UNITED STATES NUCLEAR REGULATORY COMMISSION

PERIODIC BRIEFINGS ON NEW REACTORS - PART 2

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Wednesday

February 20, 2008

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The Commission convened at 1:30 p.m., the Honorable Dale E. Klein, Chairman presiding.

NUCLEAR REGULATORY COMMISSION

DALE E. KLEIN, CHAIRMAN

GREGORY B. JACZKO, COMMISSIONER

PETER B. LYONS, COMMISSIONER

PANEL 2: NRC STAFF

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WILLIAM BORCHARDT, Director, Office of New Reactors

EDWARD BAKER, Director, Advanced Reactor Program, NRC

BRIAN SHERON, Director, Office of Nuclear Regulatory Research

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

CHAIRMAN KLEIN: This afternoon we'll hear from the staff about licensing activities. Before we start, I would like to express to all the staff members my appreciation for you all working in cramped conditions. We know that things are tight space wise.

I think there is a light at the end of the tunnel that we are making progress. And I think with the legislation that was recently passed gives us options. We know that we want a White Flint III, but I appreciate all your positive attitude and the progress that you've made in cramped quarters. So, that is certainly noted.

So, on that note, we're now moving into hearing about continuing this morning's meeting on advanced reactors and licensing. I think we'll hear also about your current status. We'll see what Bill's been doing between midnight and 6:00 a.m.

It seemed like every day that we hear of new applications and progress on the activities. I think if you look at the progress we've made on Part 52 for the advanced light water reactors, we're now in the implementation stage. At some point, we would like to get to that stage on advanced reactors and that's what we'll talk about today.

So, look forward to your comments. Any comments before we start?

COMMISSIONER JACZKO: No, I always look forward to the

presentations. Thanks.

COMMISSIONER LYONS: It was a good morning session. I'm looking forward to a good afternoon session.

CHAIRMAN KLEIN: And we all got our shot of caffeine, so we'll be awake and alert. Luis, would you like to start?

MR. REYES: Good afternoon, Chairman and Commissioners. The staff is ready to bring you up to date on our activities on new reactors and then looking into the advanced reactor licensing activities. We have a lot of material to cover, so I'm just going to turn over the meeting to Bill to start. Bill?

MR. BORCHARDT: Good afternoon. Slide 2, please. This shows the agenda for today. I'm going to discuss some of the major activities on the light water reactor and COL applications status. Then Ed Baker is going to talk about the advanced reactor licensing activities.

I'd like to take a moment just to recognize the addition of Ed to the NRO Leadership Team. He comes with a wealth of managerial and reactor experience and has already provided a very valuable input and contribution to our office.

Ed's joining us allows the organization to maintain a very clear focus and high priority on the light water reactor licensing activities. Ed's going to have the primary management licensing responsibility for the agency on the

advanced reactor activities. He's going to report to Gary Holahan and myself. With the assistance of primarily Tom Kenyon within the NRO staff; try to keep the ball moving forward on the activities we heard about this morning.

However, it's obvious from this morning's discussion that there is a significant gap between what we're currently budgeted for and what the industry would like us to do and that's largely what you're going to hear Ed and then later Brian Sheron talk about activities on advanced reactors. Go to slide 3, please.

Since our last Commission meeting on the new reactors, we've finished a number of significant accomplishments. The acceptance review for Amendment 16 of the AP1000, the Bellefonte COL, Part 1 of the Calvert Cliffs combined licensed application, the North Anna and South Texas combined license applications were all accepted for review.

The acceptance of that review does two principal things. The first is that it establishes the official docket for the review activities and the other is that it begins the opportunity for public participation in the hearing process.

There is a separate notification that goes out and offers that opportunity. So, that's been done for the combined license applications. We also published the final rule on the Limited Work Authorization and issued the early site permit for the North Anna site. Slide 4, please.

On the design certification review activities work is proceeding well. We've issued RAIs on the AP1000, and the ESBWR work continues; however, recently General Electric informed us that they were going to delay Revision 5 to the design control document by approximately two months. We're now assessing the schedule or impact of those delays.

We are establishing early on the practice within the office that it's a bit of a contract between the NRC staff and the applicants to accomplish these reviews on a predictable schedule and that when there are delays by the applicant in providing necessary information for us to complete our reviews that we will reassess the schedule and as quickly as possible reissue a revised schedule. But there isn't fat within the schedule that we can accommodate slip after slip.

So, it's our intent to be up front and clear and let the world know what the impact of those schedule delays are. It's going to get only more difficult as we move out into the future, because as you have 20-some COL applications and three design certs all running in parallel, it's not always so easy to accommodate a slip on one design because you need to figure out where the resources are then available. It might not be when the resources are available from the applicant that caused the slip.

We don't want to penalize everyone else for one entity's slip. So, we are in the process now of evaluating what impact DCD Rev. 5 delay on the

ESBWR will have.

The EPR and the US-APWR applications were submitted a couple months ago, actually right near the beginning of the year for both of those and next week we will complete our acceptance review and provide the results of those to the applicants. We're on schedule for completing that work. Slide 5, please.

The current reviews and COL applications are listed on this slide. Every one of the designs is represented on this application; on this list. Of interest, I believe, is that the Lee Station was the first subsequent combined license application and I am happy to report that although the information is very preliminary now, it looks like we will be near roughly 50% of the amount of effort that it took to do the acceptance review on the reference COL's; 50% of that is what it took to do the Lee Station.

There was a good degree of standardization between the applications and that allowed us to be far more efficient. If that same kind of efficiency plays out through the rest of the review, which is certainly our hope, we would see fewer resources being needed for the subsequent COL reviews.

I should also add that there is one omission since yesterday. Progress Energy submitted the Harris combined license application for the AP1000. Go to slide 6, please.

This slide shows the applications for combined licenses that we're

expecting throughout the rest of fiscal year 2008, and you will see the second one there is that Harris one again. When we get all these this will result in having 15 combined license applications in house by the end of this fiscal year.

We are still finalizing and implementing all the management and program management tools that we need to be successful. I think we're making good progress in putting those into place. So, we're optimistic that we're going to be able to accomplish the work.

CHAIRMAN KLEIN: Do you how many more you might expect by the end of the calendar year?

MR. BORCHARDT: I can look that up and maybe get it for you during the question and answers. It's not that many, maybe three or four would be my guess, but I'll look it up during the rest of the presentations. So, at this point, I will turn it over to Ed Baker.

MR. BAKER: Chairman, Commissioners, good afternoon. I'm going to talk about the advanced reactors licensing activities. Brian is then going to follow up and talk about the research activities with tool development and the research that's needed for advanced reactors.

I am going to cover the requested reviews. I say requested because these schedules represent the schedules that have been requested. The staff has not committed to these schedules.

Basically, we are following the Commission's direction that the resources be first applied to the COLs for light water reactors and as time permits and resources are available, we are conducting activities that have been requested. The one exception to that would be NGNP, where we have some resources from DOE that are committed to this. We are in a reimbursable agreement and so we're proceeding with that as funding is available.

So, if you go to slide 8, it shows basically a layout of the work that is being requested and on there we have the NGNP, we have the PBMR design certification, IRIS, Westinghouse's design, the Toshiba 4S. Hyperion, which we have had one meeting with and I'll talk very briefly about that a little bit later. NuScale, which is a multi application small LWR and then of course there's the advanced reactor technical review and infrastructure development and I'll talk about that.

These are based on the letters of intent that we have. People have requested pre-application discussions. They've submitted what they believe to be schedules for submittal of a design certification, a design approval manufacturing license.

Starting with -- I'm going to stick with the PBMR. As they said this morning, we've been engaged with pre-application reviews since 2005. Although it's been very limited, they have come in recently with a letter

asking us to reinvigorate that interaction. They are talking about a pre-application submittal in 2010 and they're talking about submitting -- I had heard 15; this morning I heard 19 additional white papers that would need to be addressed as part of this effort.

This is separate from any effort with NGNP. This is under design certification. This is a considerable amount of work and it is not in our FY09 budget.

IRIS, you heard the discussion of that particular design this morning. Again, they have a test program that they've asked us to review. We have a meeting set up for early April to have that discussion. Once again, we're doing these as resources are available. So, that meeting has been scheduled.

Toshiba, as they mentioned this morning, had a meeting in October of 2007. They've requested design approval. They stated the design approval would be submitted in 2010 and they are meeting with the staff tomorrow all day with -- basically presenting the design to the staff as part of a knowledge transfer familiarization on that particular design.

Galena sent in a letter in September of 2007 asking us to resume pre-app discussions. We haven't heard too much more since then from them, but they are talking about submitting several white papers on site suitability.

Hyperion has submitted a letter. It is basically uranium hydride fuel,

hydrogen moderated potassium cooled reactor. Very, very different from anything that we've looked at before. We met with them in May of 2007 to discuss the licensing process. They are talking about a pre-app with a goal of a manufacturing license and they've stated an intent to apply in 2012.

COMMISSIONER LYONS: I'd like to ask a question on this chart. When you do these various pre-application reviews, are you billing the company? I don't know at what point we start billing, I guess.

MR. BAKER: Basically -- I'll use Dave Matthews' phrase -- they get one free meeting where they come in and we'll describe the licensing process to them, how they would proceed, and then they get a project number and then we start billing.

NuScale, which is the multi application small LWR. We just received a letter in January; January 23rd it was dated. That is a small light water reactor. If you think about it in terms of a natural circulation version of IRIS, that kind of gives you a picture of it. We had a meeting with them yesterday basically to describe the licensing process and their plans to come in for design certification. And actually now they are actually thinking about coming in for a COL further down the road.

CHAIRMAN KLEIN: What's the size of that reactor?

MR. BAKER: It's about 150 megawatts thermal; 50 megawatts electric is my recollection. I've lost that piece of my notes.

MR. REYES: It's on slide 13. Slide 13 we're going to cover that.

MR. BAKER: Brian is going to talk about that from the standpoint of tools and so forth. Let me move on to challenges on slide 9.

As I said, we've been treating these as resources are available. Basically, in a restricted resource environment, the Commission gave us some direction on how to treat priorities and one of those is that we treat those that have paired with a COL, or a domestic partner get priority.

Right now the staff, with the exception of NGNP because of congressional act, we are treating these as not having a domestic partner or COL at this point in time. And so they are at the back of the line when it comes to resources, so we are not impacting the LWR COL work.

On top of that you've then got the Congressional direction in this year's Omnibus Act, which as was mentioned this morning, DOE got additional funding and as was also stated, we're not in a position at this point to keep up with that level of funding and support NGNP without additional resources to do that.

If you look at our 2008 and 2009 budget, Brian's going to talk a little more about this, but basically there's not much there to support advanced reactor work.

Other challenges, it was mentioned this morning there's a small pool

of people who have skills in high temperature gas reactors, liquid metal reactors and we're going to either have to find those resources or keep them in place or develop knowledgeable staff. And actually, the knowledge transfer that's going on with Toshiba on the 4S is helping somewhat with that with liquid metal.

Then we've got developing the licensing regulatory infrastructure. The guidance to the staff and how to do the review. That will be an additional challenge.

In terms of -- go to slide 10. In terms of what we are planning, as Bill mentioned, we are keeping this separate from the LWR licensing. We are proposing a separate organization and if we go forward with all of this work and we're looking at an organization that could grow in 09 to two branches, about 15 people, or approximately $4 million. That is not in the budget. That would be what NRO would need in terms of supporting this level of effort.

Brian's going to talk about the overall resources in terms of both offices together supporting this.

We are consolidating the licensing project management function in NRO and Research will continue in a role of providing technical support and developing the tools to support the licensing reviews going forward with this.

So, Research had the lead for most of the advanced reactor work or

all of the advanced reactor work if you don't count the light water reactors I've talked about. So, we're consolidating the light water and the non-light water project management in NRO. And that's basically my portion.

MR. SHERON: Thank you. Good afternoon. I'd like to provide you with an overview of our readiness; that is our ability -- or the ability of experienced staff and up to date tools and data to license advanced reactor designs that are significantly different from our current generation of light water reactors.

In my presentation I will summarize key features of potential advanced reactor applications, but I will focus most of my presentation on the status of the NGNP licensing strategy and our plan to meet the Congressionally mandated schedule for the prototype.

I will then briefly discuss other potential applications and provide some concluding remarks. Next slide.

On this table, this is the same one -- essentially you saw the timeline by Ed. This will give you a little more information about the size of these reactors, who the applicants are, and whether there is any utility interests. I think the real point of this, though, is that our infrastructure and our current resources can't really support these design certification submittal dates as being proposed. Next slide.

COMMISSIONER JACZKO: I'm sorry, Brian, by applicants you

mean design cert applications?

MR. SHERON: Yes. In the Energy Policy Act of 2005, Congress mandated that NRC and DOE jointly develop the next generation nuclear plant licensing strategy. The Energy Policy Act further mandates that the report to Congress will identify needed analytical tools, infrastructure needs for licensing review and resource needs.

NRC needs for analytical tools, include new codes and data to validate those codes in major technology areas as well as the need to modify and validate existing codes by 2013.

NRC needs for infrastructure development, include the identification and resolution of policy issues during the pre-application reviews, the development of interim staff guidance by 2013, and a development of skill sets for review activities. Next slide.

Advanced reactor designs such as the HTGR and the LMR are significantly different from current generation nuclear power plants. All of our codes were developed and validated for light water reactors. Staff guidance, such as Standard Review Plans, was also developed for the LWRs.

Our tools and data and the regulatory framework embodies the knowledge and experience that were developed over the past few decades for LWR accident analyses. For example, LOFT, Semi-Scale, ROSA facility and the SPES facility. These are all heat transfer loops integral test facilities.

We have also conducted an extensive severe accident research program following the TMI accident which has led to a better understanding of plant performance under a variety of accident conditions, better understanding of containment challenges and performance, and a better understanding of the magnitude and timing of fission product release.

We believe we are relatively well positioned to review advanced light water designs; however, we may need additional data to validate models for unique plant features, such as those employed in the IRIS design.

For non-light water reactors, we do not have the same capabilities, though they may to some extent exist internationally.

We believe we need to develop an infrastructure for non-light water reactors similar to those that we have for light water reactors. Next slide.

CHAIRMAN KLEIN: Just a clarification on the thermal analysis of the core itself. I assume that you have some codes that you had used for Fort St. Vrain. Are they applicable for the PBMR or is it's coding different?

MR. SHERON: They would be applicable for the prismatic design core because that's similar to Fort St. Vrain. The Pebble Bed, I think, is a very different story because of the configuration of the core. You know, so we would -- they may be applicable, but we'd have to do a lot of validation and perhaps some model improvement or modification.

CHAIRMAN KLEIN: Thanks.

MR. SHERON: It's assumed that most data will be generated by the applicant and/or Department of Energy. Additionally, the identification and resolution of key technical and policy issues should occur during the pre-application reviews. The staff also intends to leverage international data to the extent practical. Next slide.

Commission provided us with resources in FY07 and FY08 to support the development of the infrastructure needed to license an HTGR. We have started some of these activities in FY07; however, FY08 monies have not yet been appropriated by the CFO.

Even though our computer codes that are used for licensing LWRs can be adopted for the HTGR, we will need additional HTGR data to develop and validate them. I will provide examples in the next view graph. Slide, please.

By far the most important aspect of an HTGR is the fuel. As you are aware, there are several billion TRISO fuel particles in an HTGR core. These TRISO fuel particles, whether they are incorporated into a prismatic compacts or pebbles, are relied on to prevent the release of fission products; therefore, they are performing the functions of the fuel cladding, reactor coolant system and containment in light water reactors.

We want to be sure the fuel performance is commensurate with the safety functions the fuel should meet. Under a cooperative agreement with

NRC, the Massachusetts Institute of Technology is developing a code to assess the performance of the HTGR fuel. We will be using data generated by DOE to validate the code.

We also hope to be able to obtain data from international test reactors in China and Japan.

For systems analysis, we are planning to use the MELCOR code to perform confirmatory analysis. As you are aware, we developed the MELCOR code for light water reactors and it has been assessed and used extensively by the staff. We are currently developing HTGR unique models.

Our plan is to enter into international agreements where possible to obtain thermal fluid data to assess the code for HTGR applications. We will rely on commercially available computational fluid dynamic codes to study important phenomena that impact the safety performance of an HTGR.

Similarly, the PARCS code has been developed for LWR nuclear analysis. We are in the process of updating the code for an HTGR analysis. Next slide.

Material performance under the high temperature conditions envisioned for an HTGR is another major confirmatory analysis area. The higher the material temperature is, the less experience we have regarding its performance particularly in the longer term.

We will work closely with DOE to ensure that its research can provide

the necessary data to ensure material integrity. If issues related to aging effects are not resolved by the time the prototype is built, NRC can impose a license condition to operate the plant for no more than five years until data are generated and assessed.

With regard to PRA quality, the ASME is currently working on updating its PRA quality standard that was developed for light water reactors. We are participating in this activity; however, the availability of operational data for HTGR specific components is not known.

Issues related to the H2 production facility will be treated as external threats to the nuclear plant. We have capabilities to assess the potential and consequences of hydrogen combustion for both deflagration and detonation. Next slide, please.

It's very unlikely that NRC can build and operate a large scale HTGR integral test facility to obtain data for the development and assessment of various codes in time to support the Congressionally mandated NGNP schedule.

So, our planning assumption is that we will look for collaboration opportunities with countries that have integral HTGR test facilities; for example, China, Japan and the Republic of South Africa. However, NRC may need a smaller scale facility typically the type we locate at universities to provide answers to questions that may arise during the review and to resolve

technical issues that may not be fully addressed by the codes. Next slide.

We are working with CSNI to coordinate multinational activities for potentially developing and sharing data and performing international standard problems related to HTGRs and LMRs.

Other organizations that we plan to contact to establish collaboration are IRSN in France, EC - the European Commission, Germany, United Kingdom, Japan and China. In addition, we will continue to collaborate with universities; for example, MIT and the Department of Energy. Next slide.

As I mentioned earlier, in addition to NGNP we are expecting additional applications such as the 4S liquid metal reactor with passive safety features; the Hyperion reactor, which is a small, self-regulating hydrogen moderated and potassium cooled reactor fueled by powdered uranium hydride; and IRIS, an LWR that has unique safety features that are not used in current generation LWRs.

Our staff skills and current tools and data are lacking in these technologies. It will require extensive efforts and resources to bring our technical capabilities to the level needed to license these designs.

We estimate it will take about five years and adequate resources to fully develop these capabilities.

We are in the preliminary stage of estimating the resources needed.

With respect to the PBMR COL application, we have been working

with the applicant since November 2004. We have completed our review of four white papers on PRA approach, licensing basis event selection, structures, systems and components classification and defense in depth.

Request for additional information have been issued. Planning is proceeding on reviewing two new papers on fuel performance and evaluation models for PBMR.

Although progress is being made based on our budget resources, RES cannot provide independent capabilities for NRO to start a COL review in 2010. Our planning is to produce these tools and data to support the NGNP schedule of 2013.

I wanted to mention before I get on my concluding remarks with regard to the NGNP report that we are preparing for August. We've -- as I understand, we've reached agreement with the Department of Energy in terms of an approach. It is a modification of Part 52 to some extent. It follows part 52.

Obviously, Part 52 you still have to meet requirements in Part 50; for example, 50.46, 50.48.

For those aspects of Part 50, those regulations in Part 50 that do not apply to a gas cooled reactor, the approach would be to develop risk informed alternatives using risk information to the extent practical.

That's similar to the way we did it, I believe, on Fort St. Vrain where

we looked and we find out which regulations don't apply. The licensee would request an exemption and propose an alternative. We would work with the licensee to come up with alternative requirements that basically met the same safety function.

That's the approach as you heard from Dr. Corradini. We've been down and we've discussed this with the ACRS just recently and I believe we have one more meeting with them. And the plan right now would be to bring a paper to the Commission, I think in the May timeframe.

Anyway, my concluding remarks. The NRC could meet its commitment to support the Energy Policy Act mandates provided that DOE selects an NGNP design and operational envelope in early 2009.

The NRC's ability to meet its commitment is also contingent upon the pre-application review beginning in 2010 and policy and technical issues being resolved by about 2012 and a complete design of high quality being submitted for COL by about 2013 with sufficient NRC resources being available. Next slide.

In planning for advanced reactors, the NRC recognizes there are challenges ahead including the development of necessary skill sets and infrastructure for licensing reviews, the availability of adequate funding and personnel and the resolution of technical policy issues.

We must interact closely with DOE and applicants to ensure the

adequacy of data and tools to participate in its international collaboration. That concludes my presentation.

MR. REYES: That concludes our prepared remarks. We gave you extra time so you can ask a lot of questions.

CHAIRMAN KLEIN: And we probably will.

MR. BORCHARDT: Chairman, if I could, I'll give you the answer to the question. About the fourth quarter of calendar 2008, we sent out a regulatory information summary last year and based upon the responses to that, there's four COL applications expected during the fourth quarter.

Exelon for the Victoria County Texas site, an ESBWR; Amarillo Power for an EPR; UniStar at the Nine Mile site, another EPR; and then Fermi, which has not informed us of the design yet.

CHAIRMAN KLEIN: Thanks. As you can tell from the questions this morning and Brian answered part of those, the question is how do you come up with a licensing strategy when the design isn't really finalized, which is challenging, nor the site picked. So, that will be, I think, a challenge and I'm sure Commissioner Lyons will ask about Part 50 and Part 52 or combinations thereof. Commissioner Lyons?

COMMISSIONER LYONS: Thank you, Mr. Chairman and thanks to all of you for an excellent briefing.

Brian, I did appreciate your comments on the 50/52 approach to the licensing and personally, I appreciated the discussion this morning a great deal, too. I came out of the discussion this morning and I think it's consistent with what you said. I think this was partly Greg's point this morning; that it may matter less whether it's 50 or 52, probably -- I think the Chairman even called it 52-light at one point, but you did imply that we are prepared to make significant changes in Part 52 as required to match this particular technology, recognizing that its certainly different from the light water. And I think probably we are going to have to make some adjustments given the maturity level of the technology at the time we are going through this.

I hope I am surprised and that they have all the answers at the time we need them. But in any case, I did appreciate your comment.

One thing I asked this morning, and it may be premature to ask you, is where discussions, if any, are standing on the question of confinement, containment types of approaches.

It seems to me that by building in a robust confinement as was discussed this morning and Dennis even mentioned the possibility of underground siting, that one would also be further enhancing the safety envelope substantially. Is it premature to ask that kind of a question?

MR. SHERON: No, it's a good question.

COMMISSIONER LYONS: I mean, do they know what they're

doing at this point?

MR. SHERON: I think what we need and I've said this previously, and that is that it will probably come down to a policy issue that perhaps the Commission needs to weigh in on, but before we can present anything to the Commission, we would need to get something from the licensee in the way of a submittal and a proposal.

They would have to make the safety case on why they believe, for example, if they wanted a confinement why that was acceptable. We would evaluate it and then we would forward that probably to the Commission with a recommendation. I'm going to ask Dr. Eltawila -- you've had maybe more discussions of any other insights.

MR. REYES: But the issue is that it's required by the regulation, so they have to propose an alternative. So, that's the way we will handle it and whether they propose, we don’t know, and whether that proposal is acceptable or not, we don't know. It's a problem because the design is not there.

MR. ELTAWILA: Just to follow up to what Brian said. We have raised the issue of containment versus confinement to previous Commissions several times and the Commission came back and told us that you need additional information.

So, we are working on developing this licensing spread sheet about

confinement versus containment and we hope to address this as part of a Commission paper that will be coming to the Commission to discuss what is the requirement; why do we need containment; what is, as Mr. Spurgeon indicated today, you need the containment for light water because you want to confine the steam to condense it to be able to circulate it for ECCS.

So, we'll keep that in mind. We'll look at all the other functional requirements that containment needs to perform and then we will come with recommendation to the Commission about the pros and cons of each option for your decision.

CHAIRMAN KLEIN: If you could just educate the three of us, since we were not on the Commission when Fort St. Vrain was licensed. What was the approach? Was it confinement or containment on Fort St. Vrain?

MR. ELTAWILA: I believe it was confinement, but I will look to the other side.

MR. REYES: Yes.

MR. BAKER: Can I add something to that answer? It really goes to the question of when this would occur and what's in the licensing strategy. The way the joint working group is approaching that particular issue, those issues would actually be addressed in the pre-application phase in terms of addressing those policy issues.

The licensing strategy is really just how you approach it and as Mike Corradini said this morning, its Part 52, Part 50, its risk informed deterministic.

It's going to that level of information. You shouldn't expect a licensing strategy to get into some of the more technical issues.

MR. ELTAWILA: But the issue of containment would be much easier addressed if we have a strong fuel management program. The performance of the fuel as Brian indicated in his presentation is the most important aspect.

So, if DOE finished their fuel qualification program and we review the program and we have confidence in the result that will come out of that, that would make the decision much easier about confinement versus containment.

MR. REYES: If you don't need to retain the coolant inventory for cooling post-accident at the core and you don't have significant releases leaving the core, then that will be a rationale for not necessarily requiring containment.

COMMISSIONER LYONS: Agreed. But we need that rationale, but at least from what little I know of high temperature gas reactors, that's very likely to be the way it develops.

Since a couple of you just referred to Fort St. Vrain that was

another question I wanted to ask. To what extent are we going through a structured knowledge management data recapture, whatever the right word is to gain whatever lessons we can. I'm sure there is a number that aren't applicable, but still I would assume that there is information from Fort St. Vrain that does apply. I was curious if we were going through any sort of a structured process to gather that data?

MR. ELTAWILA: As part of our knowledge capture that we started a few years ago, we have developed a report and we issued the report about operating experience in Fort St. Vrain and we also -- Peach Bottom and some of the old European HTGRs. So, we have an operating experience report that we have developed to capture that knowledge.

In addition to that, we have established a very small level of effort at Oak Ridge National Laboratory to have a knowledge management activity and we have a web site about community of practice that people from different organizations that are doing work in HTGR can put their information and share information with us. So, that is working very well.

In addition to that, there was an old code that was developed by Oak Ridge and Oak Ridge kept it actually running. Right now we have it here at NRC and we are training our younger staff to work with that code to understand what can go wrong in an HTGR in case of accident and so on.

So, we are using all this information for training our staff and collecting

the information that was done in the past.

As Brian indicated, we are working with CSNI again to start to get the international community to participate in the international standard problem and that is one important feature to ensure that our code assists against experimental data.

So, we prepared a list of questionnaires and we've tried to get a group of international organizations to start participating. The first things that these international organizations should have the willingness to give data for the other countries to be able to use it for code assessment.

MR. REYES: Remember that all those activities are under that very, very, very modest budget line item that we left in '08 to continue that.

COMMISSIONER LYONS: That would have been my next question, but I'm out of time. I would guess my colleagues will take adequate care.

CHAIRMAN KLEIN: Why don't you ask your favorite question; money?

COMMISSIONER LYONS: Well, okay. We did -- I did, I think several of us did raise dollars in various ways with Dennis this morning. What I interpreted his answer to be, and I would be curious if you also interpret it the same way, was he certainly recognized a need for the DOE and the NRC to be progressing in lockstep.

He recognized that there was a significant increment in dollars provided to DOE in '08 that was not provided to us. What I thought I heard him say was that he hoped we would make a case in '09 to the appropriators and I think we should consider doing that.

That leaves open the question of '08 and at least I interpreted his remarks as being somewhat receptive to a request from us to look at balancing the '08 resources.

Now, that is not exactly what he said. I'm sure everyone here heard this slightly differently, but nevertheless, I do think that would be appropriate, at least based on what I heard. So that's not really a question, but --

MR. SHERON: Maybe I could address the resource issue. Right now in 2008 we have about $3.5 million budgeted for the advanced reactors.

MR. REYES: Out of our own budget.

MR. SHERON: And 6 FTE.

MR. REYES: This is what the Commission approved in the '08 budget if you recall that. He is speaking about our money.

MR. SHERON: What was approved for '09 for all advanced reactor work, at least in the Office of Research was 8.9 FTE and $5.75 million. Now, on top of that if you remember with regard to the Energy Policy Act, DOE provided us with $4 million over a two-year period for the

development of the licensing strategy report. So, we've gotten $2 million a year from DOE.

In addition, I think it was probably about a month or two ago we initiated a meeting with DOE to discuss the need for, you know, what we would need in the way of resources as well as perhaps leveraging their experimental program to meet NRC needs. At the time, DOE indicated they would look and see if there was additional funding they could provide to us.

We haven't heard anything yet. I don't know -- have you got any more information on that? But we did make the request of DOE for perhaps they could find additional funding to provide so that we could again develop -- do more to develop the infrastructure.

COMMISSIONER LYONS: My suggestion based on the morning discussion is that if we haven't heard very soon, perhaps raise it again at Dennis' level.

MR. BORCHARDT: Excuse me, Chairman. Could I take the liberty of trying to address a topic Commissioner Lyons raised at the very beginning of the questions? It was discussed a lot this morning. It had to do with Part 52 and coming up with some innovative approach to that. I think there is a misunderstanding or a significant disconnect between what the industry would like to see and what Part 52, at least in my mind, would be acceptable.

Part 52 creates a lot of regulatory certainty because there is enough design information for us to make a combined licensed decision with finality. What the industry seems to want to do and the Department of Energy as well, is for us to issue that same issue finality based upon the same amount of information that might be available at a construction permit stage under Part 50.

I try to be open minded, but I don't see a connection there. There is a definite amount of detailed design information that the staff must have in order to make the safety finding that's required to issue a combined license under Part 52.

I don't see any way around that unless you want to create a whole new licensing process that opens up the opportunity for hearings and litigation and other activities after construction is complete, which is an awful lot like Part 50.

I don't think we really connected in the discussions this morning and I just felt obligated since that topic came up in your opening comments that I don't really see an immediate success path there.

COMMISSIONER LYONS: It may be convincing me to go back on some of the thoughts I expressed this morning about whether this should be Part 52 at this point in time.

MR. REYES: The operative word that Bill talked about is the

level of detail on the design. That's what answers the questions we typically need under the regulations to make our safety case.

So if your design is -- if the plant is built and running, let's say Pebble Bed modular reactor in Africa, then you have all the details you need to make a judgment by us whether to move forward. If you don't have that level of detail on the design, we may have difficulty getting there. And that's the point that Bill was trying to make.

Part 52 works on an assumption that we have all the detailed information on the design to make the safety judgment and then you can issue an operating license with the condition that it would be built and tested as per what was submitted to us.

CHAIRMAN KLEIN: Have you gone through Option A is Part 50; Option B Part 52 and what you would require under both to see which path is better?

MR. BAKER: The working group went through that analysis. Keep in mind, their goal was what's going to get us to an operating license in 2021 with the most certainty. And in that comparison they determined that Part 52 was going to get us there with that certainty.

CHAIRMAN KLEIN: If you have the design.

MR. BAKER: If you have the design; that is correct. The issues they looked at were if you go down a Part 50 route, you end up two

opportunities for hearings. You end up with less amount of information when you start construction. And they went back and they looked at the history of all the issues when we operated under Part 50 and what that meant in terms of time for construction, ability to meet schedules and it was really driven by what gives us the certainty to get there.

MS. CYR: I think the issue with respect to Part 50 is -- what you're really looking at is issue preclusion. In the early stages of when we did construction permits from a litigation standpoint, when you looked at issuing a construction permit there is a minimum set of information you need when you do that. It's not a lot.—PSAR in terms of what we found acceptable to be able to do that. You can have a lot more information. If I go ahead and the Commission reviews and approves that, I may not have enough to issue the Part 50 OL, but I may have an awful lot more information -- when you're talk about flexibility of an approach, I may have an awful lot more information then I had at the time I was doing Part 50 CPs in the '70s.

If you're looking at difference in approaches from flexibility, it may not be that I'm doing Part 50. I may not have enough information to do a design certification to make all of my findings to issue a COL, but I may be able to make an awful lot more findings than I made back in the '70s. So, that I've made an awful lot of findings and therefore I made a final decision with respect to those issues and on the basis of that there is enough information

for somebody to go and build, begin to construct, and then I would have to come back and get an OL and have the agency look at those issues which I had not looked at and made a final decision with respect to before.

So, under Part 50 there's flexibility with respect to how much information I may have and may have enough to make a decision on at the time I would issue a CP.

But that is the difference between that, I think, and what Bill's saying with respect in order to do the COL, I really have to have all the information to be able to make my findings with respect to that.

CHAIRMAN KLEIN: I guess my question that I had earlier with my 52-light approach, is how much design information and design certification do you need to go down the Part 52 route?

In other words is there flexibility on that side in terms of the amount of information you would have? And then obviously you're going to kick the can down the road for a lot of ITAAC issues.

MR. BORCHARDT: My initial answer would be we have a Reg Guide 1.206 that lays out the requirements for a COL application and that is our best estimate having never been through the process of what it would take for us to be able to make that regulatory finding to issue a combined license.

MR. REYES: We have some insights. If you look at the design

certifications that we approved before we had COL applicants, there was a level of detail there that is not like some of the ones we are doing today and we agree that the remaining level of detail would be provided by the COL.

We have some experience on that, but I can tell you, if you don't have your design, I go back to my original statement, if you don't have the design for the facility, it's going to be very difficult.

COMMISSIONER JACZKO: The important thing, I think we have this -- we're coming at this from the wrong perspective. If there's no final design, there's never going to be a plant built, period.

The advantage of Part 52 is it forces the applicant to do the hard work first, get the design done, so that we can go through and review something with certainty.

If we allow a process, more like a Part 50, there is a tremendous opportunity for incomplete work, which means incomplete work on our part, which means lack of certainty and lack of ability to getting an end point.

We're not in the business of licensing plants. We're not in the business of issuing construction permits. We're in the business of getting plants to operate.

That's the goal. If you are going to build a plant and get it to operate, you need a complete design. Part 52 provides you forcing function for that design to get complete.

If what we're hearing back from the applicants is they don't think they can do that, that's not a problem with our process, that's a problem with the applicant and the state of the industry and the state of the technology on the applicant's side.

So, you know, I am very, very uncomfortable with us coming up with a brand-new process. It's taken us 20 years to get – 15 -- well, I guess almost 20 years to get Part 52. If we're going to start now and come up with Part 58, I think that is the wrong way to go.

I mean we did Part 52 because of what happened wrong, which was we allowed applicants to come in with incomplete designs and start building plants and then we would change things in the middle, there was no finality in our regulation with Part 52. We have finality in our regulation when the COL is issued; changes to our regulation, unless there's a back fit analysis, don't go in changes in the plant.

They have certainty moving forward in the construction phase about how to do it. Those are all the advantages that we get with Part 52, but if the applicant can’t get a design done, that's something the applicant needs to do and we need to force them as we did here.

That's one of the lessons with the light water reactors has been; the insistence on the staff of high quality applications, complete designs, complete application. That's what's allowing this process, although it's a little

bit rocky. It's not smooth sailing. There is some level of detail that is missing and all of those kinds of things. It has forced that work up front.

And I think that is the advantage and I think if we go down a road of going back to the old days we would go back to the old days, which is Shoreham, which plants that get built and never get operated, constantly changing regulations and backfitting plants. That's why we had the backfit rule because of what happened when we did plants under Part 50.

The problem isn't our regulations. The problem is the level of certainty and the level of detail on the applicant's side.

MR. BAKER: I want to raise one point. The joint working group is coming up with a recommendation that will go to the Commission and will go to the Secretary. That's the working group's recommendation and that will go forward then to Congress as a joint recommendation. That doesn't mean the applicant has to choose that.

The applicant can still come in and say, "This is what I want to do." Even today. There are benefits to Part 52. I think everybody realizes that, but we haven't taken Part 50 off the books.

So, there is this other issue about what will the applicant want to do? What will the applicant be in a position to do?

COMMISSIONER JACZKO: I think one of the things we have to be careful here. The purpose of this licensing strategy is for us to develop

an infrastructure. It's not to provide a report to Congress. The idea here is to come up with something that works.

As I talked about this morning, one of the difficulties we're facing right now is we had Assistant Secretary Spurgeon here not really laying down a real clear signal about what approach he favors. We had a group of eight, nine, ten people, who I think if you asked them probably didn't know enough about it, but wouldn't really have an idea to tell you what way they favored and it probably depends on whether they were for process heat or for an international design or what their needs were, the kinds of approach they would find applicable.

But the whole idea here is to get everybody focused around NGNP and get them to use that as a vehicle to move forward. That's why we're doing this licensing framework so we can lay out the framework for how we're going to go through and do the confirmatory research.

What kinds of things we're going to need to see? What are the technical issues we need to have to resolve and do all that?

I think we're on a good track right now. I think the staff has come to some good conclusions and I think a lot of this is just really fundamentally missing the point that I think the concern we're hearing is because the applicant's not ready, and I don't think we can fix the process to address that.

CHAIRMAN KLEIN: I think part of that is driven by EPAct;

originally of picking a date of 2021, but as I recall, there was also a flexibility as to whether that schedule was really reasonable. And so I think as we go forward what we should look for is what's right, what's the best way to do it. And then if we start from 2021 and work backwards, you know, it may mean that DOE needs a final design by this summer. And then that says that 2021 may have to be re-evaluated. I think as we go through that process, we'll want to look at that.

But I think at the end of the day we need to look at what's the best way to proceed and not be totally driven by 2021 because I think, again, there's flexibility in there if we have to meet that.

MR. SHERON:: I did just want to point out that if -- I think the piece that's missing in this is the fact they're trying to take a first of a kind design and immediately go into the licensing process and on top of that get it done fast. If you go back -- I'm showing my age, but when I first started working on the Clinch River project --

MR. REYES: I wouldn't acknowledge that if I were you.

MR. SHERON: If you think about it, that was the first of a kind except that the Atomic Energy Commission built the FFTF facility, the fast flux test facility and put it out in Richland and ran it and the whole idea was to get that experiential database, you might say, in terms of demonstrating that these things will work and use that as the basis for licensing the commercial

version which was Clinch River.

FFTF was not licensed by the AEC. It was an AEC reactor. I think the piece that's missing is the fact that we don't have that demonstration plant, you might say. We're going straight to something that is supposed to be commercially viable. You need to go through that design stage, and I think what I heard from DOE and I'm sympathetic, is that for a first of a kind it's kind of hard to come up with that final design the first time through.

COMMISSIONER LYONS: That's why I was raising the issue and said several times that I am not at all convinced that they can come up with a final design. And I don't disagree with Greg that it would be wonderful if we could force them to do that. I'm just not sure they're going to be able to do that on any time scale that makes any sense. As far as extending the 2021, we were hearing enough comments this morning that implies that at some point the whole thing becomes moot. I'm not sure that going later than 2021 makes terribly much sense.

COMMISSIONER JACZKO: I think -- one of the things I think is important and I always look to Bill in this because it's one of his most candid moments when he always talks about design acceptance criteria. But Part 52 does provide a lot of that opportunity to do designs in stages as well. Let's keep that in mind.

The Westinghouse AP1000 design we approved did not have finality

for major piping systems; did not have finality for the control room, for Digital I&C, because that was still evolving technology at the time. So, all of those opportunities exist within the Part 52 process to deal with designs as we go along in the COL process as we go through this.

PBMR has a design that they say they are going to have criticality in 2013. They're going to have a finalized design pretty soon, which to some extent could give them a leg-up in terms of being the direction for NGNP. So, it's not outside of the realm of possibility that there will be finalized designs or more finalized designs.

CHAIRMAN KLEIN: My guess is PBMR may not be a final design. After they operate it for a while, it may be modified as well. So, I think the question is when we do a design cert, how many amendments can we handle and can we go through that process? That will probably be a key issue that if we go down that path, so we're looking forward to seeing your paper and recommendations as to how complete, if we go down that path how the design cert is.

MR. BAKER: One point to make. PBMR is coming in for a design cert separately; NGNP at this point is not considering a design cert in the NGNP time frame. They're coming in for a license, not necessarily a design certification in terms of getting the rule done and having a certified design.

COMMISSIONER JACZKO: And that's not till 2013 under the current schedule.

MR. ELTAWILA: They are submitting their application in 2010.

COMMISSIONER JACZKO: For NGNP, the COL is anticipated 2013, I believe.

MR. ELTAWILA: That's correct.

COMMISSIONER JACZKO: That is the time when we would have a requirement for a more complete design at that point than a four-year licensing time and four-year construction time.

That gives us under the current schedule, 2009 is when pre-application review work would begin. That is four years to begin working on the design, working through the design, getting to a complete design. There is plenty of, you know, time in there if there is a commitment and the resources come from the applicant to work through those issues and potentially even be able to work off of an operating PBMR facility.

CHAIRMAN KLEIN: I think the challenge we probably will have as we go down this path, it will really depend a lot on what NGNP is, whether it's Pebble Bed or prismatic. I think we do have the codes and a lot of data for Fort St. Vrain that we handled and dealt with.

On the other hand, Germany has a lot of information on the Pebble Bed, both Julich and THTR, and then the Chinese as well.

So, there's some data out there that it's almost like you know, not quite like Clinch River and FFTF. There have been plants that have been running with gas that I think might give us some additional some technology and some data. It means we'll need a lot more, but I think there is a fair amount of data, and it depends on which way they go.

I think what we need is the computer codes to do a lot of the safety analysis. But I think if you look at your schedule, it should help drive DOE to make that decision to give us a design that we can then start working with.

In terms of information out of Germany, do you have pretty good access on Julich and THTR?

MR. ELTAWILA: We don't have this information right now, but we expect to receive it as part of the PBMR application because they have pulled the technology from Germany and they are going to submit it as part of their justification for the safety case of the design.

CHAIRMAN KLEIN: In Dortmund, remember they had that hot gas duct. They were doing a lot of testing for a long period of time on the hot gas duct. It seems on the material side there's a lot of information that we can help build on.

MR. ELTAWILA: We will definitely try to approach the Germans to see if we can access this information, but maybe because of contractual method between Germany and the Republic of South Africa, they

might not give us this data without PBMR approval. But in any case, we will get this information under the application review of the PBMR.

CHAIRMAN KLEIN: I'm sure that when China bought a lot of that technology from Germany they also had some of it.

MR. ELTAWILA: They have some of it.

CHAIRMAN KLEIN: Well, in my last trip there, there's some sharing that should occur between the two countries, so I think we'll move forward on that regard.

In terms of, Brian, I guess getting back to page 23 of your concluding remarks and you look at the commitments to support EPAct '05, there is a lot that DOE needs to do and a lot we need to do. From this side of the table what the Commissioners would like to know -- we don't have to know it now, but basically what do we need to do our part of EPAct requirements in terms of people, funding and other resources. I know space would be one of them that you need.

MR. SHERON: We would be okay if we -- I've already done the projection for Church Street.

MR. REYES: We've got him covered in Church Street. He kicked ADM out of the building, so he's going to the whole building.

CHAIRMAN KLEIN: One of the things, though, I agree with Commissioner Lyons, based on the discussion that we had with Dennis

Spurgeon this morning that both DOE and NRC need to move in similar fashions. And if there's resources needed for us to meet EPAct '05 then we certainly should let that be known to DOE.

MR. SHERON: We would obviously put that in our FY-10 budget request, but we think that there is still some additional resources we would need in '09 to, again, and this would be a combination of both Research as well as NRO in order to again meet the DOE schedule.

CHAIRMAN KLEIN: Obviously, as Congress looks at budgets for '09, I'm sure that we will communicate the fact that this program needs to move in parallel. That if they receive a significant dollar amount and we don't receive a dollar amount, then it doesn't help complete the whole process.

MR. ELTAWILA: If I may add to what Brian said. I think one of the important things that we have to hire people immediately right now because we need the group is going to interact extensively with DOE about their testing and analysis program and part of that interaction they will transfer the knowledge, so we would like to have the staff that will be working on that to be here during the interaction between us and DOE so they absorb that knowledge and be prepared for the licensing review.

So, I think one of the critical things is the NRC staff and, of course, a very good contractor to support us.

CHAIRMAN KLEIN: Commissioner Jaczko?

COMMISSIONER JACZKO: I guess I would just make a couple brief comments on the discussion on the Part 52 issue. One, I think it probably is good to get the Commission sooner than May; whatever the staff's approach is going to be. I don't know that we've yet come to a conclusion.

I hope we're narrowing in on something, which sounds to be the approach the staff is taking. It seems to me to be a good approach, but probably which I think the schedule right now is get something end of May. My sense is sooner than that would probably be better.

CHAIRMAN KLEIN: I think at least a draft. In other words, it doesn't have to be final, but at least something that we can start looking at, I think, to see the road map would be helpful.

COMMISSIONER LYONS: On that, I think that we've gotten a little bit caught up, I think, in the Part 50 versus 52 and all these things, but I think the important thing for me in all of this and I think it's what Mike Corradini said and you Ed alluded to it, the real important thing here is the technical issues. How are we going to resolve the technical issues? And clearly, the actual, I guess, resolution to the technical issues in a more detailed sense is going to come later, but at least for the road map right now the big approach is kind of to go with the deterministic risk informed approach or a combination of those two things.

That to me is probably the more fundamental decision for the Commission to really look at because that in the end is not the process; that's our definition of safety and what it's going to mean in this case, which I think is the more -- laying that foundation is going to help us decide how we address issues like containment or confinement or changes in emergency planning zones or anything else that might come out of it. So, I think, again, getting those things out to the Commission early would be helpful.

I'm going to switch gears for a little bit because I have Bill here, go back to our existing light water -- new light water reactors and just ask a couple of questions on some updates on where we stand with some of the -- what I still see as the critical path items for getting that process completed.

The first one is Part 73. Maybe can you give me an update on where we stand with Part 73 right now? I know we are in the process of doing guidance documents and getting ready to release guidance documents on that. I don't know if those drafts have gone out or how that is progressing.

MR. BORCHARDT: I am going to need some help on that.

MR. REYES: On Part 73 --

COMMISSIONER JACZKO: If you want to get back to me on that, that's fine.

MR. REYES: Part 73 we're pushing to accelerate the schedule for the rule. In June, Dr. Mallett is going to deliver it to me or we will have a

vacancy posted. Then on the other stuff, we'll owe you the details on the guides.

COMMISSIONER JACZKO: But right now you would say it's moving forward.

MR. REYES: On a serious note, the staff is pushing, but it's a lot of work. We're going to try to accelerate everything to meet it. Part 73 is a key issue we're pushing hard on.

COMMISSIONER JACZKO: Okay. The next question -- this has to do with -- I saw the APWR design cert is on here. We're going through the acceptance review with that right now. Again, it's my understanding that this falls into that area of not budgeted, but if we have resources we're doing it. I just want to make clear that my understanding of that is correct. Right now we do have resources because I guess some applicants didn't come in.

MR. BORCHARDT: Some COL submittal delays have opened up some resources. Either way, we wanted to do the acceptance review, so if there were issues that needed to be addressed they could work on that now. That's going to be our general approach to the maximum extent we can, even in '09, where we currently don't have enough resources to do all the COL reviews starting on the date they are submitted.

We want to try to do the acceptance reviews, so that if there's work

that needs to be done, the applicants can do that, and then, you know, resubmit the required additional information.

COMMISSIONER JACZKO: Okay. And on that point of acceptance review, we've done now, I guess it's about four or we have at least in review. We have South Texas. We have North Anna, Bellefonte and Duke that are in process or have been completed. Are there any lessons that the staff has learned right now about how the acceptance review process is going? Any changes, you think, could be made? Would there be an advantage to a longer time or coming up with some kind of criteria or anything you think you've learned at this point that would be useful to take stock of?

MR. BORCHARDT: I think the Commission's authorization to let us go to 60 days is beneficial because it's allowed us to go to a higher degree of detail. We're doing an assessment to see if there are any significant lessons learned.

My initial reaction would be that while you can always take longer to do it, part of the habit we need to get into is to do as good a review as we can, make a decision, and move on. And 60 days was enough for us to make some fairly difficult decisions on the first several. They weren't perfect applications.

We had a very thorough airing within the staff. We discussed the

issues and forced ourselves to a decision. Just based on that experience, I think 60 days was enough. We felt under pressure, but that's a good thing. So, I don't think we need more.

As the industry sees the feedback from the first several, they're learning. We've gotten that feedback from other future applicants that they're paying very close attention. So, I expect the quality to actually improve over time. It will actually get a little easier, I think.

MR. REYES: I was going to emphasize that second part. To Bill's and his staff's credit, all the issues that we have documented to the applicants early on have been clearly distributed to all future applicants and they have taken that to heart; in fact, delayed some applications to make sure they were fully complete.

And what you are seeing now is the latter ones we have received. Those issues are not there. They're much, much better applications and hopefully we'll get through it faster. I think there are lessons on both sides.

COMMISSIONER JACZKO: The last question I have, and I would just go back to the advanced reactors for a moment. One of the things that I think Brian or maybe Ed it was in your presentation; talking about the hydrogen hazards analysis and looking at that on the process heat side, hat may introduce one of these, I guess, licensing basis events or some kind of design basis accident equivalent. Looking at that, given the potential

that we may not necessarily be dealing with hydrogen production use of the process heat, but say the petrochemical applications, are we looking at hazards that could more broadly be, rather than just a hydrogen production hazard, but a petrochemical facility incident or are we still too premature for that?

MR. ELTAWILA: All external hazards would be treated whether it's a processing plant or the chemical plant for the production of hydrogen. Any stress to the nuclear facility itself would be assessed -- its impact on the nuclear facility.

MR. SHERON: Its proximity to the nuclear plant is also very important.

MR. REYES: The siting issue would cover that. We have current generation reactors that are nearby liquid nitrogen gas storage facilities, chemical facilities, et cetera, et cetera. So, when you go to the siting you have to know how the proximity is and all the external hazards that Farouk mentioned have to be dealt with. It could not even be connected to the facility. It could be a business nearby.

COMMISSIONER JACZKO: Do we have any examples of facilities that have the kind of proximity we might be talking about to one of the chemical facilities?

MR. REYES: We have some relatively close.

These proposals that you heard this morning are really close because the transportation of whether you are talking hydrogen or talking heat or steam, you don't want it far away for efficiency purposes, so you are going to be co-located.

In fact, we have one existing reactor who has an industrial facility nearby and they were looking into can they get heat, steam from that facility and it's very close by.

COMMISSIONER JACZKO: Okay. Those are my questions. Thank you.

CHAIRMAN KLEIN: Commissioner Lyons?

COMMISSIONER LYONS: Maybe a couple of straightforward questions. Brian, you said, I think it was on slide 17, that you don't have '08 dollars yet. You said the CFO had not been able to appropriate them yet. That slightly puzzled me. I thought that the '08 funds were in-house. Are they not?

MR. ELTAWILA: I think maybe when we prepared the slides that was the case, but I think the funds should start being released by the CFO. So, we did not update the slides, but we have the resources for '08 to start awarding contracts.

COMMISSIONER LYONS: Resources in '08 to start are not the issue?

MR. ELTAWILA: That's correct. The Commission put the resources for us.

MR. REYES: It takes about a month from when we get the money approved before they see it in their checking account in their allocations.

COMMISSIONER LYONS: I just wanted to add my concurrence with the statement that both Greg and Dale made, that if it's possible to see a draft of the licensing strategy sooner -- soon, I should say.

MS. VIETTI-COOK: You have it. We got it in preparation for this meeting.

MR. ELTAWILA: The background document. The licensing strategy is still in development and we will --

COMMISSIONER LYONS: That's what I thought you meant.

MR. ELTAWILA: Yes, that is correct.

COMMISSIONER LYONS: And then just a comment and I hate to belabor it. I'm still confused on 50/52 issues. Maybe my colleagues are 100% clear on it. I think what I was understanding Bill to say was that -- well, at least a possibility is 52 with a number of open issues or maybe it was Greg that was pointing that out.

But if you really want to stay with Part 52, you can do 52 with a number of open issues that would have to be addressed at some later point

in time. I just remain very doubtful that DOE is going to get there -- get all the details sufficiently put together to really come in with a complete Part 52.

MR. BORCHARDT: I'm not sure I can go along with the open issues comment idea. We need to have enough information in order to make a regulatory finding. You can base that --

COMMISSION JACZKO: The Commission has to as well on Part 52.

MR. BORCHARDT: Of course. But you can base that finding on detailed design information combined with ITAAC and DAC is just a subset of ITAAC; things that need to be verified afterwards in order to do that. We don't have any provision to have -- issue a license with an open item.

COMMISSIONER LYONS: I'm sorry, I meant DAC. I said open issues.

COMMISSIONER JACZKO: Certainly an approach the staff could use is license conditions that would limit operation in certain ways that would allow data to be collected, limiting output temperatures, things like that that would allow operation, I would assume, with certain parameters, and Bill -- maybe you're looking to Karen.

MR. BORCHARDT: I'm looking at Karen.

MS. CYR: You'd have to look at very specific -- maybe I can

issue them a five-year license or something, but if I am only authorizing -- that's a possibility, but we have certain -- minimum information you have to have to be able to make a finding that I'm going to issue an operating license. We're fairly clear about what those are and so I have to have sufficient information either in the form of acceptance criteria or detailed information sufficient for me to make those findings.

I mean in the ITAAC sense, it's going to operate at this level of pressure for this amount, so they basically go out and do that. It's a condition subsequent and that sense that I do that. It's not that I'm sort of, "well, we will see how it comes out" kind of thing.

Again, in a sense it would be like the staff used to issue low power licenses. You issued a license so that they can operate at 5%. I suppose there is some possibility of that and then they can come in and apply to move up to 100% or something if I only had enough information or data to show that it could operate at this level of power or something like that.

MR. BORCHARDT: The way I think of it is ITAAC is a verification activity. It's not a deferral of a regulatory decision.

COMMISSIONER JACZKO: I shouldn't have raised that. I didn't mean to reopen that.

COMMISSIONER LYONS: All that assumes that DOE is in a position to make that level of determination.

I am just very pessimistic as to whether they're going to get there. What I was trying to suggest this morning was there may be situations where in the absence of DOE having sufficient knowledge in some areas that a trade-off, if you will, or something that we could accept in lieu of that would be a more robust confinement/containment capability. That was the point I was trying to make and I'm not sure I really ever got that -- well, I should just stop here.

CHAIRMAN KLEIN: I think as you develop this strategy, I think there's things that we need to make our decision. There's things that DOE needs to do, and so we will obviously have to strike a balance, but I think if we articulate when we need information to make our decisions then it clearly articulates when they need to make their decision with design activities. And if they're not ready, then we're not going to be ready.

We'll just have to let those chips fall where they fall. Again, I think the key is being flexible; not to be so rigid that we can't move forward on this area of uncertainty, otherwise we get back to the infamous chicken and the egg. We can't move until someone else moves, so we need to keep moving forward, I think, for the benefit of the American people. So, we'll keep that in mind.

I have to -- certainly, I'm glad to see it's 50% less time on acceptance review and we will wait to see --

MR. BORCHARDT: Effort.

CHAIRMAN KLEIN: Effort, yes. We'll look forward to see what the effort is after you do the first COL to see what efficiencies are gained there as well.

MR. BORCHARDT: We have a while to wait till we're done with that.

CHAIRMAN KLEIN: Also, good news on the fact that the quality of the COL's are improving, so that people are communicating. I think that's also a positive sign that lessons are being learned along the way.

Do you get a sense that we will see in the future more utilities going at early site permit and then the COL or is it too early to tell on that one?

MR. BORCHARDT: I think we're seeing relatively little interest in early site permits. I hear of talk of one or two in the future but not very much to be honest with you.

MR. REYES: It's a time crunch issue; not that they don't like it.

CHAIRMAN KLEIN: Is that because of EPAct incentives?

MR. REYES: Among other things. If you look at what drives their long range planning for generating assets and then you look in their view the recent changes were coal, or that option may be on the cards and they were planning on doing that. Now the long range horizon is moving them to maybe the option of nuclear and they didn't have that plan.

So, when you do those kind of situations, it may be ideal to do an

early site permit and then do the COL, but it may not be better in terms of time. And so when you see their decision making from the utilities point of view, it's not having an ESP or not having it is better or less, you start with having electrical energy on the grid on a given date and you work your way back.

And if this is not movable, if this date is not movable, then it drives every other decision. If you were doing long range planning and coal was still an option and other things were still an option, they probably would have gone to the ideal ESP process.

CHAIRMAN KLEIN: Of course, I assume that a lot of the drivers right now, though, is the incentives --

MR. REYES: For the first wave.

MR. BORCHARDT: By the end of this year, there's a deadline.

CHAIRMAN KLEIN: And so, it will be interesting to see the end of next year what that strategy is, whether the ESP COL is a preferred option for that next phase.

MR. REYES: I go back to my argument. Our utilities are going in front of the public utilities commission with a coal plant proposal and they got to know. So, now you start from scratch planning because you still need that generation and you either go natural gas or you go nuclear. If you decide to go nuclear, you just ate a lot of your planning horizon.

So, if you talk to the utility executives that is driving some of the option of not to go to the ESP to do it all in parallel, which is a good feature of the Part 52 that we created there to eliminate risk, but they can't take advantage of it as much as they could simply because they are tight on this horizon

COMMISSIONER JACZKO: I think it's also we've found the ones we've done that it's -- there have been some -- because most of the early site permits did not come in, again, with this idea of finalized design, but there are a lot of issues that were deferred to COL anyway. There weren't as many issues that were closed down during the early site permit process to truly make it advantageous.

CHAIRMAN KLEIN: I think Vogtle was the first one that really had a plant, a design identified.

MR. REYES: That is the advantage of doing it that way. The disadvantage is if you did it with Technology A and for whatever reason that ends up not being your choice, whether it's cost or something else, you may not be able to do Technology B. So, that's another issue on the planning.

CHAIRMAN KLEIN: For flexibility. Thanks. Any more questions?

COMMISSIONER JACZKO: No more questions.

CHAIRMAN KLEIN: Thank you for a good first presentation, a good discussion. I again would like to compliment the staff's working with

DOE on the working group. I think that's important. I think we also need to continue to listen to industry to see what their needs are and hopefully at some point in time everything will converge.

And certainly on the research side and operation, there is a lot of information from other countries that we need to take advantage of their experience and what they have done in the past.

So, thank you and we look forward to the next update on both the new reactors and the advanced reactors.

The meeting is adjourned.