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NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Wednesday, December 20, 1989

The Commission met in open session, pursuant to notice, at 2:00 p.m., Kenneth M. Carr, Chairman, presiding.

COMMISSIONERS PRESENT:

KENNETH M. CARR, Chairman of the Commission
THOMAS M. ROBERTS, Commissioner
KENNETH C. ROGERS, Commissioner
JAMES R. CURTISS, Commissioner
FORREST J. REMICK, Commissioner

STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

LEO DUFFY, Assistant to the Secretary for Coordination of DOE Environment and Waste Management; and Director, Office of Environmental Restoration and Waste Management, DOE

FRANK PETERS, Deputy Director, Office of Civilian Radioactive Waste Management, DOE

CARL GERTZ, Manager, Yucca Mountain Project Office, OCRWM

RALPH STEIN, Associate Director, Systems Integration and Regulations, OCRWM

P-R-O-C-E-E-D-I-N-G-S

2:15 p.m.

CHAIRMAN CARR: Good afternoon, ladies and gentlemen.

The purpose of today's meeting is to hear from the Department of Energy on the status of the Civilian High Level Waste Program. As directed by the U.S. Congress in the Nuclear Waste Policy Act, the Department of Energy has been conducting a program for siting the nation's first geologic repository for disposal of high level radioactive waste.

The Nuclear Regulatory Commission has been proceeding in parallel with its responsibilities for the licensing and regulation of this first of a kind facility.

The Commission last met with the Department of Energy on this subject in December of 1988. In the course of a year, many significant activities have occurred, including NRC's review and comment on the Site Characterization Plan for the Yucca Mountain site. Most recently, Secretary Watkins provided a report to the Congress on the reassessment of the Civilian Radioactive Waste Management Program.

The Commission is happy to have with us today Mr. Leo Duffy, Director of DOE's Office of

Environmental Restoration and Waste Management.

That's your title?

MR. DUFFY: That's one of them.

CHAIRMAN CARR: And Mr. Frank Peters as well, Deputy Director of the Office of Civilian Radioactive Waste Management, to discuss the status of the program.

Do any of my fellow Commissioners have any introductory remarks?

If not, Mr. Duffy, please proceed.

MR. DUFFY: Thank you, Mr. Chairman. It was the Secretary's desire to bring the NRC up to date on what we've been doing at the Office of Civilian Radioactive Waste Management during the last year. We have some accomplishments, some new initiatives, some recommendations. I believe that progress has been made, even though we've had significant impairment on our access to the site and we have had some recommendations from committees on methodologies to look at with regard to the exploratory shaft.

In the Secretary's review of the program in the last five months, we've made five major elemental -- what we feel are improvements. We formalized the program starting with a bottoms up analysis of the schedule. It is the Secretary's

belief that this is the first time a true bottoms up of the 5,000 elements associated with the schedule has been made. The original 1998 program was identified as part of the Nuclear Waste Policy Act. The 2003 was based on a comparison with the 1998, but in our evaluation, looking at the detailed design of the facility, we did not have what we felt was a true bottoms-up schedule evaluated and looked at from the scientific characterization of the site.

We also looked at the present project management operation and felt that a restructuring was required. We got an outside consultant to look at the total organization of the program. We looked at the efficiency as we saw it in the present day on the basis of changes in the exploratory shaft to surface characterization as a priority.

The gaining access to the Yucca Mountain site for a comprehensive, scientific investigation has been delayed over the last 22 months. We felt on the basis of this delay and on the basis of the additional scientific investigation that we feel is necessary to justify or disqualify this site, that the program or programmatic schedule was too optimistic. We felt that in order to achieve the requirements of the Department of Energy to accept fuel in 1998, we had to

decouple the MRS scheduling from the identification of a site for the repository.

In looking at the methodology for accomplishment, the Secretary felt that the decision plan would give us a better accountability for performance than we've had in the past.

So, these are the key elements that directed our performance to develop the decision plan. We feel that there are still major areas that have to be resolved to move the program forward. The nomination of the Director of the Office of Civilian Radioactive Waste Management is a major area. The White House will have to nominate this person after clearance. We anticipate this will be done in the January time period when Congress returns.

COMMISSIONER ROBERTS: But has the nomination been announced?

MR. DUFFY: No, sir.

COMMISSIONER ROBERTS: Thank you.

MR. DUFFY: There has been some suggestions in both Congress and in the press on a potential candidate, but the nomination has not --

COMMISSIONER ROBERTS: I certainly don't think either of those is any source of great accuracy.

MR. DUFFY: I wouldn't either, but I think

that a lot of people have.

We felt that the organization structure required a direct line reporting operation from the Yucca Mountain project operation to the Director's office in order to get direct line responsibility. We are working on that aspect of it now and seeing what organization changes have to be made.

We believe that we've made significant progress in the application of the quality assurance to the program. Seven of our eight contractors have been audited and successfully completed. One has not. There are two still major areas both in the Department of Energy that have to be audited and that is scheduled to be accomplished by July.

In addition to that, we felt that the present methodology for technical cost and scheduled base lines was not to the satisfaction of the Secretary and a new methodology would be accomplished within the April time frame. We will define the criterion objectives against which the program performance will be measured and progress can be measured for both ourselves, yourself, the State of Nevada and the utilities who are the recipients of this program.

From the standpoint of the Secretary's

review, we've also looked at a comprehensive reevaluation for the overall program schedule, both repository MRS and transportation. From a repository license application standpoint, based on our opinion of the amount of scientific information that's required, the amount of what we feel is necessary peer review to establish criteria, we did not feel that we could satisfactorily apply for a license until October of 2001, if we find a suitable site. I think that's a key element of the Department's program, is to ensure ourselves that we have scientifically demonstrated there are no disqualifying characteristics for the present identified site characterization.

The start of the repository operations would then be revised to the 2010 time frame. Based on the NRC's evaluation of on-site storage, we feel that this does not affect the application of nuclear power to the nation's energy needs. They're a safe capability during that time period.

A revised schedule assumes a surface disturbing scientific investigation to start in January of 1991. That is dependent upon a Department of Justice -- litigation between the Department of Justice of the United States and the State of Nevada on the basis of laws that have been passed in Nevada

that are presently assumed by the State of Nevada to allow them to prevent access to the site.

We have initiatives underway to evaluate --

CHAIRMAN CARR: Is that -- you said in San Francisco they were going to give them 30 days. Has that suit been filed yet?

MR. DUFFY: Not yet, sir. We have discussed with the Department of Justice and they aren't ready to pursue that. There's a discussion between the General Counsel and the Department of Justice today. That memorandum is being prepared and is on internal review at the Department.

Initiatives are underway to evaluate alternative strategies for improving a repository schedule, but we think we're in the early stages of the scientific investigation. We feel that this is the first of a kind operation. Looking at the international community, we look at a time table that is compatible with what's been done in the other countries who are using nuclear power as a source of energy and we feel that the evaluation that we have made is consistent with those programs.

The waste acceptance at MRS on a limited basis we feel can be accomplished as early as January 1998, if we get a negotiator to negotiate the site

independent of the Department of Energy. We feel that's a very significant methodology. We believe that on the basis of having a negotiator that will take us out of the polarized situation between the Department of Energy and the states, the negotiator does not have any preconceived location for sites and we're working with the states on an impairment basis, on financial programs and assistance that the states would think were necessary if they accepted the MRS location. He could also negotiate on the time period associated with when it would be removed and would be dealing on what we feel is a level playing field versus the Department of Energy.

CHAIRMAN CARR: Have you recommended a negotiator yet to the President?

MR. DUFFY: We do not have that responsibility. It's a congressional -- White House responsibility, reports to the White House. We do not --

CHAIRMAN CARR: Okay.

MR. DUFFY: A negotiator has been considered and has been investigated and I believe it's up to the negotiator to make his decision known to the White House on whether he will accept the assignment.

The MRS strategy assumes siting through the

efforts of this negotiator. We feel that's extremely important. It also assumes that the Nuclear Waste Policy Act linkages are modified with regard to its connection with the site selection. We do not ask for any other linkage changes at this time.

A DOE-directed siting process would result, in our opinion, in extensive delay, 2002 if the linkages are modified, 2007 if the linkages are not modified. I think that's a speculative situation. From the past operation with the Department, the first thing we have to do is maintain credibility or obtain credibility. We do not have credibility associated with these programs at the present time. That would be a significant delay. We think a negotiator would have the capability to improve and expedite the communication between desired community, states, municipalities.

From a comprehensive schedule, we're looking at the universe -- use of transportable storage casks to achieve the 1998 as an option. The cask would require NRC certification under 10 CFR 71 and licensing for storage under 10 CFR 72. If we go to a dual storage shipping capacity cask, that would put us in a unique situation from a cask standpoint with both licensing and certain features of that same cask. I

don't believe that's been done yet. So, again, it's a new approach. Not a new approach, it's a new aspect of the program that would require new approaches by both us and the NRC.

We believe that on the basis of the Secretary's discussion with the President, we will get action on a nuclear waste negotiator in the near term.

From the scientific investigation of the Yucca Mountain operation based on the Nevada Attorney General's issued opinion on site disapproval 11/1/89, that's when Secretary had sufficient cause to demonstrate the need for litigation. Up until that time, we did not have what was considered satisfactory legal precedent to go in and sue.

DOE will pursue all available options to gain access to the site within the legal framework. The Secretary has, up until this time, made every effort to negotiate on the basis that the site is not a selected site, that he is under the direction of Congress to characterize this site and if there are any disqualifying characteristics it would be the Secretary's decision not to pursue this site.

We feel that the changes that we've made on the basis of doing surface characterization will give us a more rapid understanding of the items that were

identified as significant by both people within the NRC and the State of Nevada with regard to volcanism, with regard to seismic and tectonic assumptions and with regard to surface water and subsurface water, hydrology. Differences of opinion, let's put it that way. The only way to resolve those, in our opinion, is to resolve them on a scientific basis with an open peer review, community, state and governmental discussion.

The major site-specific repository design work therefore will be deferred until more information on the immediate site suitability is available from the surface evaluation and the completion of the exploratory shaft alternative studies, which we feel are significant from the standpoint of the advice we had received from the technical review board, and looking at alternatives to a dual shaft exploration that we had identified versus the ramp reverse boring shaft operation that was identified by a technical review board.

With regard to the MRS facility, the MRS Review Commission reported to Congress and recommended two facilities and a reevaluation of need in the year 2000. We think we're compatible with the MRS Commission's review. We do feel that two sites may be

even an exponential or cubic function in the degree of difficulty rather than a single site. The Department of Energy site is a modular design. It can accommodate 2,000, 5,000, 10,000, 15,000 on the basis of need. So, we feel from that standpoint we do accommodate the major recommendations from the MRS Committee.

The DOE considers that the MRS is an integral and critical portion of the waste acceptance disposal schedule and system flexibility, since we do have a contractual obligation with these utilities to accept fuel in 1998. Under the present schedule, we cannot do that with a repository. We believe that again this is consistent with the international community who are looking at MRSs at present mode of storage while they examine their options with regard to geologic repositories.

The Department is working with Congress to modify the linkage. We have no guarantee that we will get legislation concerning the decoupling, but we are pursuing legislation and will have a draft legislation to the Congress in the first month of next year.

We have been working with various committees on a communication basis, telling them of our opinion and what we intend to do and they're aware of our

present strategy. DOE is also considering the DOE siting in coordination with the negotiator efforts, but I don't think we would pursue that unless there was a significant delay with regard to the appointment of a negotiator because that would be in conflict. We would have two parties pursuing the same effort. We believe the negotiator should be doing that.

We have issued -- as an accomplishment, as you identified, Mr. Chairman, the Site Characterization Plan was issued in 1988 and the NRC issued a site characterization analysis in July. There were two objections, quality assurance program and exploratory shaft Title I design.

Control process, we are working on a demonstration of our capability with regard to the design control process and applicability of previous data to that. From the quality assurance program already identified what we feel is our accomplishment in that area. There were 133 comments, 62 questions and we are evaluating the analysis and requested a formal program for resolution of that and will recommend to the Secretary that the new director establish a methodology where we are in constant or real time communication with the NRC in resolution of that. I don't think that has been established in the

past and we expect that to be established as soon as the new director comes on. In fact, we will have action taken on that in the meantime.

The Office of Civilian Radioactive Waste Management QA requirements documents have been issued, QA programs for Fenix and Sessions, Holmes and Narver, Reynolds Electric, Sandia, Los Alamos, USGS, LLNL have been accepted by DOE and the NRC. All seven groups ordered, except LLNL, have been accepted by DOE. The Yucca Mountain project and the OCRWM audits are scheduled for June of '90 and July of '90, which we feel is a potential problem, but we think we have the methodology under control that would demonstrate the capability in that area. New site characterization will not be initiated until the quality control assurance activity is in place.

We think that the meetings with the NRC staff on the exploratory shaft design control process has been very beneficial and we would -- I'll discuss later on -- we would like to increase our dialogue in the technical area prior to rulemaking with both the staff and with the ACNW and with the scientific peer groups so that -- which we feel is the most significant portion of this project. This is the first of a kind. We do not have criteria that are

applicable in all cases to a geologic repository. We think it's going to be an iterative process to establish this criteria and we think we need more dialogue to establish this before a rulemaking process.

Eight study plans have been submitted to the NRC. Two have been accepted so far. Both of those would allow us to pursue surface characterization if we had the permits necessary for the disturbance of the site.

The Site Characterization Plan comments were received from the State of Nevada, other government agencies, Edison Electric Institute, and the public. We would expect to have a formalized plan for resolution of those comments and identification of action on those.

We've made ten in-depth technical presentations to the Nuclear Waste Technical Review Board. It has recommended extensive underground drifting, use of tunnel boring machines, alternate shaft construction, replacing a shaft with ramp and shaft design, which I identified on the basis of a reverse boring operation with a boring machine of different design characteristics than the exploratory explosion operation in rock removal that we had

identified in a dual shaft, which identified some questions concerning the proximity of the shaft and the effect of location on those shafts.

So, from that standpoint, that's why we're looking at the alternate design. We're looking at how this will effect the underground design and we think the delay necessary to do that will be very beneficial.

DOE is evaluating the recommendations and the alternatives and that's on our new schedule. NRC staff, ACNW and state have suggested extended surfaced based exploration in the past. It's now recognized by the Department of Energy that that offers the most rapid methodology for identifying surface disqualification so we can get on with the exploratory shaft operation if this is not a disqualifying characteristic.

Three types of technical interactions with the staff taking place in technical meetings, technical exchange and site visits. We feel those have been very productive and have offered the Department a new perspective on the design and on the schedule and on the scientific method. Neither DOE nor NRC have ever licensed a repository and the 10,000 year projections at the present time are, as one

member of the public in its comments have made, sort of an arrogance on our part since the recorded history of man is less than that. To project that in a time period requires extensive scientific demonstration and that's why the Secretary believes the extension of the schedule is necessary so that we don't seem to have technical arrogance about a first time repository.

NRC and DOE pre-licensing relationship, we believe with the NRC guidance on regulations, DOE can implement site investigations to establish criteria. The need to develop better understanding of site characteristics in order to enable us to establish a reasonable set of regulatory criteria is what we think one of the most important points that we would like discuss with the staff and with the Advisory Committee on how to develop that before it gets to rulemaking.

DOE proposes an initiative on a collaborative interaction with the NRC, DOE, industry and the peer committee to identify what we think are uncertainties associated with present criteria and how we could establish a more certain or at least a band of interaction and iterative process before rulemaking process takes place.

DOE's regulatory approach to rulemaking, regulatory guidance will be discussed later. It has

been transmitted to you in an August 18th letter. We think there are areas where we believe additional interaction between the NRC and the Department of Energy is necessary to give us guidance in that area, so we can come up with an iterative process before rulemaking.

Topics suitable for rulemaking are accident-dose guidelines, emergency planning with relationship to a repository and the implementation of EPA standards which again are first of a kind and we think should be scientifically based.

Topics requiring additional consideration are amplification of regulatory terms such as the anticipated and unanticipated processes and events, disturbed zone, substantial complete containment, pre-waste and placement, groundwater time travel and the time period for evaluation of 1.8 million years is considered to be areas for additional discussion.

We want to evolve definitions as we learn more about the site. We feel that the DOE topical reports is a methodology for doing that. We have never done that. We do not have any record on topical reports, but the NRC has used as an effective communication mode for the utility operation in the nuclear power industry and other facilities that are

licensed by the NRC and we believe that this is a methodology that we should pursue aggressively where we have areas of concern.

Methods for demonstrating compliance with EPA standard, we think we need flexibility on that to use alternative compliance approaches. We believe that the topical report and NRC guidance on those will be beneficial. We believe that the change in Part 60 subsystem requirements into regulatory guidance versus regulation would be helpful.

Topics requiring additional consideration are the engineered barrier. We believe that credit should be allowed for waste package lifetime greater than 1,000 years, based on engineering submittals and topical reports. We believe it's premature to restrict by regulation and prior to understanding a site. Therefore, that's why we're looking at peer review and topical reports and scientific discussion before a rulemaking order is issued.

The content of license application, we believe an expansion of the license application content requirements in rule is not appropriate. We believe the regulatory guide is an appropriate vehicle in the early stages and we believe that working with the staff we can develop such a guide on a non-

controversial basis.

We believe that topics that require additional consideration are greater-than-Class-C low-level waste. We feel that may be a significant problem unless we can define it better on where to put it, why to put it, and whether the health and risk based methodologies for establishing that. It has not been evaluated in sufficient depth to make a decision at this time. Based on the calculated volumes, it could require a second repository if it's not looked at in a scientific method.

Other areas of concern are the definition of anticipated processes and events, which I discussed before. We believe that we should be working on a probablistic basis, not a deterministic basis in the approach.

Other areas of concern are in the application of repository criteria from 10 CFR 100, Appendix A, which was originally identified for power plants. Some of the language is still defined in the power plant area. We think that from that standpoint there should be an evaluation based on a geologic repository to see what applies in Appendix A and what does not and then a specific appendix associated with the geologic repository. We believe it would be more

beneficial. We also believe that the working with the scientific community, the staff, the ACNW, would allow us to do that in the time period for license application.

The schedule for the licensing support system development, we believe a memorandum of understanding between the Department of Energy and NRC needs to be developed. I'll make recommendations to the Secretary on the basis of documentary load versus repository schedule as a significance in adapting the LSS system. We think that a memorandum of understanding between our mutual staffs will result in a more aggressive approach to that if you look at it on the basis of need, on the basis of current capability rather than schedule.

The other areas of concern, we believe that on the basis of the scientific aspect of this program, that the Advisory Committee on Nuclear Waste resources may not be sufficient to review the types of areas that we're looking at and we would look to the NRC and its staff to give us advice in that area on whether or not they feel that additional resources would be necessary on the basis of what we discussed here this afternoon.

The ACNW depends primarily on staff

briefings. We believe that a more open dialogue between the various interested parties would be very helpful as far as the Department of Energy is concerned and DOE needs to provide separate and independent detailed briefings to the concerned parties.

We believe that there are initiatives that should be worked on from a collaborative standpoint. There's a considerable amount of expertise in the program and in view of the developmental nature of this project, we believe that more input should come from peer review, scientific community to establish criteria before rulemaking. We need to use collective program resources rather than proceeding on a potentially divergent path and then finding out we cannot achieve that criteria. So, it is, in our opinion, a mandatory need that we have more scientific input before we get to a rulemaking process.

DOE proposes to use the experts from DOE, NRC and other federal agencies, the nuclear industry, Nuclear Waste Technical Review Board, Advisory Committee on Nuclear Waste, State and other to work together. And that, again, puts complexity in the review of scientific data and could extend the program if we did not have a coordinated method with the NRC

to achieve that.

Concepts of establishing standards committees in areas of uncertainty similar to the ANSI Committee, the instrumentation committees and electrical code committees to review this with peer experts with assignments, in our opinion would be beneficial to narrowing down the uncertainties as we approach the rulemaking position. This approach allows for full advantage to be taken in a prelicensing consultation period.

Therefore, the Department asks the Commission, as site characterization and other elements of the repository program are implemented, to evaluate this methodology. We'd like to resolve issues raised specifically in this presentation on a scientific peer review basis. We'd like to initiate a collaborative interaction and we -- as far as the MRS and transportation strategies, to look at that from the standpoint of ensuring timely waste acceptance, which is a major requirement for the Department of Energy.

That is a formal statement. I'll open up to the Commission to evaluate our program.

CHAIRMAN CARR: Commissioner Remick?

COMMISSIONER REMICK: I have two questions,

Leo. You mentioned what I'd say was an optimistic outlook on the status of your QA programs. I think that has been a continuing concern. You did make the statement, I believe, that you would not undertake any characterization without QA program being in effect.

MR. DUFFY: Right.

COMMISSIONER REMICK: But how about -- is it limited just to characterization? How do you stand in other areas where you have been proceeding for a few years and QA has been criticized?

MR. DUFFY: I think there are two specific areas, as I understand the situation. Number one, we do have now the audits of seven major out of eight and we do understand what the deficiencies were in the audit of LLNL. Within our own organization, we are implementing the guides that we have given to the contractors. We have no audited our own operation. I believe that's a significant deficiency on the Department. It was a strategy that was implemented. I think it's a viable strategy to get the major portion of the implementors qualified under the QA program even though the Department itself has not had an audit. The work that is being done in the field is now being done by qualified quality assurance personnel. We've trained over 1,000 people. I hope I

wasn't too optimistic in the aspect of addressing the program, but I think the implementors in the field are the key and we do have a methodology that we will submit to you in January concerning all data that has been acquired prior to the quality assurance program so that you can review that. If it's not satisfactory, then we can discuss that dialogue and see that we do have the satisfactory justification for using any data that was achieved before quality assurance audits.

COMMISSIONER REMICK: Another question. I'm not sure I understand. You indicated that ACNW might need more resources so they can entertain presentations from the Department. I can understand if they're just hearing from the staff, but do you request an opportunity to brief ACNW --

MR. DUFFY: Yes.

COMMISSIONER REMICK: -- and being turned down because they don't have adequate resources? I'm not sure I understand.

MR. DUFFY: No, but if we look at it on the collaborative basis that we discussed, which would make more presentations available in areas of uncertainty, which we feel there are quite a few, if we go to the committee methodology of assigned

committees to look at various points of the future, we believe that the ACNW would be called upon more by both us and the staff to receive presentations on these criteria and give the Commission back an evaluation.

We think there are very many areas that will have to be resolved as we get into the exploration operation. We do not have the potential at the present time on an iterative process, refine something. What is the significance in the scientific endeavor? We will have other committees looking at that and we hope that that will present to the staff and to the Advisory Committee a dilemma, an anomaly that may, as we move this data forward, produce a larger demand than in the past.

In the past, we've been looking at paper and we will be looking at real time problems when we get to the field type application. That's why we believe that's something to be considered.

COMMISSIONER REMICK: One other question. I know DOE has a history of an experience and you plan in high-level waste of performing operational readiness reviews along the way, I think of characterization and construction and so forth. Do you feel that you adequately know what the Commission

might want you to demonstrate at those various hold points or when you perform operational readiness review? Are we providing any input of the type of things beyond what you might have identified that might be helpful to the NRC and being satisfied at that point that you're ready to proceed?

MR. DUFFY: I think you have provided that, but I think you've also asked for additional access to our laboratories on the basis of what we're doing. I'm sure that on the basis of what you see and what we can get into in exploratory ESF Title II design, that there will be more areas of interface, not necessarily hold points, but evaluation points before proceeding because I think we're both walking down a path of potential unknown in this area and I do believe that there will probably be more hold points than in the past.

COMMISSIONER REMICK: Well, I'm hoping we've learned from the --

MR. DUFFY: Right.

COMMISSIONER REMICK: -- power reactor area. Then along the way there's some things, hopefully, we can do early on rather than waiting six, eight, ten years and then having to go back and try to reconstruct what took place. I think that requires

both identification by DOE and by the NRC of the type of things that should be looked at at those hold points.

MR. DUFFY: We believe that to be the case also. One of the reasons why we wanted a more up front peer review and possibly contact with the ACNW was to preserve the NRC's regulatory aspect while we discussed the scientific points before our rulemaking operation. It's a fine line of perception more than distinction. If we're working very close with the NRC and we're making collaborative decisions, then there can be some loss of objectivity, at least perceived by the public, and we feel that there should be more scientific discussion up front that allows you to be a regulator even though you are contributing to the scientific criteria.

COMMISSIONER REMICK: Thank you.

CHAIRMAN CARR: Commissioner Roberts?

COMMISSIONER ROBERTS: It's my impression, and if it's a false or erroneous one in your opinion I'd like for you to say so, but it's my impression that in the past, at least, within the Department of Energy, the emphasis or reliance has been on the geological site rather than the method of packaging or encapsulation of high-level waste. Would you comment

on that?

MR. DUFFY: I can't comment specifically on the basis that that has been the strategy. I believe we were working in parallel on that. I believe the initial concept of geologic repository was to rely strictly on the site characteristics as the primary barrier that may or may not have influenced the judgment on the aspect of canister design, air gap or other auxiliary barriers. But that has been the demonstration qualification of a geologic site. You have to look at is it satisfactory from a geological repository standpoint on its own. It may have given then an unjustified perception that we're working only on the site, but we are working on canister design, we are working on refueling design, we are working on transportation design.

COMMISSIONER ROBERTS: Well, that leads to my follow-up question. On page 14, 3.2.3, does that represent any change in the Department's emphasis or direction?

MR. DUFFY: From the aspect of --

MR. PETERS: In the oral testimony, I think.

MR. DUFFY: Yes, I have it here. I just didn't have it to that point.

COMMISSIONER ROBERTS: I'm sorry. I'm

looking at your handout.

MR. DUFFY: Yes. I was looking. Do you have it there?

Yes, that is, I think, a modification in our strategy, yes, sir, that the air gap between a canister would be an additional barrier between the geologic repository and would give us the capability for going for greater than 1,000 years.

COMMISSIONER ROBERTS: Who coined the cutsie phrase "pondering the imponderable?"

MR. DUFFY: It's not mine, so I can't guarantee it, but I'm sure somebody used it before us. I don't think it's an original by the Department of Energy.

COMMISSIONER ROBERTS: That's all I have.

CHAIRMAN CARR: Commissioner Rogers?

COMMISSIONER ROGERS: Just on that same subject, do you have any idea of what you're thinking about with respect to the greater than 1,000 years?

MR. DUFFY: In time element? No. I think that's one of the things that we would like to iterate on with the scientific community, what is a reasonable probablistic time frame that we can justify rather than identifying 1,000 years, which I don't think has any significant scientific merit either. So, from

that standpoint, iterating on 1,000 years without a base for the thousand is a questionable way to do business.

COMMISSIONER ROGERS: Well, it's just a scale.

MR. DUFFY: Yes. Right.

COMMISSIONER ROGERS: It's like an inch in --

MR. DUFFY: Right. If it's good on a semi-log or log-log scale. Other than that, it's divisible by 2, 4, and 8.

COMMISSIONER ROGERS: Yes. Well, some of these numbers, it's hard to see where they ever came from, scientifically anyhow.

MR. DUFFY: That's right. I think that's the major point that we would like to bring to the Commission today. We believe that there will be scientific bases that we can establish as criteria for rulemaking. There will be iterative processes that we believe that we will find as a result of a broader cross section with the community and as we get the site characterization. What we will find will probably be anomalies more than it will be definitive parameters. On that basis, we think that there's a lot of dialogue necessary in this program to assure

the citizens of the country that we're not going down a path to achieve a need rather than a scientific evaluation.

COMMISSIONER ROGERS: There may be difficulties closing that process.

MR. DUFFY: Yes, sir, and that is one of the reasons why we see the need for the extension, so that we're not driven by a need or driven by a schedule, that we're driven by a valid scientific evaluation.

COMMISSIONER ROGERS: Just looking at some of your old dates and new dates, I noted that on an old schedule you were to start the exploratory shaft facility in 11/89 --

MR. DUFFY: Yes, sir.

COMMISSIONER ROGERS: -- and the license application in 1995. And your new schedule calls for the start of the ESF in 11/92, and license application in 2001. Now that's a 50 percent increase in the time--

MR. DUFFY: Yes, sir.

COMMISSIONER ROGERS: -- between those two. Is that just to give yourself more flexibility, or is there something that you actually have identified as requiring --

MR. DUFFY: Well, when we did the bottoms-up

on the basis of the 5,000 data points, we had time elements that we felt are realistic and on the conservative side, rather than arbitrary and on the accelerated side. I think we could supply you with which ones were the determining path on the subnetwork schedules that we have, different from the ones we've seen.

COMMISSIONER ROGERS: Well, any single or large one, or whether it's a collection of --

MR. DUFFY: I think it's a collection.

MR. STEIN: In-situ testing, essentially.

MR. DUFFY: We're looking at, well, from the standpoint if we went to the two mile ramp and the reverse boring operation and the various segments. As we find things -- it gives us a broader area that evaluates the acceptability of site, but it's also giving us a significant increase in the amount of area that we have to characterize. We're going to have a two mile ramp and a reverse bored shaft. A two mile ramp is a significant -- we've asked for additional drifts. In fact, the TRB was very pointed in looking at the more drifts you look at the better understanding you have of the site.

So from the scientific characterization standpoint, we're going to have a hell of a lot more

data to look at. We got a lot of data to look at now with relationship to 300 bore holes and --

COMMISSIONER ROGERS: But this new schedule, though, it does assume that you're going to --

MR. DUFFY: Yes, sir.

COMMISSIONER ROGERS: -- use a ramp for one of the --

MR. DUFFY: Well, we're looking at that. As you see on the schedule, we had the exploratory shaft alternatives evaluation. We are looking at that at the present time, and we'll have that as evaluation in the later part of '90.

COMMISSIONER ROGERS: Just turning to another item of interest to us, have you thought not only about the schedule for the LSS that might be modified, but what kind of resources are required in the near term for that?

MR. DUFFY: We have, but we would like to discuss that prior to the memorandum of understanding to assure ourselves that we haven't biasly locked into a methodology that you disagree with.

COMMISSIONER ROGERS: Do you have a schedule for discussing that with NRC staff?

MR. DUFFY: We have a letter from you to us, and the response back will request a meeting to

discuss the purpose of a memorandum of understanding. The Secretary was very interested in getting that resolved, because there was a difference of opinion there.

COMMISSIONER ROGERS: Right. Okay. Very good. I'm going to ask one that's maybe a little difficult.

MR. DUFFY: I don't think we have any that are easy.

COMMISSIONER ROGERS: I think you're used to those. But just in looking at the whole -- this whole history of this kind of an effort, and hearing from the state utility boards and their concerns about some of these things -- more than $5 billion has been collected in fees from utilities over the years towards a repository, and more than $2 billion have been expended of that to date, and of course there's a great deal of groaning and moaning about that -- but I wonder is there anything positive that you can say with respect to those expenditures that in a sense will be useful for -- really useful for the repository, whether it is Yucca Mountain or not Yucca Mountain?

MR. DUFFY: I definitely think that's the case. I think the Secretary has been in exceptional

dialogue with the utilities and the public utility commissions over the last four months on that expenditure. I think $1.2 billion was identified as expenditures on programs other than Yucca Mountain, which were not under the control of the present group.

But the methodologies, certainly in respect to BWIP, identify the need for improved control and custody of corings, core samples, dialogue with the laboratories on the methodology. There were considerable packaging methodologies that were examined so that we could take cores. As I remember, the latest design on that is a package that will contain the existing moisture for 50 years, that we could go back and retrace the cores.

If you look at the methodology for dry core boring, if you look at the vacuum extraction operation, can I justify $2 billion expenditure on the basis of all the positive aspects? I don't think so. I don't think I would even attempt to try. But of the last $700 million, the majority of that has been identified in the transportation operation, in the canister design, refueling cask operation, handling operation, emergency plans operation. So there is certainly beneficial operation, but I think you'd get a wide variance in the audience's opinion on whether

or not we spent it effectively.

COMMISSIONER ROGERS: Is there any -- have you produced a piece of paper on that that puts some of these things down?

MR. DUFFY: Yes, sir. We have a tabulation of what was spent. That has been given to the Secretary.

COMMISSIONER ROGERS: Yes. Just in terms of what is generally useful that can be used regardless of how we go in the future --

MR. DUFFY: Ralph?

COMMISSIONER ROGERS: -- things that are not--

MR. STEIN: We have spent a great deal of time looking at our expenditures in the past and what they have gone for. We have, for example -- I believe that we have, with the expenditures in the past, referring back to Mr. Duffy's comments that we can't account for the $2 billion plus in detail, but we can say that those expenditures have resulted in what we believe is a strong technical and scientific basis for the repository leading to the Site Characterization Plan, which is a document I think that everybody will agree is rather comprehensive in nature and does describe the program that I think that we need to

implement in the scientific investigation of site.

We have established a really -- what we feel is a quite incredible MRS program, which requires a number of studies, an extensive amount of studies. Looking into the future, we will have established a very credible -- what we believe is a transportation program, altogether an integrated program. It's money that may be challenged, the expenditure of it, but nevertheless one needs to do a lot of these things in order to be able to solve where we go from here.

MR. DUFFY: I think we show a positive aspect to a lot of the expenditure, but I don't think we could detail a justification.

COMMISSIONER ROGERS: Thank you.

COMMISSIONER CURTISS: I've got a number of questions that I guess I'd like to pursue. We've just gotten your detailed statement. Haven't had a chance to take a careful look at it, but let me just sort of go down them in no particular order.

You're going to spend a couple of additional years now on surface-based testing?

MR. DUFFY: We're going to surface characterization testing for the two to three year period while we're in Title II design, yes, sir.

COMMISSIONER CURTISS: Could you expand upon

how you intend to integrate the surface-based testing into the Site Characterization Program?

MR. DUFFY: Yes, sir. In the Site Characterization Program, what we're doing at the present time, and it's in the Site Characterization Plan, is we're prioritizing what was initially anticipated to be done after the start of exploratory shaft into the up-front to see that we are doing the right priority with respect to ground water intrusion, with respect to vulcanism, which we think can be easily identified as whether it's recent or ancient in relationship to eras. And the other aspect of the trench application, 1,500 feet, 48 feet deep, X number of feet wide, where they're going to be, what faults are going to be looked at, that is reprogrammed, rescheduled, and reprioritized.

COMMISSIONER CURTISS: Okay. So the work that you're going to do is covered already in the SCP.

MR. DUFFY: Yes, sir.

COMMISSIONER CURTISS: And it doesn't-- it's just going to get shuffled around --

MR. DUFFY: Right.

COMMISSIONER CURTISS: -- and done up front.

MR. DUFFY: Initially, I think this -- you know, this decision was a recent decision on our part.

It's been identified in the past by both your Technical Review Board and the state of Nevada as what they felt was an early methodology for finding site disqualification in view of the potential for faults.

COMMISSIONER CURTISS: Well, I certainly think it makes a lot of sense from the standpoint of focusing on the disqualifying conditions that might exist.

Let me turn to your testimony that begins really on the regulatory process. It starts on page 11. I've got a number of questions just from a quick once-over that I'd like to ask you about now--prepared to address them. We'll follow up on them.

Beginning with the question that Commissioner Roberts raised, on page 14, with the engineered barriers, really I have two questions. One, you indicated that's an evolution or a change in the Department's position from the standpoint of reliance that you're going to place on the engineered barrier vis a vis the repository.

MR. DUFFY: Well, I don't think it's -- I wouldn't exactly state it in that manner. There may be a question.

COMMISSIONER CURTISS: State it the way you would state it.

MR. DUFFY: Okay. We still rely primarily on the geologic site. I mean, that has not changed. What we're saying is that the credit that was taken in the past by, I think, Commissioner Roberts' identification and perception at least --

COMMISSIONER CURTISS: Right.

MR. DUFFY: -- that the Department was not looking at the engineered barrier as an additional part of the total systematic capability of the repository. What we're saying is we think that should be explored in greater depth. And from that standpoint, the barrier offers another retardant to any release type operation.

COMMISSIONER CURTISS: Do you intend to, beyond the 1,000 year period that you read the current regulations as limiting you to, do you intend in looking at container performance to seek out a container that would give you the maximum protection and seek reliance on that, or is there -- give me some feel of whether we're talking 1,000 years or a million.

MR. DUFFY: Frank wants to take a shot at that.

MR. PETERS: We're developing a strategy which will include long-life waste packages to help in

this particular area.

COMMISSIONER CURTISS: Well, how much further than 1,000 years are we talking about? There are a lot of forms out there.

MR. PETERS: It's premature to really answer that.

MR. DUFFY: I think, again, we're going back to the deterministic versus probablistic situation. We would present a scientific evaluation on a probablistic basis on what additional container design would give us with regard to confidence level on leakage with regard to the pH, the water concentration, and the specifics of the site we selected. Okay? So that is the probablistic standpoint.

The deterministic standpoint would say, based on this failure due to corrosion we might be able to get another 250 years because this pH is less than we anticipated or the water concentration is not as great as we expected or we're going to use a different material.

COMMISSIONER CURTISS: Okay. The second question on that subject, you note that, as I mentioned, that you read the current regulations as limiting you to a package life of 1,000 years, and you

would like that changed or modified in some way so as to permit you to take credit for a container that goes beyond 1,000 years. We've talked about that subject here in earlier briefings and it's a concept that I'm not unsympathetic to. I'm just curious to know, from your standpoint, what do you mean by taking credit? Less groundwater travel time or greater confidence or margin?

MR. DUFFY: If it comes out to a balance between equals, that might be one of the aspects. If we find a deterministic point that says we have a different matrix structure and flow, then the design of the canister may compensate for that. It may stay at 1,000 or it may, if we find a better matrix, give us the capability to say that it is a longer period of time. So it has both sides, and that's why we wanted to get into the scientific dialogue to see what areas we should be looking at in the test program to evaluate whether or not we can use the extended time period in the container.

I think in the Swedish characteristic evaluation they used the container as a major retardant, and so looking at that it has its advantages.

COMMISSIONER CURTISS: And your current

reading is that Part 60 would have to be modified to permit you to take that credit?

MR. DUFFY: We think so, yes.

MR. STEIN: Well, there is another approach too, in addition to modifying it. There are parts of Part 60 that talk about that we could come back to the Commission with additional information and seek credit for a container beyond 1,000 years. There needs to be some further amplification of that. There have been discussions between DOE and the NRC staff as to ways that we might get a greater confidence from the NRC that containers that were built to -- designed and hopefully could perform greater than 1,000 years would be given credit, whatever we want to define credit as. Certainly credit, in one way of defining it, is that it gives added confidence that we're isolating the waste beyond 1,000 years.

COMMISSIONER CURTISS: Okay. Let me jump back up on page 14, because there was a statement there that intrigued me under 3.2.2, last sentence. "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."

I guess I'd like your view or what you mean by that statement. What in particular are you looking at in the subsystem performance criteria that in your judgement suggests that that set of criteria may lead to a more restrictive result than the EPA standard contemplates?

MR. STEIN: One example of a restrictive statement is the 1,000 year groundwater travel time that is in the regulation. What we really need a focus on, I believe, is total system performance. And I think that that's, at least in my perspective -- if we can demonstrate total system performance for the repository and demonstrate compliance with the EPA standard whenever it appears again, I think that we will demonstrate that the repository is satisfactory, whether or not 1,000 year groundwater travel time is achieved.

It's really the total system performance that is important, and not just the fact that we have 1,000 year groundwater travel time. If you had something other than 1,000 year groundwater travel time, but it really ended up that you weren't releasing any radionuclides to the accessible environment, that to me is demonstrating that the repository is satisfactory.

COMMISSIONER CURTISS: You've essentially got that framework in the WIPP proceeding --

MR. STEIN: Yes.

COMMISSIONER CURTISS: -- where you've got the EPA standard, but you don't have the subsystem performance criteria. Could you give us maybe your thoughts on --

MR. DUFFY: In the WIPP standard and in the WIPP operation, what we've found is we have less permeability than we had anticipated. That's a very positive aspect from a sealant standpoint.

The aspect of the closure rate. The closure rate is a more rapid closure rate than had been anticipated by a factor of two. That's also a positive from a standpoint of closure. It's a negative from the standpoint of lifetime of the facility and the maintenance operation.

If we look, then, at the gas generation, an uncertain portion that's going to be developed during the five year test program, we have taken the most conservative generation of gas with respect to the container, with respect to the internals to the container, with respect to radiolysis, with respect to microorganism interaction. And so on the basis of that, if you take the permeability to be the least and

the gas generation to be the most, you have an accident condition.

If you take a gas generation and find out, in the case of what Ralph indicated, the hydrology difference and the permeability difference, they may compensate. And so you now have an iterative process wherein the present systematic approach is a definitive process. But we need to iterate on the characteristics of the existing site, rather than on a deterministic methodology.

COMMISSIONER CURTISS: What you're proposing here -- and I'd like to read this more carefully-- but what you are proposing in this body, talking about the regulatory framework, is that in some respects we need to add things to our regulation. For example, the petition that you're going to file here with us shortly on the 5 millirem EDE --

MR. DUFFY: Five rem.

COMMISSIONER CURTISS: Five rem, excuse me.

In some respects, you're proposing, such as the engineered barrier, that we need to go back in and either through the language that Ralph referred to find some way to accommodate a container that would last beyond 1,000 years or amend the regulations.

MR. DUFFY: I think one of the things we're

asking for is an up-front evaluation period and dialogue before rulemaking, so that we have the capability during the exploratory scientific aspect to determine whether that's achievable.

COMMISSIONER CURTISS: That's what I'm trying to get a feel for. On the rulemakings that focus on the uncertainties, I take it you're suggesting that we ought to slow down to permit what you called the "iterative process" to move forward and allow the kind of flexibility that you've described as you get into characterizing the site.

MR. DUFFY: Where that additional scientific input from peer groups or other groups, international community, has questions, that we resolve this as part of the experimental performance assessment before we make a rulemaking.

COMMISSIONER CURTISS: Okay. In this area, the one that has to do with the relationship of the Commission's Part 60 criteria to the EPA standards, just a point of clarification. Are you proposing that that issue needs to be addressed by the Commission in the fairly near future because the regulations as they're currently written prescribe more than we need to prescribe to meet the EPA standard? Are you suggesting that we need to move forward in that area

now?

MR. STEIN: First, relative to the EPA standard, one of our suggestions is that we defer-- hopefully, NRC will defer any rulemaking action until we see the standard, because we have the potential of having two separate regulatory documents out in the public --

COMMISSIONER CURTISS: Right.

MR. STEIN: -- if NRC were to go ahead now and based on some interpretation put out a revised Part 60 and then EPA comes out with its standard, revised standard. So we could have real conflict.

So we're asking that you consider holding off on putting any -- doing any rulemaking relative to the EPA standard at this point in time.

COMMISSIONER CURTISS: Even if that's as long as three or four years to get the EPA standard out?

MR. STEIN: I don't see where that would have an impact on our program.

COMMISSIONER CURTISS: Okay.

MR. DUFFY: We'll be looking at --

COMMISSIONER CURTISS: So there's no immediate impact if we would defer our conforming rulemaking for a period of what, four or five years?

MR. STEIN: Well, EPA is projecting two years.

COMMISSIONER CURTISS: I understand that.

MR. DUFFY: I put it in your time period.

COMMISSIONER CURTISS: Let me ask one question on the EPA standard. Mr. Duffy, you indicated that you thought the EPA standard is a first of a kind standard and should be scientifically based.

MR. DUFFY: Right.

COMMISSIONER CURTISS: Is it your assessment today that that's where EPA is, or is that a suggestion that we ought to reexamine -- EPA ought to reexamine that issue?

MR. DUFFY: I think -- well, I hate to be more definitive than what I already said. I think we need to look at the scientific basis for some of our decisions. I'm not sure that that is done in depth at the present time. I think there are some deterministic criteria that we reevaluate from a risk-based standpoint, from a health standpoint, and from an achievability standpoint, and an economic standpoint, safety being number one with regard to health, and establish a risk-based analysis that can be justified. I don't think that exists at the present time.

COMMISSIONER CURTISS: Okay. I guess I just have two more questions. On the suggestion that we beef up the ACNW, could you expand upon what you see as the relative roles of the ACNW and the Technical Review Board in terms of what they provide you as independent organizations? What are --

MR. DUFFY: I haven't had the direct -- only from the discussions I've had with the people in the project. I'll give you what my impression was, that the ACNW advises you and staff. In the aspect of dialogue, as they need our input they would ask for it. It's not on the basis of we have access to give more than what they think is needed. That may not be a clear definition.

But in the future, we would expect to have more access to present the technical justifications for some of our positions in concert with the staff and the ACNW. And as we get into these areas of uncertainty, we feel that there may be more dialogue required than we've had in the past.

COMMISSIONER CURTISS: Okay.

MR. DUFFY: Is that an accurate portrayal?

MR. STEIN: Yes, I think it's accurate. I do think, though, that they do offer one additional characteristic, as opposed to the Technical Review

Board. And that is that they have a regulatory perspective. They're scientists and they're regulatory perspective. The Technical Review Board, very competent people, they're not focused as much on the regulatory side of things as the ACNW is.

COMMISSIONER CURTISS: Okay. One final question on the LSS. Do you have a feel, based upon your latest schedule, as to when you think it would be appropriate to begin loading documents into the system?

MR. DUFFY: I think we have a feel, based on the statistics of the documents we have available. We have, what, 1,300,000 pages, and the new office has 1,100,000 pages of documents ready for loading. It's a systematic methodology versus the hardware that we're talking about, whether or not the hardware is the key or whether the system for documentation on existing hardware is compatible to future hardware. We do have a time table. I think there's a further dialogue required within the Department of Energy before we come to a memorandum of understanding with the NRC.

COMMISSIONER CURTISS: As to exactly when documents ought to be loaded into the system, okay, we'll wait to hear. Thank you.

MR. DUFFY: That was a key discussion that we had.

COMMISSIONER CURTISS: Okay. Thank you.

COMMISSIONER REMICK: I don't think you should be reluctant to suggest the ACNW. If you want to participate, make presentations, I would assume they would welcome it. One of the functions of a committee like that sometimes is getting staff and applicants together and hearing both sides and sometimes making helpful suggestions. I doubt very much that they'd be reluctant to have you.

MR. DUFFY: I think one of the things that we're looking at in the recommendation is based on the future need it may be an overload situation if we get into what I consider the characterization portion, which has a lot of data associated with it. They are your advisory group. And from that standpoint, any more loading we put on them takes away from their ability to advise you. So that's why we looked at it in anticipation of an increased load.

COMMISSIONER CURTISS: That's all I have, Ken.

CHAIRMAN CARR: I'm surprised that you think greater-than-Class-C waste is a problem.

MR. STEIN: Why do you think that?

CHAIRMAN CARR: My impression was there was going to be a minor little corner of the repository--

MR. DUFFY: I haven't seen it defined in volume yet, but from what I identified in potential, it could be the potential for long-term burn-up fuel with structural capability that has to be taken. We haven't seen a reasonable volume.

You don't understand that?

CHAIRMAN CARR: No. Give me a -- tell me what you're thinking of that I don't know about.

MR. DUFFY: Well, the first thing we're thinking about, the small --

CHAIRMAN CARR: We made a big study of how much greater-than-Class-C waste there was out there, didn't we?

MR. DUFFY: No, not as far as I know.

MR. STEIN: The answer is that we made a study, not a detailed or extensive or necessarily an accurate study. But we made a judgement, and we had a lot of caveats in our --

CHAIRMAN CARR: But all studies are detailed and necessary and accurate.

MR. STEIN: By definition.

CHAIRMAN CARR: I thought that's why we made them.

MR. DUFFY: The terminology that we had with regard to greater-than-Class-C, I've seen as much as a second repository required to handle greater-than-Class-C. From the standpoint from -- maybe you haven't seen that study.

CHAIRMAN CARR: I haven't seen it. If you've got it, I sure need to see it.

MR. DUFFY: And then, we've seen the ones on the --

CHAIRMAN CARR: Will you send it over?

MR. DUFFY: -- greater-than-Class-C that have immediate need which we can handle within the Department's operation on pins, on sources, and things of that nature. So, two different approaches to the need for greater-than-Class-C. We think we need to go back, take a look at that, take a look at the detailed projections and see whether or not we do need a second repository.

CHAIRMAN CARR: I request that you would send us whatever you've got on Class C we don't know about, because obviously you know something we don't know.

MR. DUFFY: I'm not sure. That may be the case. We may have different information that you don't think is reliable.

CHAIRMAN CARR: That's hard to believe.

I'm a little concerned, I guess, about your collaboration idea. You know, we like to think we're going to be independent from you. You've got to design it and build it, and we're going to license it.

MR. DUFFY: Right.

CHAIRMAN CARR: I don't want to get in bed with you and say, you know, this is the way we're going to do it. That takes away my independent look at it. How far do you want that collaboration to go?

MR. DUFFY: I tried to make that point in my presentation, that we looked at that as a very sensitive area and that's why we wanted to have more peer review before rulemaking, so that when we did come up with a rulemaking that it was defined as an acceptable process. We don't want to jeopardize the NRC's --

CHAIRMAN CARR: I guess I'd go so far as to say we'll be happy to tell you when we think you're heading into trouble.

MR. DUFFY: I'm sure that that's the case. We just thought we needed more dialogue on what your definition of trouble was.

CHAIRMAN CARR: I guess my concern on waiting for rulemaking is it sounds -- if you look at

all this together, it looks like we're going to wait and make the rules to fit the site.

MR. DUFFY: There may be some areas that we think that would be an advisable opportunity, but we don't think that's the general trend.

CHAIRMAN CARR: I have a little problem with that, I think. We'd like to think we can make the rules fit public health and safety and some site has to fit those rules.

MR. DUFFY: Right. We think the same thing. I think that's what we identified as our first rule of concern was safety.

CHAIRMAN CARR: As far as a realistic schedule, which you've now come out with, I have a little bit of problem with that, because I'm not sure you've allowed enough time for suit settlement and site access.

MR. DUFFY: That may be the case.

CHAIRMAN CARR: About a year in there, right?

MR. DUFFY: We had --

CHAIRMAN CARR: And you haven't filed the suit yet.

MR. DUFFY: We had discussions with --

CHAIRMAN CARR: Your lawyers are better than

ours.

MR. DUFFY: We had discussions with the best legal minds available to us at the time, and they gave us a varying set of time tables. One, which was on the basis that the federal judge who reviewed the case would have definitive information based on a comparative evaluation of permits that are in existence, that the degree of environmental impairment associated with what we were doing in this scientific characterization may or may not be different and he would judge it on that basis. The other would be that we did not have enough information available on a comparative basis.

There's also a fight -- a Nevada state engineer who has -- as they used to say in Idaho, was the "water king." And in fact, they used to say that in Pascagoula, as I recall. And he has the deterministic aspect of the use of water. That may be a legal problem that we have to resolve if we bring in a train load of water. He may have the right to tell us how to use that. So those are the things that got into a year. If it's more than a year, we may have to go for other options.

CHAIRMAN CARR: Is it fair to say that it's a day for day slip, depending on site access?

MR. DUFFY: I don't think it's a day for day slip. I think we have capability, but we can't do disruptive activities on site. It's pretty close to a day for day slip, though, in the surface characterization past '91.

MR. PETERS: That's correct. When you get to the exploratory shaft, we have some flexibility beyond a year before it begins to impact us, and we see that as critical path, essentially, for site characterization.

MR. GERTZ: Exploratory shaft is the critical path for site characterization right now. We have the two years of surface-based testing until we get up to that point of starting the exploratory shaft. That provides some opportunity for flexibility.

MR. DUFFY: Yes. I think the key from a schedule standpoint is if we did find a disqualifying characteristic, the sooner we find it the sooner we are looking at the next site for evaluation. So that aspect of the schedule I think is very important.

CHAIRMAN CARR: You're going to continue designing the ESF, though?

MR. DUFFY: Yes, sir.

CHAIRMAN CARR: You don't know yet where

we're going to put it, I guess?

MR. DUFFY: We're going to continue to design it, starting on the schedule which shows we're going to have a restart in '91 -- '92.

CHAIRMAN CARR: Maybe I better look at the chart.

MR. DUFFY: The chart says that we stop the exploratory shaft Title II until we completed the alternative evaluation, and then we restart the Title II operation.

CHAIRMAN CARR: But doesn't it indicate the design goes on?

MR. DUFFY: It says evaluation and design.

MR. PETERS: There are two components to that. That's a little bit confusing.

CHAIRMAN CARR: Design is going to stop.

MR. DUFFY: The design of Title II has stopped.

MR. PETERS: Yes. The design that was ongoing previously has stopped. We are now evaluating the new alternatives and we're going to restart again at the appropriate --

MR. DUFFY: The question that was raised to assure we continue with the two shaft design versus the ramp shaft design.

CHAIRMAN CARR: Okay. Go over with me once more about standardized casks for shipping and storage.

MR. DUFFY: There are casks that have that capability at the present time, but have not been requested for license.

CHAIRMAN CARR: You know, it seems to me that the design of the cask is either going to control some of the repository design or visa-versa. But out there we've got plants who are trying to do something with casks and it seems to me it would be a lot smarter if they only did one thing and they had a cask with the fuel stored in it that they could send to your MRS and you could send to the repository and store.

MR. DUFFY: That may be the case unless we looked at it from the standpoint of the number of times you have to handle the fuel utility at the present time. If you take it out of the fuel pool and put it in a concrete canister, put it out on the pad, bring it back into the fuel pool and unload it, if the time schedule were such that we could have an MRS at a given time period, it would reduce the amount of handling to get the earliest fuel to the MRS with a minimum amount of handling and a minimum number of

casks.

CHAIRMAN CARR: But if they take it out of their pool and store it in the cask, that you can then take to the MRS and then take to the repository, that would solve all the problems, wouldn't it?

MR. PETERS: Single cask would.

MR. DUFFY: A single cask would, but a single cask might be very expensive and those are the kind of things that we're looking at right now. As a matter of fact, we have a five cask program going on for storage. One of those casks I know of had original design for both storage and shipment. It has not been asked for licensing on the shipment portion. It's only been asked for licensing on the storage portion, certification on the shipping, license for the storage.

MR. STEIN: I think there's two elements of the issue at this point. One is that there are a number of utilities that I believe will need to have some interim storage capability.

CHAIRMAN CARR: Already do.

MR. STEIN: Already do. And --

CHAIRMAN CARR: The longer we wait, the more there will be.

MR. STEIN: Exactly. And some of those

utilities have already decided on a way to dry store their spent fuel. Some are storing them on casks that are just on the site which are not transportable casks. Some are storing them in a facility where they actually move from the pool with a cask to that facility on their site. Those different designs are really the designs that we hope would someday be brought into a standard design. There have been lots of discussion that the Commission has had in the past on a standard design for those --

CHAIRMAN CARR: But you realize if you decided on a design, they'd all use it today because that saves a lot of time and effort and money.

MR. STEIN: But, you see, that's their decision. That again is their decision.

CHAIRMAN CARR: It's really not their decision because there's no design that you've decided on.

MR. STEIN: But our design --

MR. DUFFY: Yes, but we do have a test program to come up with a design by '92, which in our operation meets the '98 criteria for receipt of fuel. We have multiple designs being tested at Idaho at the present time --

CHAIRMAN CARR: Okay. You've got my point

anyway.

In your judgment, if you get a negotiated site, doesn't that eliminate that linkage?

MR. PETERS: Not automatically.

MR. DUFFY: Not by law.

CHAIRMAN CARR: I thought it did.

MR. PETERS: It permits the negotiator to go back to Congress --

MR. DUFFY: Right.

MR. PETERS: -- to seek --

MR. DUFFY: It's a different way of disrupting the linkage. He has to go back and say he has a negotiated site and then they have to change the law which presently identifies --

CHAIRMAN CARR: I thought it allowed them-- I thought the linkage only tied in if it wasn't a negotiated site. That's the way I read it.

MR. DUFFY: I don't think that --

COMMISSIONER CURTISS: It's not our understanding.

MR. DUFFY: It's not our understanding, but --

COMMISSIONER CURTISS: The slide has to be authorized by Congress.

MR. DUFFY: Right.

COMMISSIONER CURTISS: Isn't that correct?

MR. DUFFY: Right.

COMMISSIONER CURTISS: But in the absence of any --

MR. DUFFY: We may not have a site identified. Okay? And the site for the MRS can be authorized by Congress. But presently, as I read it, but I'm not the lawyer here so I'm reading it on the basis that you have to -- the President has to identify -- we have to identify to the President that we have a site and then at that point we can start the MRS. We can go selective, but we can't do anything with it until we have identified a site. That's my interpretation. That could be wrong. It wouldn't be the first time.

COMMISSIONER CURTISS: Because I see -- I'm not sure I disagree with you -- the site for the MRS has to be authorized if there's a volunteer, but the Congress does not have to actually decouple the site from the limitations that would currently apply to the non-voluntary site. That linkage would not apply --

MR. PETERS: They do not have to, but one would expect that that might be part of the package.

CHAIRMAN CARR: When do you think you'll have your next plan out? I mean something so we can

make sure we're not on your critical path.

MR. DUFFY: We expect if it's -- we expect to have another one out in January with new data. I think the Secretary expects to issue it on a bimonthly basis from that standpoint. But we'll have to give you a copy of our internal schedule to show the progress because it is, in addition to a long-term decision plan, it's a performance plan on the basis of our own internal performance, not necessarily external. The Secretary is extremely interested in achieving a performance-based evaluation for all our projects.

CHAIRMAN CARR: Okay. Any other comments or questions?

COMMISSIONER CURTISS: Ken, let me clear up a couple of items here.

Based upon what you've learned at WIPP, are we going to have a mixed waste problem with spent nuclear fuel? Is the --

MR. DUFFY: If you wanted to look at a Rod Serling operation, I'd say that possibility exists. Somebody could say that there's heavy metals in there.

COMMISSIONER CURTISS: Do you know of anything today such as the --

MR. DUFFY: No, sir.

COMMISSIONER CURTISS: -- gas that you've seen at WIPP that would suggest that RCRA has got to be considered in this context?

MR. DUFFY: Not yet, no. I think the problem that we have at WIPP is that we have a scientific extrapolation of potential that says if we take the worst case considerations the canister could, under an aerobic situation, corrode and produce a large quantity of gas. In an anaerobic situation, it can produce a certain quantity of gas that could or could not permeate this --

COMMISSIONER CURTISS: Is that answer to that question affected by whether you put greater-than-Class-C waste in the repository or have you looked at that yet?

MR. DUFFY: I don't think so from the standpoint of what -- the greater-than-Class-C in most cases is in the stainless category. I don't think the gas generation on the stainless projection was as much as the carbon steel, but I don't remember that in exact detail. But I could get you the --

MR. GERTZ: It could have some hazardous complements.

MR. DUFFY: It could have some hazardous complements, but I think in a gas situation, I just

don't remember the numbers, but I thought when we looked at it that under certain conditions, like in tough, it wouldn't be the same as in salt. The corrosion rate would be significantly less.

COMMISSIONER CURTISS: One final question. On your petition for the accident-dose guideline, you say you're going to submit that, is it later this year, as in later in '89 or later in the fiscal year or --

MR. STEIN: '90.

MR. DUFFY: '90. That's one of our conservative schedules.

COMMISSIONER CURTISS: Okay. Do you have a feel for -- from the standpoint of your schedule, how urgent action by the Commission is on that? When do you think we need to move forward given your other activities?

MR. STEIN: If it's a design criteria, then we'll have to apply. So, as we go through our design activities, particularly as we proceed to Title II, we would like to hopefully have some resolution by that period of time, which is '91.

COMMISSIONER CURTISS: '91?

MR. STEIN: Yes, hopefully '91.

CHAIRMAN CARR: Well, gentlemen, I'd like to

thank you for being with us today to discuss the status of the Civilian High Level Waste Program. I agree with Secretary Watkins' view that this program is a scientific endeavor of critical significance to the nation's ability to safely manage and dispose of the nuclear waste and to the reestablishment of confidence in the nuclear energy option in the United States.

We at the Commission are pleased with the Secretary's commitment to ensure that the scientific investigations are the focal point of the program, so that the results are technically sound and uncoupled from a scheduling process which may constrain the collection of sufficient information for a determination of site suitability and a thorough and complete license application.

As the NRC staff commented in its recent comments to DOE on the Site Characterization Plan, we urge that DOE give early priority to addressing those issues which may most significantly impact any determination regarding site suitability.

In my view, today's meeting has been most worthwhile in providing exchange of views on the status of the program and I believe we should continue such meetings as events warrant. Also, I can't

emphasize enough the importance of the pre-licensing consultation between DOE and NRC as well as the interactions with the state and tribes.

You've placed a lot on the table today and we appreciate it. Such dialogue contributes to the early identification and potential resolution of issues as they arise.

Finally, I would like to comment on that area of the program which is of particular interest to me as it impacts on our ability to complete the license review in the three year time frame prescribed by Congress. It's my strongly held view that as long as the potential repository site is under consideration and site characterization is either ongoing or actively planned, development of the licensing support system should continue. Since it is reasonable to expect that problems and delays may be encountered in the development of such a large and complex automated system, it's important to continue an aggressive development schedule to help ensure the licensing support system never gets on the critical path of the license review of the repository.

I offer my help to you in support of this view and defense of our respective budgets. So, if you need help, holler.

Do any of my fellow Commissioners have any additional comments?

COMMISSIONER ROGERS: Just that if DOE can accomplish things as rapidly as Mr. Duffy can deliver information to us, you're in great shape.

MR. DUFFY: We'll try.

CHAIRMAN CARR: Thank you and we stand adjourned.

(Whereupon, at 3:39 p.m., the above-entitled matter was concluded.)

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING BY DOE ON STATUS OF CIVILIAN HIGH LEVEL WASTE PROGRAM

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: DECEMBER 20, 1989

were transcribed by me. I further certify that said transcription is accurate and complete, to the best of my ability, and that the transcript is a true and accurate record of the foregoing events.

Carol Lynch

Reporter's name: PETER LYNCH