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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

OFFICE OF THE SECRETARY

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BRIEFING ON STATUS

OF SPENT FUEL PROJECTS

Nuclear Regulatory Commission

One White Flint North

Commissioner's Conference Room

11555 Rockville Pike

Rockville, Maryland

Wednesday, February 23, 2000

The Commission met in open session, pursuant to notice, at 9:03 a.m., the Honorable RICHARD A. MESERVE, Chairman of the Commission, presiding.

COMMISSIONER'S PRESENT:

RICHARD A. MESERVE, Chairman of the Commission

GRETA J. DICUS, Member of the Commission

NILS J. DIAZ, Member of the Commission

EDWARD McGAFFIGAN, JR., Member of the Commission

JEFFREY S. MERRIFIELD, Member of the Commission

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STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

ANNETTE L. VIETTI-COOK, Secretary

KAREN D. CYR, General Counsel

WILLIAM KANE, NMSS

WAYNE HODGES, NMSS

CARL PAPERIELLO, EDO

WILIAM TRAVERS, EDO

BILL BRACH, SFPO

SUSAN SHANKMAN, SFPO, NMSS

EARL EASTON

EDWARD DAVIS, NAC International

RALPH BEEDLE, NEI

KEVIN KAMPS, NIRS

P R O C E E D I N G S

[9:03 a.m.]

CHAIRMAN: Good morning. As I'm sure you all know, the Commission is meeting this morning to hear from the Office of Nuclear Safety and Safeguards, Spent Fuel Project Office. The purpose of our meeting this morning is to discuss the status of its activities and its program's performance and plans. This meeting supplements the briefing that was held on February 11 in which we heard about other activities of the Office of Nuclear Materials, Safety and Safeguards.

This is, of course, a panel of the staff that is now before us that, after we complete our questioning of this panel, there will be panel of stakeholders who are going to be presenting their views and some of the issues that affect the office.

Let me urge all of you to be careful in watching the time. One of the most valuable parts of the interaction with you is the question and answer period that we have, both with the staff and with the second panel. We have had the opportunity to review the materials that were filed beforehand and are familiar with those materials. So, we really can cut to the chase, I think. Let me add that that comment is also directed at the second panel.

Let me turn to my colleagues and see if they have

any opening comments, and if not, why don't we proceed.

MR. TRAVERS: Good morning. We appreciate this opportunity, Chairman, to brief the Commission on the status of Spent Fuel Project Office activities and initiatives. I believe it was in 1995 that the Commission and the staff created the Spent Fuel Project Office in response to the obviously growing significance of spent fuel transportation and storage issues, and so I think it's appropriate that we provide you with this briefing on the status of things.

We have the right team here to do that. Beginning on my right, Bill Kane is the director of NMSS; Carl Paperiello, who is the deputy director in my office; Bill Brach, who is the director of the Spent Fuel Project Office; Dr. Susan Shankman, who is the deputy director of the Spent Fuel Project Office in licensing and inspection; and Wayne Hodges, who is the deputy director and SFPO for technical review.

The only three directors of that office are at the table. I was the first director of the Spent Fuel Project Office. Bill Kane was the second. Bill Brach was the third. So, we ought to have the right story and hopefully be able to answer your questions this morning.

MR. MERRIFIELD: No excuses.

MR. TRAVERS: No excuses today. So, let me turn it over to Bill who's going to give the presentation.

MR. BRACH: Thank you, and good morning. The purpose of the briefing, as Bill mentioned, is to provide the Commission an overview of the Spent Fuel Project Office activities. Slide two is an outline of the presentation. First, I'll provide a brief summary of SFPO's responsibilities for storage of spent fuel and for transportation review of all nuclear materials, including spent fuel transportation.

I have two slides that give a picture of the U.S., which show the location and type of currently operating facilities, spent fuel storage facilities, and planned and projected facilities. I'll then move to discuss initiatives we've taken to improve the cask certification and review process, the status of our current case work completions over the past year, and initiatives we are currently developing to further develop the certification process.

Next, I'll provide a brief overview of some of our transportation activities and two studies we have underway to address spent fuel transportation issues. I'll then conclude with a brief summary of our status in ongoing activities.

If we could move to slide three, please. The first two bullets on slide three summarize SFPO's primary responsibilities, which are to review and certify packages for the transportation of nuclear materials, including spent

fuel under the requirements of 10 C.F.R. Part 71 and to license spent fuel storage facilities and certify storage casks under 10 C.F.R. Part 72.

We additionally have the responsibility to develop and maintain the inspection program for both transportation and storage. We provide technical support to the regional offices on these inspections. I'll point out the regional offices have the responsibility for the implementation of the inspection programs under both transportation and storage. We within the SFPO headquarters office conduct a limited number of inspections of cask and package vendors.

The third bullet notes our significant involvement with the U.S. Department of Transportation and the International Atomic Energy Agency on both storage and transportation activities. A later slide will address our activities in this regard in a little more detail, and I'll note that we as well review and approve licensees' quality assurance programs -- that's licensees' and vendors' quality assurance programs for both transportation under Part 71 and storage under Part 72.

If we could move to slide four. This slide and the next slide give a picture of the current and planned independent spent fuel storage facility installations in the U.S. There are currently 15 operating and licensed facilities located in 13 different states. There are ten

site specific licenses -- they are noted by a triangle on the page -- and five generally licensed facilities which are noted by a circle. Let me just briefly explain the difference in a site specific and a generally licensed facility.

A site specific license requires an application to the NRC for a licensed facility. The applicant must describe in detail all aspects of the planned facility, the site description, the cask system and design and operations, and the ongoing controls and programs to be in place to assure safe operations. This process includes opportunities for hearings, and requires an NRC licensing decision and action.

A general license is conveyed to all holders of Part 50 power reactor licenses to use a currently certified cask listed in Part 72 without application to the NRC. The reactor licensee must assure that their site, planned use and programs are all bounded by the cask design parameters.

I'll also note that the facilities are for dry storage of spent fuel with one exception, and that's the G.E. Morris facility located in Illinois, which uses spent fuel storage pool. I'll point out on this slide that there are two existing DOE licenses for storage of spent fuel -- the TMI II fuel debris facility in Idaho and the Fort St. Vrain facility located in Colorado.

We move now to page five. Page five, again, presents the planned and potential facilities. There are approximately 20 planned facilities over the next five or so years in 14 additional states. The mix and types of facilities is changing as the slide shows, for most planned or projected facilities will be generally licensed facilities which do not require NRC issuance of a license. Page five also shows that there are five site specific licenses planned and 15 general licenses planned. This information is based on meetings that we've had with applicants and licensees and general information from reactor licensees on their future plans.

I want to identify a third DOE site to be licensed by NRC. This will be another facility located in Idaho to store Peach Bottom shipping port and freighter fuel. The application from DOE to NRC is expected later this calendar year.

Before we leave this page, I want to note that there are a number of decommissioning reactors which are planning to have generally licensed storage for their spent fuel. For example, you'll note Maine Yankee, Connecticut Yankee and Big Rock Point, just to name a few. The plans for general licensed storage facility will require that these reactor licensees maintain and not terminate their Part 50 license. The matter of how to transition from a

general license to a site specific license is a topic we've had some discussions on with the industry.

If we could move now to slide six, the Commission has indicated an interest in hearing from the staff and the next panel of representatives comments and activities in support of certificate review process. In the next three slides, I'll briefly cover recently implemented initiatives to improve the process, our current status, review status, as well as initiatives under development.

We have implemented four significant changes to the Part 72 cask certificate rule making process this past year. These changes are listed under the first bullet. All these changes have markedly improved our efficiency and timeliness. Perhaps our biggest gains in effectiveness and efficiencies to date have also come about through some of our internal process improvements. Through our rules for engagement, we have developed review schedules with clear identification of dates and expectations for both NRC review activities and for applicant actions. We have met those dates and expectations and in doing so, we have brought both stability and predictability to the cask review and certification process.

The remaining bullets identify some of the important tools we've developed and implemented in the process. Our efforts to standardize our process and provide

clear review guidance have assisted the staff and applicants. This helps to assure consistency across review teams and to assure consistency from review member to review member. Our use of interim staff guidance documents provides a means for us to implement and come to closure on technical issues. I'll discuss the use of interim staff guidance documents a little more as we discuss high priority technical issues.

Moving to slide number seven, the information on this page covers fiscal year '99 and the first quarter of fiscal year 2000. You'll note the shift from single purpose storage cask to dual purpose storage and transportation casks. We've been extremely busy. Note that there are four dual purpose casks and one single purpose cask certificates currently in rulemaking process. We expect these to be completed in the next few months. Two applications, two dual purpose cask applications, are under review and a third application is expected, scheduled later for receipt later this fiscal year.

The transportation statistics include those spent fuel and non-spent fuel case work. The bulk of the transportation reviews are for non-spent fuel cases, and the bulk of that work is for amendments to currently certified transportation packages.

I've already mentioned the two DOE facilities, TMI

II fuel debris and Fort St. Vrain facilities that were completed this year. The third facility that was completed is the Trojan facility in Oregon. The three facilities under review include the Rancho Seco facility, and action which is near to completion now; private fuel storage facility for which we provide periodic monthly reports to the Commission and Congress on the status, and that review is proceeding. The third review is in support of the Department of Energy's Naval Reactors program. We are performing a technical review for their planned Naval reactor facility to be located at Idaho. The technical support to Naval reactors is being done under a reimbursable agreement and will not result in an NRC license.

I'd like to draw your attention to the footnote on this page which highlights the shift in certificate case work from reviewing new cask designs to amendments of currently certified cask designs. You can see the work loan shift simply in the number of cases. I will point out that each cask amendment will result in a rulemaking to amend the certificate, and this is an issue I'll discuss more on the next slide.

We want to focus our NRC staff activities on efforts to streamline and improve the certificate process. First, we're working to assure that the certificates only contain conditions that are required. For example, where

the technical basis exists to support parameters or bounding numbers, we will be using that data in the certificates instead of individual point numbers. You may have heard a phrase called smarter certificates, and this is an example of our efforts in that regard.

Second, we're standardizing the technical specifications building on the reactor initiative in this area. Again, it goes to assure that the tech specs only contain what's truly needed in the tech specs and the other information stays in the safety analysis report.

Collectively, these efforts support the implementation of a change to 7248, which will allow licensees and certificate holders to make changes to their cask systems without NRC prior review and approval as long as a specific change does not result in a change to a certificate condition or a technical specification. As noted in the slide, we're working with the industry to develop guidance on the implementation of 7248.

We recognize that alternative approaches to certificate amendment rulemaking need to be examined. One of the suggestions we're currently reviewing is to revise Part 72 to specifically identify the types of amendments which can be identified through direct final rulemaking. As long as an amendment falls within those limitations, the amendment could be issued as a final certificate change and

final rule. We clearly are looking at other options and looking to the industry for suggestions as well.

We also are reviewing our internal review process. We want to institute a review schedule that would only allow for one round of questions. The expectation is that the application should be complete at the outset, and therefore the goal should be no more than one round of questions. This action, too, would shorten the schedule for reaching a final regulatory decision.

Another process area of high SFPO activity is preparation for dry cask storage license renewal. As noted on the overhead, we have a group developing the guidance and technical basis to support renewal and will be ready for the first dry cask license renewal request, which is expected from Surry in mid-2001. As noted on the overhead, Surry's license expires in six years, in the year 2006.

If we could move to slide nine, please. SFPO and the industry had a public workshop in mid-December to identify and discuss the prioritization of technical issues needing resolution to support dry cask reviews. The new issues listed on this page are not only two of the top priority issues identified, but have also been a subject of many technical workshops and exchanges. High burn-up fuel is a top priority issue, the highest issue needing technical resolution. NEI's farming and industry working group to

help focus industry generic efforts, while we at NRC are working both with NRC's office of research on generic technical research. We're also working on individual application requests to meet individual licensee needs for high burn-up fuel. I'll offer we're making progress, as noted in the first bullet in both regards.

I should note that there are competing interests in the resolution of high burn-up and other technical issues. We in the industry would like to resolve the issues generically and broadly, but that takes time, resources and technical data development and analysis. Meanwhile, licensees, especially some plants that are decommissioning, need resolution of their site specific needs on time frames meeting their decommissioning schedules and resource availability. We clearly are trying to support both objectives and resolution of their term licensing needs, as well as generic issue resolution.

NRC efforts to address burn-up credit I think should be seen as a success to date. In 1999, NRC took the first steps to provide limited approval. In May of 1999, we issues our first interim staff guidance document on burn-up credit, and then in August we issued a revised ISG which expanded the allowance for burn-up credit. Previously, NRC had not allowed credit for burn-up. There is clearly more to do on burn-up credit from our meetings with the industry.

We are working to develop additional revisions to our interim staff guidance document on burn-up credit, and with NRC's research support. Office of Research Support, we're making very good progress and data development and analysis to support future interim staff guidance provisions.

Moving now to slide ten, I want to briefly discuss some of our transportation activities and move into some of our studies with regard to spent fuel transportation. At the Commission briefing on NMSS program the Chairman referenced earlier, a few questions were asked about the NRC's transportation regulations and consistency with the IAEA standards. As described on the slide, we are developing a plan to develop a revision to Part 71 that would incorporate the latest IAEA transportation standards referred to as ST-1. The U.S. and most other countries, including the European community, have initiatives underway to incorporate ST-1, the IAEA transportation standard. International adoption of the IAEA standard is important to support international nuclear commerce.

The staff plan for developing this rulemaking is due to the Commission is May of this year. It will include other issues, some of which are listed in the second sub-bullet. The staff will be using the enhanced public participatory approach in this rulemaking, as directed by the Commission this past fall. We are planning workshops,

extensive use of the web, and much stakeholder involvement in preparation of the proposed rulemaking.

SFPO participates in international transportation activities primarily in support of the Department of Transportation, who serves as the U.S. competent authority for transportation. As noted on the slide, we participate in main committee and working groups in the review and development of transportation standards and guides, as well as we meet bilaterally with our foreign transportation regulatory counterparts.

SSPO staff have for the past few years been advocating a risk based approach to international transportation regulations. Recalling Commissioner Dicus' and McGaffican's comments two weeks ago, surface contamination limits, as well as other standards, may benefit from these considerations.

Moving to slide 11, I want to shift the focus now briefly to discuss two spent fuel transportation studies we have underway. Spent fuel transportation is an area that's frequently receiving much stakeholder interest. This is frequently a topic when high level waste disposal and the future repository are discussed. The next two slides provide a brief overview of two studies we have underway -- the re-examination of the generic environmental impact statement for spent fuel shipments and the review of spent

fuel package performance in transportation accidents beyond the accidents considered in Part 71.

If we could move to slide number 12. The focus of the review is on the updates to some of the technical bases or assumptions used in the 1977 study. For example, some of the shipment parameters for age or cooling time for spent fuel have changed significantly. In 1977, there was an assumption that spent fuel would be recycled and that fuel would be cooled for 90 days to one year before shipment, which is in marked contrast to today, where most spent fuel is cooled for five, ten or more years before planned shipment for storage or disposal.

Also, cask designs today are bigger and contain more fuel. Advances in computers and modeling techniques have also brought markedly improved dose and accident modeling capabilities. The re-examination of NUREG 0170 also builds on the results of the 1987 Vogtle study. The NUREG contractor report on the re-examination of NUREG 0170 will be available in March, next month, of this year. As we move to the next slide, I'll describe how we plan to incorporate the results of the re-examination review and the public comments on the report into our ongoing activity.

Slide 13. There's been much interest in the physical testing of spent fuel shipping packages to validate the assumptions and modeling used in risk analyses. The

objective of this study is shown in the first bullet. We've taken a very open approach to our study planning for this review. We've held four public meetings to engage other federal agencies, state and local government representatives, Native Americans, interested citizens, citizen interest groups, the nuclear industry, International Atomic Energy Agency, and the general public, to ask of all of them for their input to our study planning. We found these meetings and input to be very informative, as well as necessary for us to be sure that as we move forward in our study planning, we're aware of and can address our stakeholders' interests.

The four meetings that we held this past fall were one in Bethesda, Maryland in November, two meetings in the Las Vegas area, and one in Parump, Nevada. Mr. Kevin Kemps, who will address the Commission later in the second panel this morning, participated in the Bethesda meeting this past November.

Our plan is to issue a summary report in June this year on the stakeholder interests we received from the meetings, as well as a web page we've established, and as well as the views and comments of our contractor, Sandia Labs, who will be preparing the study review report. We will then plan to hold additional meetings later in the summer to receive stakeholder comments on the June report.

We plan to issue a report in June this year, and we'll hold additional meetings later in the summer to receive stakeholder comments on the June report, as well as any comments stakeholders may have on the report, on the re-examination of NUREG 0170, which I discussed on a previous slide.

Our plan is to finalize the study plan and report and to identify additional testing that may be recommended to validate the assumptions and models we used, and this report should be completed by the end of this year.

Moving then to our last page, page 14 on the summary, let me just briefly summarize that our activities to date are meeting current industry needs. By the end of the year, we plan to have or should have three, maybe four, dual purpose cask systems approved. I mentioned three instead of four in that it's my understanding that one of the transportation applications that we had expected to be receiving shortly may be a little bit later. So, it clearly looks like we'll have three dual purpose casks reviewed and approved by the end of this year, a fourth possibly.

We've devoted significant staff and management time, effort and commitment to complete our work in a timely manner. Safety is always paramount in our reviews. As noted, we believe that expectations for both staff and applicants have been clearly established, resulting in a

very predictable and stable process. Yes, there is more we can do. I've noted two areas for improvement, which I've discussed earlier. That is, the amendment process review, as well as technical issue resolution.

I want to stress that we are continuing our effort to interact with our stakeholders. In the past 12 months, we've supported over 20 major conferences and workshops on SFPO activities, and this is not including our ongoing licensee/vendor/applicant meetings. This is a significant investment of management resources, but we believe it's important as we move our programs forward.

This completes our presentation, and be pleased to address any questions the Commission may have.

CHAIRMAN: I've got a few questions. One, just something to follow up on something in your last couple of slides. You had indicated that you were undertaking both the re-examination of NUREG 0170.

MR. BRACH: Yes.

CHAIRMAN: And undertaking this evaluation of transportation accidents. Is the thought that once you've completed your re-examination of transportation accidents you may come back and make further revisions of the NUREG? How do these things -- I mean, they are obviously parallel and they ought to relate to one another, and so what's the plan?

MR. BRACH: Let me give a little bit more background. NUREG 0170 is our generic environmental impact statement to support Part 71 transportation. Our re-examination that we are just about completing now will support the continued validity of the generic environmental impact statement with regard to bounding transportation. The package performance study that we're initiating is looking at accidents, if you will, beyond design basis accident considerations. That would go markedly beyond the bounding, if you will, the confines of a technical basis supporting the environmental impact statement.

However, to answer your question, if through our package performance study there are findings through our physical testing or modeling or analysis to show that there are, if you will, shortcomings or issues we need to revisit, and clearly we will, but it right is envisioned that the package performance study will complement the analysis done to support the update re-examination of 0170.

CHAIRMAN: I understand. So, you may not have to come back and re-examine the NUREG, depending on how that study turns out?

MR. BRACH: May not have to. It clearly, depending on the outcome -- if it indicates we have to, we clearly will.

CHAIRMAN: I'd like to ask you a question about

the general license issue, and it really prefigures some comments that we're going to get in the second panel. There was some commentary to the general effect that for Part 50 licensees that have the benefit, therefore, of a general license for casks, that there are issues that are important that are site specific that are escaping public scrutiny, and they give an example of the fact that there might be erosion under the pads which the casks are placed. There's a further assertion that the 72.48 process has been used in a way so that you get a general license and then you make modifications, and then that also escapes public scrutiny. I would appreciate it if you would react to those comments.

MR. BRACH: Let me first, in our review and determination that a cask meets the Part 72 requirements and can be certified by the NRC is dependent upon our doing a very detailed technical review of the dry cask storage cask, its design and cask system, its use. In that review, we are reviewing all aspects of the acceptability of the cask design with regard to meeting all of the performance requirements contained in Part 72 to assure safe storage of spent fuel, as well as the use of that cask. In the safety evaluation report we issue, the certificate and its conditions and the technical specifications that go along with that certificate lay out the bounding and the conclusions and conditions that must be met to assure the

safe use of that cask based on our technical review of all aspects of a design planned use.

That support, that information supports a determination we make with regard to issuance of a certificate. That entire process is subject to and made available to the public for their review and comment through a formal rulemaking process. We publish the proposal to issue the certificate. The public has access to the draft certificate, the draft technical specifications, the draft safety evaluation reports supporting those actions, as well as the safety analysis report of the vendor to support those actions.

Our review -- the comment review and resolution --the opportunity of the public to comment on that is afforded through the issuance of those rules, and then we have the responsibility to review the comments received and make a determination as to changes that maybe are needed or not needed or if not needed, why not, to support resolution of those comments, then supporting the staff's recommendation for issuance of a final rule that would address the comments received from the public on the proposed certificate and associated documentation, and to address those issues. I mention that because the specifics with regard to the cask design, its use, those bounding parameters are stated in the certificate and the technical

specifications as a Part 50 power reactor licensee under the general license provisions decides that a particular cask that's currently listed in Part 72 is a cask they want to employ at their site, it's incumbent on the Part 50 power reactor licensee that they must assure that all the site specific characteristics at their facility are bounded by the specific criteria and the bounding conditions of the cask that went through the Part 72 certificate review process.

The two aspects of the question, in response to your question, sir, is that the detailed review of the cask, its acceptability and meeting the requirements of Part 72 and supporting information is reviewed by our staff and is available to the public for review and comment as part of the formal rulemaking process to add that certificate to the list of casks contained in Part 72. Then it's incumbent on the power reactor licensee to assure that they use that cask only within the confines of those bounding parameters and conditions in the certificate and technical specifications.

CHAIRMAN: The example that's given that we'll be discussing a little while is the issue of whether a pad on which the casks are to be placed are the appropriate size and strength and durability in terms of erosion resistance, for example. Would that kind of an issue be something that would be covered by the conditions for the certification of

the casks?

MR. BRACH: The cask conditions and technical specifications would lay out the conditions on which the cask must be able to perform -- excuse me, the pad must be able to perform to hold the cask under different conditions. It's incumbent upon the reactor licensee to assure that the site specifics of their facility with regard to the pad, its construction and its stability meet and satisfy those bounding parameters in the certificate.

As Bill Travers just mentioned as well, part of the NRC's process is to do inspections of the -- whether it be a site specific facility or a generally licensed facility, the NRC conducts inspections of the licensee's activities in construction of the pad as well as does inspections and overviews of the licensee's determinations and evaluations to assure that their actual activities are bounded by the conditions in the certificate.

CHAIRMAN: On an unrelated question, and then I'll turn to my colleagues, we got a recent SECY paper that indicated that amendments of the certificates were proceeding using a direct final rulemaking process, which I understand to mean that at the same time the proposed rule is published for notice, the final rule is also published and would become effective 30 days thereafter. You made reference to it, I think, in slide six here today. How is

that process working? I mean, have you been effective in assessing whether amendments are going to prove controversial or not, and therefore been able to determine whether the direct final rulemaking is appropriate?

MR. BRACH: We have on a couple of occasions attempted to use the direct final rulemaking approach for a certificate amendment. An important responsibility we have in making first that decision should we proceed down a direct final rulemaking path for an amendment or go forward with a proposed amendment is a staff's determination as to whether we believe the issues involved in the amendment may be controversial or not. For those -- based on staff's understanding of technical issues, deemed that we do not believe the issues will be controversial, have proposed a direct final amendment approach. In one occasion that we have issued a direct final rulemaking, we did receive a comment that we, the staff, determined was a significant adverse comment that resulted in our pulling back the direct final rulemaking, turning that into a proposed rulemaking to modify the amendment, and are now in the final stages of review and resolution of the comment received to support staff's recommendation for further rulemaking. So, the one occasions we've had, we did receive a significant adverse comment that did leave us with a decision on our part, that appropriate action is to withdraw the direct final rule and

go down the proposed and final rulemaking.

CHAIRMAN: And how many have you done by direct final rulemaking?

MS. SHANKMAN: I was going to say, the number is very small. We've only put out three. One couldn't be direct final because it was closing out a director's decision related to a 2.206 petition, and the other, Phil described, we had to make a proposed rule. So, we'll know probably in the next six months how successful we are.

MR. BRACH: Let me add, on the one -- Bill Travers reminded me -- on the one direct final rule amendment that we had proposed and then withdraw, the comment and our review of that comment has not resulted in any staff's proposed changes to the certificate or cask design. The question involved an issue that the staff had not adequately provided a public documented face to explain some of the review issues we had gone through reaching the decision we had reached.

CHAIRMAN: Let me turn to Commissioner Dicus.

MS. DICUS: Thank you, Mr. Chairman. I want to follow on on my issues with transportation with a couple of questions, one of which you've probably answered or at least partially answered with the Chairman's, I think, first question, but these really relate to slides three, 10 and 12. The first question, specifically what are we looking

for with respect to the DOT IAEA interface, and how is that going, as DOT is the lead and obviously they must be very much involved with what is occurring there. Can you comment a little further on it?

MR. BRACH: There's a memorandum of understanding that the NRC and Department of Transportation have negotiated some years ago with regard to interface of our two agencies. As noted on the one overhead, the Department of Transportation is the U.S. competent authority on transportation and really takes the U.S. lead.

NRC's support to DOT is primarily in the realm of technical support with regard to nuclear transportation that falls within NRC's purview. The Department of Transportation clearly has hazardous cargo and other considerations that go markedly beyond NRC's purview, and well as international responsibilities there.

MS. DICUS: What impacts on the industry with IAEA standards?

MR. BRACH: There's a direct potential impact in that there's responsibility we within the U.S. have to support international commerce to implement and to adopt through our regulatory processes the international standards for transportation. Directly with regard to NRC, the IAEA standard ST-1 is an international standard that we, as mentioned beforehand, will be developing now the plan to

proceed with the rulemaking to incorporate that standard in NRC's Part 71 regulations, and that will go through the proposed rule of public comment process, for sure, as well as our existing Part 71 is based on earlier IAEA standards. So, there's a continuity, if you will, of the international standards that are established and the responsibilities we have to implement those standards domestically here.

MS. DICUS: All right. The second question is really from slide 12, and it has to do with, and we discussed part of this, and I think in response to the Chairman's question. What gaps have you identified with respect to shipment parameters, cask designs and does models that you're really going to have to address?

MR. BRACH: When you say gaps, I believe the biggest issues are what we see in some of the assumptions that were used in 1977 with regard to cask designs today, fuel loadings, enrichments, burn-up, as well, as I mentioned earlier, that in the middle 1970's, there clearly was an expectation then that reprocessing would be a part of the fuel cycle, if you will, and that today -- that resulted in assumptions in the middle '70's that fuel would be cooled to a markedly less period of time than today.

What we are looking at are the advances, or the changes, if you will, in the fuel as it's manufactured, as well as the casks and the size and types of materials of the

casks. We also are looking at the advances in modeling. If I recall correctly, I believe RADTRAN 1 was maybe developed as part of the NUREG 0170 back in the middle '70's, and I believe we're up to RADTRAN 5 or 6 -- RADTRAN 5, a markedly further progressed modeling technique for modeling transportation activities. Susan, are there other --

MS. SHANKMAN: No, we use more up-to-date information from the Department of Transportation. We collaborated with the Volpe Center, and they gave us better data to use for accident forces.

MS. DICUS: Okay. In slide eight, industry and certainly certificate holders have expressed some concerns with respect to streamlining, standardizing our tech specs and changes tests, experiments, et cetera, and the whole processes that we're involved and we'll probably hear from the industry about that. Now, on slide eight, you listed several thing you're working on to try to deal with this. Are those things going to deal with all the issues that have been raised?

MR. BRACH: All the issues is probably a little broad question for me to say absolutely yes. Let me answer it this way. I think the efforts we're working on --

MS. DICUS: That was a set-up question.

MR. BRACH: Yes. Let me offer, I believe the efforts we have underway to be sure our certificates only

contain first, the information that clearly is required to support our regulatory decision are contained in the certificates, and second, as I mentioned beforehand, that to the point the technical analysis supports at bounding numbers or parameters be used as opposed to a point number, that we would incorporate that in the certificates. Our efforts to standardize the technical specifications is an evolving project we've had within SFPO. Again, the purposes there are to assure that the tech specs one, only contain the information that needs to be in the technical specifications, the supporting information and the bases or elsewhere would be in the safety analysis report.

Both of those initiatives are important because as we move forward with regard to Part 7248, a licensee or vendor or a certificate holder can only make a change under 7248 without NRC prior review and approval if that change they're proposing to make does not in any way impact a certificate condition or a technical specification. If a proposed change under 7248 by a licensee or a by a certificate holder would result in a change to the certificate condition or a change to the technical specifications, that must then be submitted to us as an amendment request and be processed through the certificate amendment process.

It's not trying to make the certificate conditions

very, very brief or technical specifications brief. It's just to be sure that we are not having additional information that's not needed to be in the technical specifications or conditions because to modify any of that additional non-important information in and of itself would require an amendment change to modify that. So, we want to be sure our certificates and technical specifications are as exact and precise as they need to be to support our regulatory decisions, our technical review that supports regulatory actions.

MS. DICUS: Okay.

MR. KANE: We've, as directed by the Commission, attempted to get alignment of that process with the process that's used in reactors with 5059 for making changes, and we've tried to conform those to processes along the way to make sure that they do exactly the same thing, same way.

MS. DICUS: Okay, and one final question, if I may, Mr. Chairman, on slide 13. You discussed the large number of meetings that you've had with both the public and with industry, which I certainly support. I appreciate the fact that you've gone to this effort. What's the public telling us? What's their views? We hear some of them, but in general?

MR. BRACH: Two things. I'll start off with the positive. For sure, I think we've had very, very positive

feedback from all the stakeholders, including state and local government representatives and others, Native Americans and public interest groups in the meeting. Very appreciative of the initiative we've taken in this regard, but before we have laid out, if you will, the NRC staff plans and here's our proposal, that we're going to our stakeholders and asking them for the input with regard to their issues, their interests, their concerns, so that we can take that information and use that as we develop our plans. I wanted to mention that because I heard very, very positive feedback at all four of the meetings that we've had in regard to our -- my perspective, very open approach to listen to the stakeholders before we move forward to make recommendations.

More directly with regard to a number of the comments we've received, a good number of the stakeholders have raised questions with regard to the actual physical testing that's been done to demonstrate that the modeling, the assumptions that have been made with regard to how materials would perform, if you will, under certain accident conditions. I'd say been a dominant comment we've heard is that there would be a very much marked interest in seeing physical testing of the cask, whether that be full scale testing or scale model testing and query those types of decision. One needs to be based on the need and also

there's a cost aspect with regard to the type of physical testing that may be embellished.

MS. DICUS: Okay. Yeah, I've heard that from the citizens of Nevada. Thank you, Mr. Chairman.

CHAIRMAN: Mr. Diaz?

MR. DIAZ: I'm going to quote Commissioner McGaffigan. I'm going to sound like a broken record, but there is an issue that, you know, keeps coming up, and it is the fact that we are at a point in the technical development and capabilities in which conducting state of the art analysis is relatively more easy than it was before, and I want to emphasize the importance of conducting conservative if we have to, but realistic analysis when we deal with any of those issues. The area of that obviously requires sometimes a little more in depth is when you're doing amendments which could actually be very simple or could be complicated, and that's an area that I would strongly encourage you use the state of the art techniques.

Having said that and since the 5059 was brought up, I'd like you to go back to your slide number eight and see how we maintain a consistent language as we deal with rules and other things that we do. If you look at the number eight, you have minor changes not require NRC approval. Could you tell me where those minor lies between zero as small, negligible, and minimal?

MR. BRACH: Let me offer on the slide, the same as 5059.

MR. DIAZ: All right, then the word must be changed.

MR. BRACH: Maybe if the word minor could be removed because in trying to discuss earlier to the terms question, Commissioner Dicus as well, what we really are making reference to are changes that do not impact the certificate or the tech specs as they've been issued. My phraseology of the use of the word minor meant to be it's a level below that. A number scale I don't want to offer.

MR. DIAZ: Yes. You might want to offer the escape, but you might want to be consistent since we struggled for so long with the use of the word minimal, and if that's what you mean, then that's what you should use.

MR. BRACH: Let me offer, I think your point also, with regard to the change, the rulemaking change to Part 7248, you may recall that when the change to 5059 went through through the Commission review, there were two parallel rulemakings that were going forward together, the proposed change to 5059 and the proposed change to 7248, coupled with the implementation of 7248 was staggered, to be 18 months after the effective date of the published rules.

There are two aspects of that. One is that the 5059 process had an earlier implementation date with the

NRR, our reactor counterparts, and the industry working to develop implementation guidance for 5059. The clear intent was that that implementation guidance would be developed, and then we on the Part 72 spent fuel storage side would be learning from and to the extent the reason we're following, the guidance as is developed, a guide 5059 reviews and activities, that that same template would be used as we move forward under 7248. So, they were staggered on purpose, and we clearly have the intent to follow that same methodology.

MR. DIAZ: I just want to be helpful in the sense that we already struggled with minimal for so long that we don't want to resurrect a different word right now that might have different meaning. We want to be in the same area.

MR. BRACH: Yes, that makes sense.

MR. DIAZ: Okay, next question on your slide number ten. Could you explain to me what bubble containment for plutonium means?

MR. BRACH: Yes, and it's in CFR 7163. There's a requirement that packages plutonium be contained in what's referred to as double containment. That means two leak-tight, if you will, physical containments. We received a petition request -- two years ago -- in the recent past where the petitioner was asking that NRC revisit that question in a technical basis for continuing to require

double containment for plutonium packages.

MR. DIAZ: I'm sorry. That's what my question is. What is a plutonium package? All spent fuel contains plutonium. Is this something that's packaged different than spent fuel, or is the spent fuel --

MS. SHANKMAN: No, it's not spent fuels.

MR. DIAZ: It's not spent fuel?

MS. SHANKMAN: No, it's plutonium and it has to be greater than 20 curies.

MR. DIAZ: Oh, that's what I was -- so, it is not plutonium in spent fuels.

MS. SHANKMAN: No.

MR. DIAZ: Specifically plutonium in some other form.

MS. SHANKMAN: Right.

MR. BRACH: Right.

MR. DIAZ: Being outside, metal, it's just based on the quantity of plutonium.

MS. SHANKMAN: Yes.

MR. DIAZ: Not a chemical or physical shape.

MS. SHANKMAN: No.

MR. BRACH: Twenty curies.

MS. SHANKMAN: Bigger than 20 curies.

MR. DIAZ: It could be in any form?

MS. SHANKMAN: No.

MR. PAPERIELLO: No, I think it has to be shipped as solid.

MR. BRACH: Yes. Plutonium, it can only be shipped by regulations as a solid form.

MR. DIAZ: No, no, I mean, could it be metal? Could it be an outside?

MR. BRACH: Right, as a solid, yes.

MR. DIAZ: As a solid.

MR. BRACH: Yes.

MR. DIAZ: Okay, so that's what the difference is. The last thing --

MR. MERRIFIELD: I'm sorry, I don't mean to interrupt, but I need a clarification of your question. What about mox fuel test assemblies? Would that be included or excluded from this definition?

MR. BRACH: My understanding is mox fuel would be required to meet the 7163 requirements for double containment.

A staff member is clarifying for me, and I thank you, that a fuel assembly is not required to be contained in double containment.

MR. DIAZ: That was the point of my question because it came out like plutonium, you know. All right, thank you.

MR. BRACH: And we've clarified yes, that is

correct, in 7163.

MR. DIAZ: All right. I appreciate it. The next quick question is again on the issue of transportation spent fuel shipment, et cetera, et cetera. Last year, there was a little bit of problem of coordination between the offices. I'm sure that Dr. Travers have now made sure that there's no lack of coordination between NRR and NSS and so forth. I mean, just a plain question, is all of these issues that went last year, something was published ahead of time. I mean, we have resolved the coordination between the office on the issue of the spent fuel shipments. There was an issue last year.

CHAIRMAN: I don't recall an issue.

MR. TRAVERS: Oh, yes, I remember it now. I think I know what you're referring to, and we are striving for even better coordination on that point, but I recognize that issue, and I think we're in a good condition to give you assurance.

MR. DIAZ: I'm just asking if you are personally aware that this was an issue and that it has been resolved.

MR. TRAVERS: Yes, yes.

MR. DIAZ: Thank you, sir.

MR. TRAVERS: Yes, sir.

CHAIRMAN: Mr. McGaffigan.

MR. McGAFFIGAN: I'll start by commending you all

for the improvements I think that have been made over the last couple of years in getting a businesslike process in place for approving dual purpose canisters. I know much of the problem we had in the office that we had a couple years ago when we were getting Congressional report language, stemmed from the decision by Congress to terminate the multi-purpose canister program. You were expecting one high quality application from DOE and Westinghouse and ended with multiple applications and had a lot of problems with the quality of some of those applications, so I think we've made a lot of progress.

Let me start with transportation, and I possibly will either require a second round or whatever. Let me just try to run. One issue you haven't mentioned that I mentioned last time, this nuclear fuel article of February 7 talked about UF6 containers and the Europeans trying to deal with -- apparently it's the ST-1 IAEA initiative. IPSN has perhaps determined that the current Uf6 canisters are going to have to be upgraded and has suggested a solution in order to be compatible with the IAEA standard. The article had a line in it to the effect that European regulators have begun discussing a common approach, but U.S. authorities aren't yet in this discussion. So, I was wondering whether we are in the discussion or not.

MR. BRACH: Let me answer that in part and I'll

ask Wayne Hodges, our deputy director for technical review, to follow. I mentioned earlier that both in the U.S. as well as European community and other nations currently have efforts underway to start the process of adopting ST-1. The European community has a unique aspect in that a number of the western European countries; for example, U.K., Germany, France and others, are jointly looking at the adoption of ST-1 in the European community of regulations. They are clearly amongst themselves having meetings and interactions.

This past fall we did meet bilaterally with representatives from the U.K., France and Germany, talking about transportation, both spent fuel transportation and actual aspects of activities of both storage and transportation. Much of the discussion did focus on ST-1 and the efforts the European community has underway to adopt that rule within the community as well as our efforts that we are initiating to start that same process here in the U.S.

With regard to specifics on the UF-6 testing -- Wayne, are you --

MR. HODGES: Well, I know it satisfies our current testing for the drop testing, the puncture testing, and the fire testing. I'm not -- and immersion, right.

MR. McGAFFIGAN: The article claims that IPSN has determined that it will not pass the 800 degree centigrade

burning requirement for 30 minutes.

MR. BRACH: Can I have a staff member? Earl Easton, who's been involved in much of ST-1 over the years. Earl, if you can come to the mike at the side there, please.

MR. EASTON: Commissioner, I think this issue deals with the shipment of unenriched UF-6 cylinders, which for about 40 years has been shipped not subject to Type B fire tests, shipped as low specific activity material. The Europeans, led by the French, did indeed lead the push to get a standard to have these cylinders subject to a fire test, 1475 degrees. The United States strongly opposed that provision. We had then the EDO, Mr. Taylor, write to the ACSS chairman, Mrs. Bishop of Canada saying that we would take that to the Board of Governors at IAEA. The opposition was that strong. We opposed it on a risk informed basis.

It turns out that the U.S. has thousands of these cylinders sitting in storage yards. It's a large, large impact, and also that the French had led a research program down at Tenerife about whether existing cylinders would pass this test. The research was not finished at the time the rule was adopted, so we opposed it both on the risk basis and on the research not being done. We said that the hazard from unenriched UF-6 is a chemical hazard. It ought to be treated as a chemical hazard, and let's look at the chemical industry on how they ship HF and those type of chemicals and

come up with an equivalent type standard.

We lost that battle. This is primarily a Department of Transportation issue. They have jurisdiction over shipping unenriched. They have not chosen to be that engaged with the Europeans because we have a different problem. We have a different outlook on the standard, and I don't think DOT has really made up their mind where they want to go.

MR. McGAFFIGAN: Can I briefly follow -- you said you lost the battle despite Mr. Taylor writing --

MR. EASTON: Yeah, we lost the battle. We got outvoted.

MR. McGAFFIGAN: So ST-1 does include this provision that we think is unrisk informed and stupid?

MR. EASTON: Yes, there's a couple like that, yes.

MR. McGAFFIGAN: I'm sorry to, you know, four baccarels per square centimeter. I mentioned last time our French colleague wanted us all to understand, Mr. Phillipe St. Raymond, deputy director of DSIN, that this is a cleanliness standard. It isn't connected with health effects. But this cleanliness standard results in people wandering around casks getting does trying to prove that there isn't four baccarels per square centimeter of contamination left on the cask. So, we trade real does for theoretical dose, and you know, our regulations, as I said

last time, I think the Atomic Energy Act asks us to protect public health and safety, not cleanliness. So, is there -- what is there -- and there's also apparently within IAEA some talk of this. This article is about updating, I guess, ST-1 and what other activity may or may not change an ST-1. Is four baccarels per square centimeter in the DOT or our regulations at the current time, and is it possibly pass a risk informed test?

MR. BRACH: It is in the ST-1. As I mentioned, we are starting a plan to develop how we'll be proposing the public interaction with our stay coders and proposing a rule change to Part 71 that would incorporate ST-1. We clearly would expect that there will be public views and comments offered on that and other measures in ST-1.

You might recall at the previous briefing, I had two mention that and as well simply the bilateral discussions I had this past fall with our counterparts in western Europe. We discussed the existing requirement, and it's my understanding that the European community is not proposing a change to that standard, that they have seen that to be a compliance issue that needs to be met through compliant actions by the user's part, the transporter's part, to make sure that the external surface of the casks are clean to appropriate levels.

MR. McGAFFIGAN: But it's not a health and safety

standard. I remember when the issue came up in France and other countries last year and they were trying to -- people were exceeding the standard by factors of 100 or a thousand, and they were still getting, I think microrems per year or something. So, you know, I don't know where else in our regulations we try to prevent microrems.

MS. SHANKMAN: Let me give a little -- maybe some background. This standard applies to all packages, and it was developed, my understanding is that it was developed more for the nonspent fuel packages where you had handlers -- think of Fedex -- that had lots of packages.

MR. McGAFFIGAN: That might be dealing with a thousand of them, right.

MS. SHANKMAN: Right, and the idea was to maintain a standard that would prevent them from getting overexposed or meeting the occupational limits. It is true that it also applies to the spent fuel casks, and as far as taking a reading, whatever standard we have, they'd have to check to see that they met that standard. The overexposure or the extra exposure may come from efforts to decontaminate the casks, and the amount of weeping is accounted for by that standard because there is cask weeping. It's a phenomenon that's known but not fully understood. So, we allow in this country -- it's still the same standard, but we allow a hundred times that when it gets to its destination if it

starts off meeting the four baccarels per centimeter squared.

MR. McGAFFIGAN: I don't want to delay the Commission too long. There's another aspect of this that goes in the opposite direction, and I think it may be an ST-1, or you'll have to tell me where it is. I know it's in DOT. There's a definition of radioactive material that we know from a previous briefing gets incorporated in things like RCRA permits for states. It's 2,000 picacuries per gram. If material is contaminated to radioactive material less than 2,000 picacuries per gram, it isn't radioactive material, doesn't require radioactive packaging, et cetera. If it's above that, then it comes under -- is that an ST-1 deal, or where does that come from, the 2,000?

MS. SHANKMAN: Earl has been our emissary to many of the meetings.

MR. McGAFFIGAN: You can't lose Earl here.

MS. SHANKMAN: He and John Cook have -- John Cook also have gone to these meetings.

MR. EASTON: I'll shoot myself in the foot again. Yes, that definition has been in the IAEA regulations, U.S. regulations for over 40 years. In this time in ST-1, the community of states, again over U.S. opposition -- this was the second issue that Mr. Taylor wrote. They adopted so-called radiospecific exemption values which now for every

radionuclide, there's a limit below which it's radioactive and above which, okay. So, the U.S. opposition is why are you changing this definition after 40 good years of use when you have to go through retraining; you have to figure out how to handle with mixtures. They had things like coal being radioactive, you know, as an unintended consequence.

This is now one of the provisions that will come to see whether we're going to be compatible with ST-1 or not. It got so confusing in the latter days of IAEA, the member states actually took a vote whether to strip out the definition of radioactive materials from the regulations, and the vote passed. They were left temporarily without a definition of radioactive materials which they cleverly put back in. It's a very controversial issue. It was supported by the European union. They had the clout to get it passed. We understand that there was a cost benefit analysis done later by the European union that didn't turn out to be very favorable. We've been unable to get copies of that because they have processes where their contractors can keep this proprietary, even though the governments pay for it.

MR. McGAFFIGAN: Now, if coal is now a radioactive material, we may be hearing from some non-normal stakeholders fairly quickly. Why don't I stop there, Mr. Chairman. I have a couple of other issues, not on transportation. I do suggest to the staff, and if I don't

get another round, I don't, but I think this paper that comes forward on Part 71 in May -- I learned a great deal that I didn't know from this discussion we just had. I hope it's a full paper, and I hope you guys don't pull any punches in terms of discussing, as your staff did today, you know, what the pros and cons of some of these provisions are. You know, we can get outvoted in IAEA, and if it involves by the European union, if it involves international commerce, perhaps we have to do it, but if it involves domestic commerce and it's idiotic, then maybe we have to think about making exceptions, some of which will be in one direction and others of which may be in another direction.

CHAIRMAN: Mr. Merrifield?

MR. DIAZ: Mr. Sherman, just one comment on this area which might clarify the differences between chemical hazards and radioactive hazards. Uranium tetrafluoride, which is a solid at standard pressures and temperatures, is shipped around the world in double brown bags. Up to ten pounds, you can get uranium tetrafluoride delivered to your door, you have a license, by UPS. I've seen it multiple times. They come in, they come and lift the brown bag and they drop it on your door and say sign right here. The thing is that uranium tetrafluoride is very chemically stable, okay, it doesn't decompose, and therefore, it has no chemical hazards and so it's handled different. Now, if it

has changes the last three years, I don't know, but up to three years ago, I used to get the shipments, and a very happy trucker came and dropped the bags on my front door. A comment for the Commission. Thank you.

MR. MERRIFIELD: I've got some questions I'd like to move through relatively quickly. I think, you know, the staff is obviously to be commended for a lot of hard work on getting past certifications through. We've had a lot of demands on the office and on the agency and the speed to which we would be able to address concerns of our licensees I think is certainly something we should be very pleased with the work that the staff has done.

That having been said, there are still some issues out there, obviously associated with high burn-up fuel and damaged fuel. These become more noteworthy as it relates to those licensees who are in the process of decommissioning. We have had testimony for Maine Yankee. Similar circumstances are involved at Yankee, Rowe and others.

To what extent can we marshall our resources and triage these things so that we are obviously dealing with ongoing requests from plants that are operating but at the same time address some of these high burn-up and damaged fuel issues so that those facilities which are in decommissioning and which have high costs associated with maintaining spent fuel pools can be addressed so that they

can move forward with their decommissioning.

MR. BRACH: What I'd mentioned before, kind of what my perspective was, are competing interests with regard to meeting individual licensee or vendor applications as we have in hand as well as the effort to resolve issues generically. You mentioned Maine Yankee. I'd use some other examples. At Big Rock Point and Connecticut Yankee, who had a facility that has an amendment coming in the near term. The example I used on the overhead where we have one case where it looks like we will be able to approve for that site specific vendor burn-up up to 60,000 megawatt days. That's in result of our review a specific cask application for a decommissioning plant who, for their particular needs, needs a cask with those certain parameters to meet their decommissioning needs and their time frames and schedules. We understand very clearly the time limitations and resource limitations on their part as well with regard to their schedules moving forward.

I want to say we're reasonably successful in that regard, but one thing that's resulting in, and that's where we're kind of at a quandary of what I mentioned in competing interests. As we're moving forward, Maine Yankee is another application we have under review in higher burn-up, not quite as high as that, is an issue requiring resolution. As we're moving forward with individual cask amendments,

reviews and approvals, we're able to come to partial closure in some aspects, but particularly as it meets that one licensee's needs. What we're trying to do, and this is something Wayne Hodges has been very instrumental in, as we develop interim staff guidance documents based on individual cask review, and we can take the technical underpinnings of that review and step back and see if we can more broadly or generically apply it, that's been the basis for ISG's that we've been issuing. We have one ISG on high burn-up right now. We have a draft that we're working on. Based on some of our ongoing, current application reviews today that are very site specifically directed, but yet there are some generic underpinnings from those reviews that have broader application.

We also have, though, stepping back now from the broader generic issue, we clearly are one, looking to the industry's initiative where they're going to muster industry and vendors forces collectively to lay out the framework for addressing high burn-up fuel on a generic basis, as well as an effort we, NRC, have with our own NRC's office of research, working both with NRR, going back to Commissioner Diaz's earlier question, coordination with what's being looked at on the reactor side of the house with regard to higher burn-up fuel and what we're looking at with regard to the eventual storage of that fuel. So, we're coordinating

our efforts through the office of research to look at that issue broadly and generically, but we have -- if we have a quandary of both the individual cask applications with specific time frames and individual specific needs that we're doing our best to be sure -- to review the technical basis and move forward there as we can, as well as the broader, or generic, issue.

MR. HODGES: Triage is a good description of the way a lot of our work goes. We have one particular application now that we're looking at. We're dealing with failed fuel and how to handle it. There was a method of handling it proposed by NEI which we were not in complete agreement with, but we're probably close to agreement on. It's been now submitted by this one applicant and through that process, we will probably work out any differences that remain on how to handle failed fuel.

We did have an ISG that we issued a year-and-a-half ago as an initial point, and we're moving from there. On the high burn-up, we're doing the same type of thing. We're taking what data are available from any source, and we're recently -- are now in the process of up to 60,000 megawatt days per ton for one application with some strings.

MR. MERRIFIELD: You know, to the extent that we can take specific licensee issues and apply those, you know,

learn those lessons and apply them generically the time when we're research challenged certainly makes sense, and to the extent that we can utilize, you know, appropriate cooperation within the industry, that seems to make sense as well.

These, you know, issues associated with casks are not -- they are obviously important issues for us to grapple with. We've got some very highly qualified people that we're dealing with, and they are not necessarily the most technologically sophisticated issues with which we deal with as an agency. I don't mean that in any negative sense to the people who work on it, but that's just a fact.

They are, however, some of the issues which do generate significant public interest and concern. Are we satisfied -- now, I know you all have been working a lot in terms of increasing the amount of public communication and listening to the concerns of the public, but are you satisfied that we're doing the best job that we can do as an agency in providing communication and information to the public in a balanced and objective manner so that they are able to gain greater understanding of this and perhaps clarify some of the doubt that is simply, in my eyes, borne by a lack of understanding of these issues?

MR. BRACH: In your question I think you've laid out the objectives of what we're trying to do. As I

mentioned beforehand, we've in the last year participated in 20 workshops and conferences, and those are open, and many of those were active public involved and stakeholder involved interactions. Can we improve or do better? The answer clearly is yes. What you mention is the objectives in your question are also our objectives and our interactions with the stakeholders, not just to say what we've done but to explain and hopefully have the dialogue where the technical understanding as well as the process of understanding can be parlayed from us to our stakeholders and we can benefit from interactions and suggestions they may have as well, but can we do better? I'm sure we can, yes, sir, but the objectives that you laid out are what our objectives are in these interactions.

MR. MERRIFIELD: I don't know the extent to which you've had interactions with our counterparts in the Navy who are involved with significant discussions with the public relative to transportation issues associated with the casks that they use. I don't know if there may be some benefit in searching out some of the lessons that they've learned and helping us communicate because they seem to be relatively successful as well.

I do want to make a note in that regard as related to the Navy. I have had a discussion recently with Admiral Bowman, and I do want to represent that he said he was very

pleased with the level of support being provided by this agency and certainly wanted the staff to hear that comment from the Admiral.

The last comment I wanted to make was getting back to 10 C.F.R. 7248. Are we -- do we have some level of confidence that licensees will actually be able to make reasonable changes relative to this new process? Do we think this is going to be a successful path for us?

MR. BRACH: We had a workshop with the industry earlier this month in February, and Susan was our lead representative at that. Susan, if you can just discuss briefly the views as you hear it from the industry and licensees and others on implementation?

MS. SHANKMAN: One of the issues that came up at the workshop is that now that 7248 has been extended to vendors, in the past it was only licensees, the issue comes up of who is the keeper, if you will, of the design. I think that's something that the industry is working on, so that the significant design changes that would be within the tech specs and the certificate of compliance would be made with the vendors' support. We now have a requirement that the licensees have to send their 7248's to the vendor and the vendor has to notify all the users of the cask because the issue is to maintain some consistency across the design as changes are made. So, that's all in the 7248 process.

Are we confident there? The same group that designs it should be able to make the 7248. We intend to inspect those 7248's as they're completed, and we'll inspect them more in the beginning as we get a better sense of how they're accomplished. At the licensee level, it will be the same process they use for the 5059 and the same degree of sophistication and engineering. So, yeah, but confident they should be able to do it.

MR. KANE: I can give you a personal perspective, and I believe that this can open up a large scope of simple changes that can be made under that process. You know, that's the way it's expected to be and it's the way I'm sure we can make it. I can think of one recent amendment which went through rulemaking which I am absolutely sure could have been done under 7248 if we had arranged the technical specifications and the certificates to be appropriate. I would think there are a lot of simple changes that could be made under that process.

MR. MERRIFIELD: An associated question which is hopefully a yes/no answer, one of the concerns out there has been -- one set of issues on the design side. There's a whole other set of issues on the manufacturing side where we had problems recently. Are we satisfied that there have been improvements on the manufacturing side from past experience?

MS. SHANKMAN: Yes, yes. We're going to continue to inspect that process to be sure that those improvements are maintained.

MR. MERRIFIELD: And continued.

MS. SHANKMAN: Yes.

MR. BRACH: Let me just, on that I would add, they -- not only is Susan's answer based on NRC inspection, but we clearly have been laying out to licensees the purchaser of these cask systems, the responsibility they have to assure the quality of the manufactured cask and its conformance with all aspects of the certificate.

CHAIRMAN: I'd like to thank the staff. I appreciate the very informative and helpful briefing, and with apologies to Commissioner McGaffigan, however, in light of the fact that we have invited some others to speak. I wanted to make sure we had ample time for them to be able to make their presentations. So, I think that we have to bring this to a close and again, thank you for your help.

MR. MERRIFIELD: Mr. Chairman, if I may make a suggestion. We've done this in the past when we run short of time. Perhaps the Chairman may entertain Commissioner McGaffigan having a couple of questions in writing to the staff.

CHAIRMAN: Okay. Shall we call on the second panel now? The second panel consists of Mr. Ralph Beedle,

who is Senior Vice President and Chief Nuclear Office for NEI; Mr. Edward Davis, who is the President and CEO of NAC International; and Mr. Kevin Kamps from the Nuclear Information and Resource Service. Mr. Beedle, why don't you proceed first?

MR. BEEDLE: Thank you, Chairman, Commissioners. May I have the first slide, please?

I think this slide indicates that I have Lynnette Hendricks with me, and so she's my staff back-up if we have real technical questions. When the staff talks about involvement of NEI in industry, Lynnette Hendricks has been at the forefront of all that effort, so she's very knowledgeable and willing and able to answer any questions if we have any.

Second slide, please. The challenges that the staff describes in the previous panel I think are ones that I would like to characterize as ones that face not only the NRC but the industry. If the industry is to be successful, the NRC has to be successful in this process, so this isn't something that it's a win-lose. We have to win-win in this case if we're going to be successful.

One of the things that I would like to do is kind of punctuate the need for this effort, the effort being successful construction of dry casks for our spent fuel. In 1999, we loaded about 128 casks. In 2005, we expect to load

530, and by 2010, we expect that number to be well over 1,000 casks, so it's a problem that is going to face us in terms of numbers and some other characteristics that I'll get to in just a moment.

The other challenge that we have in dealing with numbers is also improving the licensing process, and I think the staff covered that very well, so I won't belabor that point.

Next slide, please. Just to give you some visible evidence of the nature of the problem, in addition to these numbers, we're changing the characteristics of the materials that we have in our spent fuel pools. This is for an average -- excuse me -- average PWR. Here we are at 1999-2000 breakpoint in this graph, and we show that the characterization of that spent fuel is exceeding the roughly 45,000 megawatt days per ton burn-up.

The dotted line represents the cask designs that are available to us today at the stored fuel, which means that when we get to the point where we have removed from the fuel pools all the material below 45, then we're in a position where we've got to have a different design certified cask to deal with this inventory of materials. So, it's a problem that's growing as we find higher and higher burn-up fuels authorized in the reloads of the plant, and it's one that we need to have a corresponding change in

the way we design the casks and fabricate those casks in order to deal with that inventory.

Next slide, please. This is another way of characterizing that change in inventory, and it's a bar graph. I think you can see here where we find that that's greater than 45, it's just another demonstration of the significance of the problem.

I'd like for you to flip through the next two slides. These are BWR graphs. It shows the same problem, not quite to the same extent but nonetheless one that will face us in a very real way in the year 2005.

Could we go to the next slide and then the next one. Go to slide seven. Licensing progress successes. The rules of engagement that the NRC has developed for vendors and NRC interactions have been extremely helpful. The SRP's and ISG's again mentioned frequently during the conversation that was held just a little earlier this morning also has made a significant difference in the course of the last year and how we deal with dry cask storage construction certification.

Areas that we still need to look at in terms of improving a licensing process, we need to resolve and develop a good process for making these changes to the cask, the 5059 and the 7248. You had asked the question of what does that mean to us. It means that you need a certificate.

Not that it's open ended, but it has sufficient latitude in it that you can make minor changes as they come about. This is an engineering product. It's of minimal significance, I should add. These are engineering products and, in any case, when you're dealing with engineering products, there are times when you need to make some changes to them. It doesn't take a great deal to see that the ability to make these changes under the 7248 are something that would certainly benefit the industry that are fabricating, as well as the NRC and the licensing and control of them.

The next slide, please. Bill mentioned consistency in the reviews, and I would like to just emphasize the value of consistency in just about any process, and this is no different than the dry cask. If we know what the reviewers are looking for to answer the right questions, then the initial submittals are much better. The process of only having one round of REI's I think has significantly reduced the complexity of trying to deal with staff's concerns. It helps the staff focus on what they need to know, and it gives the vendor the ability to answer those questions.

Next slide, please. Improving the licensing process. We mentioned the fact that there is a need to take some of the very specific lessons learned, for example, in burn-up, and apply that to the generic application and cask

design. We need to continue to look for areas in which that's possible and apply generic lessons across the board.

Next slide, please. One of the examples that was touched on earlier, the high burn-up issue. Several years, like two years ago when Bill Kane was faced with some of the problems of trying to deal with moving on down the line with certification of the cask, it dealt with burn-up. So, he ended up having to constrain some of his design parameters in order to make it possible to move ahead with the design certification process. I think it's now time where we need to put a little more resources into looking at that and open that up, and I think that's what the whole discussion was about.

Next slide, please. Industry activities, we've developed guidelines for maintaining quality in the construction fabrication of the casks. We've created a new committee to audit vendors and fabricators, and I think that's gone a long way to improve the quality in the product. We've encouraged utilities to notify the NRC five years in advance of their needs to try and give the NMSS staff time to gear up and plan for the workload that they anticipate. NEI has developed a number of brochures to educate not only the industry but the public in general.

We plan to do some workshops. Bill mentioned a working group. I don't think we're going to create a

working group, but we will have workshops that will probably run about one a month for probably the next five to six months, somewhere in that order, in order to focus some attention on the issues that we face today. I think that's going to be just as effective in getting at the issues and developing common understanding and resolution of problems as a work group would be. It would also permit wider latitude participation in the process than just an NEI working group.

Risk was mentioned in this cask storage process, and we intend to turn to EPRI and ask them to develop a detailed PRA on dry cask storage so that we'll have some basis for determining risk as the various cask designs are examined.

In the 7248, NEI is in fact working on guidance for that. Just as we did with the 5059, we expect that we will have the staff approval and support for the development of that.

Next slide, please. In summary, the 7248 is very important to us. Increase in case load for amendments is something that we're very mindful of and one way to eliminate that is through that 7248. More resources to address, the generic and technical issues, and I think that's one where we need to focus some attention in order to learn the lessons from the previous applications and apply

them to ones in the future. Then the change in rule to get consistency between 72 and Part 71.

If we turn to the last slide, please, the spent fuel project office, I think, and I would agree with Mr. McGaffigan and Commissioner Merrifield, that they really have done a tremendous amount of work in the last year to improve this process. I'd be the first one to applaud them for that. That's not to say that we've ironed out all the wrinkles. It's not entirely in their hands. It's also in the industry's hands. We need to work together and move forward to develop better casks, better cask designs and at the same time be mindful of the concerns that the public has as we go about this process.

With that, I'll conclude, Chairman.

CHAIRMAN: Thank you very much. Let me turn to Mr. Kamps now.

MR. KAMPS: Thank you for this opportunity to address you today. I'll be -- I don't have slides, but I'll be referring to my presentation which was on the handout tables for others as well.

Mr. Beedle referred to a win-win process for NRC and the industry, and I think that it's a win-win-lose process, where the public is the loser. From the public perspective, the effective versus efficient struggle is swaying way over to the side of effective for the industry

and efficient for the NRC, but it's leaving the public as the losers with a consequent loss of public confidence and trust in both the NRC and in the industry.

At the top of the public's list of concerns is the use of the general license to circumvent public participation. These nuclear waste dumps are being located next to environmental treasures, fresh drinking water supplies, public property and nearby communities. With 7248, there is no such thing as a generic dry cask. The regulator can't even be certain that the cask's safety evaluation report continues to apply because of the modifications that are being made by utilities. In short, the NRC has stripped the public of its right to an adjudicatory process of the right to discovery and cross examination which they would have with public hearings.

There really are very good reasons to conduct site specific environmental impact statements and adjudicatory public hearings. In Michigan, it was mentioned earlier, the Palisades plant dry storage cask pad is located on shifting sand dunes, which the Michigan Department of Natural Resources and the Army Corps of Engineers have declared as high risk erosion zones. In addition, a memo was written to the former NRC chairman, Ivan Selin, from NRC staff person Ralph Landsman, which pointed out that the Palisades dry storage pad is endangered of not only erosion but the risks

of earthquakes that could even -- I'll read from the memo so I'll get his exact words.

Actually, it's the consequences that might occur from an earthquake that I'm concerned about. The casks can either fall into Lake Michigan or be buried in the loose sand because of liquefaction. As of last summer, he still did not have an adequate response from the Commissioners, and that came out at a public meeting at the Palisades plant.

The next part of my presentation is the first rule of holes. When you are in one, stop digging. This refers to the fact that no safe unloading procedure has ever been demonstrated for dry cask storage. It was one of the major contentions at Palisades in the lawsuit that saw an injunction against the loading of the VSC-24's in the first place back in the early 90's. The fourth cask to be loaded at Palisades was found to be effective, and Consumers Energy Company, as a sign of its commitment to public confidence, announced that they would unload the cask. It was then that they ran into unforeseen complications, such as the radioactive steam flash that would result from putting the thermally hot fuel back into the storage pool.

So, the public is fully aware, now that it's nearly six years later, that there is no demonstrated safe unloading procedure. That cask has sat there for nearly six

years. The first rule of loading dry casks must be do not loan unless you have demonstrated how to safely unload. The public will have no confidence that the NRC or the industry knows how to safely unload dry storage casks until it is demonstrated.

About the issue of fabrication before certificate of compliance, the public is very concerned that cheap, quick fixes are going to replace rigorous regulation. Once the major investment of large amounts of money have been made into the fabrication of casks, the pressure will be to allow these casks to be used, no matter what problems develop.

The next section refers to the problems that have developed, not in decades but in a short few years' time. The explosion at the cask in Wisconsin at Point Beach was a surprise to the NRC, to the industry and to cask manufacturers. This is a clear sign that paper reviews are not adequate, and I'll get to that shortly. What defies comprehension is that the NRC and the industry would repeat the same mistakes after Point Beach.

In June, 1999, after a three-year stop on loading VSC-24's, there were two hydrogen burns at Palisades, which clearly demonstrated that administrative controls were not in place. Shortly after that incident, there was a suspicious fire at the Palisades plant in the document

storage room. The public does not know what documents were lost in that fire relating to the incidents at Palisades that had just occurred.

Just after that, there were the bubbles at Trojan that stopped the loading of a cask in the pool.

These repeated problems clearly show that paper reviews are not adequate. Real tests are not an absolute guarantee against unforeseen problems, but they would certainly go a long way. Before casks are manufactured, full scale tests must be done. Full scale, real life, tip tests, drop tests, dip tests, and chemical interaction tests under real life conditions are very much in order. For transportation casks, full scale testing under real life accident scenarios must be conducted.

Given the public's distrust of the NRC and the industry on these issues, a genuinely independent third party must be an integral part of the testing process. It's interesting to note that lead test assemblies and tridium test rods are required before a production mode gets into full swing, but the same approach is not followed with dry storage casks. Trial and error is certainly not in the public's interest, and in the long run, it's not in the cask manufacturer's, the NRC's or the industry's interest as well.

The public sees the present, innocent until proven

defective licensing process as nuclear experimentation in their back yard, or front yard, as the case may be. There's a growing list of faults and defects and failures with dry storage casks, so it's growing evermore evident that the safe operation of these facilities for 20 years is not the case at all. Failures have developed within a few years, not decades. A TN-40 cask at Surrey Nuclear Plant in Virginia has suffered a helium leak and cracks in its concrete outer shield. VSC-24's at Palisades and Arkansas One have suffered weld flaws and helium leaks, not to mention the hydrogen ignition events at Palisades and at Point Beach.

Along with the helium leaks, there's the question of fuel deterioration and future handling problems. There's been a failure in QA-QC with the Vectra new homes casks with the concrete aggregate. These repeated chemical failures, premature aging, degradation and deterioration really point to the need for a comprehensive review of the cask licensing process. The question in the public mind is not if problems will occur, but how soon, and for this reason, the public is starting to refer to these Nadas ISFSI's which I can't pronounce but is IFI's, which is much easier to pronounce.

Because of the importance of the proposals, I'd like to go over them one by one. The first proposal from the public perspective is to eliminate the shortcut of

allowing the general license to serve for these installations. There is no such thing as a generic dry cask because of the licensees' ability to use 7248. In the absence of eliminating the general license shortcut, thereby making every IFI application an application for a site specific license which requires public hearings. The citing of an IFI using a general license must be proceeded by a local public hearing convened by the NRC. Prior to the transfer of control of spent nuclear fuel at any IFI from the licensee to the DOE, the NRC must convene a local public hearing and prepare an EIS. This point is very important. The public confidence i the DOE is very low in their ability and their past record of handling high level waste. Local public hearings are very much in order.

Number four, prior to the transfer of control of spent nuclear fuel at any IFI location from the licensee to a nuclear management company, the NRC must convene a local public hearing to address the management company's regulatory capabilities and plans regarding the control and storage of spent nuclear fuel. There are communities that are facing the possibility that nuclear management companies will relocate fuel from a number of plants to a single plant location, and there is tremendous concern about this.

Number five, the public should be provided with a local public hearing for applications by a licensee to renew

the certificate of a cask. I should add that perhaps the certificate should be issued for less than 20 years given the early failures of these casks. Five years may be more in order.

Number six, prior to NRC's certification of a dry cask, an independent third party must test the cask under live conditions, loading and unloading of spent nuclear fuel, as well as evaluate the vendor's safety analysis report. No exemption should be granted for the construction of a cask, even at the vendor's own risk, until the third party has completed its evaluation and submitted its report to the NRC.

Number seven, the final point. The public should be provided access to changes done to casks through the 7248 process. Thank you.

I'd like introduce my technical expert, Paul Gunter, who can answer more technical questions.

CHAIRMAN: Good. Thank you very much. Mr. Davis?

MR. DAVIS: Thank you. I'm going to stay within the Commission's admonition to be within the five minute rule this morning. Accompanied by Bill Lee, who is our vice president for engineering, chief engineer pool. Would you stand up and be recognized, please?

NAC is operative in the nuclear fuel cycle, both in the front and the back end for over 30 years. We

specialize in the safety, security, storage and transportation. We have successfully licensed 12 systems, 12 storage and transportation and over 80 amendments. We have logged over 3,000 shipments over six million miles, I might mention with unblemished safety record. We have unloaded hundreds of casks.

If we could go to slide one, please. I have a couple of key points here this morning. Number one, I want to thank the Commission for its leadership and oversight in terms of addressing the issues confronting utilities in terms of dry storage. I particularly want to commend the leadership of the spent fuel project office and the project review team for the significant work that they have made over the last two years. I think there's still room for improvement, and certainly there's additional challenges lying ahead. That doesn't take away from the significant progress that's been made.

The second point I might mention is that it's not a static situation, it's a dynamic situation. The utility needs are changing, both for operating plants as well as decommissioned plants, which is creating a gap between what's been certified in terms of the contents that can be loaded in to the storage systems and what actually is in the pools themselves.

Thirdly, the point that I've been making is

there's certainly an urgency and importance attached to the resolution of technical issues. High burn-up fuel has been mentioned and standard tech specs, and I would agree with that, and I want to associate myself with Ralph Beedle's testimony today on behalf of NEI. I also want to make a mention that I think there's a need for an urgent effort to resolve some of the process issues in terms of how the certificates get amended and changed. Commissioner Merrifield used the medical term triage, and that's sort of a term I guess is used in the medical profession for prioritizing the medical emergencies. I would like to see the spent fuel project office get out in front and be more proactive. I have a couple of recommendations in that area as well.

Lastly, I think there seems to be certainly I think the spent fuel project office and the Commission be well advised that the used risk significance or risk informed decision making. Certainly from our perspective there needs to be -- needs to harmonize the regulatory approaches that are embodied in parts 50, part 71 and part 72. The technology has changed. Dual purpose technology now is licensed under both Part 71 and 72. Both of those regulatory regimes had not envisioned dual purpose technologies, and we've had advancements and risk significance, risk informed decision making, Part 50, which

have not been translated into 71 and 72 space.

Lastly, a point I think that was raised when the spent fuel project office staff made their presentation, there needs to be consistency and compatibility with international standards. Although they seem to be a slight nuance there, we're trying to amend our current regulations to be compatible as Part 71 and Part 72 with the new international standards. On the other hand, beginning to go down a path, we might change the testing parameters for our own use here in the United States, creating incompatibility and inconsistency with the international standards. So, I would caution the Commission in terms of moving in a direction away from the international standards.

Second slide, please. There's been a lot said about this. I'll just mention the fact that there has been progress. I believe it has not compromised the public health and safety or public accountability and consistent within the four corners of safety paramount, public confidence and public accountability and the effectiveness and efficiency in the regulatory process. So, I think the progress as made has stayed within the four corners in the foundation that the Commission has laid out for its improvements in the process area.

I believe the rules of engagement did, in fact, establish stability and predictability in the process.

Based on our experience, we received for our last dual purpose system an initial license approval within two years -- two years and two months. We think that certainly represents significant progress from the past. We still think that there's perhaps a 25 percent to 50 percent improvement in that. Particularly on the front end, there was some cue time that's sort of waiting in sort of the regulatory hopper, if you will, and it's also based on sort of a two-round REI process. So, we think that the process can be further improved upon the two years that we experienced in 1999.

Having said that, I do want to commend the spent fuel project staff again for what I observed during the last two years for their professionalism and dedication in terms of meeting schedules. I mean, the staff actually as in the weekends working overtime and hours in the evenings trying to maintain these schedules. So, certainly an effort was made there, something which I think it new and different and certainly well welcomed and appreciated on the part of the industry.

Third page, please. Mr. Beedle has already spoken to the needs, the drivers that are changing the requirements as far as spent fuel storage. First and foremost, there's the decommissioned plants, number of decommissioned plants in New England that are being decommissioned. The paramount

issue there for them is fuel pool solution. They need to get the entire contents out of their pools into the spent fuel storage canisters. These, as you know, these original certified canisters do not allow a lot of the off normal, non-standard fuel components. These include consolidated fuel, individual fuel rods and fuel debris. That's presently not certified to be containerized in the certified canisters today.

In addition to that, as Ralph Beedle has outlined for you, utilities, in the drive to be more competitive or increase in the burn-up of their fuel going beyond the 45,000 megawatt days per metric ton limit. That's the current limit as far as the fuel that can be containerized in our current canisters, and therefore there needs to be an effort to raise that limit.

Fourth slide, please. As far as the resolution of generic issues, Ralph outlines these issues. The high burn-up fuel certainly is the one for operating plants. Over 50 percent of the fuel that's being discharged is in the high burn-up category, over 45,000 megawatt days per metric ton. Standard tech specs are paramount in terms of developing a smart certificate that would allow more flexibility in terms of the use of 7248 once it's promulgated. Burn-up credit, that's akin to high capacity canisters.

One of the things I believe, again, in the area of -- not to overuse the metaphor, in terms of triage, I believe that the spent fuel project office and the Commission would be well served in establishing a generic program framework, if you will, complete a project plan, complete with schedule milestones and accountability for the process in terms of making progress on some of these generic issues.

Page five, please. We, as other designers, have advanced designed that are ready for NRC review. They can credit for partial burn-up credit that's implicit in the interim staff guidance. We are also awaiting resolution in terms of the generic technical issues that we can incorporate in these new designs that we'll be submitting, and we believe it needs, as I mentioned already, there needs to be a formal resolution program on some of these generic issues.

Page six, please. In terms of process refinements, it's already been noted that all changes to the COC require a rulemaking process. It's a 12-month process, we think, that needs to be a more effective, more efficient means for changing initial certificates. We think the amendment process needs to be based on some sort of risk significant, some sort of threshold mechanism, if you will. I've already mentioned it's very clear to me at the various

regulatory regimes of 50, 71 and 72 have to harmonized. The staff has reported earlier to the Commission that they had some 62 amendments to Part 71 and that they're saying ten amendments presently and 20 pending to Part 72. I just don't see, and we believe that the number of amendments will just continue to grow with time. So, we don't believe that the Commission will have enough resources really to process those amendments in an expeditious and a timely manner. We need to implement 7248 as expeditiously as possible. We've already mentioned that the COC rulemaking in terms of the change process has to be changed.

In summary, again I want to compliment the spent fuel project office and staff for their dedicated effort over the last two years. They've done a good job. It's too early to spike the ball, if you will. There's new challenges that lie ahead, particularly for decommissioned plants that have a variety of different fuel types that have to be containerized, and they are on a very tight timetable, as you know. For operating plants, they're discharging now, presently, high burn-up fuel that's presently not -- cannot be containerized in a present certified systems. We believe there needs to be a generic process, a structured process, a disciplined process, for resolution of generic issues. Then along with that, complementary to that, we believe there needs to be some sort of process reform to make changes to

the original certificates.

I want to thank the Commission for its leadership, it's oversight, and its support for insuring timely changes. Thank you very much.

CHAIRMAN: Thank you very much. Mr. Kamps, one of the major points that you made -- you made several, but your concern about the general license and the use of the 72.48 process. Mr. Beedle had made the point that these are engineered products and that some modifications to apply to some uses may well be necessary. I'd like to pursue the issue. Let's presume for the moment that the staff has done the job and has imposed adequate technical specifications and conditions that they sort of bounded the performance characteristics that the cask is supposed to meet and made sure it's used in appropriate circumstances. Why isn't that sufficient?

MR. KAMPS: Paul, would you like to respond to that? He's closer to this than I am.

CHAIRMAN: Okay.

MR. GUNTER: I think the issue here is whether or not the public is involved in the process, and I think that's what Kevin's addressed clearly here, is the public wants to be clearly involved and to have the ability to be a part of the process in a legitimate proceeding. We see the changes that are being proposed through this particular

process as a shortcut, and, you know, granted, everybody is trying to move a process along here toward solution. We're not proposing that we're against dry cask, but clearly the concern is that both the financial commitments and the technological commitments that are being put forward by the movement of this waste clearly need more public involvement. I think this is at the crux of the issue.

CHAIRMAN: As I understood in the process, however, that when the process of certification is itself a rulemaking in which there is an opportunity for public comment and all the documents are made available. In your view that that's insufficient?

MR. GUNTER: You know, public comment and the ability to engage in a process of discovery are worlds apart.

CHAIRMAN: Okay, thank you very much. I'd like to follow up, and this is really prompted by Commissioner McGaffigan's comment and something that you had said, Mr. Davis. Commissioner McGaffigan had a whole series of questions he'd asked about this IAEA ST-1 and the possibility that there are aspects of it that may be questionable when viewed from a risk informed perspective.

In your comments, you emphasized the importance of our maintaining consistency with the international standards. Perhaps Mr. Beedle would like to comment on this

as well. I mean, is the message you'd like to deliver to us is that we should accommodate ourselves to ST-1, even though there are aspects of it that are not risk informed in order that there would be consistency between our regulations and those that might exist elsewhere?

MR. DAVIS: I'm not implying that the Commission would not make reasoned judgments as where there might be diversions from the IAEA, but those areas should be kept to a minimum. I think it's important to understand that most of the spent fuel that's been transported today, some 80,000 metric tons, which is very significant, mainly in support of reprocessing campaigns in Great Britain and France and Japan has largely been done safely and efficiently and effectively. So, the body of experience resides, you know, elsewhere rather than the United States.

Second, what I was specifically referring to was changing some of the testing requirements, the accepting test requirements for casks. For example, raising the drop tests from 30 feet to 90 feet, or the immersion tests, you know, from 30 minutes, 1,000 degrees to whatever for eight hours. Those sorts of things that have been talked about that are very popular -- full scale testing. All those types of changes which may -- some people may be promoting but certainly are not consistent with international acceptance standards.

CHAIRMAN: Thank you. Commissioner Dicus?

MS. DICUS: I have a question for NEI, and it goes to the concerns of the public and public involvement and process. I noted that you, NEI, has brochures, I think you said, to assist the industry in early public communications in engaging the public and the communications about the waste, et cetera.

What is your understanding of what the industry is actually actively doing to engage the public?

MR. BEEDLE: Well, it's our understanding that as the utilities move toward the development of a spent fuel storage facility, they do engage the public. They make a concerted effort to educate and inform the public as to what they're doing. I mean, the last thing they need is to put a significant investment in this, only to find a significant public outcry against the development of it. So, they've made an effort to try and educate and through that, get some acceptance of it. These brochures are mechanisms that help the utility describe and discuss that in a fairly straightforward manner.

MS. DICUS: What about the workshops that you mentioned that you're going to be having? What's sort of the content of them, and are they going to be probably --

MR. BEEDLE: Well, by having workshops, as your staff indicated, the workshops that we've had with the staff

have been open to the public.

MS. DICUS: Okay.

MR. BEEDLE: And by having workshops rather than working groups, we make this a more open process, one in which the NRC can participate and other members of the public. We've had several workshops with the NRC and over the course of the last couple of years. They've all been open to the public, and we've had quite a few non-NEI members, non-NRC employees attend those. So, we've had pretty good reception in that regard.

MS. DICUS: Okay, thank you.

CHAIRMAN: Mr. Diaz?

MR. DIAZ: Yes, maybe there's a question for both Mr. Beedle or Mr. Davis. You both are emphasizing the need to, you know, put additional resources to resolve the substantial issues that remain. Does that mean that you're going to love the Congress so we can get out additional budgets and we can solve this problem since its a zero sum game.

MR. BEEDLE: We'll work on that, sir.

MR. DIAZ: Very good, appreciate that.

MR. DAVIS: Happy to lend a hand.

MR. DIAZ: Mr. Davis, is there any single, you know, technical licensing issue that you believe is the, you know, needs to be resolved for the, you know, moving all of

these things forward in a manner that is consistent with our, you know, mission of protecting public health and safety and with the needs of them, is there any single one?

MR. DAVIS: If I had to name one, I would say high burn-up.

MR. DIAZ: High burn-up.

MR. DAVIS: I think that's sort of an -- you'd get that as an industry-wide response to your question.

MR. DIAZ: All right, and Mr. Kamps, I know you have raised a series of objections. I think the main one has been someone that's not been able to be involved in every step of the process, is that correct, or every change that is made? You think that every time there is a change, they have to be a full hearing, or you used the words adjudicatory hearings. Is that your position that every time, even if it's what we call a minimal change that we don't think has any significance regarding to risk, you still believe that that process needs to go through an adjudicatory type process. Is that your position?

MR. KAMPS: Paul, you want to address that?

MR. GUNTER: Again, the issue is, you know, in the eyes of the Commission and the industry, what constitutes a minimum change? We recently saw the changes to the VSC-24. It basically resulted in no change at all to the hydrogen gas generation event, but there was no public oversight,

public involvement in the Trojan area for the changes that were proposed to the VSC-24. So, what constitutes a significant change, you know, that's what's in question. Again, you know, we bounce this word minimum term around, but minimum can constitute some major issues in terms of resolving risk to public health and safety.

You know, it is the issue that we are making a significant commitment to a very long term issue, and at -- while there is economic risk to the industry, clearly the burden of health and environmental risk is on the public, and for that reason, the public should be able to closely scrutinize, and if deemed, intervene.

MR. DIAZ: So now I hear a different thing which I think is an important one. You are saying that the process in which minimal changes are done without, you know, prior Commission approval or a continuation need to be clearly spelled out and identified and that you think that if that's done well, then you have a basis in which to judge the things. In other words, it's a process issue, and that if the process if not clear, then you think that public intervention is necessary. Is that correct?

MR. GUNTER: Clearly public, you know, we agree with everyone here that public education is fundamental and necessary. I think that as a further check and balance, though, the public should be given more weight in terms of

its ability to intervene. So, education with the opportunity to intervene, I think keeps everybody in check.

MR. DIAZ: To intervene after a certain threshold because we have a large number of checks and balances inside that we believe are very, very clear and, you know, that do, you know, even we think, you know, the staff. There is always a series of checks and balances concurrence that I think brings a lot of credibility. From my position I see bringing credibility to every step of the process. There must be a time in which, you know, we can move forward on an issue and determine that it really doesn't have any risk significance, that the change is minimal and to be able to proceed with it without, you know, keep delay in the process.

However, I do agree with you that maintain the public inform is very, very important. Thank you, Mr. Chairman.

MR. GUNTER: Can I just add, though, that the onus is now on the NRC and the industry to regain public confidence with the demonstrated failures of a number of cask designs. I think that's why you need to weigh heavier now with bringing the public into a meaningful participation.

CHAIRMAN: Thank you. Mr. McGaffigan.

MR. McGAFFIGAN: Mr. Davis, the issue of getting

standard tech specs and getting license conditions that are the right license conditions, let's assume the staff is successful in that effort and we have standard tech specs and we have license conditions that are only the ones that are needed so that the 7248 process could work. Well, that itself, I mean, I'm just trying to look at it from your perspective. They tell you what you can then take out of your tech specs and how you can amend your certificate, but that change, that change itself will require a rulemaking, right?

MR. DAVIS: To put that in place?

MR. McGAFFIGAN: To put that in place. Could it require multiple rulemakings if we don't do it all at once? I mean, if we sort of dribble out, you know, you can make this change, you can make that change, or would you wait as a prudent matter until they had finished, you and other licensees, until they had finished their review and told you exactly what it was they were likely to approve before you started that process. How does that work? I'm just trying to understand, you know, is this -- how many amendments of this nature we're going to have through the rulemaking process and all that.

MR. DAVIS: Well, first and foremost, you have to finalize the promulgation of 7248 which draws a threshold below which the users of these casks that are certified

under a general license can make changes below that threshold, that bright line. Hopefully there will be some specific, very clear, definitive criteria that are laid out. I believe, having read 7248, that there are the criteria there.

The second thing that has to be done for the present systems that are certified, those COC's are extremely comprehensive and detailed. They'll have to be amended, and this I think goes to your question. They're going to have to be amended to incorporate the essence, the concepts of a smart certificate and the standard tech specs. I would, I guess, in addressing that, would not advocate a wait until it's perfected. I would, as the occasion permits, I would amend those certificates on a timely basis to incorporate the changes to the tech specs, as well as the smart certificate so that those certificates can be lined up with sort of the end game as far as where the Commission's spent fuel project office wants to be with the certification process.

MR. McGAFFIGAN: Now, 7248 has been promulgated. We're just waiting -- the effective date of it is, it's like 5059. It's waiting for the development of guidance, and is it the same process as NEI, in the case of 5059, I think we're working off of NEI 9607, Rev something. Is there an NEI document that's going to be submitted to the staff, or

in this case, is the staff taking the initiative to develop the guidance?

MR. BEEDLE: No, there's an NEI document under preparation, in preparation, and we'll follow the same process we did with this.

MR. McGAFFIGAN: So, it's following the 5059. It's not --

MR. BEEDLE: We're expecting timeline-wise, probably another year before that whole thing is in place.

MR. McGAFFIGAN: Okay.

MR. BEEDLE: Let me go back and -- to the credit of the spent fuel project office, they took some of our original certification requests and limited the scope of that COC well within the design capability of that cask because that was what they knew they could do at the time. So, in an effort to try and move that certification process along, then you had a cask that was far more robust than the capability of the fuel that they put in it.

In issuing that COC, those restrictions prohibited the vendor and the licensees from doing anything else with that cask. So, that's where we're talking about developing these processes so that you can expand the capability of that cask.

MR. McGAFFIGAN: An issue that was mentioned by Mr. Brach in passing was that there had been some

discussions between the industry and the staff, presumably at these workshops, about how to transition from a generic license to a site specific license at places like Maine Yankee, Connecticut Yankee, Big Rock Point, et cetera, and this goes to an issue that Mr. Kamps raised. At that point, what are the thoughts at the current time?

I didn't have a chance to ask the staff, but what are the -- it would appear at the very point where you're trying to terminate the Part 50 rule where there is a public hearing of the sort that Mr. Gunter has been talking about, you'd simultaneously have a process where you'd be going to a site specific ISFSI transitioning out of 50, where just not even looking at the regulations at the moment, there might be a second public hearing on the ISFSI. That may be what the rules require today and that may be right, but what discussions have there been with regard to this transition from a generic license, specific license, or the other issue that Mr. Kamps raised, if take title ever occurs, and I'm not holding my breath, would, you know, the transition from the licensee to DOE, and DOE taking over the ISFSI.

MR. BEEDLE: You have three parties in this. One is the NRC's management over the Part 50 license. Then there's the prospect of the DOE taking custody and how the DOE would regulate that process. Then you've got the states, and once you get out of the Part 50, then you have

the state regulation coming into play, as well as the EPA. The prospects of dual regulation are something that I think we'd just as soon not have to face.

MR. McGAFFIGAN: Isn't the law clear today that ISFSI's are regulated by the Nuclear Regulatory Commission. There is no state involvement in regulating an ISFSI.

MR. BEEDLE: I don't think that Maine Yankee would agree with you. Now, whether or not it's a legitimate regulation, it's nonetheless regulation because they keep having to answer questions and deal with issues associated with that construction.

MR. McGAFFIGAN: I'll let our general counsel deal with the state of Maine, but I think it's fairly clear in the Atomic Energy Act and the high level waste acts and whatever that that responsibility is ours. I think even if DOE takes title, I think it's clear in the statutes that DOE would require some sort of license or something from us. They wouldn't be self-regulating in their take title activities. I think that's clear.

MR. BEEDLE: Well, I think whenever you bring another federal agency into play here, whether they have strict regulatory authority or not, it brings a certain degree of regulation that you may or may not want.

MR. McGAFFIGAN: Well, this may be all premature. Mr. Kamps, one thing, and I know the Commissioners, we're

running out of time. The one item that you mentioned, item seven on your list, I think you're going to get. I mean, I think 7248 as revised requires that the SAR changes be submitted on an annual basis to the director of NMSS, and that that document be made in the public record. So, I think that that was provided for in the rulemaking. It's in the existing 7248, and I don't recall us changing that in any way when we tried to amend it as part of the process of amending 5059 as well. If I'm wrong on that, let me know, but I think that that's the case. I'm getting nods from the staff, so you're batting one for seven, and maybe higher. Phil, I better let Commissioner Merrifield ask his question.

MR. MERRIFIELD. Two questions, the first one directed towards Mr. Davis and Mr. Beedle. Commissioner Diaz raised a point initially that has a degree of seriousness to it. I think we have been trying as an agency overall to appropriate right size ourselves. We're down to around 2800 people down from around 3400 back in 1993. Our budget, from an inflation adjusted perspective, is at the lowest point it's been in the history of this agency, I believe.

We are trying to as a Commission craft a balance, and that is to make sure that we are focusing on positive outcomes and doing so in a manner that maximizes our ability to protect public health and safety and yet balance that out

with not inappropriately utilizing or wasting human or economic resources. Occasionally, and this is certainly a possibility, that we overshoot the mark. I certainly don't know if you have any comments now or you want to go back and think about it a little bit, but is this an area, the spent fuel project office, where perhaps we have overshot the mark and we need to provide additional resources which might increase our need for budget requests down the line. I sort of posit that as a thought.

The second part of that is to what extent as an alternative have you all thought about -- you know, I talked about triage. Getting together as an industry and providing us with some greater guidance about what you all collectively can agree on the priorities, which is difficult given the fact you have different vendors and different licensees, but to give us some greater clearance and understanding about where we need to go, to utilize our resources to the best extent we can. You may want to think about that one and get back to us.

MR. BEEDLE: Well, I think that's a very interesting question, and it's not dissimilar to the question that I ask myself in the budget process for our own organization. As new and emerging requirements pop up and we look at those and say that's something that needs to be dealt with because it has significant ramifications if you

don't deal with it. In this case, we're talking dry cask and the very real potential that you end up with plants that can't operate if they don't have those casks for storage. So, you know, it's kind of an operational issue.

MR. McGAFFIGAN: But the question, if you're going to apply resources to a program or project that you hadn't applied in the past and you can't develop any more resources, you need to look at those areas where you can reduce resources in order to kind of reallocate those. Training, reallocation of resources, better processes, I think all of those all in that category of trying to realign. I mean, I could come back and give you, you know, you ought to take one person from that office and one person from that and get the five that you need to put over here. I don't think that's what you need from the industry. We'd take a bunch of pot shots at you, and I don't think it would really be that helpful.

If you'll go back to the study in personnel that was done on behalf of the Senate, and they said you could reduce by, I don't know, 70 --

MR. McGAFFIGAN: Yeah, but they said we should get rid of the research program. Zero was the right number of research. They had ridiculous things in there that doesn't have the support of this CFIS panel in which NEI participated or whatever.

MR. BEEDLE: I was thinking of the Tim Martin study where they --

MR. McGAFFIGAN: That's the Tim Martin study. It said zero was the right --

MR. BEEDLE: He was also looking at multiple groups doing the same function and saying if you got three groups doing the same thing, maybe you can eliminate two of them. You know, and to the extent that that may have helped in the board sense, look at the agency, I don't think it really helped you solve the day to day problem of budgeting your resources.

MR. MERRIFIELD: I guess the -- to redirect this, we can certainly have a discussion about research on another day. The point is there are additional things you want us to do, and we're trying to -- I think we are trying to accommodate that as much as we can, and there are pushes and pulls that go along with that. To the extent that industry can align itself in some way to help us prioritize where we don't necessary have additional resources we can apply would be helpful. So, I'll leave it at that, and if you've gotten further things, you can respond later, if you wish.

MR. DAVIS: If I could comment just a second, specifically directed to the spent fuel project office, at least in my mind, despite heroic efforts on the part of the staff to address both the case work -- that's the licensing

work -- as well as generic issues, I think they're going to fall behind in terms of just keeping up with the amendments. It's a process. It hasn't changed, and I doubt whether or not they'll be able to resolve some of the generic issues like high burn-up that we mentioned. So, in my mind at least, I think there is a need for additional resources. Any time you matrix the resolution of generic issues with your current licensing project teams, you know, it's -- what gets short shrift is the resolution of generic issues, and then you start resolving those on a case by case piecemeal basis, and you're going to get variations from one review to the other. So, I don't think that's the best way to be. I would argue for additional resources on the -- at the very least on the generic -- on the high priority, high profile generic issues that I will also argue that you may have to make an investment in realigning your processes and harmonizing your various Parts 50, Part 71 and Part 72 and go into more of a risk informed basis in establishing those thresholds so you can provide additional flexibility to the users of these license systems. Then preserving for review and approval by the staff are those things that exceed the threshold.

MR. MERRIFIELD: That's helpful, and as I said, if you've got additional thoughts after this is concluded, certainly I'm sure the Commission would win on those as

well.

Mr. Kamps, I have -- you had a very detailed explanation and explication of many of the issues you've seen in the past with casks, and it would be imprudent of anyone, including me, to a assert that there hadn't been problems, and I think you pointed them out, and I think articulately.

Many of these, it dawns on me, have occurred before the time that I became a commissioner 16 months ago. I know if you look historically at this agency, the problems that we had on the reactor side in the early years of the program, we have many, many problems. Now that we're 25 years to our history, the number of problems and the scope of problems are different and lower that we have encountered with reactors. Some of that is a result of experience and that is the result of having a better understanding on our side, better understanding on the part of our licensees.

So, I'm wondering if you could help me work through separating the wheat from the chaff, you know, those areas where there have been some difficulties getting off the runway, so to speak, in terms of understanding how to build and utilize these casks versus what you would perceive as more systemic issues associates with these casks, which I would argue probably -- you would want us as a commission to spend more time focusing on in the future. I'm wondering if

you could comment on that.

MR. KAMPS: I think we could talk to our members at all of these locations around the country and get their feedback because they've been denied that opportunity where they live to communicate with the NRC in any meaningful way. We'd be happy to communicate, be a bridge, but it would be so much more effective for the NRC to speak directly with these affected communities at the reactor sites. So, we'd be happy to --

MR. MERRIFIELD: I'm trying to get some particulars. Are there particular issues associated with these casks that you believe are more the result of the early learning process versus those which are more subject to substantial issues that are ongoing?

MR. KAMPS: Paul?

MR. GUNTER: Right now I think the biggest concern that we have is that, as has been amply pointed out, we're looking at a tsunami of nuclear waste destined for some resolution in dry cask out of spent fuel. The public is quite concerned that this is all being put into the context of a competitive market when, in fact, this raises long term public health and environmental safety issues. So, at the root of the issue is that the public is looking to the NRC with eroding confidence to deal with the issue of public health and safety in a balance, where obviously competition

has now entered with a heavier weight.

The cask problems to date that continue to unfold put in light of what looks to be a fast track and expedited proceedings does not win back that public confidence in light of the magnitude of the problem yet to come.

So, what we look to you for is a restored confidence that your process is going to not only fairly evaluate outside of the arena of competition the issues of health and safety and at the same time, because of the problems to date, reinvolve the public in a meaningful, participatory, and as a continue to check to assist you in the pressures that this regulatory body's facing from this industry.

MR. MERRIFIELD: That's fair. I mean, I just wouldn't want to leave the impression -- I hope you don't --that we are completely excluding people. I mean, I think this Commission has taken a very active role in trying to seek public comment in a variety of areas where regulating and to try to help the Commission understand how we should move forward. Clearly the participation of NIRS today is part of that process.

I guess what I'm trying to get at, and I'll stop, because we may not be able to address this today. By separating those issues, for example, a burn issue at Palisades relative to a welder torch touching off a small

burn, which is more of a -- to a certain extent is a management problem that can be addressed in one way, versus issues associates with cracks of the casks themselves which would point out to me a more systemic problem that has a greater degree of concern. I'm trying to -- what I'm trying to understand through my question to the two of you was how do we separate those two so that we can truly focus on those issues which are more risk significant, presumably from a public standpoint as well in terms of moving forward. That may be something you want to come back again in the future with some further thoughts. Thank you, Mr. Chairman.

CHAIRMAN: Thank you very much. I'd like to express my appreciation to the panel and also to the first panel for a very helpful briefing. With that, we're adjourned.

[Whereupon, at 11:23 a.m., the briefing was concluded.]

CERTIFICATE

This is to certify that the attached description of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON STATUS OF SPENT FUEL PROJECTS

PLACE OF MEETING: Rockville, Maryland

DATE OF MEETING: Wednesday, February 23, 2000

was held as herein appears, is a true and accurate record of the meeting, and that this is the original transcript thereof taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company

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**NRC Commissioners Meeting on Dry Cask Storage**
**Wednesday, February 23, 2000**

**Presentation prepared by**
**Kevin Kamps,**
**Nuclear Waste Specialist,**
**Nuclear Information and Resource Service.**

From the public safety perspective, the trend in licensing dry cask storage is going completely in the wrong direction. Public confidence is shot, public trust is betrayed, and the public is left facing a technological nightmare with no legal power to intervene. The NRC's regulatory approach is not only irresponsible, but dangerous. In the tug of war between "effective versus efficient" licensing of independent spent fuel storage facilities, the public sees the current process as having swung way over toward the NRC greasing the skids for cask manufacturers and nuclear utilities at the expense of public health, trust, and involvement considerations.

## CIRCUMVENTING PUBLIC PARTICIPATION

My personal involvement with dry cask storage began in the early 1990's downwind of Palisades nuclear plant in southwest Michigan, the first plant in the country to enjoy the NRC approved short cut on safety of building an independent spent fuel storage installation (ISFSI) under the plant's general operating license, without a site specific environmental impact statement, a site specific license, nor a public hearing.

At the top of the public's list of concerns is the use of the General License to circumvent public participation in the siting of nuclear waste dumps next to environmental treasures, fresh drinking water supplies, public property, and nearby communities. We understand that the Nuclear Waste Policy Act allows the use of the General License for generic casks. However, the 10 CFR 72.48 process allows the licensee to change a generic cask into a site specific cask without the need to go through the site specific licensing and public hearing process. Essentially, there's no such thing as a generic dry cask because of the licensee's ability to use 72.48. Licensee changes to a generic cask also creates the situation where the regulator can't be certain that the cask's Safety Evaluation Report continues to apply.

In short, the NRC has stripped the public of its right to an adjudicatory process, of the right to discovery and cross examination. Concerned citizens have been stripped of their legal rights to protect themselves from the environmental and public health dangers associated with dry cask storage of deadly high level atomic wastes.

There really are very good reasons to conduct site specific environmental impact statements and adjudicatory public hearings. Public involvement often leads to gems of local insight such as, in the Great Lakes, that sand dunes shift and erode, so you might not want to plunk 125 ton spent fuel storage casks on them. There's a little piece of wisdom that goes way back to the early days of the Judeo-Christian tradition, as seen by its inclusion in the Old Testament – thou shalt build your house on rock, not on sand. (It's akin to "don't build your house in a flood plain if you can help it," which Northern States Power would have been wise to consider at Prairie Island.) Of course, the advice has metaphorical applications as well, but the NRC and the industry might attend to the literal interpretation.

Mary Sinclair of Don't Waste Michigan, who helped point out to Dow Chemical Company and the NRC that the Midland nuclear plant was sinking into the ground, also likes to remind everyone that Palisades' dry cask storage pad is built on a high-risk erosion zone. Those are the Michigan Department of Natural Resources' words, not hers. A three foot thick slab of concrete, anchored to nothing but shifting sand. The ISFSI was built under the plant's general operating license, but Palisades is on an 8 foot thick foundation, anchored to bedrock. In a memo written to former NRC Chairman Ivan Selin, NRC staff person Ralph Landsman, pointing to the Palisades dry storage pad and casks, the shifting sand dunes around and beneath them, and the breaking waves of Lake Michigan less than 150 yards away, warned that circumventing site specific environmental impact studies will lead to catastrophic consequences. As of last summer, Landsman had still received no satisfactory response from the Commission.

## THE FIRST RULE OF HOLES: WHEN YOU ARE IN ONE, STOP DIGGING

One of the major contentions raised by Don't Waste Michigan, the Lake Michigan Federation, and the State of Michigan Attorney General Frank Kelly in seeking an injunction in federal court against the loading of VSC-24's at Palisades was that no safe unloading procedure had been demonstrated. NRC and Consumers Energy's response to this challenge? They promised the judge that if anything went wrong, the loading procedure could be reversed, and the cask safely unloaded. Simple as that.

Well, the fourth cask to be loaded at Palisades was found shortly thereafter to be defective. As a sign of its commitment to public safety and the environment, Consumers announced it would unload the cask. Pretty quick, Consumers ran into unforeseen complications. They found they couldn't unload the thermally hot fuel into the pool without a highly radioactive steam flash. Cask #4 still sits there today – going on six years after Consumers announced they would unload it.

Rather than re-appraise the situation, Consumers raced to load 9 more casks.

Consumers claims to have the unloading problem solved. Theoretically solved, on paper, perhaps. The best procedures often are paper ones. The NRC has approved the procedure. But what is the procedure? Consumers hides behind the cover of proprietary information – and the NRC lets them get away with it. The public is fully aware that there is no demonstrated unloading procedure – but don't sweat the small stuff, the industry's got work to do, and casks to load.

The first rule of loading dry casks must be, do not load unless you have demonstrated how to safely unload. No cask with a helium environment – that is, one that is much hotter thermally than a spent fuel pool – has ever been unloaded. The public will have no confidence that the NRC or the industry knows how to safely unload dry storage casks until it is demonstrated.

## FABRICATION BEFORE CERTIFICATE OF COMPLIANCE: BUILD 'EM FIRST, ASK QUESTIONS LATER

The NRC's decision to allow cask manufacturers to build casks "at their own risk" before they receive their certificate of compliance has further undermined public confidence. Once casks are built, and lots of money has been spent, the pressure will be on NRC to help "fix" any problems that are discovered, rather than prevent them in the first place. Certainly, forbidding the use of casks that have been fabricated is out of the question. The public fears that cheap, quick fixes are replacing rigorous regulation. We're talking about high level radioactive wastes, some of the deadliest stuff on Earth. There's no room for short cuts on safety to save a buck for the industry. The public is outraged that this is happening. To discover that casks have problems after they've been loaded with irradiated fuel rods is scandalous – a clear sign of an dangerously irresponsible licensing process. Every time the NRC gives the green light to cask manufacturers to fabricate casks before they have their certificate of compliance begs the question, in the public's mind, when will something go wrong? When will defects be discovered? After the casks have already been fully loaded? That's a little late.

## BUBBLE, BUBBLE, TOIL AND TROUBLE: CRACKS, CORROSION, AND EXPLOSIONS

Who would've ever guessed that a VSC-24 could explode. Certainly not the "experts" at the NRC, the utility companies, and the cask manufacturer – all of whom missed that chemical reaction between the zinc anti-corrosion cask liner and the boric acid in the spent fuel pool water. Let's see, zinc plus acid yields hydrogen gas. Hydrogen gas plus a spark yields an explosion. Oh, an ignition event, sorry – an ignition event that dislodged a three ton cask lid. The May 1996 Point Beach explosion came as a surprise to everyone, except perhaps the public, which has come to expect just about anything from the nuclear establishment.

What defies comprehension is that the NRC and industry would repeat the same mistakes again and again. The June 1999 hydrogen "burns" at Palisades showed that even after three years of supposedly getting their act together with the VSC-24, there was still a serious breakdown of administrative controls. The suspicious fire soon thereafter at Palisades in the dry cask storage document storage shed did not escape public awareness. The fire inspector's report could not rule out arson as a cause of the fire. The original documentation about the burns which had recently occurred may have been lost – the NRC and the public will never know what was lost in that fire. Then the bubbles at Trojan – so many hydrogen bubbles generated in the spent fuel pool that the cask loading procedure had to be halted due to poor visibility.

These repeat performances show clearly that paper reviews are not adequate. Real tests are not an absolute guarantee against unforeseen problems, but they would certainly help. Before casks are manufactured, full scale testing must be done. Full scale, real life tip, dip, drop and chemical interaction tests under real life conditions are in order. For transport casks, full scale testing under real life accident scenarios must be conducted. The pat response from the highest levels of the NRC are that the transport casks will be safe – we'll make sure of it. Trust us. Well, the public does not trust the NRC, nor the nuclear industry – we haven't for a long time now, and for very good reason.

For this reason, a genuinely independent third party that deserves the public's trust must be an integral part of the testing.

It's ironic lead test assemblies and that tritium test rods are required before production mode is allowed to proceed, but the same approach is short-cut with dry storage casks. Trial and error is certainly not in the public's interest, and in the long run, neither is it in the plant's, the cask manufacturer's, nor the NRC's best interest. As it is, the public sees the present on-the-job training/innocent until proven defective licensing process as nuclear experimenting in their back yard, or front yard as the case may be.

The NRC promised the public by granting licenses to ISFSI's that they would operate safely for 20 years. This is ever-more obviously not true. Failures have developed within a few years, not decades. A TN 40 cask at Surry Nuclear plant in Virginia has suffered a helium leak and cracks in its concrete outer shield. VSC-24's at Palisades and Arkansas One have suffered weld flaws and helium leaks, not to mention the hydrogen ignition events. There has been failure in Quality Assurance/Quality Control of the concrete aggregate with the Vectra Nuhoms casks. There have been repeated chemical failures, premature aging, degrading, and deterioration. When is a comprehensive review of the cask licensing process in order? The public believes right now.

## A MODEST LIST OF PUBLIC PROPOSALS

1) Elimination of the general license short cut. There's no such thing as a generic dry cask because of the licensee's ability to use 72.48.
2) In the absence of eliminating the general license (thereby making every ISFSI application an application for a site specific license which requires the opportunity for a public hearing) the siting of any ISFSI using a general license must be preceded by a local public hearing convened by the NRC.
3) Prior to the transfer of control of spent nuclear fuel at any IFSFI from the licensee to the DOE, the NRC must convene a local public hearing and prepare an EIS.
4) Prior to the transfer of control of spent nuclear fuel at any IFSFI from the licensee to a nuclear management company (which may intend to store spent nuclear fuel from storage deficient reactors at an IFSFI under its control) the NRC must convene a local public hearing to address the management company's regulatory capabilities and plans regarding the control and storage of spent nuclear fuel.
5) The public should be provided with a local public hearing for applications by a licensee to renew the certificate of a cask.
6) Prior to NRC's certification of a dry cask, an independent third party must test the cask under live conditions (loading and unloading of spent nuclear fuel) as well as evaluate the vendor's Safety Analysis Report. No exemption should be granted for the construction of

a cask, even at the vendor's own risk, until the third party has completed its evaluation and submitted its report to the NRC.
7) The public should be provided access to changes done to casks through the 72.48 process.

NAC INTERNATIONAL

# Spent Fuel Management Technology Trends and Issues

## *"Closing the Gap"*

**Edward M. Davis**
**President & CEO**
**NAC International**

**Presentation to U.S. Nuclear Regulatory Commission**
**February 23, 2000**

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# Key Points

- SFPO and industry have worked hard to make MPC technologies available to utilities
- Utility needs are creating a "gap" between fuel inventories and certified technologies
- Process reforms are as important and urgent as technical issues resolution
- Risk significance should play a larger role in processes and interactions

# SFPO Improvements

- More focused and timely licensing reviews without compromising public health and safety
- Improvements instituted to "jump start" certification
- Established constructive rules of engagement
- Committed to meeting schedules
- Issuance of standard review plans
- Issuance of interim staff guidance

# Current Needs

- Operating plant needs for storage space are changing
  - Fuel characteristics are dynamic
  - Certified technologies require rulemaking for *all* changes – *regardless of risk significance*
- Decommissioning plant needs are accelerating
  - Full pool solution
  - In addition to fuel content, need to address high burnup fuel, damaged fuel, control rods, burnable poison rods, GTCC waste and other fuel types (e.g., consolidated fuel, individual fuel rods, fuel debris, etc.)

# Urgent Resolution of Generic Technical Issues Is Critical

- High burnup fuel
- Standardized technical specifications
- "Smart" certificate of compliance
- Burnup credit
- Other – e.g., cask tipover, high seismic, convective heat transfer

# Next Generation Solutions Are At Hand

- Advanced designs are ready for NRC review
- Generic technical issues require expeditious resolution
- Formal resolution program needs to be established with project planning, milestones, dedicated resources and implementation program

# Process Refinements Needed

- Design change approval process needs reform
  - Amendment process needs to be based on risk significance
  - Harmonize change process among Parts 50, 71 and 72
  - Implement revised 72.48 process to provide needed flexibility, although not a panacea
- COC rulemaking process needs to be expedited with oversight by the Commission

# Summary

- Establish project planning and dedicate resources for resolution of technical and process issues
- Reform process for changes to certified technologies
- Request continued Commission leadership, oversight and support to ensure timely action

# NRC SPENT FUEL PROJECT OFFICE ACTIVITIES


FEBRUARY 23, 2000

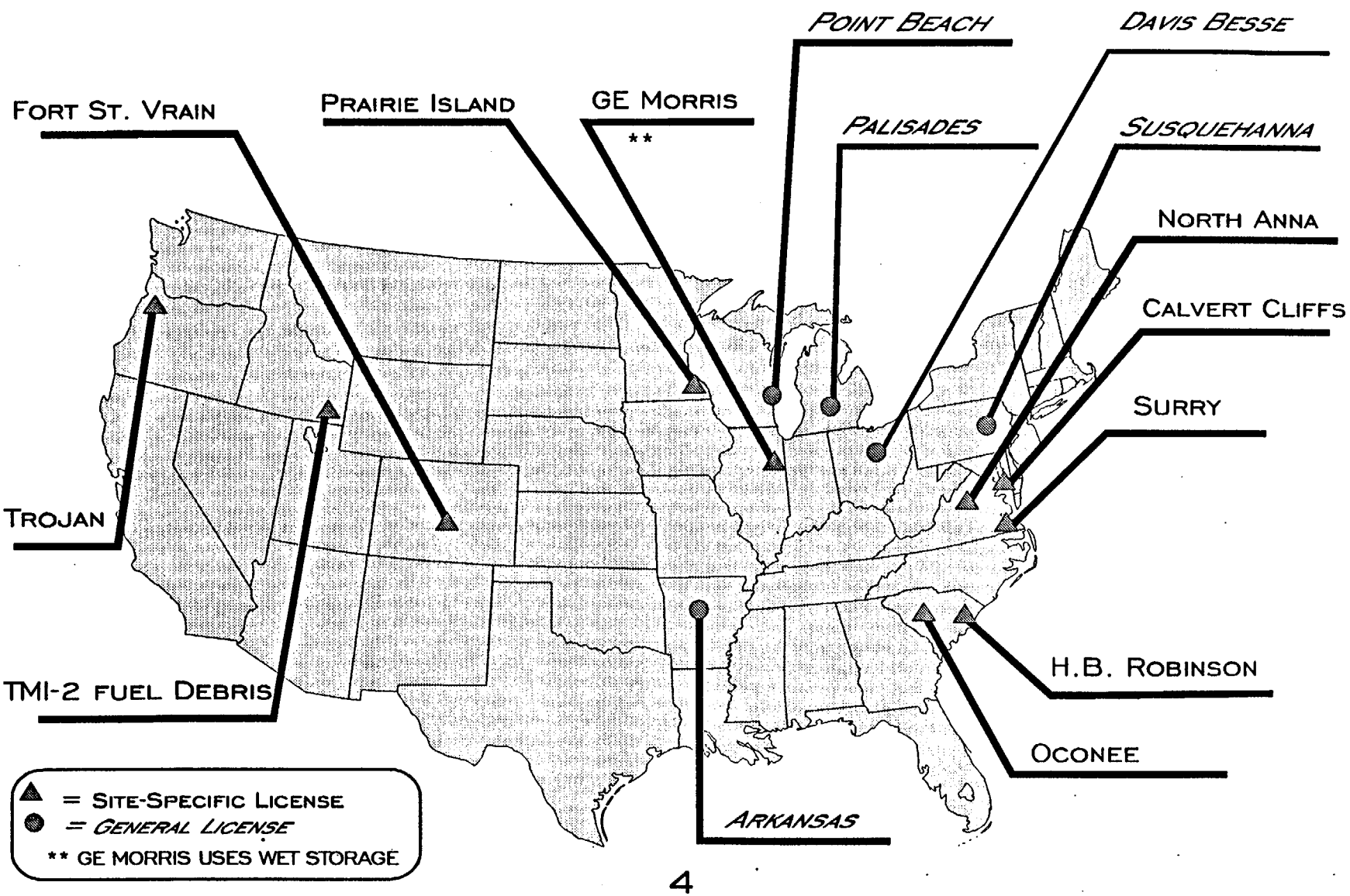
# OVERVIEW

- SFPO Responsibilities
- Current/Planned ISFSIs
- Storage Certificate Review Issues/Status
- Transportation Activities/Studies
- Summary

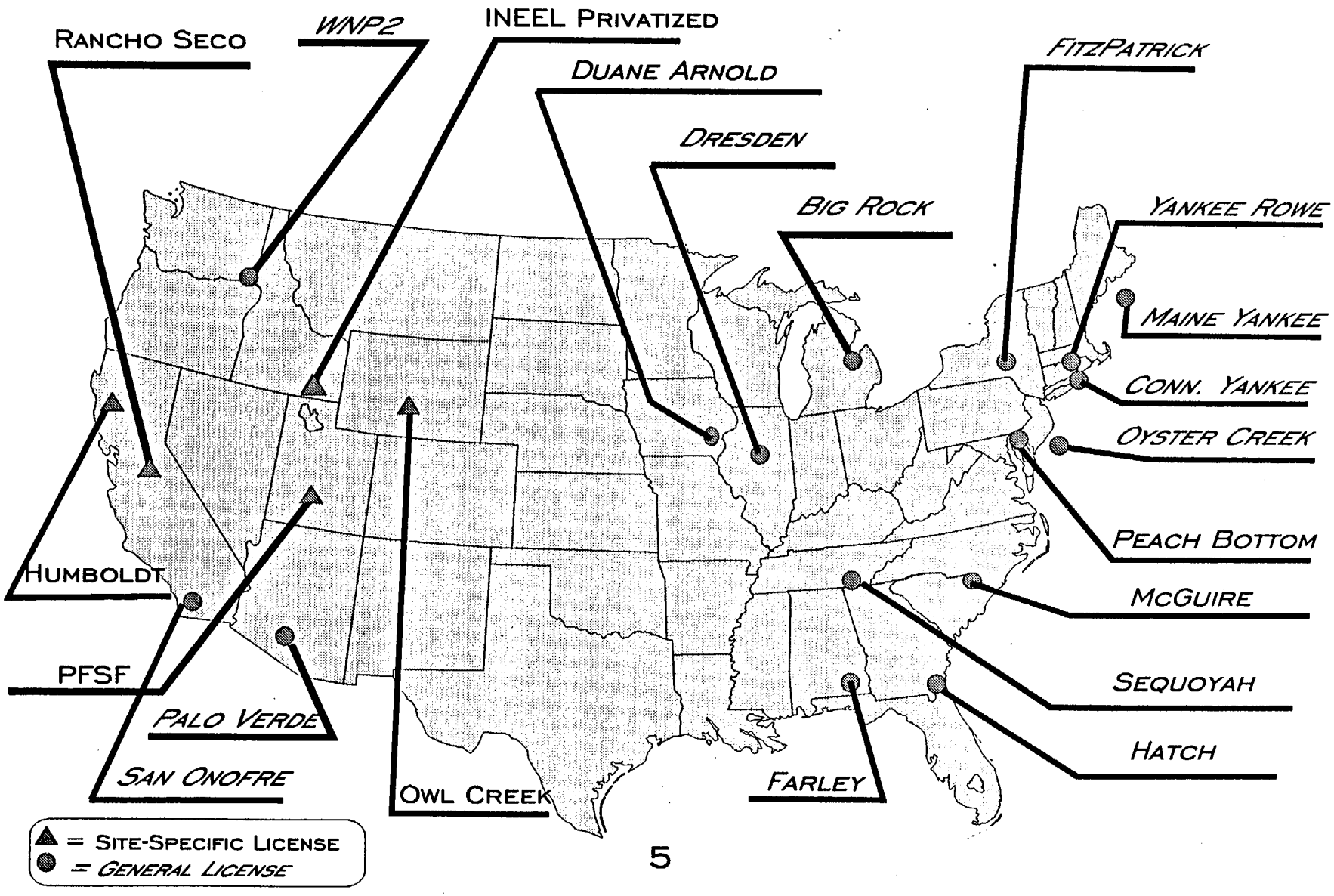
# Spent Fuel Project Office Responsibilities

- Independent Spent Fuel Storage Installation (ISFSI) Licensing, Inspection Program Development, and Project Management
- Storage and/or Transport Cask Certification for Spent Fuel; Transport Package Certification for other Radioactive Materials Packages
- Regulatory Program for Safe Transportation of Licensed Radioactive Materials; DOT/IAEA Interface
- Quality Assurance Program Reviews and Inspections

# OPERATING SPENT FUEL STORAGE SITES (ISFSI)



# POTENTIAL NEAR-TERM, NEW ISFSI SITES



# STORAGE CERTIFICATE REVIEW ISSUES/STATUS IMPLEMENTED ACTIVITIES

- RULEMAKING INITIATIVES
  - CERTIFICATE RULEMAKINGS SIGNED BY EDO
  - STANDARD RULEMAKING PLAN FOR CERTIFICATE RULEMAKINGS
  - DIRECT FINAL RULEMAKING FOR CERTIFICATE AMENDMENTS
  - DEVELOPED STANDARDIZED RULEMAKING PACKAGES
- NRC REVIEW PROCESS IMPROVEMENTS
  - RULES OF ENGAGEMENT (SCHEDULES AND TEMPLATES)
  - INTERNAL PROCEDURES (E.G., STANDARDIZED RAI AND SER FORMATS)
  - STANDARD REVIEW PLANS
  - INTERIM STAFF GUIDANCE DOCUMENTS
  - LESSONS LEARNED PROCESS

# SPENT FUEL PROJECT OFFICE
# CASE WORK STATUS
# OCTOBER 1998 - JANUARY 2000

## SPENT FUEL STORAGE CASKS[1]

| | DUAL PURPOSE CASKS | SINGLE PURPOSE CASKS |
|---|---|---|
| COMPLETED | 1 | 0 |
| IN RULEMAKING | 4 | 1 |
| UNDER REVIEW | 2 | 0 |

## TRANSPORTATION CERTIFICATE REVIEWS (SPENT FUEL AND NON-SPENT FUEL CASES)

| | |
|---|---|
| COMPLETED | 141 |
| UNDER REVIEW | 51 |

## INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS[1]

| | |
|---|---|
| COMPLETED | 3 |
| UNDER REVIEW | 3 |

[1] ADDITIONAL CERTIFICATE/LICENSE AMENDMENTS ARE UNDER REVIEW AND IN RULEMAKING TO ADDRESS SITE SPECIFIC ISSUES (10 AMENDMENTS PENDING / 20 AMENDMENTS PROJECTED IN FY00)

# STORAGE CERTIFICATE REVIEW ISSUES/STATUS INITIATIVES UNDER DEVELOPMENT

- CERTIFICATE REVIEW AND APPROVAL PROCESS
  - MINOR CHANGES NOT REQUIRING NRC APPROVAL
    - IMPROVED CERTIFICATES
    - IMPROVED STANDARD TECHNICAL SPECIFICATIONS
    - GUIDANCE ON NEW 72.48 CHANGE CONTROL PROCESS
  - ALTERNATIVE CERTIFICATE AMENDMENT PROCESS
  - AREAS FOR IMPROVED EFFECTIVENESS AND EFFICIENCIES (E.G., REVIEW TIMES, STAFF GUIDANCE)

- ISFSI DRY CASK STORAGE LICENSE RENEWAL
  - SFPO TASK GROUP DEVELOPING STAFF GUIDANCE AND PROCESS
  - CONSIDERING NRR AND NMSS LICENSE RENEWAL EXPERIENCES
  - SURRY LEAD PLANT FOR RENEWAL (LICENSE EXPIRES IN 2006)
  - ISFSI RENEWAL PROCESS AND GUIDANCE WILL BE IN PLACE TO SUPPORT RENEWAL

# STORAGE CERTIFICATE REVIEW ISSUES/STATUS
# HIGH PRIORITY TECHNICAL ISSUES

- **High Burnup Fuel (Industry's Highest Priority)**
  - Currently reviewing basis for up to 60 MWD/MTU
  - NEI forming industry working group to coordinate and develop technical basis
  - Technical concern is embrittlement and cladding creep

- **Burnup Credit**
  - Past practice no credit allowed for burnup credit
  - Issued two ISGs in 1999 which provide limited burnup credit
  - Developing technical basis with RES for expanded burnup credit

# TRANSPORTATION ACTIVITIES/STUDIES

- MAJOR RULEMAKING IN DEVELOPMENT
  - RULEMAKING INCORPORATES IAEA TRANSPORTATION STANDARDS (ST-1)
  - INCLUDES OTHER MAJOR CONSIDERATIONS:
    - CHANGES FOR CERTAIN SPENT FUEL PACKAGES (SIMILAR TO 72.48/50.59)
    - DOUBLE CONTAINMENT FOR PLUTONIUM
  - RULEMAKING PLAN DUE TO COMMISSION IN MAY 2000
  - STAFF TO USE ENHANCED PUBLIC PARTICIPATORY APPROACH USED FOR PART 70
- SFPO INVOLVEMENT WITH INTERNATIONAL COMMUNITY
  - PROVIDE TECHNICAL SUPPORT TO DOT, (U.S. "COMPETENT AUTHORITY" ON TRANSPORTATION)
  - PARTICIPATE IN IAEA TRANSSAC COMMITTEES AND WORKING GROUPS
  - ADVOCATE RISK INFORMED/PERFORMANCE BASED APPROACH TO INTERNATIONAL TRANSPORTATION
  - MEET BILATERALLY WITH FOREIGN COUNTERPARTS ON TRANSPORTATION

# TRANSPORTATION SAFETY ASSESSMENT STUDIES AND REVIEWS

- ACTIVITIES UNDERWAY
  - RE-EXAMINATION OF GENERIC EIS FOR SPENT FUEL SHIPMENTS
  - REVIEW OF SPENT FUEL SHIPPING PACKAGE PERFORMANCE IN TRANSPORTATION ACCIDENTS

# RE-EXAMINATION OF NUREG-0170

- Reassessment of generic EIS (NUREG-0170, 1977) for spent fuel shipments
- Updates shipment parameters, cask designs, dose models, etc.
- Estimates dose from routine shipments; dose-risk from accidents
- Accidents based on NUREG-0170 assumptions, modal study (1987), and contractor computer modeling
- Report to be issued March 2000

# SPENT FUEL SHIPPING PACKAGE PERFORMANCE IN TRANSPORTATION ACCIDENTS

- VALIDATE ASSUMPTIONS AND MODELING USED IN SPENT FUEL RISK ANALYSIS (CONSIDER NEW CASK DESIGNS, INCLUDING DUAL-PURPOSE CASKS)
- PUBLIC MEETINGS IN NOVEMBER AND DECEMBER 1999 TO RECEIVE AND DISCUSS STAKEHOLDER CONCERNS
- SUMMARY REPORT ON STAKEHOLDER INTERESTS, AND NRC STAFF AND CONTRACTOR REVIEWS TO BE ISSUED IN JUNE 2000, FOLLOWED BY ADDITIONAL PUBLIC MEETINGS IN SUMMER 2000

# SUMMARY

- Reactor Licensees Will Have More Dry Cask Options
  - SFPO anticipates 4 dual-purpose cask systems should be completed by December 2000

- SFPO has established rules of engagement and schedules for reviews
  - Schedules have been met
  - Stability and predictability in review process established

- Principal areas for further improvement (Amendment process, Technical Issue Resolution)

- SFPO Actively Engaged with Industry and Public Licensing and Technical Issues Related to Spent Fuel Storage, Decommissioning, and Transportation

# Challenges of Spent Fuel Management

Ralph Beedle,
NEI Chief Nuclear Officer
and
Lynnette Hendricks,
Director of Plant Support, NEI

NEI

# The Challenges

1. Responding to Dry Cask Needs
   - Increasing Demand - 128 casks loaded, 1999; 530 by 2005; 1100 by 2010
   - Evolving Needs - higher burnup, different fuel types, etc.
2. Improving the Licensing Process
   - Amendments will overwhelm the current process.

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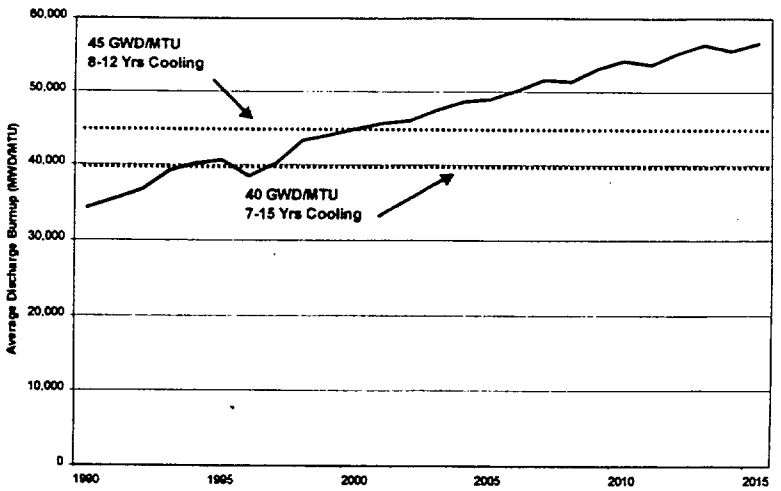
## Historical and Projected Average PWR Discharge Burnups

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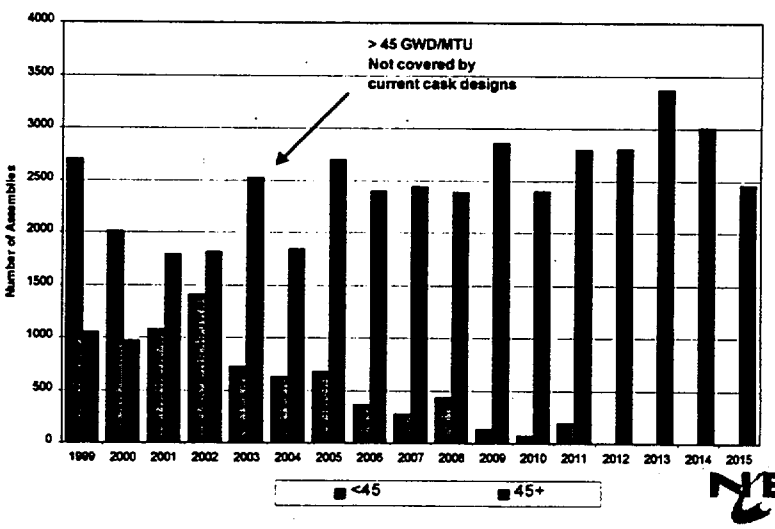
## PROJECTED PWR BURNUP DISTRIBUTION THROUGH 2015

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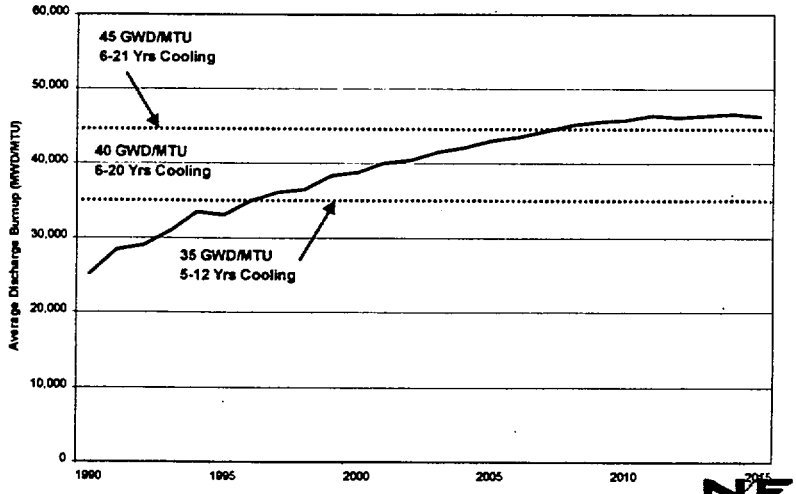
## Historical and Projected Average BWR Discharge Burnups

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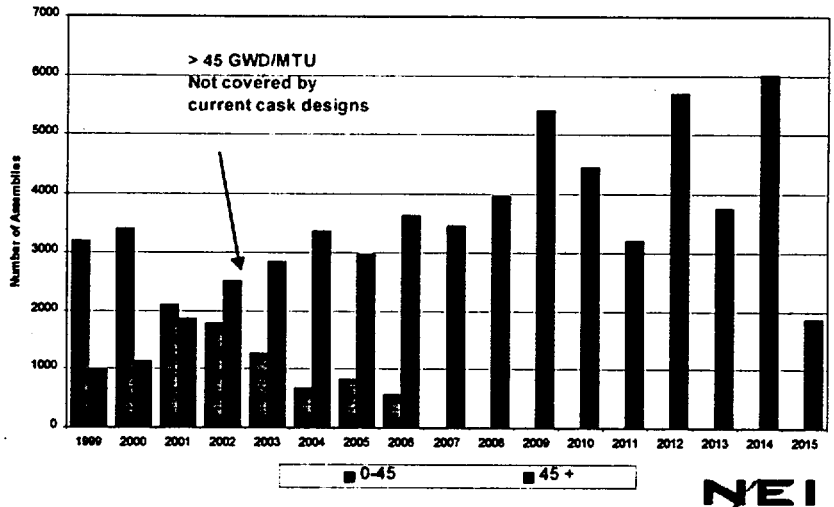
## PROJECTED BWR BURNUP DISTRIBUTION THROUGH 2015

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## Licensing Process Successes

- "Rules of Engagement" Standardize Vendor/NRC Interactions
- SRPs and ISGs Provide Improved Guidance to Vendors and Utilities

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## Improving the Licensing Process

- Consistency - Parts 71, 72 and 50
  - Good progress on 50.59 and 72.48
  - For dual purpose systems
    - Need "72.48-like" ability for Part 71 (work underway at NRC)
    - Address difference in licensing periods (5 years vs. 20 years)

NEI

## Improving the Licensing Process (cont)

- Generic Issues Example: High Burnup Fuel
  - Approval limited to lower temperatures than industry believes is reasonable, with cladding condition restrictions and confirmatory measurements
  - Application review time is over, but additional work is appropriate

NEI

## Industry Activities to Keep NRC Resources Focused on the Licensing Process

- Developed Guidelines for Maintaining Fabrication Quality
- Created NUPIC Committee to Audit Vendors/Fabricators
- Encourage Utilities to Notify NRC 5-Years in Advance
- NEI Brochure to Assist Industry in Early Public Communications

NEI

## Improving the Licensing Process (cont)

- Consistency of Reviews
  - Differences in focus of different review teams
  - Internal vs. external reviews
  - Similar systems end up with different requirements - even for same vendor

NEI

## Improving the Licensing Process (cont)

- Generic Issues
  - Dealt with on case-specific basis
  - Review schedule, rules of engagement prevent coming to closure

NEI

## Improving the Licensing Process - Resource Implications for SFPO

- 72.48 Implementation will require guidance/training for staff, resources for better documentation of bases in SER, development and application of risk insights
- Increase in case work for amendments
- More resources to address generic technical issues
- Rule changes for consistency between 72 and 71
- Rule change for amendment process?

NEI

## Conclusion

SFPO Should be Appropriately Resourced to Meet Spent Fuel Management Challenges:

1. Respond to expanding, evolving industry needs
2. Improving the Licensing Process

NEI