

UNITED STATES NUCLEAR REGULATORY COMMISSION
BRIEFING ON RESEARCH AND TEST REACTOR CHALLENGES

TUESDAY

AUGUST 11, 2009

The Commission convened at 9:30 a.m., the Honorable Gregory B. Jaczko,
Chairman, presiding.

COMMISSIONERS PRESENT:

GREGORY B. JACZKO, CHAIRMAN

DALE E. KLEIN, COMMISSIONER

KRISTINE L. SVINICKI, COMMISSIONER

STAKEHOLDER PANEL:

Steven Reese, Director, Oregon State University Radiation Center

Donald Wall, Director, Nuclear Radiation Center, Washington State University

Jere Jenkins, Director, Radiation Laboratories, School of Engineering, Purdue University

NRC STAFF PRESENTATION:

William Borchardt, Executive Director for Operations

Eric Leeds, Director, Office of Nuclear Reactor Regulations

Tom Blount, Deputy Director, Division of Policy & Rulemaking, NRR

Kathryn Brock, Chief, Research and Test Reactors Branch A, NRR

P R O C E E D I N G S

CHAIRMAN JACZKO: Good morning. We're meeting today to talk about research and test training reactors. I think it's certainly an important issue as we work to deal with what is a significant backlog for the review and renewal of licenses for some of these facilities. Before we get into that, I wanted to touch bases on -- this is the first in a series of meetings the Commission will be having in the next several months to talk about a variety of issues.

Certainly I think an ambitious schedule for the Commission which demonstrates certainly our focus and interest in tackling really some of the key issues confronting the agency. I think our meeting schedule lays an important groundwork, but really continuing to maintain public confidence in the work that we do. The briefing sessions we've scheduled will enable both the Commission and the public to better understand the status of important developments and issues facing the NRC.

We'll use these meetings as opportunities to broaden the diversity of stakeholder perspectives, and today we

have a very good diverse perspective from the research and test reactor community and to ensure openness through transparency and information sharing.

As I look across the spectrum of topics we'll be discussing with the staff and other stakeholders in the coming months, it's clear the Commission will continue to have an important focus as it always does on the safety and security of nuclear reactors and nuclear materials.

I look forward to discussions that can set us on the path to closing out long standing issues such as fire protection, emerging issues such as the potential to oversee the construction of new nuclear reactors and continuing priorities such as cyber security and emergency preparedness.

All of those are items that will be on our agenda as we go forward in the next couple of months.

I look forward to working with my fellow Commissioners and the staff to help continue our important mission of protecting people and the environment.

As I look at today's meeting, I think this will be an important meeting to demonstrate the continued partnership we have had with the research and test reactor community in looking at the issues of license renewal.

As I look at the material, I think this really is very much a partnership.

The research and test reactors have a unique statutory role in our oversight process and in our authorities. As I look at some of the challenges, I think there are challenges on both sides. There are challenges in having sufficient documentation, having sufficient understanding of really the licensing aspects of your own facilities which I think will help as we go forward to, as you develop and better understand those aspects.

It will better help us be able to work through this backlog and I think the staff will talk a little bit about some ideas they have about how to work through some of these issues in a risk-informed way, making sure that we maintain our focus on safety and are able to get through some of these reviews.

With that, I would ask if any of my fellow Commissioners would like to make any comments?

COMMISSIONER KLEIN: In terms of closing out issues that are longstanding, I think license renewal is probably one of those as well. Look forward to hearing from you today.

COMMISSIONER SVINICKI: Yes, Mr. Chairman. First of all, thank you for that preview of our very busy fall and early winter. I look forward to it. I think that through these meeting as you mentioned, we'll be addressing again in a very open and public way a lot of important issues. So I'm glad that agenda is well and truly underway, so thank you for that. I did want to make a few comments. If my figures are right -- and I'm going to confess I went on the TRTR web site last night, but I take responsibility for these figures.

I noted there have been approximately 64 university research reactors licensed and built in this country, but I believe again that no more than maybe a couple dozen of those are still operating, perhaps even fewer and maybe we will hear about that today. For the last couple of decades

according to TRTR closures of university research reactors were averaging about two a year. Why do I mention this?

Again, the Chairman was giving some context for our meeting today but any country that is going to have a civilian nuclear power program or plans to embark on one has to start with the educational infrastructure. Without this really important component of research reactors, neither the regulator nor the nuclear industry will have access to people coming right out of the university with real hands-on experience. I think we're diminished for the lack of that experience.

This meeting in that context is very important. NRC doesn't operate or build research reactors, but what we do, we license them and then the license renewal is an important process we have going on here. Today, we'll examine I think both from the NRC staff and from our invited guests today, how we can make the process more effective. And I think that's important work. Thank you.

CHAIRMAN JACZKO: With that, we will begin with Steven Reese from the -- the Director of the Oregon State Radiation Center. Mr. Reese.

MR. REESE: Thank you. I appreciate you inviting me here. Something I want to note before I get started though, is that last week it was 110 back in Corvallis and everybody in this town seems to accuse me of bringing hot weather today and yesterday. Since I'm leaving tomorrow, it will be nice again.

As I said, I'm Steve Reese, Director of the Radiation Center. I'm very pleased to be here. First slide -- or second slide. We are a one-megawatt TRIGA reactor. Very typical of other TRIGA reactors around the country, you can see from the picture there, it's a rather good picture of the facility because it gives you a good idea of how big a facility we're talking about.

The tank they're standing around is six and a half feet in diameter, about 16 feet in depth. So it's not a very big tank. The other thing to consider is the core in the bottom of that picture is about, approximately two feet high and about two, two and a half feet in diameter. Physically, we're not talking about something that's very big at all.

We were originally were licensed in 1967.

We had a 40-year license. And recently as you are aware, went through the process of both renewal and conversion. One complicated the other, and I'll get to that in a moment. Actually I'll get to it right now. What happened is right in the middle of license renewal we started negotiations with DOE for conversion of our fuel from high-enriched uranium to low-enriched uranium. That complicates things because we were asked to analyze the new core which changed significantly or changed rather a couple of chapters in our Safety Analysis Report.

Next slide. Here's the time line. We began doing the safety analysis report for license renewal in early 2003. It took us about a year and a half to get through those reviews. From within our own facility, we submitted it in late 2004 and you can see that conversion analysis started in 2006, and our first request for additional information for license renewal happened about the same time that we began conversion, so quite some time later.

In 2007, approximately a year later, we finished our analysis for conversion, submitted

that paperwork, and approximately a year later we had both our renewal and our conversion submitted at nearly the same time. Within a week of each other, we received the word, about both the license and the conversion order. Part of that was based on what I had stipulated because I didn't want to repeat a lot of work.

I knew my paperwork was in for license renewal and I based my conversion analysis on that submission for license renewal. In essence, I was saying I needed them both analyzed and approved to go forward.

Next slide, please. What worked well for us in this process was that we had a very good -- we certainly understood our facility but it provided an opportunity to really organize our facility and the knowledge of our facility in a way that we're very, very satisfied with. The other thing that really provided an opportunity for -- we involved a lot of students and faculty as part of the nuclear engineering department.

That's good because a person in my position, my philosophy is our reactors have to do

three things: You have to provide service, research and education, not necessarily in that order and it is up to you to figure out what that balance is. It was different for each facility, so it was very important for me to take the opportunity to involve faculty and students in the effort. It really, really paid off for us.

Next slide. What worked well:

Face-to-face meetings with the project manager, NRC reviewer and licensee were absolutely vital. We had a lot of fits and starts. I'll talk about that in a moment but to really make progress in an appropriate and rapid fashion, a very appropriate fashion I might add, you really needed to sit down in a face-to-face meeting preferably on site because if there are misunderstandings or questions, you can literally stand up and say it's right there.

This is what we're dealing with. This is the context to what this question is asking. The other thing that proved really, really well to be very successful was the fact that I would receive the RAI's and we would start to schedule a site visit that I just talked about in a time frame such

that we had our answers to the RAI's before the site visit occurred.

That was fairly important because then we could all talk on the same page. There was no guessing, there was no correspondence back and forth. We could talk about what kinds of answers so that we had the right context for the questions. It proved to be very, very effective clearing up a lot of misunderstandings.

Next slide. What didn't work well? And this is going to go to some of the comments that I'll make a little bit later. And that has to do with experience. When the first relicensing effort was done, the person responsible for license renewal for our facility was not our program manager. It was never really clear on why that occurred the way that did. Be that as it may, I think perhaps there wasn't a lot of experience under the belt of this person who was doing license renewal.

More to the point, the contractor that was responsible for doing the review of the license renewal based on the RAI questions we got back perhaps wasn't as familiar with research reactors

as they should have been . Some of the questions were, in my opinion, a little unnecessary. Certainly makes it easy to answer but doesn't mean I had to spend the time answering those types of questions. There was a lot of slow progress and there was not a clear understanding as to why the progress was so slow. What also was interesting -- and I think this came about because of the conversion, once the conversion hit, my project manager became responsible for license renewal and the conversion, which I thought was a very appropriate thing to do. A whole new slew -- essentially we started from scratch again and a whole new slew of RAI's came out of that in addition to the ones that we covered.

It seems to me there wasn't enough reviewers. There seemed to be one or two reviewers from a DOE facility that they were utilizing and it seemed to me that with the backlog, part of the problem was that there were only a couple people they were relying on.

It was a little surprising that they couldn't get hold of some other folks.

Next slide. Another thing that happened that I would like to make a comment on is that I think NRC significantly underestimated the workload that came about as a result of these conversions. These conversions kind of hit us like a tidal wave. There was a lot of political pressure to get these things done in an expedited manner. And that was on top of everything else.

One could argue that that in and of itself is the reason why there wasn't enough expertise or more people brought in. But in my opinion, we saw this coming early enough that you could bring people on board and up to speed. You had a couple of years before -- three or four were coming all at once. You had an opportunity, and it seemed like it was missed.

And I think some of these pressures -- some of what concerns the RTR community is that a lot of that experience that group has left in recent years, certainly over the last three years and I can't help -- it's a personal opinion, but I can't help but feel that some of those pressures brought on by that conversion and a lack of people brought

in in a timely fashion in anticipation of this workload contributed to that kind of atmosphere.

Next slide, please. End result: We went through this process, even with the conversion, and the doses were less than 10 C.F.R. 20.1301. What does that mean?

That's the dose limit to the annual public. This is the worst-case accident. The dose that we calculated even after the conversion, which was confirmed, confirmed the SAR was less than a millirem, worst case hypothetical accident, so very, very low. We spent most of our time in licensing conversion on Chapters 4 and 13. And you can see what 4 and 13 are, reactor core description and accident analysis. Turn the page. The RAI effort was the same way. It was spent mostly on those two chapters.

Most of the other chapters are basically summaries of existing procedures or retraining manual. Those are the type of things that are reviewed by inspectors on an annual basis.

They don't really change at all. One could make the argument that even Chapters 4 and 13 in a

lot of facility cases haven't changed much. That's fine. So be it.

Next slide. One of the things I would consider doing is we've gone through as part of this conversion process is we've updated our analysis since the early -- since the 60's and 70's for that matter . And they have to a large degree confirmed what GAO's calculations were back then; very safe, very effective. And in hindsight, from start to finish, I can't imagine why a renewal couldn't take more than two years. All we're really doing is re-reading. Fine, you take the information. You reorganize it in a new 1537, which is the standard format, and you read that.

I don't understand why it takes many, many years to read a document that is based on the guidance put out by a NUREG. It should be fairly straightforward and it's consistent with what they've seen in the past.

Next slide. One of the things that I would ask is that when you bring in new people, I found this to be very effective, certainly when we were

going through relicensing and the conversion analysis is that the person with experience as the program manager for the facility should act as a filter for the information coming through from contract reviewers or whoever is working on it. I found that to be eminently effective, certainly with folks that didn't have a lot of experience understanding the differences between power reactors and research reactors, which is substantial. Thank you.

CHAIRMAN JACZKO: Thank you, Mr. Reese. We will now hear from Mr. Wall who is in the process of having a license renewal.

MR. WALL: Mr. Chairman, members of the Commission I want to thank you for the opportunity to be here today to meet and discuss these very important issues. Actually, I'd like to make one comment that I thought of at the last moment. As you pointed out, Commissioner Svinicki pointed out, about two-thirds of university reactors have shut down since the late 1970's. We have a thriving program and a lot of university support, and we're not going anywhere.

The next slide, please. On March 9, 1961

our reactor first reached criticality as a materials test reactor. In 1967 we converted to TRIGA fuel. In 1976 under the FLIP program became an HEU fueled reactor and used HEU fuel in our reactor safely from 1976 until last year when we converted from HEU to LEU.

Next slide, please. I'd like to say a few words about our HEU to LEU conversion, and that is that I had submitted the conversion safety analysis report in August of 2007, and then we conducted the RAI resolution during the course of much of 2008 and reached our conversion milestone in September of 2008. And we are now entirely an LEU fueled reactor.

Next slide, please. In putting together the conversion SAR, we essentially modified three parts of an earlier SAR that we had submitted as part of the license renewal process. Those were the reactor description, the accident analysis and the technical specifications, which are Chapters 4, 13 and 14 in the SAR.

This follows very closely with some of the interim staff guidance that I would like to come

back and discuss in just a few minutes.

Next slide, please. We submitted a Safety Analysis Report on June 24, 2002, for the license renewal. And this safety analysis report followed the format that was specified in NUREG 1537 which was promulgated in 1996. This Safety Analysis Report that we submitted in our case took about four years to prepare. The reason for that is because of something that has been discussed before, and that is limitations on resources that facilities have. We have one fellow who is an associate director working part time on this, which is why it took four years.

Admittedly, if there was somebody working full time, or two people working full time, it would take much less time. But it does give an example of the kind of pressure this can put on a facility to comply with NUREG 1537.

Next slide, please. Now, NUREG 1537 is something that we're familiar with because we live with this document, and it's something that was promulgated by the Commission. But it's worthwhile to point out that NUREG 1537 consists of two parts,

a total of 869 pages. When it's all printed up, it forms a stack about as high as the two copies of the CFRs that you have in front of you. In fact, NUREG 1537, is a much longer document than the SAR ends up to be. I do want to make one comment about it, NUREG 1537 in my opinion, is a magnificent piece of work. I didn't put such superlatives here in my slides, but that is my actual opinion. When I read it, I am very impressed with the amount of thought and study and preparation that went into putting that together.

And quite frankly, it's one of the best guidance documents I have ever seen on how to put together a formal application for some purpose. I used to work for Sandia National Laboratories on the nuclear waste management program and we didn't have a guidance document nearly as good as this one putting together the compliance certification or compliance recertification for the waste isolation pilot plant.

I definitely want to say that my hat's off to those who put that together. Nevertheless, what it does is specify a great deal of very much

in-depth analysis, much of which is, in my view, and I think in the view of many of my colleagues, unnecessary in doing a license renewal application. Essentially, what it stipulates is rewriting the entire SAR and treats license renewals as initial applications. In my view, this is something that needs to be discussed and thought out, because many of our facilities -- ours, for example -- has got a long history of safe operation. And in fact, when I went back and did the analyses for the conversion safety analysis report and looked at Chapter 4 and 13 and 14, what I found is that the original information that was contained in our earlier safety analysis report was sound.

I did not find any mistakes in there that would have any kind of negative impact on the public safety. In fact, in many cases, a much more detailed analysis that we are able to make nowadays confirmed the earlier analyses and found that in many cases, it was very conservative.

Next slide, please. And so, in that context, the document, SECY-08-0161 discusses four issues that have contributed to the licensing renewal backlog.

The historic NRC staffing and emergent issues really goes back to two things. One is the -- here's an awkward word to use in nuclear context, the "fallout" that came about as a result of the accident at Three Mile Island and the focus that the NRC had to make during the 1980's as well as in the post-9/11, as we know, occupied much of NRC's time.

The limited licensee resources is a moveable target, really. Limited resources are limited if we're asked to do a great deal of work. But we of course have enough resources to continue to operate safely and to protect the public on a routine basis.

Next slide, please. And with reference to document 00-95 which contains the interim staff guide on license renewals and divides it into two tiers, those at two megawatts thermal and greater and those less than two megawatts thermal. I'm only going to comment on our specific situation. We're a one megawatt reactor. This interim staff guidance focuses on three things; reactor design operation, accident analysis and technical specifications.

These things are exactly the things that we

had to reanalyze in order to do our reactor conversion from high-enriched uranium to low-enriched uranium fuel.

Next slide, please. So, from our perspective, from Washington State University's perspective, we have already submitted the pertinent information that is required for license renewal. We have sent in a Safety Analysis Report in 2002. And essentially, I consider that to be a pending document when doing the analysis for the reactor conversion from HEU to LEU fuel. We've gone through the RAI process already for the conversion SAR.

This was a very extensive process. We had close collaborative effort between WSU, between NRC, between the reviewers and other collaborators who were assisting us with the analysis on this project. And again, this contains all of the information that's requested in the interim staff guidance, which is a light reactor description, the accident analysis and technical specifications.

Next slide, please. One thing that NUREG 1537 pretty much doesn't take into account is the long history of safe operation of facilities such as ours and

the others throughout the country. Since we've been operating safely for 48 years, the initial criticality of the reactor took place on March 9, 1961. This was before I was born, actually before a lot of people in the room were born. I'm only the fourth director of the reactor project at Washington State University since 1955.

So what we have is a lot of institutional knowledge and a lot of emphasis on those things we need to do to continue safe operation and protect the public.

Next slide, please. So, the conclusions that I would like to make are that 48 years of safe operation should speak volumes with respect to us understanding how to safely operate our systems and protect the public.

We're not alone in terms of having a safety history that is like that. So for that reason, I think that it is appropriate to focus on the three areas described by the interim staff guidance in terms of reactor license renewal. I would also suggest that it would make a lot of sense to decouple a complete rewrite of a Safety Analysis

Report in the format of NUREG 1537 from the license renewal process. As I said before, I very much like the document NUREG 1537. And my first choice given infinite resources would be to write an SAR that's exactly down the line in conformance with that and in fact that's exactly what we have done. And I don't think that in all cases it is appropriate and that is why I think that decoupling it from the license renewal process would be an appropriate step. Thank you very much.

CHAIRMAN JACZKO: Well, thank you Mr. Wall for that bit of information. We'll now hear from Mr. Jenkins who is the incoming President of TRTR.

MR. JENKINS: Thank you Mr. Chairman, Commissioners. My name is Jere Jenkins, I am the incoming chair of the TRTR as the Chairman has said. Next slide please. TRTR is a national organization of test research and training reactors. Our mission is to support the use of reactors in research, education and training throughout the country, and that includes both the university reactors and national lab reactors.

Our membership consists of anyone who is

associated with the reactors either in operations or in regulation. We do have a commitment at TRTR and that commitment is to maintain safe and secure facilities and safe operations.

We also have a commitment to educating the public. From my own personal experience, we get about 1,600 to 1,800 visitors a year that come through our facility that we can basically show them that this is what nuclear technology is. Our reactor occupies two cubic feet, one foot by two foot reactor. It sits at the bottom of a 17-foot pool that holds 6400 gallons of water. When people come in and look at the reactor and say, oh yeah, that really isn't all that exciting, is it. They see that we really do pose a limited risk to the public and to the public health.

Next slide, please. I became the facility director for Purdue in 2004. I am the fourth facility director since 1962 when the reactor was first licensed. The Purdue University reactor is a one kilowatt reactor. It was designed for 10 kilowatts but we licensed it at one in 1962. It had a six-year license at the time. And we renewed the

license in 1968, again in 1988 and resubmitted in 2008. This was right on the heels of converting to low-enriched uranium. In 2005, the Department of Energy came to us and said you're going to convert your reactor to LEU, get ready to start doing that work. I said I'm getting ready to resubmit our license. They said hold off on that.

For the next two years, we worked on the conversion. We did it with DOE support and the support of Argonne National Lab. We were able to basically redo the analysis for chapters 4 and 13, which we would not have done otherwise. But we got that done and then finished the conversion in late 2007. And then in 2008 I basically rewrote the SAR under the guidance of NUREG 1537 and submitted that then at the end of July which was a timely renewal.

Next slide, please. I'd like to say that research and test reactors are non-power reactors. That is how they are recognized by the regulations.

They do have a very low risk to public safety. If you look at the maximum hypothetical accidents at most of the reactors, they don't involve the reactor themselves. Our maximum

hypothetical accident at Purdue is a failure of a fueled experiment. That failure of a fueled experiment does not involve any process with the reactor at all.

Even under that maximum hypothetical accident, we have less than one millirem of radioactivity escape the confinement of the reactor room itself and become a dose to the public.

They are vital to the research, training, and education missions of the nuclear infrastructure that we -- that Commissioner Svinicki mentioned. If you talk to any one of our graduating seniors, they have all had the opportunity to operate the reactor at least twice, to do experiments, realtime experiments where they get to apply the theory that they learned in the classroom. They all point back as alumni and say this is one of our favorite things that we've done here. It is a mission that we're actually trying to broaden and add more reactor experiments because we believe the students are going to be best served and best trained entering the work force if they have the opportunity to see how these things really work.

Next slide, please. The sizes of the reactors represented by TRTR range from a few watts to 20 megawatts.

Even though most of them are somewhere in the half a megawatt to megawatt range, all of the analysis that has been done show they pose very little risk to the public, even up to the largest reactor at 20 megawatts. We're not talking about large machines here. Most of them don't even have a containment facility because it's not required. So if you look at the public risk posed -- and this was actually put forward by our university administration recently -- there are much more vital places that where many more people could be harmed than what the reactor's considered.

In fact, the university doesn't consider our reactor a great risk. And they do support us and they do expect that we will stick around for the long-term future. The staffing at most of the reactors ranges from one person probably up to a few dozen. But most of those people would be involved in operations and not necessarily involved in the licensing or rewriting of safety analysis

reports.

Most of the reactors exist on minimal support, absolute minimal support from the universities. The research labs are a different story.

They have different budgetary requirements. If you look at the universities, the universities do not have a lot of money, especially the state universities right now. State budgets are being cut. Purdue experienced another 4% to 6% cut in the state budget again. So we do not have a lot of money to play with to hire people or take people away from other jobs to put them on to writing licenses. Also get very limited support, if any at all, from the Department of Energy.

Most of the Department of Energy money is mission directed now and they don't see the reactors as fitting necessarily that mission with the global energy partnership.

To review the prior licensing activities for most of the reactors, we have first, second and third generation licenses. In the case of Purdue, we're presently on an extension of our third

generation license until the fourth generation license is reviewed. We have seen an evolution of the Safety Analysis Reports requirements. Our first safety analysis report submitted in 1962 was six chapters.

Those are now up to 16 chapters, including a financial statement from the university. The reactor community is willing to support the upgrade of these Safety Analysis Reports but we would like to see that decoupled again from the licensing aspect of this.

Most of the reactors have been running safe -- all of the reactors have been running safely since they were first licensed. The science and the physics has not changed, even though the codes that may be used now are state-of-the-art. The codes that were used then were state-of-the-art. The answers that we find when we redo the analysis, for instance in the analyses we did for the conversion proposal in 2006, we do not see any change to what was found in 1962.

So, it would be worthwhile for us, I think, to put forward to the NRC and for the NRC to

consider that really we haven't changed much. If we do make changes, these are part of the 10 C.F.R 50.59 reviews and those should be included as part of analyzing a license application. NUREG 1537 is a relatively recent document, developed in the 1990's.

ANSI 15.21 which is the American National Standards Guide for Safety Analysis Reports has gone through a few iterations. I believe the latest edition is 2007.

We wrote our Safety Analysis Report for our new license under the guidance of 1537 and ANSI-15.21, which was suggested by my project manager at the time. The fact that we are required to get a new license with each renewal though has become kind of a burden on the research reactor community, especially in light of limited staffing.

Next slide, please. The budget and staffing capabilities of the facilities in the NRC are both stretched thin. We know with the economic situation right now they will probably be stretched thinner, at least at the facilities. The NRC may not have the same problem right now, but a recent challenge is the elevation of these previously acceptable SARs to the new standards. The process of analysis of the applications is slow

and cumbersome, having possibly in one case, two different contractors review the analysis, review the Safety Analysis Report makes for multiple iterations of RAIs.

Next slide, please. New NRC project manager staff and management are not necessarily as familiar with the facilities as the previous staff was. We applaud all the efforts of the licensing branch to become more familiar with the URRs or the university research reactors. They are making great strides in doing that. We are willing to help them become more familiar with that. And that familiarization will allow the licensing process to go more smoothly.

Involvement of other units within the NRC and assistance of the analysis of the license applications brings a certain challenge to it in that many of the other units are used to dealing strictly with power reactors and they don't understand the low risk or don't understand the low risk presented by the university research reactors.

Next slide, please. Our assets, we have a long history of safe and secure operations at our

facilities. Any facilities that have gone through changes have done the appropriate 10 C.F.R. 50.59 reviews. It is incumbent upon us to make changes to the Safety Analysis Reports to reflect the approved 10 C.F.R. 50.59 reviews. We have prior license documentation, for instance, Safety Evaluation Reports. If those were done as a NUREG that we can fall back on that shows the NRC analysis in 1988 for our facility, for instance, showed that we posed limited risk to the public and all our analysis was good.

Reactor conversion experience, those reactors that have recently converted have gone through another Safety Evaluation Report.

All of those Safety Evaluation Reports could be combined into one document or two documents to reflect different types of reactors that can be used as basically a reference to say that, yes, we've seen these reactors are safe and will operate with public safety in mind. We also have the recently renewed licenses that have been out there, could also be added to that pool of references.

Next slide, please. The focus areas of the license reviews are in Chapter 4 and 13 of the SARs. We believe that's where they do belong to have the earthquake potential for a facility be reviewed.

Again, I don't believe much of that information has really changed, but that potentially could become part of what a review of the safety application or the Safety Analysis Report would be. We need to keep in mind that we have to have a risk informed judgment in the decision-making process. We need project managers that are very familiar with the facilities.

Next slide, please. Some quick points to consider: The utilization of the existing NRC know-how, even though that's not near where it was, it can be brought up to speed again. I would point out that we're going through this now. In 20 years if we issue 20-year licenses, the NRC will have to go through this again and acting well to take care of this problem and make it a more streamlined process now will help us out in 20 years when probably not the same people will be around at any

of the facilities. Probably not at the NRC either.

Any change must bring improvement to the process and not add more of a burden. I appreciate the continued stakeholder involvement that the Commission has offered us. Thank you.

CHAIRMAN JACZKO: Thank you, Mr. Jenkins, for that testimony. I think we heard common themes from all of you. We will begin now with our questions with Commissioner Svinicki.

COMMISSIONER SVINICKI: Thank you. I agree these were great presentations and many questions come to mind. I would say first of all, I hope my questions will be seen in the light of I have a sincere interest in understanding how we can make this process better. One of the ways we do that is speak plainly about things that aren't working well. I'm not looking to pick on any aspect of this program, but a few of you have made a reference to that NRC's reviews are substantially reliant on a contractor, a model to get contract support for our reviews of your applications.

What I've taken away kind of spread through this record and also the NRC write-up of the meeting

that they held where they talked about the interim staff guidance and the staff's paper with proposed improvements was this notion that maybe that there's not good cohesion.

There has been NRC staff turnover. That I think I don't need to diagnose so much because the agency has gone through a substantial reorganization, created two new offices. So recent history for this agency that was, again, not saying that made it helpful to your applications but I think I know why there was staff turnover in this area. But I wanted to examine that piece of perhaps cohesion between the RAIs that you get from a contractor. Mr. Jenkins, you mentioned you had two contractors.

I can't imagine that helped very much. Is this -- I think Mr. Reese, you talked about the RAIs that you got from the contractor doing the review didn't seem to have an appreciation for the fact that this was an RTR versus maybe a power reactor.

I wondered if any of you would comment on that or any suggestions you would have. Do you feel

these RAIs come to you over a transom and get shipped back over? You talked about the benefit of having continuity in your NRC managers and the project assigned staff at the NRC level.

They it seems to me could be bringing cohesion to your review that might last two years if you had that continuity. I'm really specifically interested in the contractor piece. Is it kind of job shopped in a way that makes it difficult for you to, you just receive them and answer them but you're not getting a sense of what safety issues they're driving towards?

MR. REESE: I'll try to answer that if I may. What happened the first time around -- see if I can capture all of this -- what happened the first time around is it's not that there was a clear -- it seemed to me that some of the RAIs that I received the first time around, there was a clear non-familiarity with research reactors. It seemed to me that some of those questions could have been filtered out, for lack of a better description. And while that's okay, usually when those questions would come up, they're fairly easy to answer --

don't apply because of X. So those traditionally didn't take up a whole lot of time. This was the very start of the process and these were the first RAIs we were receiving.

I wasn't looking forward to the next couple of years, let's put it that way.

MR. JENKINS: If I could elaborate, I'm sorry. It wasn't our facility that had two different contractors. It was one of the facilities still going through the licensing process. I'm wearing two hats today. One is representing the entire community. One is representing Purdue. Our experience with the conversion analysis was very good. We had one contractor. And when the questions came back from the contractor, we had Al Adams who acted as the filter to a lot of those questions that did not apply necessarily to the research reactor, especially our research reactor being very small compared to some of them. Some of the RAIs that weren't necessarily applicable were set to the side, and there was a justification for doing that.

But they did not put those questions

forward. We limited the questions to 41. We were able to work on the answers and submit answers back to AI and the contractor before the site visit. So we were already passing information back and forth, so that process that was smooth. The conversions were all done, I wouldn't say necessarily in a hurry, but they were -- the DOE was applying pressure to have this done quickly because we wanted to reduce the HEU use in civilian reactors.

That same sort of time constraint does not apply to license applications. They can stretch on. I think in the one particular case that I'm mentioning, it stretched on longer than the contract with the first contractor.

So a second contractor was brought in and a second set of RAIs which are only tangentially related to the first set came back. So that second set of questions weren't necessarily questions on the answers to the previous RAIs. They were totally new. Having this go on for so many years when you're working past the length of these contracts, I think that's where the problem comes in.

MR. WALL: I'd like to make a comment also.

A contractor was also utilized in our case for the analysis of our conversion SAR. And I found the process to be quite transparent. In fact, the questions arrived, and it was a fairly straightforward process to communicate with both NRC and the contractor to make sure that we clearly understood the intent of the questions and provided clear and satisfactory answers. From my point of view, the process was satisfactory.

COMMISSIONER SVINICKI: Thank you. And with the remainder of my time, some of you indicated your familiarity with the interim staff guidance and also with some of the staff's proposals for streamlining and revamping.

As you mentioned, Mr. Jenkins, perhaps for the next wave of renewals that we would modify this process. I might ask about two specific things. One would be as I understand, the lack of an existing requirement for RTRs to update their SARs. I know that that doesn't have a direct nexus with renewal but when a facility was entering a renewal, they would be in the position of having an updated SAR.

Just generally, professional view points or opinions on instituting a requirement to update SARs for RTRs?

Do any of you, have you taken a position or have your organizations?

Mr. Jenkins: I think a requirement to make the facilities, especially if they have limited personnel update or keep their SARs up to date every year, most of the facilities with limited personnel they also do other jobs. I teach three classes on top of being the facility director for the reactor. Having to submit something on an annual basis or five-year basis would probably be a real burden.

Maybe on a ten-year renewal scope or ten-year review scope of the SAR, that would probably be something that would be doable. Again, it's always going to be a moving target. If NUREG 1537 is not going to be the only game in town, at some point there will be something new. The ANSI standards are also reviewed on a regular basis. To have to keep doing that, yes, we can probably make an effort to do that but it's not going to be something that's going to happen very

easily.

Mr. Wall: I agree. I would not recommend that we be required to update SAR's on such a frequent basis. Very little changes over time, and those changes are passed by NRC when they take place on the reactor or significantly affect the license. And so I think that particularly since, as Jere said, it's a moving target, what about when the standards change a few years from now? As they inevitably will because everything does.

Ideally, it would be nice if we updated every year or every two years or something like that. But the question has to be asked: How does that contribute to protecting the safety of the public?

And the answer is: In my opinion, it does not.

MR. REESE: I think it's appropriate if once every 20 years a facility can go back and look at their SAR and incorporate 50.59 changes that have built up over those 20 years. Part of the problem we're having is the format changed in the mid 90's. Nearly all of the facilities were build prior to that. Nobody had the

format. It's the process of taking existing information, putting it into that and submitting it. Once every 20 years, if you're anticipating it a few years out, I don't see that as a great burden. We've got a lot of history. We can do a lot of referencing. Aside from chapters 4 and 13, which have been reevaluated a couple of time here in the last two years, much of it comes from existing procedures. So, once every 20 years I think is okay.

COMMISSIONER SVINIVKI: Thank you for that feedback. Thank you, Mr. Chairman.

CHAIRMAN JACZKO: Thank you Commissioner Svinicki for those questions. I think just to follow up on Commissioner Svinicki's point, I guess I'm -- perhaps this is a terminology issue, but I think, I guess one of the things that I took away from what I heard is that the lack of updates to the standard -- or the Safety Analysis Report was one of the challenges in developing the license renewal process. Maybe that was a misperception. I had always understood the issue of having the Safety Analysis Reports updated on a more continuous basis

as a way to facilitate license renewal. If you look at the power reactor community, one of the significant differences there relative to the research reactor community is that Safety Analysis Reports are updated on a much more frequent basis. Therefore, license renewal is a different process because you're not necessarily having to do a de novo review of the relevant information.

So I guess I was a little bit surprised to hear that there's not an interest in trying to maintain Safety Analysis Reports. I understood that to be something that would be effective in helping make the license renewal process easier. Maybe I misunderstood the issue. I don't know if any of you want to comment on that .

Mr. Jenkins: Part of the 50.59 review process should be adding those changes if you are making any changes to the physical plant, adding those changes into the SAR. For facilities 50.59, for instance Purdue, we didn't make any changes to the physical plant basically from 1967. Our first change to the reactor itself came with the conversion.

CHAIRMAN JACKZO: So what would an update in

that four year period -- is it just newer codes?

MR. JENKINS: I would not even recommend that we would have done newer codes but we would have --

CHAIRMAN JACZKO: I'm asking what would an update involve? During that time period, you would have had to update your SAR on a periodic basis. What would that have involved, just utilizing new codes?

MR. JENKINS: Well, no we would have had to go from the 8 chapters of the original SAR was to the 16 chapters that it is now. All of the reactor systems were combined into one chapter. Now they're all broken out. So there is a chapter on safety systems. Well, Purdue doesn't have any engineered safety systems because they're not required for the reactor. Our engineered safety system is the fact that the reactor is such low power. There's 6400 gallons of water. There's a very good heat sink. So it's pushing -- it's trying to make a one size fits all Safety Analysis Report for all the reactors which are certainly not the same, if you look at the very low power reactors, basically the desktop reactors.

CHAIRMAN JACZKO: I'll have to be honest, I'm confused. When we talk about updating the SARs on a periodic basis, if there's no changes in your facility, presumably there are no changes in the SAR.

MR. JENKINS: There shouldn't be changes in the SAR, but the guidelines for what an SAR should look like have changed.

CHAIRMAN JACZKO: If we are in a period in which we're not changing the guidelines for an SAR, what would be involved in updating a SAR on a periodic basis absent changes in the facility, I guess is what I'm trying to understand?

MR. REESE: What we're all struggling with is the fact that, quite frankly, it's just a rewrite to go from our original SARs that were written in the 60's. It's the same information essentially. It's a little bit different but all you have to do is take what you have, rewrite it put it in that format, safety basis really hasn't changed and we have proven that lately with all the conversions that are going on. So you ask what does it take?

It really just takes what you have existing, putting it in the format. The problem that --

CHAIRMAN JACZKO: Let's talk about going forward. Going forward, the format is going to be the same. I don't think that the staff is anticipating any format changes. If absent a change in the guidance on what various chapters should entail, what would updating the -- would there be no work, then, in that case?

I'm trying to figure out if there is still something that needs to be done that would be problematic.

MR. REESE: Very little. What Jere said is right. When we do 50.59's to alter our facilities, it's usually not that significant. We're very much on the margins here. We're not talking about doing something very exotic with cores or anything. You're talking about changing a rod drive mechanism, going from chain link to a stiffer motor, something simple like that, fall into the process. That's a one-sentence change in your SAR. Once you get in a new format, I think it's very easy to maintain.

The problem that we have is sometimes there is a paradigm shift to think that power reactors, because they keep theirs up to date, that that's fundamentally different from just, from the research reactor community getting it into the right format and reviewing it in a license renewal format. There is a paradigm that says, all right, once we move into that format, now we have to go through relicensing. That's the part that is really escaping me. Why can't we put it in the format? If the safety basis hasn't changed, nothing's changed then it should be license renewal just like a power reactor. It doesn't matter if we haven't updated it, if we put it in the format they want, the safety basis hasn't changed, it's no different than a power reactor. The problem we're having is getting it into the format that was changed in the mid-1990's.

Chairman Jaczko: So going forward, the issue of updating the SAR should not be an issue?

MR. REESE: As long as the guidance for the format doesn't change.

Chairman Jaczko: That was closer to my understanding.

That's very helpful.

Mr. Reese, you talked about the work that you did to update your SAR, and I think a lot of that work involves students who need experience, creative ways to take full advantage of that.

Relative to others in the community, where do you think your reactor stood in terms of your ability to do that?

Do you think you had more capability to do the update of the SAR than others?

Do you think you were reflective of generally where other reactors are?

MR. REESE: Let me break that down into two different processes. When we talk about license renewal, when we originally started that year and a half process before we submitted, it was largely me and another gentleman who put that together. But in fact, we did not redo the analysis. When you talk about codes or anything like that, we did not do that. We took what we had in our original SAR and some more recent work that had been done at UC Davis and incorporated that into 4 and 13, made specific modifications that are pertinent to our reactor. But that was essentially it.

We submitted that. We didn't do, redo the analysis associated with the reactor core. Now when we went through conversion, there was money provided by DOE and the stipulation was that there was an interest in looking at this from a modern and high-fidelity code standpoint. When you have that kind of money, it's okay to go through, incorporate students, bring on professors, nice interaction.

CHAIRMAN JACZKO: SO that was for the conversion?

MR. REESE: That was for conversion. For our original license submission, we didn't do that, nor did I think it was necessary for original license renewal.

Chairman Jaczko: So now going forward, you now have an updated SAR?

MR. REESE: I do. What I have are two three-ring binders, one for the conversion and one for the SAR. And essentially the conversion is chapters 4 and 13 and all I have to do is cut and paste and put it into SAR. My goal was to do that by the summer and I haven't done that. Hopefully by the end of the

calendar year my goal is to resubmit an SAR with all the RAIs and all the conversions into one document so we can go forward on 50.59s.

CHAIRMAN JACZKO: Many of you commented on Chapters 4 and 13. As we look at going forward and trying to risk-inform this process and focus on the areas most significant. Are those the two chapters -- I guess I was hearing from all of you -- that would be the significant chapters when it comes to the areas of focus that we should look at, or is that not a fair assessment of your comments?

MR. JENKINS: I believe that's a fair assessment and I also believe that is the intention of the licensing branch is to spend most of the time on Chapters 4 and 13. However, those reactors that are proposing any types of changes, the licensing branch said they intended to give it a full review, which means reviewing the chapter on earthquakes, reviewing the chapter on engineering safety systems.

As part of our license reapplication, we asked for an upgrade from one kilowatt to our design

power of 10 kilowatts. Looking at the analysis that we did for the conversion, we have an onset of nuclear boiling at 190 kilowatts which is lots of margin between where we want to operate and where our onset of nuclear boiling is. But because we asked for an upgrade to ten kilowatts, we're going to get a full review of the SAR. I can only hope everything I did on earthquakes is correct.

CHAIRMAN JACZKO: I would think you know how to do that analysis. We would hope that you wouldn't have to hope.

MR. JENKINS: I'm not a geophysicist so everything that I pulled in I hope is what the NRC is going to want for that. I'm a nuclear engineer. But what it comes down to is Chapters 4 and 13. Chapter 4 is physics, Chapter 13 is the accident analysis safety and safety analysis. That's where the meat of what we've done is. That's where most of the review should be.

CHAIRMAN JACZKO: Thank you. Appreciate it. Dr. Klein.

COMMISSIONER KLEIN: I'm probably one of the few Commissioners that either suffered through or had the opportunity to do a license renewal, a decommissioning, and a new license. And I can

relate to a lot of frustrations that we heard from that side of the table from what I went through with my personal experience. It's not a license renewal. It's a new license application. And the documentation that was required was cumbersome, dealing with the contractors who were typically from the national labs, that it did not have any experience in research reactors.

I suffered the same thing that you suffered. Questions that were asked were just irrelevant and meaningless, but yet you have to respond to them. The time it takes to respond to those is a challenge, to say the least. And so the SAR, in my view, the problem is the information is there but it's the formatting is not simple because the requirements, when you changed all the chapters, when the NRC changed all the requirements, the technical information was there but the time it takes to reformat an SAR into the new format is not trivial.

It's very time-consuming, it's difficult. And so my concern is that ten years from now, we'll have a whole new requirement for SARs. And so these

facilities that have limited staff are going to have to change all their formats again. The information won't change but the format will change and the requirements will change. So it's rather challenging. Having gone through that personally, it was -- it's a challenge. I think the difficulty that I saw on the license renewal, it's not a renewal. It really is a new license.

Questions would get asked, for example, on liability. So you go to your University President and you have to fill out your complete financial reports for the university.

Well, you start asking for that and it makes University Presidents nervous and asking why are you asking for that information?

Then you have to go down to the system and ask for their entire financial activities. So a lot of the questions, I think, are cumbersome and really are not public health and safety driven. They're more bureaucratic driven. So I'm hoping through this process that we can streamline it and really get it to a license renewal and really look at a risk-informed activity so we can do it better

because I think we all want the same thing. We want them safe, secure and protect the public in a manner. But the way we go about it is challenging.

I think if you look at the time it takes for these renewals compared to what it does at a power reactor, we're orders of magnitudes off. I think some of the reactor renewals have been in since 1977. That doesn't bode well for the system for these renewals. I'm hoping we get this to a better process for us, the NRC and the licensee.

I have a few questions. I guess one of the questions, Steve, it sounded like it took a long time to come down to your safety analysis of less than 100 millirem in your safety analysis. Did it take a long time to reach convergence on that?

MR. REESE: The original SAR written back in 1967 calculated something very similar. So that was one part that I did from scratch myself, so I wanted to do it myself and through the part of relicensing. In that process of doing it, the numbers weren't exactly what they came out in '67. When you're dealing with a millirem or half a millirem, that's kind of lost in the noise. The

point is that that number was very, very, very low.

When you say, did it take me a long time to reach that conclusion, my answer would be no, it was pretty straightforward.

As a matter of fact, I assumed that my building wasn't even there. I said my building instantly evaporates, my water instantly evaporates, magic occurs here, and the cladding on a fuel element magically evaporates. All of this stuff happens – what is the dose downwind. It's less than a millirem. A pretty good feeling to have.

COMMISSIONER KLEIN: One of the challenges that we're having at the NRC is personnel change. Obviously for some reason, people want to retire. We bring in new people. What's it like in the RTR community?

Are you able to get good replacement people as individuals retire? What's your pool that you draw from? Is it adequate?

MR. JENKINS: I would say for the most part it probably is. There is a lot of competition in the marketplace, particularly from the NRC. They're hiring a lot of people away from the RTRs. The

utilities are offering a lot of money, signing bonuses. We don't have the kind of money that the utilities can pay people. It is tough to keep people around. We have a continuous influx of hires, I think, that are right out of school that are happy working with the reactor community at least for a little while to gain some experience.

They get to be a senior reactor operator, most often which is a good thing to put on a resume and take forward.

MR. WALL: When I think about how we operate, I compare our facility to a college football team where we have them for a few years and then they go off to the pros. We have a small number of permanent staff who are with us for a long time. We're the coaches. And we train people and we get a lot of young folks, a lot of student operators and a lot of students work in the facility. Quite frankly, it's a little bit embarrassing how smart some of these kids are, but it's really a terrific thing for us to be able to do.

We do have a very difficult time competing

with the utilities because we can't pay what the utilities pay. And so people come and work in our facility. They get trained, licensed, work there for a year, or two or three years and then go off to a utility where they make two or three times as much as what I can pay.

COMMISSIONER KLEIN: Getting back to the license renewal process; you commented on, one size fits all challenges that occur. I see some people in the back that work at NIST. And so you have a 20 megawatt reactor and then you have one kilowatt. Are you able to give some guidance back to our staff as to how one can do this in a better way rather than try to do a one size fits all? Are you able to compartmentalize and deal with TRIGAs in one way and -- which is a high number of the RTRs, and then, have you thought about how one can make the license renewal simpler but yet safer?

MR. REESE: I'll jump in. I think it goes back to what I said before. For some reason, there's a paradigm to think we're going through a relicensing process. I think what we need to do is move to a license renewal philosophy.

If we can get the SAR in a format everybody seems to agree is acceptable, while cumbersome, you can four years, a year and a half, two years, not sure about Jere how many years he worked on that, but you can anticipate that from our facilities.

It is essentially a rewrite to can get it into a format you want. Substantially, the safety basis hasn't really changed. So if that's the case, why aren't we treating it like license renewal?

An in-depth review, even four, to a large extent, but everything else is basically reviewed by the inspectors every single year or is in our procedures that are reviewed by both our in-house safety committee and the inspectors when they are visiting our facility. It is not to the level of detail because you don't want to put that detail in a Safety Analysis Report. So it's usually a summary of what you're doing already. From my point of view, you shouldn't spend a whole lot of time looking at that stuff that's already inspected on an annual basis.

I guess my point is that if we could move to more of a license renewal philosophy, once we get inside something that looks like 1537, why not just do a license renewal instead of relicensing?

MR. JENKINS: I'll second that. The physics of the reactors hasn't changed, the operation hasn't changed. Yet the paperwork that says the reactor can operate safely has changed. I think the license branch is trying to separate out, at least in what we've seen in the interim guidance documents, they are trying to separate out the larger reactors from the smaller reactors. The larger reactors will get a more intensive review. But they get a more extensive review on their inspections as well. We are of course willing to work with the license branch to help streamline this process. I think we've had a good amount of cooperation so far and look forward to continuing that.

MR. WALL: I'm not sure how well a generic approach would work for example, for all TRIGA reactors since Chapter 4 is pretty site specific. And so is to some extent the accident analysis depends upon facility considerations. But I do agree that once the SAR is in a format of 1537 and through both our annual inspections, then the license renewal should be a breeze.

COMMISSIONER KLEIN: Thank you for your

comments. I just really encourage you to stay active in communicating. If you have ideas where one can streamline the process and make it better and still maintain our high safety standards, we'd appreciate those comments and feedback. Thanks.

CHAIRMAN JACZKO: I want to thank you as well for a very informative presentations. We got a lot of good information. We'll hear from the staff, who will provide an opportunity to talk about their plans, short term and long term, both to perhaps address some of the short-term concerns and probably in the long term, to look at rule change too. I think the one point I will comment on, it's always important to keep these issues in perspective. No reactor has been shut down. We're talking about an issue of folks staying in license renewal, or timely renewal for an extended period of time.

While there is a backlog, in many ways, that's an inconvenience and certainly not our preference, the impact on any of you has not been a loss of your license or anything like that. You continue to operate, continue to operate safely. So

this is in many ways an effort to try and make this process look a little bit better and a little bit more timely and efficient. In terms of an impact to your facilities, you continue to operate, and that's an important piece that we haven't really touched on here.

Nobody has been shut down because of this or anything like that. I appreciate your comments and I think we'll now hear from the staff. Thank you.

We've heard lots of good information from some folks that have experienced having gotten their reviews, people who are in the process and a general overview of I think some concerns from the TRTR community. I look forward to hearing the work the staff is doing to address those concerns and have a good process going forward.

MR. BORCHARDT: Good morning. I would like to thank the previous panel too we appreciate their insights. We acknowledge the very important role the TRTR is playing for the Nation. The challenge has been at the NRC to finding that right degree of balance between regulatory oversight and not having unnecessary regulatory burden on these

facilities. At one time, just to go a little bit into some historical perspective, 15 or 20 years ago, the regulation, the regulatory oversight of RTRs was fully embedded within the office of Nuclear Reactor Regulation.

We had the same reactor physics reviewer that was doing a power reactor do the RTRs. We learned through the feedback that we got from the RTR community that didn't work very well. As a result of that, we created an island, if you will, of RTR reviewers and inspection staffs. We pulled in fact, most of the inspectors into one dedicated group that focuses solely on RTRs.

They have, especially since 9/11, been under considerable resource constraints as the agency's resources were directed to higher priority activities. The ability to enable these facilities to continue operating under timely renewal allowed us to do that. It's not something we wanted to do, nor did we do it in a cavalier manner. I think even in hindsight, it was the right thing to do. You're going to hear the short and longer-term actions that were taken to improve the

process.

I'd just to acknowledge the leadership of Kathryn Brock and the NRR team for taking the lead on these issues. With that, I'm going to turn over to Eric.

MR. LEEDS: Good morning Commissioners, Chairman. Research and test reactors really are a key aspect of the National infrastructure as Commissioner Svinicki mentioned. They are used for conducting research, development, as well as education. We also heard that from the previous panel. But for the members of the public, I want to remind them that research and test reactor activities also benefit a number of fields of science: physics, chemistry, biology, certainly medicine in the use of and manufacture of medical isotopes. But also geology, archeology and environmental sciences. So these research and test reactors are very important to the United States. Most of the United States research and test reactors have been licensed since the late 1950's.

Currently, about two-thirds of the operating research and test reactors have

applications in-house and under staff review.

When I'm done, I'm going to turn it over to Tom Blount and Tom's going to give you a little more context and go into a little more of the contributing causes for our current backlog. But before I do that, I just want to look forward and let you know I think the NRC staff has worked very well and aggressively pursuing a streamlined license renewal process.

We all need to remember we've been doing it the same way for the past 30 years. Any time you do something the same way for so long, it becomes a challenge to change. But I think the staff has embraced that challenge. And I think they're maintaining their focus on safety and security.

In addition to the renewal of licenses, the staff also continues to make progress in a number of other avenues involving the research and test reactors. Certainly, working to complete these high-enriched uranium to low-enriched uranium conversions, working on a long standing license transfer issue and preparing for the possibility of molybdenum-99 manufacturing here in the U.S. You've

heard a lot about the research and test reactor, NRC staff being relatively new, and that's true.

But I believe it's a very strong staff, and they have a very nice mix of diverse backgrounds. They've shown me a lot in the past 18 months. I have a lot of confidence in them. I think that they can meet these challenges. Certainly as Bill mentioned under the leadership of Kathryn and Tom, I think they're well on their way. Let me turn it over to Tom Blount. Tom will provide more context and some background to the contributing factors that lead us in front of you today.

MR. BLOUNT: Thank you, Eric. Good morning, Chairman, Commissioner Klein, Commissioner Svinicki. I'd like to provide a little more background and context for our current RTR backlog situation. As Eric indicated, we've got 32 operating reactors in the research and test reactor arena licensed by the Commission; 21 of those, or about two-thirds, are currently in-house for renewal.

Most of those applications are greater than two years old, and we recognize Texas A&M was back

in '97 when it came in. Five of those 32 are what we would consider higher powered reactors, not necessarily high-powered, but higher powered; greater than two megawatts.

That two megawatts is a pretty significant threshold for us relative to risk and how we look at risk. Kathryn will talk a little bit more about that. One of the areas that we use that 2 megawatt consideration or threshold is in security when we look at security reviews.

Some of the contributing factors to our backlog or some of the contributing causes, if you will, we've heard a lot by our guests and ourselves about our resources. And it's true, we have been resource constrained. Looking at the staff roster for RTRs in 2005, there were three staff PM's assigned to doing reviews or doing licensing actions actually. Of those three, one since retired, one's moved on to other avenues, if you will, outside the agency.

But one is still with us, Al Adams. He has been a strong and contributing factor in leading us and helping us get to where we are today, and we

certainly appreciate that.

The Commission has recognized that we've had difficulties in this area. We've sent up a couple of Commission papers associated with that. Most recently SECU-08-0161 which you have subsequently approved for us to go forward and implement. We want to thank you for recognizing we are trying to make progress in that area. Some of the other high-priority activities that caused us to focus otherwise deal with post-9/11 security activities.

How that impacted RTRs really gets to the GAO Report, for instance, certainly caused us to shift our focus somewhat. As Eric mentioned, I think Eric or Bill mentioned, we have security in-house with the RTR group. That's where that resource comes from, not necessarily from NSIR as with the power reactors. The DOE program --

CHAIRMAN JACZKO: That was a change made recently? Just the focus I think for research and test reactors and recognizing their distinction?

MR. BLOUNT: Yes, sir.

CHAIRMAN JACZKO: Another thing along the lines that Bill suggested too.

MR. BLOUNT: Shifting that focus also has an impact on the resource characteristics. That's part of that issue. You're absolutely right. The DOE program on HEU-LEU conversion, we completed that, the staff completed those reviews two years ahead of the original schedule. That is a drain on their focus, a drain on the attention paid to that. Fortunately, we have that, the lower-powered facilities behind us. We still have the higher-powered facilities that we need to deal with.

A good part of that is behind us. Most recently, as Eric mentioned, the medical isotope issue has raised its head, has become something we have had to move resources off to handle. Now we have been working towards improving our resource position, getting staff in place and ensuring that we have the right contractors. Kathryn will speak to some of that here momentarily. It has been a struggle. We went from the three back in 2005 to now, if you look at the roster, there are about 12 folks that are focused on these reviews and other RTR activities.

With those resources become the knowledge management issue. How do you get that knowledge transferred to these new folks?

How do you have the infrastructure or how do you have the capability to transfer that information from someone who doesn't have that experience or background, because remember, we just had one individual that had grown up in this arena. That's part of our challenge and that's part of what we're doing. We've gotten some innovative activities that Kathryn will speak to again that allowed us to get some resources to help in that area.

Staff turnover obviously is a concern. With the standup of the NRO Office, for instance, there is a bit of a staff drain there. People saw an opportunity and absolutely we want them to seek those opportunities. But then it has an influence on what happens to the RTR community or our RTR staff, if you will. So those are some of the challenges. That's some of the context, some of the construct, if you will, of what has allowed us to get to having a backlog. If you look at when the

applications came in, 15 of the 21 that we have in-house today came in post-9/11. That kind of tells you what the timing was on these. Yes, we do have a backlog, but I think Kathryn is going to speak to what our plan is currently and what we're intending to do to move this challenge forward to successful conclusion. With that, I turn it over to Kathryn.

MS. BROCK: Good morning. My discussion today is going to focus on the staff's efforts to streamline the license renewal process both in the short term and the long term. And specifically, I want to highlight the efficiency and effectiveness of the new process. I also want to address some of the short term challenges we have with eliminating this backlog and take a look at the long term process so that we have a consistent and effective long-term plan for license renewal in the future that focuses on safety and security.

The overarching objective the staff has right now is to eliminate the license renewal backlog by the end of 2010, and the staff has a plan to do this. The plan will be effective only if

a few assumptions remain valid. And I'm going to talk about that a little bit later on when I talk about our challenges but I thought it would be important to mention them briefly.

Some of these challenges that we mentioned already are staffing, emergent work and the possibility of deferred work. The staff is working towards the streamlining process for a long-term plan. And the goal of this long-term plan is to have a framework in place that will enhance the process but at the same time, reduce unnecessary regulatory burden.

And the grand plan is for license renewal and initial licensing not to be equivalent in the future.

Currently, we use NUREG 1537 as the standard review plan for both initial licensing and license renewal, and we think there will be a separation of that in the future. The cornerstone of the development of the streamline process has always been focused in the staff's mind on safety and security. And the staff has done this by identifying some areas of the current plan that are

key to making a reasonable assurance determination.

In coming up with this new short-term plan and the long-term plan, the staff did not start from scratch. We have begun with the framework of NUREG 1537 but we're also bringing into the mix the opportunity to take credit for the operating history. And you've heard from our guests today that these facilities have a longstanding successful operating history and the staff agrees with this.

We'd also like to take credit for some of the inspection processes we have in place. These are conducted annually, semi-annually in some cases. We want to use that good information that we have.

Additionally, we've talked about the conversions, the high-enriched uranium to low-enriched uranium conversions. Staff acknowledges that much of the significant work done for those conversions is directly applicable to license renewal. We want to use that conversion information as we go forward with license renewal.

As Tom mentioned, we are considering a

risk-informed approach whereby we have a two megawatt cutoff for the higher powered reactors and the lower power reactors. One thing we've really learned throughout the last year as we've been developing our short term plan is that stakeholder involvement is key.

We had three public meetings specifically on license renewal, and it's really been an opportunity to have a collegiate discussion with our stakeholders where we can share ideas, we can hear about how some of the staff ideas might have unintended consequences.

But at the same time with all this information transfer, we have a process that's open and transparent as we go towards changing some regulations possibly in the future.

In addition, we also drafted an interim staff guidance document which we published in the Federal Register and it requested stakeholder comments. We are trying to maximize our stakeholder involvement all that we can.

So let's talk a little bit about the short term plan. I mentioned that the staff is pursuing a

risk-informed and graded approach to the streamlining process. Facilities greater than or equal to two megawatts will receive a traditional review, and when I say "traditional review," they will go through the review process using NUREG 1537.

Those less than two megawatts will undergo the streamlined, the focused review process in the interim staff guidance.

In addition to some of the changes we made in the interim staff guidance, one of the things we heard through the public meetings was communication is key. Some of our guests today talked about the RAI process, Request for Additional Information. And we realized it was cumbersome both for the staff and for the licensees and that that was a big time sink.

We are trying to think of ways to use that to help streamline the process. What we're trying to do is we're trying to build in additional face-to-face meetings. We're going to increase the number of face-to-face meetings we have with the licensee in the hopes when the RAIs are coming, we're all on the same page and we can have clear

RAIs and then adequate responses coming back.

As we developed the interim staff guidance, we realized that if we were going to be successful, we had to have a very good idea of what resources were going to be necessary. So we sat down with the interim staff guidance and we sat down with the NUREG 1537 and we really broke it down to figure out what level of effort and what resources it would take for the branch staff, for other staff in the agency, including OGC, for our contract support and as well as for licensees answering questions.

We took a real good look at how much effort that took. This is the information that influenced our resources paper. We felt very confident that we were able to look at the process and were confident in our estimates to get this job done. From there, we partnered with the Center for Planning Analysis in NRR and they helped us to put all this information into an EPM structure, enterprise project management, so that we can keep an eye on all 21 of our license renewals in place.

And if we have some issues that come up,

say we need an extra round of RAIs or there is emergent work, we can make an assessment of the work that needs to be done and make an educated choice about how we'll go forward.

If we talk about what's contained in the interim staff guidance, the staff has some primary review areas and some secondary review areas. And our guests have talked a lot already about our primary review areas. Those are reactor design and operation, technical specifications and accident analysis. By using NUREG 1537 as the jumping off point, the staff decided that those were really the areas that were necessary for total review in order to make a reasonable assurance determination.

In the focused review process, those are going to get the same good look that they always have gotten. We also acknowledge that there are likely some secondary review areas that we need to look at, and those areas are radiation protection, waste management and financial qualifications.

This is where the staff really tried to get creative in how we go about our reviews. For example, in radiation protection, we're going to

leverage the use of our inspection program where we're going to take a look at the last few number of inspections.

As long as we can see that the operational history in that area has been good and adequate, staff will use that as the reasonable assurance determination. If there's some challenges noted, we can dig a little bit deeper.

As far as financial qualifications, this is an area required by regulation, and we are going to go forward with those reviews as we have in the past, and we've heard from our public meetings that sometimes that's an area that's pretty tricky for the licensees to respond to. They're used to the technical questions.

We're going to do the best we can to help them with those answers by providing some questions in advance that were asked of other facilities by possibly bringing our financial qualification folks on those site visits so we can have the face-to-face coordination with them as well. Another area is environmental analysis. This is required by the regulations as well.

Traditionally, this is a review that would be conducted by the project manager or with some help by the contractor. What we have done now is we've partnered with Region I to use some of their expertise in environmental analysis. They have been trained by our staff. The benefits of this is that it broadens the NRC scope of understanding of research and test reactors just a bit and it allows the project manager to be free from that review.

They'll still have to take a look at the analysis at the end but it enables that review to occur concurrently with the other work being done, thus streamlining the process.

Here you can see an inventory of some of the facilities we've been working on. One point that I'd like to make, you can see we have some completed facilities over the last year. We have Oregon State, NIST, and the University of Missouri, ROLLA. The point of this is throughout the last year even though we have been working towards developing the streamlined process, we're still working on the backlog. In fact, we completed two reviews the year before that with Ohio State and

Kansas State, and we're thinking we're going to have about three more about the turn of the fiscal year, so the October-November time frame. We really are making some progress and having some success in this area.

Then you can see the little break down we have here of the facilities greater than two megawatts that will receive the traditional review and then the 17 facilities less than two megawatts.

Now, I'd like to talk about some of our challenges. These challenges have been in the areas of staffing, emergent work, deferred work and then some assumptions for going forward. Several of us have already mentioned that it has been a challenge for the hiring, training, and retraining of sufficient qualified staff in our branch. But we're trying to use some of the options available by the agency to help us with that.

For example, we have two relatively new staff members who are taking advantage of the work at home option. They work at home full time from outside the D.C. metro area. We've been able to attract talent of individuals who might not have

normally wanted to live in the D.C. area. I can't imagine that, though. And then Knowledge Management has been really tricky for us. As Tom said we have a lot more new staff. Traditionally, we've depended on senior staff to pass on the tribal knowledge to the new staff.

This is simply very difficult when you have so many more new staff than you do have experienced staff. What we're trying to do is we're trying to revamp our project manager qualification program so that these individuals when they come in, they have a structure to work from. We're hoping that that will help us to get these people up to speed a little bit faster and get them understanding both the project management requirements and the research and test reactor technologies. We do rely on our senior staff currently. We have -- Al Adams has instituted a Monday afternoon interim staff guidance training session where we get together. We have it webinared for folks not in the building, and we're going through the interim staff guidance. As we embark on all of these reviews at once, it's going to go a lot smoother, we're hoping.

Now the emergent work issue: As the lead

branch for licensing and research and test reactors, we do a variety of different tasks. And license renewal isn't the tip of it. But when we do have emergent work such as medical isotopes and the Molybdenum-99 production, this is an area where our staff does have the lead for the agency in that topic.

Unfortunately, we've had to pull a couple folks away from working on license renewals, and we understand it's a very high agency priority. But we pulled them away from working on license renewals to focus on Molybdenum-99 and stolen other folks, at least part time, from different parts of the agency to help us as well. That is a challenge for us.

Tom mentioned the high enriched uranium to low enriched uranium conversions and the fuel qualifications reviews. These are areas where the staff works with the Department of Energy to help fulfill their mission, as mandated by Congress, to eliminate the use of HEU in civilian reactors. This is often done on a very tight time frame and the staff is challenged to work through that time frame while keeping the eye on safety and security.

The deferred work is also difficult for us.

As you noted in our resource paper, in order to meet this difficult challenge of eliminating the backlog of license renewal applications by the end of 2010, we're going to need the additional resources necessary so that we don't have to defer some of this important work.

And we noted some of this work in our resources paper. I'll just highlight a couple that I think are really important. One is the non-critical project manager functions. So that would be any kind of request that came from a licensee that didn't have a safety focus. We might have to defer some of those actions. Traditionally, when you have a new staff member or a new staff member who has been assigned to a facility, we like to send that staff member out, get to know the facility, get to know the staff so that can enhance their project manager capabilities. We're seeing that could possibly be deferred as well throughout this process.

Another example, we've been working on the update of Regulatory Guides and we're also working on a rulemaking for fingerprint rulemaking in

support of the Energy Policy Act of 2005.

We'd like to keep working on those and not be stalled and have to start up again. So I just bring that to your attention. Some of the assumptions that we have in order to make this a success is that we need to have some contracts in place.

And we have been challenged by getting contracts in place in a timely fashion. We do have some success. Just last week we put a contract in place with a company to work on the greater than 2 megawatt license renewals. So we are making progress in that, but that is something that challenges us.

And, again, the assumption that we have the resources as needed for our actions. Let's go into the long-term plan. The staff put together the long-term plan and it was outlined a little bit in SECY-09-0995.

In it the staff aims to optimize our current program to create an effective and sustainable long-term plan. And we believe that this is going to include rulemaking. This process,

as with the short-term plan, we want to be able to take advantage of the inspection program, previous operational history as well as the standard review plan in place.

Still, some of the things we might intend to do is use our interim staff guidance, perhaps make that into a NUREG document. We also want to look at the timely renewal process. Currently a licensee is not required to submit an application for license renewal until 30 days before the license is expired, at which time they go into timely renewal.

This has been difficult and challenging for the staff because we'd like to have an opportunity to be able to review the application with a little more time. This is something we're looking at. We also heard from our guests today about requiring periodic updates to our Safety Analysis Reports. This is something that the staff would like to investigate to see if it would be appropriate for our long-term plan. The way we're going to go about this is we intend to conduct a regulatory analysis which you know is the analysis that looks into the

technical, legal and policy issues in a rulemaking, and we intend to have that done by December of 2011.

That will really be the staff's opportunity to take all these good ideas, take a look at them and put them together into a document which will then in turn, intend to have the proposed rule in January 2013 and a final rule in January 2014.

As with every other rulemaking and to follow up on our lessons learned from the short term process, we intend to have extreme stakeholder involvement in this; lots of public meetings. We want to be as transparent as we can and really gain the good knowledge that our licensees bring to the table.

In fact, we've started working on it a little bit. We have some resources in 2010 to begin the work on this regulatory analysis. Just in the last couple of weeks, staff put together sources sought so we can help find some technically qualified contract staff to help us out a little bit so that this work can continue concurrent with the work down of the backlog.

Now, a few closing thoughts and to sum up some of the messages. The staff has succeeded in reducing the backlog over the last couple years while we're working on developing a new enhanced process. But to continue this, we will need to have the resources needed to be successful. And throughout this entire process, the main focus for the staff has been on safety and security. Finally, stakeholder involvement is the key. I can't say it enough. It really does help us to be better regulators.

CHAIRMAN JACZKO: Thank you for that thorough presentation. I certainly would second the importance of the stakeholder communication. I certainly think we heard some good thoughts this morning and understand you've done a series of meetings. And I think, I'm sure have been very productive and useful meetings as you move forward and get good ideas about how to address some of the challenges. Thank you for the presentation. We will begin questions with Commissioner Svinicki.

COMMISSIONER SVINICKI: Thank you. I want to begin acknowledging as well in my short time, I don't have

as much history as some of my colleagues on the RTR process, but tremendous progress I think is being made, and that's to the credit of you Mr. Blount and Ms. Brock and all your colleagues who work with you. I know you represent others who aren't here at the table. I think we're turning a corner on this. And as you mentioned, it's hard because the -- we do have an in-house significant number of applications under review right now. While you want to improve your process for the next wave, I support the priority that working on the backlog is important, and staff has, in the two papers you mentioned, come to the Commission and asked us to weigh in on that. I think there is general agreement that we need to focus on that. The curious thing is, if I heard the statistic right of 15 of the 21 in-house right now came in post-9/11.

But let's assume in a five or six-year period, there was quite a wave. I guess it has to do with the history of -- our atomic history in the United States that a lot of these reactors started about the same couple of decades. And so I think over time the agency will get these in clumps for lack of a more elegant word. So focusing on the

backlog, but it may be that those who could harvest the benefits of a better process, a more risk-informed process in the future, will be a gap and we'll have time to get that in place.

What would be nice and what was, I think in one of the staff's papers was, could we look at, after the staff used the term, "a few of the outstanding renewals," after completing those, would there be things that could be instituted more quickly for the rest of the 21 in-house that might come a little bit later?

And I think staff is involved in a process where if they worked down part of the backlog but could institute some things for the rest of the backlog that you're open to doing that, obviously things that take the rulemaking will require that. Is there anything you can say about how many -- I don't want to say necessary it's a Lean Six Sigma or some other sort of process, but is there any examination that's going to occur after a certain number of the backlog are completed?

Or is there anywhere in the way you phased working in the backlog that would be a natural

point where you could examine some of this and for the coming applications, or the remainder of the backlog you could institute some additional efficiencies.

MS. BROCK: I think throughout the process, we'll be evaluating this to see where efficiencies can be gained and lessons learned. Since we have such a focus on license renewal, we'll be able to learn from each other as the different project managers go through the process. They are a little bit staggered so that we don't overload our contractors and overload our staff at the same time. We are kind of gradually going through those over the next year or so.

MS. SVINICKI: One of the things that staff talked about and you mentioned it, is the timely renewal requirement. I believe the requirement right now is 30 days. If there were a longer requirement in there, it might naturally suggest to some of the applicants to spread these out so we wouldn't be getting these in these clumps. What was staff notionally thinking about?

If it wasn't 30 days, how much longer would you propose? Are you still just working through in

your stakeholder workshops about that concept?

MS. BROCK: We're still looking at that and we're hoping in the regulatory basis analysis, we'll be able to really take a look and make some of those decisions and investigate thoroughly what our options are.

MR. BLOUNT: Part of the challenge if I can jump in we find with the 30 days is if we were to say that an application was unacceptable because it had insufficient information, then that doesn't allow a licensee to be in timely renewal in the 30-day period.

We don't want to lose that option. What we would like to do is give us enough time to have an interaction on the front end that gets us the best application possible so that when we do start the review, it becomes a lot easier, whatever that review is going to look like at that point in time. That is really what the context of what we were trying to accomplish.

COMMISSIONER SVINICKI: I think staff put it a bit more elegantly in one of the papers , but it was this notion with 30 days if an application is not of the appropriate quality or is missing items,

the consequence of you for rejecting that is so high that it tends to -- you tend to try to work through it after accepting the application. I didn't raise this issue of extending out the 30 days with the previous panel because I see that this is really more to help our processes and systems and to give us really the regulatory option of saying this is insufficient and you need to submit information that's missing.

I'll be looking forward to as you work through your stakeholder input, I'll be following that to see what you came up with there.

I did notice in the interim staff guidance there is a section on treatment of license renewal applications already in process. It talks about -- I won't dig it out now -- but it talks about RAIs that have already been generated but not responded to. It's this notion of as you work through the backlog, what kind of efficiencies can you be instituting?

But if you move to the more focused review for some of the applicants in the backlog right now, would there be RAIs that would kind of be obviated at this point and in the interim staff

guidance talked about maybe issuing to the applicant what of the RAIs under the new streamlined process really need to be responded to and then perhaps staff doing some sort of memo to the file for the other RAIs.

Is that something that stakeholders have given much feedback on?

And it would require to return to the issue I raised with the first panel, this integration with the contractors and what they generate. I also want to give you the opportunity to speak to that same question of we do have a model that relies on contractor support substantially here. But NRC staff is trying to integrate this and screen out questions that aren't appropriate. Is there any general commentary you'd make on either of those two items?

MS. BROCK: I'll start with your second question. We do work with contractors and we rely heavily on them. It is the job of the project manager to screen out and be the intermediary between the contractor and the licensee because the licensee should work with the regulator, not with the contractor. So that is a goal we have, is to be

the ones that work with the contractor, hone those RAI questions and then pass them on to the licensee. Then you brought up the issue of RAIs that are already out there.

This is something staff thought deeply about because we considered RAIs are out there. They're already there. If we go to a new streamlined process, how is that going to look if we don't ask the same question?

Are we still doing the same thorough review with the focused review process that we did with the traditional review process?

And we really did think deeply about it. I think by structuring our focused review on those three key areas and then leveraging the inspection program and the good operational history, we're able to be confident that the program we're going to have in place will be adequate and that those RAIs that were out there but now won't be answered, we're comfortable with that.

COMMISSIONER SVINICKI: Has there been in terms of applicants themselves and their feedback, to say should I keep working on these RAIs or

should I wait to receive the subset of those that you expect?

Is that introducing an uncertainty for them or have they given any reaction?

MS. BROCK: We talked about that at least one of our public meetings and we expressed that we would like for them to hold off on RAIs and wait for the new round of RAIs.

COMMISSIONER SVINICKI: Did you have anything Mr. Blount?

MR. BLOUNT: I am simply agreeing with Ms. Brock.

COMMISSIONER SVINICKI: Thank you Mr. Chairman.

CHAIRMAN JACZKO: There was a little bit of discussion earlier about the SAR and updating of the SAR. I guess as I understood the discussion and Dr. Klein commented on it as well. There is perhaps some trepidation that we'll be changing the format again of the SAR. Is there any plan by the staff to change the format or the structure of the SAR again?

MR. BLOUNT: Currently, there's no plans to

change. 1537 has been since its inception and that's part of the problem. Prior to the inception of 1537, there really wasn't clear guidance on what an application renewal looked like. And in fact at one point early on, the staff was doing the administrative review of the applications.

But it was determined that that doesn't get us to the point of reviewing for safety and security. It does not ensure, give us a reasonable assurance finding. So the staff stepped up to, okay we need to do a full reasonable assurance evaluation. But there wasn't clear guidance on that.

What happened was the staff developed 1537. Unfortunately it came in at this interim period between licensing activities. And when that happens, the next thing the licensee sees is this new structure that you're expected to comply with. And that throws them a curve. At this point in time, no, there is no expectation or intent on our staff --

CHAIRMAN JACZKO: Right. Can you give me -- the staff, and as long as you're going to be here,

we're not going to change the format of the SAR?

We would see no value in that. That's helpful as we go forward.

It's always difficult when you ask those questions because no matter what you say people are going to read it however they want to read it.

MR. BLOUNT: My replacement may have different ideas.

CHAIRMAN JACZKO: Now, you're making it worse. There is no intention to change it. That is an historic artifact. And the idea would be to continue with that and focus things within that existing structure. We heard a lot about Chapters 4 and 13. The three focus areas that you talked about were essentially the reactor design, accident analysis and technical specifications. Are the technical specifications in chapter 4?

They are in chapter 14. There would be additional chapter then as well in addition to chapters 4 and 13 that we heard about earlier in terms of the focus areas for the review?

MS. BROCK: Three primary focus areas.

CHAIRMAN JACZKO: Essentially three primary chapters?

One of the issues, going back and comparing the development of this work. Obviously our focus has to be on safety. Recognizing the health and safety implications of these reactors is certainly a different scale than the power reactor community. One of the things I wanted to clarify, if we went back and looked at the earlier SECY, the 2008 SECY, one of the comments staff made was if we were to reduce the scope of the review, there could be some unresolved issues in the review process. As we skip forward to the 2009 SECY, that doesn't seem to be that same concern with the focus. Recognizing the Commission certainly stepped in and made comments in the interim period.

Absent that, can you explain why now you're comfortable with the more focused review and that it is going to be fully protective of public health and safety? And previously not as comfortable that way.

MR. BLOUNT: Initially in the 2008 period I think we had less interaction and less opportunity to interact with our stakeholders. Subsequent to that, I think, a big part of this has been the opportunity to interact and be educated, if you

will, to a larger degree, to be more informed, I guess. Through that being informed and through that understanding, we gained a better knowledge, better knowledge base to the point that we feel very confident, highly confident that the three focus areas that we have identified are the right three. That presents the basis for reasonable assurance for this effort going forward given recognizing the history and the operating experience we've had in the RTR arena.

When you take the RTR separately and look at this effort from a, what do I need to review if I start at a blank slate, then, sure, I need to look at everything. But when you bring out the fact that there's 40 years worth of operation here, safe operation, that pretty well speaks volumes.

Utilizing that as well as our inspection history, we have a high degree of confidence.

CHAIRMAN JACZKO: Well, that's good to hear. It certainly reinforces the value, I think, of the interaction and the conversations. And I think hopefully that's also something the RTR community is recognizing as they explore more of these

stakeholder interactions.

An important issue on that note on the stakeholder interactions, and maybe you could touch on and maybe Kathryn could comment on this one. Some of the things that you've learned and some of the things you've gained from the stakeholder interactions as this process has gone on? We certainly talked about one which is maybe a better understanding of the areas for focus. Are there other things specifically you can point to that would be of significance?

MS. BROCK: The interactions we've had enable us to highlight that we're all -- we've heard some of our guests talk about how they are working towards the safe operations of these reactors as well. We have a common goal though we are the regulator, we have some goals in common. By talking it out and not coming to it from a point of view that, oh, the NRC is going to be correct. This is what we need to do and there's no other way to do it. They have really helped us to evolve our positions into something that is workable both from a regulatory point of view and from a licensee point of

view.

Chairman Jaczko: I appreciate that. That's certainly good to hear that that kind of dialogue is happening. One last question if I could turn too -- we've heard a lot about staff resources and resources and demands on the time and effort of the staff as being a contributing factor. That's certainly a factor and element in it. One of the other issues we haven't talked about is resources on the part of the applicants.

Maybe you can comment on what you see as a challenge, that is an area we don't really ultimately have any control. Maybe you can talk a little bit about how much of a contributing factor that is and in the end, how that will impact our ability to reduce this backlog if there aren't sufficient resources on the applicant side going forward.

MS. BROCK: Well, I think when I was discussing the request for additional information, that whole process, the staff understood that there are issues with resources on the licensee's part. And sometimes that came through in the length of time it would take for the licensees to respond to

RAIs. So we understand this and that's where we decided to come towards more communication. So that if we can help each other understand the questions and the responses, then we can possibly reduce the amount of time, or the spinning of wheels on both ends. And so we can pull that time together a little bit.

MR. BLOUNT: If I can contribute a little bit to that. Where this showed up most glaringly, if you will, is recognition of the conversions. As we heard, the conversions are a subset, if you will, of the license review process. It was very successful, or highly successful when they had the resource of a contract support from DOE to provide that.

We can get them done, get them turned around. That works very well. It's problematic when we don't have that type of support because we provide a challenge to some of the licensees. Some of the smaller staff licensees who are asked highly technical questions that may not -- the response may not reside, or the knowledge may not reside immediately in-house has to go out and find it or

glean it from some other source.

CHAIRMAN JACZKO: We heard some of that, about some of the seismic analysis from Mr. Jenkins.

MR. BLOUNT: Case in point. It presents a Challenge for them. With that in mind, then, if that resource were available, then it eases some of that transition. It makes the process a little bit easier for everybody involved because we get the answers back faster. They have less strain on their resources. It's a little bit different with the power reactors in that they have large engineering staffs that they can go to, get answers and so forth. RTR folks don't necessarily have that kind of resource immediately available to them.

CHAIRMAN JACZKO: I appreciate that. If there is anything that I have picked up here is that the interaction DOE would be an important piece from the research reactor community. Certainly if there is anything that we can do to encourage DOE to be participating in that, I think that would be a useful endeavor because it probably would help everyone get to resolution on this quicker. But that may be out of our control. It certainly seems

to have been a model that worked better in the HEU-LEU conversion.

Dr. Klein?

COMMISSIONER KLEIN: I'd like to comment on When Bill made his opening comment that we have made improvements in the RTR area from those days when I recall it was under the power reactor, the same inspectors would come in, one inspector came in and wanted to know how many armed guards I had at my TRIGA reactor. And then he wanted to know how thick my containment building was. We have made progress. I'd like to acknowledge Kathryn and Tom's activities. You have played a key role. I guess if we could clone Al Adams, that would be better in terms of some of that corporate history. One of the comments Tom you made was the fact that you had 15 applications since 9/11.

Commissioner Svinicki eloquently described these clumps that come in. Do they clump? Are there --

MR. BLOUNT: Not necessarily -- they are clumped if you look at the post-9/11 until now. Yeah, there's a significant period. Actually, I

think that they could be spread out a little more evenly with a little foresight.

COMMISSIONER SVINICKI: I meant on decadal time scales, not geologic.

MR. BLOUNT: Understood. If we had been able to handle them in a more timely manner, I don't think we would have seen this kind of bough wave, if you will, at this period in time. There's a couple in 2002, a few in 2004 or 2005, 2007. So there's some cyclic periodicity about them. The next group will be fairly well clumped because we're talking about doing 19 of these in 12 months. So when they come out, Eric's going to be pretty busy reviewing, and so are the rest of us. But they're going to come out staggered over months versus years. Now, are there some things that we can do in pre-planning to help the next generation?

I think there are. I think that we can do that when we look at our long-term plan and transition, what does that look like?

There are some licensing activities that we could consider relative to the timing of the license. But that gets into the technical basis

that we need to prepare in our regulatory analysis.

COMMISSIONER KLEIN: I think it would be good to take a look at that to see if you can spread the workload so you don't have those spikes. One of the things about license renewals is you sort of know when they're coming as opposed to the new license that we're dealing with and people start and stop their schedules. So license renewals hopefully will be a little bit more predictable.

MR. BLOUNT: We think we can do some of that.

COMMISSIONER KLEIN: Kathryn, on Slide 6, you talked about establishing a new streamlined regulatory framework by 2014.

MS. BROCK: That's our long-term plan.

COMMISSIONER KLEIN: That's five years. That's the life of a Commissioner's appointment. Is there any way we can streamline the streamlined process?

Ms. Brock: I think what we need to do is the upfront work in developing the regulatory basis. We are going to begin that starting in 2010, which is just a couple of months away. Right now,

we do have some SECY deadlines to have the proposed rule by 2013. And we can certainly do our best, but I think as far as our planning goes, it fits well with our ability right now to handle the backlog of license renewals by the end of 2010 and transition into the long-term plan into 2011.

COMMISSIONER KLEIN: It's nice to get the backlog out of the way but I'm much more concerned about the new process to really get it to a renewal rather than a relicense framework.

One of the questions or comments that you made on financial qualifications, a lot of these reactors are state universities where they're owned by essentially the state. What kind of information do you need on financial qualifications in that regard?

These typically are not private entities, some are but mainly they're state. What kind of financial qualifications do you need?

MS. BROCK: I might have to defer to a financial expert in the room. We are concerned about asking questions that are obvious. We don't want to be asking the facility questions. Prove that you're the state of Kansas is one we've been

teasing about.

What we're trying to do to enhance that is provide more information to the facility about the types of questions and what the answers look like from the previous facilities and let them know that it's okay if they don't have the answer but it might be their legal staff or their financial staff that has that answer. We think that the questions maybe aren't quite as hard as they might seem to a technical person.

COMMISSIONER KLEIN: I know that was one of the areas that caused me challenges on a license renewal one year, asking for commitments from a state and wanting to see all the state budgets and verify that you will guarantee certain kind of funding. When it's legislatively determined, it's hard to demonstrate that. I think that pretty well covered my comments.

I say keep up the good work. Try to do the streamlining and get it to a real renewal instead of relicense.

Thanks for all of your activities.

CHAIRMAN JACZKO: Well, I want to thank the

staff for a good discussion and our guests this morning as well for their thoughtful input. I think the staff has good direction from the Commission and knows how to move forward and will keep us apprised as you work both on the short term and the long term. Thanks for your presentations and your hard work. Thank you.

(Proceedings concluded)