Secretary's announcement last fall of the program's restructuring, refocus, and so forth. You see, the Secretary's announcement came after the findings of the report were formalized. These findings were well known to us two years ago. But the announcement of our restructuring came before the report was released to the public. This sequence is important, because the report gave the impression to people on the outside that the DOE program is no better today than it was two years ago. For my part, basically, I am carrying forward such nonsexy little things as getting the program management in hand.

GRAHAM: *What did the National Research Council's report say is wrong with your program?*

BARTLETT: Their principal concern was about the rigidity of the program—the requirement that we get everything right the first time and the belief that we must know exactly where we are going—that we, from the very start, are going to do it the "right" way. This was the impression they had two years ago. In fact, everything that was then on the table—for example, the site characterization plan and other documents—said that we knew all the answers and that we had only to go out and prove them.

So the National Research Council's board said, "This program can't work that way. There are surprises in geology; there are uncertainties; there are variations and some uncertainties within the regulatory system; et cetera, and you simply cannot succeed with so much rigidity in the way DOE is proceeding."

They were absolutely right. Absolutely right. The program was being viewed from the outside as having great rigor in everything it did so far as the public was concerned. It was also viewed as not having a solid management framework for that rigor. There were, for example, inconsistencies and lack of accountability and control with respect to the spending and in the interpretation of scientific information.

So the Board was right in its analysis. But, as I said, we have had two years to start getting a new fix on the process. And we are now, basically, developing a strategy that allows for the flexibility that the report calls for. We are dealing with the findings and the so-called "unexpected aspects" of discovering the properties of a geologic formation.

The charge that we are not prepared for the "unexpected" or the "showstoppers," as the report says, is a well-known criticism, and we are starting to adapt to it. So, we are making progress in response to the criticisms that we are too rigid and that we cannot predict what is out there.

There is, however, one funny little dichotomy associated with this. My first actions here were predicated on rigidity. That is, I intentionally presented those orders in a clear and tight management framework, so we will know where we are going. We must have a basis for our actions and our decisions—and how we spend the money. We must be accountable to the General Accounting Office and to the Congress for all such things, and we will be.

But that's just the framework. On top of all this comes the implementation, which is and will be highly flexible to deal with and to accommodate the different kinds of things we will be finding as we proceed with the exploration of the mountain.

The metaphor I use is a fishnet. It concerns the management structure and basis for action for building a fishnet. We are

" . . . we will work with the NRC to develop methods by which we will show safety in compliance with its standards."

tying the knots for putting things together as they need to be put together. We are doing this rigorously so we can trace back to regulatory requirements, to the Nuclear Waste Policy Amendments Act requirements, and to DOE orders—all those sorts of things that govern the results we must produce.

And so that's the structure. But now the fishnet is flexible in its use as we go forward with the exploration of the mountain—in the evaluation of its properties, our decisions, et cetera. So, this is what we are building into the program.

GRAHAM: *I know that there are various things that could kill your program and that some of them are outside your control. For example, the National Research Council's board held a conference here this week to talk about the regulatory aspects of the HLW repository. As you know, because you attended the conference and gave a paper, a main focus of the symposium was the strange impasse between the Environmental Protection Agency and the Nuclear Regulatory Commission over repository standards. You ultimately must ask the NRC to license the repository, and it seems to me that a potential seed for the destruction of your program is to be found in this long ongoing dispute between the regulatory agencies. After hearing the arguments by the parties at the symposium, I went away feeling that this dispute must be resolved if there is to be a repository. I also perceive that the dispute has been exacerbated by the board's very strong stance—as expressed in its report—that the EPA standards are too stringent and must be modified.*

Will you please explain this dispute and tell our readers what impact it might have on what you are doing?

BARTLETT: Let me try! The EPA regulation, as it is or was before it was remanded in 1987,² has in it a basis for evaluation the safety performance of the repository based on probabil-

ity. And they felt that was essential, based on the 10,000-year time period, and everything else, as a basis for a regulation.

This 10,000-year period refers to the containment requirements of the proposed EPA standards for the management and disposal of spent fuel and high-level waste. That is, the primary standards for the disposal of these wastes are the long-term containment requirements that limit projected releases of radioactivity to the accessible environment for 10,000 years after disposal. These release limits are intended to ensure that risks to future generations from disposal of these wastes will be no greater than the risks that would have existed if the uranium ore had not been mined to begin with.

And there's another factor. The levels of performance specified by the remanded EPA regulation are very stringent in comparison to all other radiological standards. Two included factors are quite different from any other regulation on radiological standards. Those are: 1) the stringency of the proposed standard for allowable releases—that is, what the agency believes will give reasonable assurance that public health and safety will be protected; and 2) the fact that the allowable release calculations are based on probability considerations.

Both of those factors give the NRC a problem. The NRC as the implementing agency, first of all, wants to make its own decisions and judgments with respect to stringency on the principles of reasonable assurance. And second, the NRC has historically had great trouble with the concept of basing their actions and decisions on probabilities. The professionals at the agency prefer a deterministic approach. So, somehow there must be a reconciliation.

In addition, the NRC has its own performance standards for the various parts of the repository, and that agency must be satisfied that we can meet those standards before it will give us a construction permit. Unfortunately, as things stand right now, it may be possible for us to satisfy the EPA standard but not the NRC's. And it's potentially possible that we could satisfy the NRC and not the EPA.

So, the whole process is a continuum from the EPA standard to the NRC standards to our demonstrated compliance with them, and we have significant concern about all this.

So, that's one of the things that the National Research Council's symposium was about. The NRC must adopt into its standards whatever the EPA standard turns out to be, and it must relate that to its own performance standards. Out of that, NRC must ultimately produce rules for demonstrating compliance, and this is what we deal with.

In other words, the NRC tells us what we must do. However, we will work with the NRC to develop methods by which we will show safety in compliance with its standards. There are some great uncertainties about all this right now.

GRAHAM: *I sat through that conference, and I sensed extreme rigidity by the opposing principals. I didn't get a feeling that either party is anywhere close to a compromise. I may be wrong, but it seems to me that you could do the best job in the world; however, if this problem isn't resolved, Yucca Mountain could go down the tubes. How do you respond to that?*

BARTLETT: Let me put a slightly different twist on it. First of all, Yucca Mountain must first be addressed with respect to the issue of "is the site suitable?" And that will address only a sub-



²In the mid-1980s, certain antinuclear groups took the EPA to court over its proposed regulation for HLW disposal. In 1987, the court remanded the regulation and directed the agency to restate with more specificity.

set of the regulations—only those that deal with whether the geology provides a suitable location for a repository. Then ultimately we get into the question of “if it is found suitable, how do we design and license a repository in that geology?” And that’s where all those EPA and NRC regs will come into play.

As it turns out, the U.S. Court of Appeals for the Ninth Circuit in San Francisco, on September 19, released a determination, saying that the basis for evaluating whether the Yucca Mountain site is suitable will be according to DOE siting guidelines—not by an EPA or NRC regulation.

In other words, the court has said that we should use the DOE siting guidelines as a basis for determining whether the site is suitable, so the issues coming out of the EPA and NRC regulations—that is, the safety performance of a repository—are not in contest in the near term on whether the Yucca Mountain site is suitable.

Now, for any location, be it Yucca Mountain or wherever we might ultimately put a repository, the EPA and NRC regs do come into play. I like to think that we will be able to establish a continuum of flow-down effectively from the EPA requirements, to the NRC requirements, and to our compliance rules and repository demonstration. I think there is time to do all these things, but certainly I would agree with you that the symposium did not demonstrate a lot of coming together. But we are just at the beginning. In fact, EPA has not even published a new draft of its proposed standard.

GRAHAM: *So, you are not anticipating an enormous roadblock?*

BARTLETT: No, I am not.

GRAHAM: *Let me explore another item that was aired at the National Research Council's conference. The spokesman for the state of Nevada stipulated that the Yucca Mountain site has already been determined by him and others to be unsuitable for HLW storage. You, in your own discussion paper, elaborated on this and gave a response. Will you do that again for our readers?*

BARTLETT: Sure! Nevada alleges that the site is unsuitable on the basis of the DOE siting guidelines, which are primarily aimed at providing information necessary to prepare sites, and on the basis of the requirements in the Nuclear Waste Policy Amendments Act, which directs the Secretary to be conservative in his judgments. Based on those two things—provisions in the guidelines and conservatism—the state alleges on three counts that the site is unsuitable in terms of their available data and on how they interpret these provisions.

The three counts are: One, groundwater travel time, which is an element of the NRC regulations as well, but our siting guidelines are based on the NRC regulations. The second one is human intrusion—the likelihood that people will penetrate the site in the future. And the third one has to do with the existence of faults as evidence of site instability in the future.

They allege—on the basis of current information and conservatism and their interpretation of the existing data—that the groundwater travel time is far faster than will be permitted by the EPA regulation. They allege that the probability of intrusion is very high, because there is so much mining around the area right now, suggesting that there are significant mineral resources within the mountain. Therefore, mining will occur in the future and will disrupt the repository, they say. And thirdly, they allege, because there are 32 known faults and the site is actively volcanic, that the site will be highly unstable and that a repository would not be safe.

“The scientific community . . . must analyze the information it receives and use this as a basis for progress.”

Thus, they say, on the grounds of all these items, the site should be disqualified immediately.

GRAHAM: *That's what they say. What do you say?*

BARTLETT: Nevada's allegations do not take into account—here comes that word again—the probability of the occurrences, and not whether those faults are what can be called “capable.” By this I ask: Could the faults produce earthquakes in the future or are they residue of things that occurred long in the past? Is there, in fact, mineral value in the mountain that could be the target of future exploration? We'll find that out when we open the exploratory shaft.

The Nevada officials have made a summary judgment without considering the likelihood of the factors stipulated, and their allegations are based also on very incomplete evidence with a very high degree of uncertainty.

So, I categorically reject their position at this point. The information is too uncertain to make a judgment. They have not taken into account the associated “likelihood” issues, which are—in fact—required to make a determination of site suitability.

GRAHAM: *I recall hearing Secretary Watkins say that the DOE's primary goal is to move onto the Yucca Mountain site and make a thorough scientific investigation. And he said, if the DOE finds the site unsuitable, Nevada will be the first to know. Does this represent your feelings on this matter?*

BARTLETT: Absolutely!

GRAHAM: *The Nevada speaker at the symposium also made a blanket accusation that everyone, except maybe the EPA but including the DOE, is openly “jiggering” the data and the standards so you can bring in Yucca Mountain at any cost. How do you respond to that?*

BARTLETT: They are picking up on an issue that came up several times during the symposium, which says, “hey, the standards are too stringent, too uncertain, and will never make Yucca Mountain fit, so we will change the standards to make Yucca Mountain fit.” I think that's nonsense.

Issues of stringency and assurance of safety do remain about the regulations, but any changes to these standards, I think, would be structured to improve implementation. There is a fundamental question of whether the regulations promote sufficient safety. That's the stringency issue. It's still open, but I don't think it's fair to say that changes to regulations inevitably compromise them.



No one is questioning this. I made the point in my paper that—in all discussions—nobody has said “hey, if we do that, we are going to compromise public health and safety.”

The charge of “jiggering” the standards is not fundamentally at issue. However, the way we go about verifying safety performance in accordance with regulations is fundamental.

But I don't think there's any question about this at the DOE. We are not going to compromise safety requirements just to get something done. I don't think anyone in the entire system has any intentions or expectations of such action.

GRAHAM: *Nevada politicians often say that Congress is out to “stick it to Nevada.” come what may. Therefore, you should not need to win the hearts and minds of the people of Nevada. But the board's report said that you should be more forthcoming about what you are doing out there. Of course, this last comment was made before you got here. So, what are you, John Bartlett, doing to win the hearts and minds of the people in Nevada?*

BARTLETT: I, so far, have spoken personally with about 40 of Nevada's political and educational leaders. What I have found is that a good many of these people are, in fact, open to substantive conversation and to reliable information, assuming I can provide it. The overall position of these—and I call them “opinion leaders”—is not nearly as hard or as negatively intransigent as it has been represented by the news media and by some of the state's political leaders. And I think there is room for the education of some of the political leaders. There is room for education—or, for information. I am trying to provide that, and I'm trying to get a feeling for where these opinion leaders are coming from.

Frankly, I have found in my discussions with these people in Nevada that there is not a lot of solid knowledge or understanding about what our program's about, what its implications are, and what's actually being done by us in attempting to es-

establish a dialogue with them. For example, such a dialogue could lead to an opportunity by the state to conduct a scientific overview of our work, et cetera. We have been operating with Nevada on an ignorance base—we should be operating on an information base. I'm finding that out, and I'm trying to overcome it—as much as I can—on a personal basis.

GRAHAM: *You said you have been here for five months. In that period, how many times have you visited Nevada. Once or twice? Less than ten? More than ten?*

BARTLETT: About a half-dozen times. I have been there at least once a month.

GRAHAM: *I would like to direct some questions about political perceptions on Capitol Hill. At the Council's symposium, Ben Cooper, who is an aide to Sen. Bennett Johnston, said there is a perception on Capitol Hill that nuclear utility executives are becoming disenchanted with the DOE's HLW program. This disenchantment, Cooper implied, is based primarily on the large sums of money the industry is paying into the Nuclear Waste Fund and the lack of progress being made by the DOE. Have you observed this disenchantment?*

BARTLETT: I hear selected disenchantments almost daily from people who come in here. Nuclear utility executives have clearly been—in the past—concerned, if not totally disenchanted, about the way the program is operated and proceeding. They certainly have been less than enthusiastic in their support. I think that stems from a number of things.

First of all, some issues about the program have not been all that visible—how it is proceeding, how it has been managed, et cetera. These are some of the things we are trying to fix.

Secondly, the program has not been terribly well presented with respect to sensitivity and/or insight and concern about the people who were wondering what the program managers were doing.

Thirdly, I think there has been broad misconception, or lack of understanding, about the program. This, in part, is due to the lack of representation about what the program had accomplished and because we are—or the nation is—inventing this whole thing as we go. Congress is inventing it; we're inventing it; and the regulatory system is inventing it. God didn't give us a Rosetta stone saying, “here's the way to do it.”

The Congress has already made adjustments by the amendments act; the regulatory community is in the process of looking at the essential adjustments—the regulations didn't come out perfect the first time; and our program wasn't perfect the first time either.

The whole program, going all the way back to the advent of the waste policy act, has not had sufficient input on the uncertainties associated with geologic properties. The program managers have not been sensitive enough to this issue, and correcting this will take time. The scientific community must mull all this over. It must analyze the information it receives and use this as a basis for progress.

There has been limited progress in the program up to about two years ago, and there has also been unwarranted expectations for program progress. This is because, in the early stages, there was a lack of sensitivity and awareness about these issues. These factors are reflected in the waste policy act, which set very rigid requirements for the start of the program.

That was done with ignorance of the uncertainties we must now face. It was built on the kind of expectations engineers face when they go out to build a bridge. Countless bridges have been built throughout the ages, so, relatively speaking,

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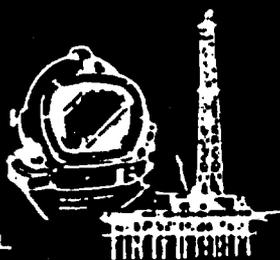
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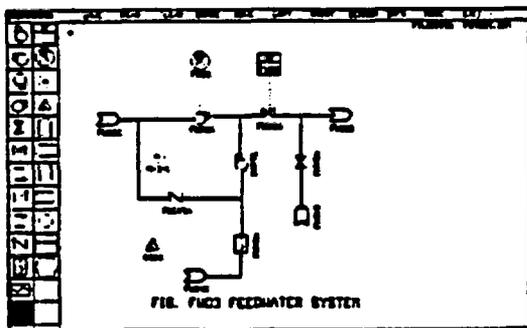
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it's no big deal to build another one—no matter how wide the river.

But building a high-level waste repository is not like building a bridge, and we are only just now beginning to realize that.

A real opportunity for a deep understanding of the implications of this first-of-a-kind venture and the requisite, accommodating fabric of the program didn't come into play until the publication of DOE's draft of the second site characterization plan. That was in 1988, and it was the first opportunity for the community involved to see it all and to start thinking about "how are we going to gather this information, interpret it, and apply it to regulatory requirements?"

The EPA/NRC regulations didn't come until 1985, and, of course, some of them are back under issue again. So, for the first time, we have this synthesis of what the scope of effort is, what the uncertainties are, what the requirements are, and how we must start thinking about how to get from here to there.

The process really started with the reviews of the draft site characterization plan. Then, in response to that, the DOE put out the final plan, and the NRC commented formally on that. In all this, there was an intense dialogue going on within the technical community, between the DOE and the NRC, and with the industry, the state of Nevada, and other participants. And then, for the first time—in about 1989—we had a pretty good understanding of the scope of the program's fabric and issues involved with data acquisition, interpretation, and application.

Now, we are ready to go.

GRAHAM: *If I may, I would like to bring you back to the matter of disenchantment within the industry over payments into the Nuclear Waste Fund. Within about the past year, I have heard someone suggesting that the industry has already paid enough such that the interest alone on the fund is sufficient to pay for the DOE waste program. I have also heard that some utility executives profess some concern that certain public utility commissions may one day consider these payments to have been imprudent. What do you say to that?*

BARTLETT: First of all, the attitude that interest payments on the collected money is enough to pay for the DOE program is very shortsighted. And it's not true, by the way. The interest is accruing on the order of about \$150 million or \$160 million per year. Actually, it was \$167 million last year. The program is spending on the order of between \$300 million and \$400 million annually, and that will go up significantly once we start excavation and testing on the mountain. So that argument doesn't wash.

Also, it's a short-range view, because we must consider and base the fee and our activities on the life-cycle costs. This is a requirement imposed on the program. We must evaluate the life-cycle cost of the program annually, and assess the adequacy of the fee based on that. The life-cycle cost is now estimated to be about \$30 billion.

The program has been going on the basis of a rate of expenditure less than income. That is because we are in the early stages of site evaluation—and, of course, we have been kept off the mountain by Nevada's legal maneuvers. So that has kept the rate of spending lower than the rate of income—but only in the near term. As I said, expenditures will go up as soon as we start into the excavation and more expensive site characterization.

So, we must take the long-range view. They don't.

On the basis of the past, but surely depending on the state and what the situation that a given utility is in, you find indi-



vidual viewpoints with respect to the prudence of paying into the HLW fund. And you find issues stimulating that, such as utility concerns about the rate that spent fuel is accumulating in their pools, and whether they are going to get the services of spent-fuel transport to an MRS in a timely fashion.

There is a range of things, but to me, there does not appear to be, at this point, a consensus among utility executives on this item about disenchantment. This, I hope, is partly a consequence of some of the effort I have been making to communicate to the utilities about where we are, why, and where we are going.

GRAHAM: *Is there anything that I have left out? Is there anything that you specifically want to say while I am here?*

BARTLETT: The state of Nevada, really only the state of Nevada, has been alleging deficiencies in the quality of the program's technical work. That is a concern of mine, because it was one of the things that I wanted to assess on my own when I came into this job.

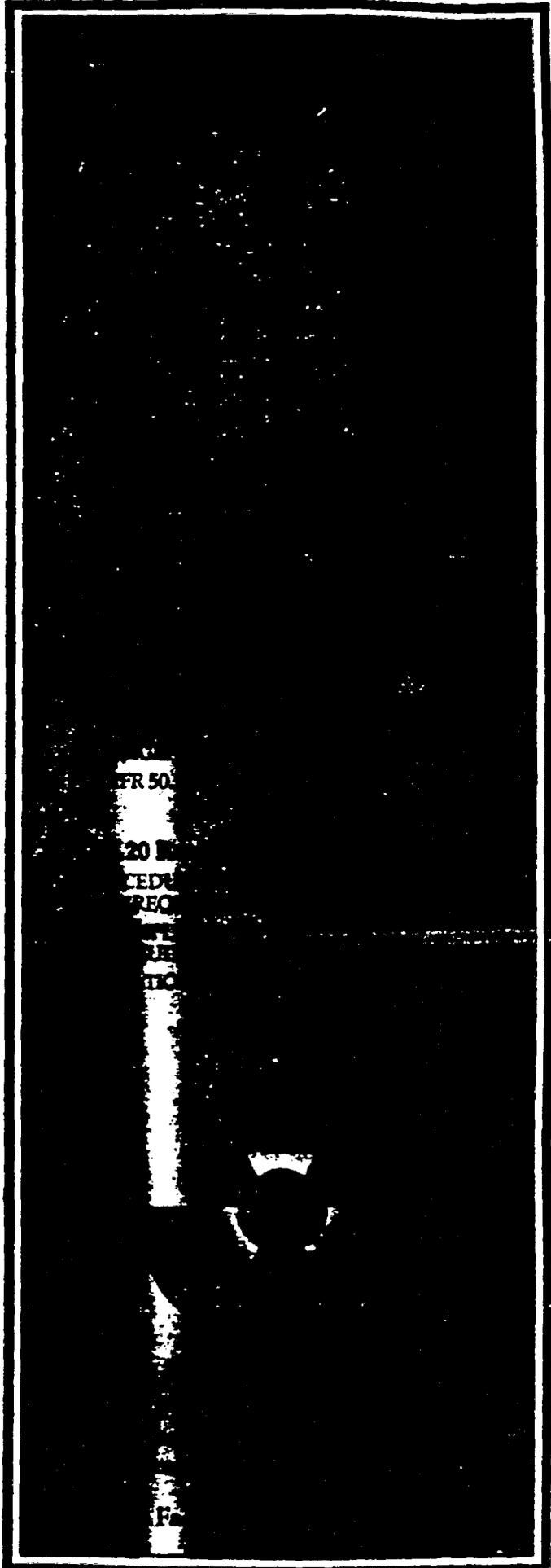
I am thoroughly pleased to say that there is no lack of quality in the technical work that is being done for this program. Our technical work is sound. We have world-class people doing world-class work in the technical areas of the program.

I have confirmed this, as I have tested the waters by talking to scientists in other nations and by making a professional assessment of the work through our bilateral agreements, and so forth. So, I am convinced that the technical work being done in the program is superb.

There are other related issues about "has it been the right work, the necessary work, is it focused to the program needs?" And we are now working to assure ourselves that what we are doing meets those criteria. However, in my mind, there is no question about the quality of the technical work that's been done, and I want everybody to know that I have great confidence in this assessment.

Responsible technical controversy is healthy and essential to this program, and the people who are doing the work are providing a good basis for that. We also have an independent Technical Review Board to help us with this requirement.

Let me say one more time that I have great confidence in the technical underpinnings of our activities.



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ENCLOSURE 3



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

APR 09 1990

Mr. John W. Bartlett
Director
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
Washington, D.C. 20585

Dear Mr. Bartlett:

SUBJECT: NRC COMMENTS ON DRAFT PROJECT DECISION SCHEDULE REVISION 1

I am replying to the request of March 1, 1990, for the U.S. Nuclear Regulatory Commission's (NRC's) comments on the U.S. Department of Energy's (DOE's) Draft Project Decision Schedule (PDS) Revision 1. The Draft Revision was prepared under Section 114(e) of the Nuclear Waste Policy Act of 1982, (NWPA), which requires that DOE prepare and update a PDS that portrays the optimum way to attain the operation of a repository. DOE is to cooperate with all affected Federal agencies in preparing the PDS. The NWPA also requires that any agency that cannot comply with a deadline in the PDS submit to DOE and to Congress a written report explaining the reason for its failure to meet the deadline.

The NRC notes DOE's decision in the Draft Revision to consider PDS "deadlines" subject to NWPA reporting requirements to be only those critical milestones scheduled to occur within three years after issuance of a PDS or any revision thereof. We believe that this is a realistic and achievable scheduling horizon. More importantly, the three-year scheduling horizon for critical milestones allows for needed flexibility in adjusting later milestones in order to implement contingency plans to address unexpected program developments as they arise.

The Draft Revision includes only one NRC deadline within the current three-year scheduling horizon. That is Milestone (19c), "Accept OCRWM QA [Quality Assurance] Program," which is scheduled for September 1990. NRC is concerned that this milestone could be interpreted as the timeframe when NRC will lift its QA objection in its Site Characterization Analysis (SCA). NRC's interpretation of Milestone (19c), which is based on recent NRC-DOE QA Program meetings, is that NRC should be able to accept DOE's QA program plans for implementation by September 1990. Until DOE demonstrates its ability to implement its QA program, for all program areas, through development of study plans and technical procedures, the NRC cannot lift its SCA objection. NRC expects, however, that by January 1991, DOE should be able to demonstrate acceptable implementation for those portions of the QA programs needed to begin surface-based testing. However, NRC's lifting of its QA objection for any part of the program will be contingent on DOE's further demonstration of QA program implementation.

NRC is also concerned that the Draft Revision does not include milestones for development of the Licensing Support System (LSS). As NRC stated in its comments to DOE on the "Report to Congress on Reassessment of the Civilian

ENCLOSURE

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Mr. John W. Bartlett

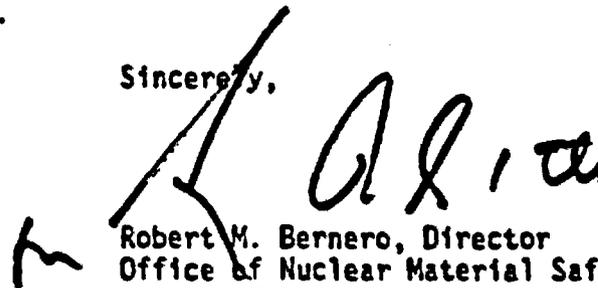
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Radioactive Waste Management Program," DOE's reference schedule for the repository program should include DOE milestones for the design and development of the LSS. This would help ensure that the LSS will be operational on a schedule that will allow participants in the licensing proceeding early access to documents relevant to the licensing decision.

We are providing additional detailed comments on the Draft Revision in the Enclosure.

I hope that these comments are useful to DOE in preparing its Final 1990 Revision to the PDS. Any questions you or your staff might have concerning these comments should be directed to Mr. Robert E. Browning, at 492-3404, or Mr. John J. Linehan, at 492-3887.

Sincerely,


Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosure:
Addnl NRC Comments on the
Draft PDS Rev 1

cc: R. Loux, State of Nevada
C. Gertz, DOE/NV
S. Bradhurst, Nye County
M. Baughman, Lincoln County
D. Bechtel, Clark County
D. Weigel, GAO

ADDITIONAL NRC COMMENTS ON DRAFT PROJECT DECISION SCHEDULE REVISION 1

Repository System

- NRC offers the general comment that in reviewing the PDS milestones, we have made the assumption that the review time for PDS activities is the maximum allowable time for the period indicated. For example, if the review period is April 1990 to June 1990, it is assumed that the time for the review is the maximum time possible, three full months.

Section 1.4

- The PDS should explain the basis for deciding that a milestone is "critical," and thus subject to NWPA reporting requirements. The PDS should also explain the basis for proposing that selected planning objectives be subject to NWPA reporting requirements.

Table I-A

- Milestone (7a), "NRC Issues Comments on Sufficiency of Site Characterization Analysis and Waste Form Proposal," is currently a planning objective with a target date of April 2001. In preparation for meeting this planning objective, NRC will be reviewing DOE progress in its site characterization activities and waste form development, on an ongoing basis.

The NRC will also review DOE's Waste Form Proposal prepared under Section 114(a)(1)(B) of the NWPA as a basis for its Sufficiency Comments. The PDS should indicate when DOE plans to issue the Waste Form Proposal so that NRC can evaluate whether there is adequate review time for it to meet Milestone (7a).

- Milestone (7a) is scheduled for the same month that DOE issues its Site Recommendation Report (SRR), Milestone (8c), to the President. Because the NWPA requires that these NRC comments be part of the basis for the SRR, it does not appear that the April 2001 dates for both of these actions are realistic.
- Milestone (11a) in Table I-A is DOE's submittal of the License Application to NRC. A new milestone should be inserted after (11a) for NRC's decision on docketing DOE's License Application. This decision would be made as a result of NRC's acceptance review to determine if DOE's License Application is complete and acceptable for docketing. We anticipate this decision can be made two months after License Application submittal.

- Milestone (11b) should be retitled "NRC License Application Review and Licensing Hearing" to more accurately reflect the major activities in this time period. The three-year statutory NRC licensing time period will begin after NRC docket the License Application, and not when DOE submits the License Application. The PDS schedule should be changed to reflect a two-month period for NRC's docketing decision.
- The schedule for NRC's review of the updated License Application and decision regarding a license to receive and possess waste under Milestone 14 and shown on Figure 3 shows approximately 21 months for this activity. DOE scheduled NRC's review to begin about 18 months before completion of construction, and end about three months after construction is completed. This 21-month period is longer than the nine months provided in the June 1987 Mission Plan Amendment; however, the three months after construction is completed is less than the nine months originally planned. NRC is concerned that this three-month period is not enough unless the overall 21-month review period starts when DOE's construction is "substantially complete" (see 10 CFR 60.41). DOE should clarify when construction will be substantially complete.

(We would also note that, unlike Figure 3, Figure 1 does not show any time between completion of construction and the start of waste emplacement.)

Table I-B

- It is not clear what Milestone (13h) means. In May 1989, NRC issued a final rule, amending 10 CFR Part 61, on disposal of Greater-than-Class-C (GTCC) low-level radioactive waste in a deep geologic repository unless disposal elsewhere has been approved by the Commission (54 FR 22578). NRC's rulemaking on GTCC containment criteria has not been issued and is, in fact, only under consideration as a potential future rulemaking.
- Milestone (13i) should read "Review of the Commission's Findings Under the 1984 Waste Confidence Decision."
- The words "Waste Confidence Decision" should be deleted from Milestone (13j).
- Milestone (22a) is unclear. NRC provided comments on DOE's "Consultation Draft Site Characterization Plan for Yucca Mountain" in May 1988. The Milestone should be revised, as necessary.

- Milestone (23a) should be retitled "Issue Draft Table of Contents for Format and Content Guide."

Appendix A

- The list of NRC activities in Appendix A-6 does not include NRC review of the Draft Environmental Impact Statement (DEIS) included in Table I-A. We would suggest that the PDS include NRC's review of the DEIS in Appendix A-6 to be consistent with milestones for review of the DEIS by other Federal agencies in Appendixes A-1 through A-5. Also, as noted above, NRC recommends that a new planning objective be added to Table I-A (Item 11) and Appendix A-6 for NRC docketing of the License Application.

Monitored Retrievable Storage and Transportation Systems

The NWPA does not require that the PDS set dates for activities related to the monitored retrievable storage (MRS) facility or transportation systems. These have been included only to provide an overview of the total waste management system. With this understanding, NRC offers the following comments:

- Regarding the MRS, DOE assumes that a State will volunteer a site for an MRS and that the statutory restrictions linking the MRS to progress on the repository will be modified. Only if these assumptions are realized, and litigation does not ensue, may it be possible to meet the target 1998 schedule for limited waste acceptance.

The "revised MRS strategy" referenced on p.21, which will cover obtaining a volunteer site and expediting the licensing process, will "likely result in significant changes to the MRS schedule." These changes are to be reflected in future updates to the PDS. The NRC believes that it is likely that the changes to the MRS schedule will be to further delay the schedule.

- In Table III-A, the date of DOE submittal of the Safety Analysis Report for the from-reactor and from-MRS cask development should be indicated.
- In Appendix A-6, Item III-A-1(b) is inappropriately assigned to NRC. DOE should have the lead for this item, in consultation with NRC.
- Also in Appendix A-6, Item III-A-7(b) should refer to NRC "review" of the MRS Transport/Storage System Certification of Compliance.

ENCLOSURE 4



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

OCT 0 : 1990

Mr. Samuel Rousso, Associate Director
for Program Administration and Resources Management
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
Washington, D.C. 20585

Dear Mr. Rousso:

SUBJECT: COMMENTS ON THE FINAL DRAFT OF THE PROJECT DECISION SCHEDULE

By letter dated August 31, 1990, the U.S. Department of Energy (DOE) provided the final draft of the Project Decision Schedule (PDS). In the letter, DOE noted that it had considered the comments provided by other federal agencies and had provided a proposed disposition of the comments. In addition, DOE stated that the final draft PDS would serve as the U.S. Nuclear Regulatory Commission's (NRC's) commitment to the activities, schedules, and deadlines contained therein.

Based on its review of the proposed dispositions, the NRC staff believes that DOE has not adequately addressed some of its original comments. In particular, the staff has found that DOE may not have completely considered or addressed comments in the areas of (1) quality assurance (QA), (2) the Licensing Support System (LSS), and (3) the monitored retrieval storage facility (MRS).

In the area of QA, the staff's comment noted that there may be some misunderstanding on the meaning of milestone (19c), "Accept OCRWM [Office of Civilian Radioactive Waste Management] QA Program." The staff expressed concern that the milestone could be misinterpreted as the date by which the NRC would lift its Site Characterization Analysis (SCA) objection. In its response, DOE acknowledged that its interpretation of the milestone was consistent with the NRC's, and that milestone (19c) did not represent lifting the SCA objection. Although DOE has clarified its understanding of the milestone, it did not provide this clarification directly in the PDS, but rather provided it in the summary of comment responses. Without changing the PDS to clarify the meaning of the milestone, the milestone may still be misinterpreted. Therefore, the staff recommends that the milestone be broken into two separate milestones. Revised milestone (19c) would be "Determine OCRWM QA Program is Procedurally Adequate and in Selected Areas Acceptable to Begin Site Characterization" with a completion date of January 1991. A new milestone (19d) would be "Determine QA Implementation is Effective and NRC Removes SCA Objection." The completion date for this milestone would be "TBD" until DOE provides a better schedule of its own actions to accept the QA program.

In its response to the lack of a schedule for the LSS in the PDS, item (2), DOE noted that it was committed to the development of an LSS but that the absence of LSS milestones in the PDS is due to significant budget cuts and delays in the program. However, in a recent action, OCRWM and the NRC's Office of the LSS Administrator have agreed on an LSS development schedule that would result

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in the acquisition of an LSS pilot system available for testing and evaluation in the 1993 time frame. Therefore, DOE should revise the PDS to include a schedule for the LSS and reflect the results of the NRC/DOE agreement.

For Item (3) covering the MRS, the staff raised a number of concerns about DOE's ability to accept limited wastes by 1998. The bases for these concerns were (1) the fact that, through legislation, the MRS is presently tied to the progress on the repository and (2) the selection of a site for the MRS. Before DOE could have an operational MRS by 1998, legislation would have to be enacted to remove this coupling of the MRS and repository, or a state volunteers a site. Although DOE acknowledged in its response that there is uncertainty in the MRS schedule contained in the PDS, it did not change any of the information in the PDS. Therefore, the staff believes that without providing a discussion of the major obstacles facing the MRS, the PDS may in fact be too optimistic in its presentation. Hence, DOE should provide a discussion of the legislative and political events that need to take place before the MRS schedule would be achievable. Because of the speculative nature of some of the activities, the NRC cannot commit to the schedules and deadlines listed, but will use them as guidance as to what the response times DOE desires for various activities.

Also in the area of MRS, the staff stated in its comment on original milestone (7b) that the milestone should reflect an NRC review of the MRS transportation storage system development technology not approval. In responding to this comment, DOE expanded original milestone (7b) into three milestones covering (1) submittal of a DOE application for the system, (2) an NRC review, and (3) NRC approval. Based on discussions with OCRWM representatives, the staff was informed that at this time, DOE is not certain what the technology will involve and is also uncertain what type of action will be required by the NRC staff. If it involves developing reports on the types of technology that will be used, the appropriate NRC activity would be to review and comment. On the other hand, if it involves the development of a dual purpose cask, the NRC action would involve certification of the cask. Therefore, a more appropriate milestone would be to revise milestone (7b) as "DOE Determines Type of Technology to be Developed," with no further milestones. This is because the future milestones would be dependent on the results of milestone (7b).

Besides its concerns on DOE's disposition of the staff's comments, the staff has identified four milestones that need to be updated. First milestone (1a), "Issue Final Format and Content Guide," has a tentative completion date of September 1994. Hence the present "TBD" for milestone (1a) can be changed to September 1994. The second milestone that needs to be changed is milestone (3b), "Review of the Commission's Findings under the 1984 Waste Confidence Decision." This action has been completed. Therefore, it can be moved to Table I-B with a completion date of September 18, 1990. Milestone (19b), "Issue Safety Evaluation Report for the QA Requirements/QA Program Description," needs to have its June 1990 proposed completion date changed to December 1990. The reason for this change is a late submittal by DOE of the necessary information plus additional time needed by DOE to respond to staff questions raised on that material. The fourth milestone that needs to be changed is milestone (13a), "NEPA/Review Procedures for Geologic Repositories for HLW," in Table I-B. For milestone (13a), Table I-B DOE should add that the final rule was issued on July 3, 1989.

Finally, the staff has identified an issue that it had inadvertently omitted in its original review. In Table II-A, items (5b) and (5c) identify the granting of a construction authorization by NRC for a simple receipt facility and a spent fuel handling building. With respect to these milestones, DOE should understand that licensing under 10 CFR Part 72 is a one-step process, and that the NRC only issues a materials license not a construction authorization and then an operations authorization. Therefore, the milestones should be revised to reflect this.

As was stated in its April 9, 1990 comments on the PDS, the staff agrees with DOE's three-year scheduling horizon for critical milestones because it allows for needed flexibility in adjusting later milestones in order to implement contingency plans to address unexpected program developments as they arise. I hope you find the staff's comments beneficial in finalizing the PDS.

Sincerely,



Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards