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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON NUCLEAR WASTE (ACNW)

161st MEETING

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TUESDAY

JULY 19, 2005

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ROCKVILLE, MARYLAND

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The Advisory Committee met at 3:30 p.m. in Room T-2B3 of the Nuclear Regulatory Commission, Two White Flint North, 11545 Rockville Pike, Dr. Michael T. Ryan, Chairman, presiding.

COMMITTEE MEMBERS PRESENT:

MICHAEL T. RYAN	Chairman
ALLEN G. CROFF	Vice Chairman
JAMES H. CLARKE	Member
WILLIAM J. HINZE	Member
RUTH F. WEINER	Member

ACNW STAFF PRESENT:

Neil M. Coleman

Latif Hamdan

Michele Kelton

Michael Lee

Richard K. Major

Sharon A. Steele

Ashok Thadani

ALSO PRESENT:

Heather Astwood, OCM

Dennis Damon, NMSS/SFPO

Dave Diodato, USNWTRB

Allen Fetter, NMSS/HLWRS

B. John Garrick, Invited Expert

Norm Henderson, Bechtel SAIC Company

Robert Johnson, NMSS/DWMEP

John Kirkwood, BAHOCRUM

Jocelyn Mitchell, RES/DSARE

John Russell, CNWRA

Duane Schmidt, NMSS/DWMEP

Wilkins Smith, NMSS/FCSS

Roxanne Summers

Engelbrecht Von Tiesenhausen, Clark County, Nevada

I N D E X

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

(3:38 p.m.)

CHAIRMAN RYAN: On May the 14th to the 21st, three of us, Allen Croff, Jim Clarke, and myself visited Japan. We had a number, I think, of good meetings, the first of which was the NSC, the Nuclear Safety Committee of Japan.

And it was interesting, I think as we took away some major issues that the NSC is wrestling with, the same kind of integrating definitions of waste as the ICRP actually talked about, very low activity wastes, low activity wastes, which is probably equivalent to what's LAW in the National Academy Report, low level waste, high low-level waste, which might actually be intermediate waste, and then on up to high-level waste.

So they are struggling with, and at this point are relatively qualitative about where these boundaries are. And then they're tending to look at them in a different way than we are. They're not looking at them so much from the origin definitions. They're looking at them in terms of what is the right disposal concept for these various levels.

Do you guys agree?

VICE CHAIRMAN CROFF: Pretty much with the

exception of high-level waste where --

CHAIRMAN RYAN: Yes, that's clearly at the top end.

VICE CHAIRMAN CROFF: Yes, at the top end, that's a source-based definition. So they could work themselves into the waste incidental to reprocessing problem if, you know, they ever got there. Now they reprocess their waste and don't have much stored in tanks and stuff so that may not be an issue. But they could.

But the others were using those terms. And I guess I'd phrase it is they're tending for the other waste types to go more like a DOE system. Instead of defining classifications per se, they're just basically developing a site and developing an acceptance criteria for that site and what goes into it is that class of waste.

CHAIRMAN RYAN: I think it is based on the performance assessment --

VICE CHAIRMAN CROFF: Yes.

CHAIRMAN RYAN: -- and the risk-informed assessment --

VICE CHAIRMAN CROFF: Right.

CHAIRMAN RYAN: -- for that site. It's not --

VICE CHAIRMAN CROFF: It seems to make sense.

CHAIRMAN RYAN: It seems to. Some other observations, obviously Japan has a closed fuel cycle. They have a high-level waste study area in Honorobe, which is on Hokkaido, the northernmost island. And the study area is guaranteed by written agreement not to be a high-level waste site for Japan. That's the only way the study area could be started.

It's got to be a multiple shaft, you know deep geologic investigation program in hard rock. There's a similar site on the western side of Japan in unconsolidated sediments. I mean the idea there is the science teams will be experimenting -- I've got it reversed. Excuse me. I'm sorry.

Thank you. The hard rock is in the western side and Honorobe is the unconsolidated sediment.

But the interesting part is they have had a candidate effort where 3,239 information packets went out to communities and community leadership groups seeking a volunteer. And they have received zero responses. They have had no success stories come out of the process so far. And so that's an issue there they are struggling with.

These two study areas are underway but we'll see how that proceeds.

MEMBER HINZE: No success stories or no applicants.

CHAIRMAN RYAN: They had one that they worked with for a while but failed. But there is nobody on the horizon that is raising their hand saying please make it mine. So that was an interesting development.

MEMBER HINZE: Any Indian traps there?

CHAIRMAN RYAN: The Tokai -- I'm sorry, the Rokkasho area is where they have quite a lot of development, both nuclear and non-nuclear. They have 30 days to refine petroleum products to cover the nation's need. So they have quite a large oil storage tank field up there to store this reserve. And I believe they're continuing to increase it as time goes on.

VICE CHAIRMAN CROFF: They have no refineries.

CHAIRMAN RYAN: What?

VICE CHAIRMAN CROFF: They have no refineries.

CHAIRMAN RYAN: They have no refineries. It's all imported, finished products. They have 22

two-megawatt windmills. Tokai Power is operating 11 and Kansai Power is operating the other 11. They are in some sort of a performance kind of competition to operate these windmills.

MEMBER WEINER: What kind of area do these windmills cover -- windmill farms cover?

CHAIRMAN RYAN: I'm going to guess a couple hundred of acres or so. They tend to be strung out on mountain ridges and places where they will catch the most wind. They weren't in an array. They were, you know --

MEMBER WEINER: Strung out?

CHAIRMAN RYAN: -- strung out a bit. And I guess that's really, you know, kind of a high-end experimental facility. But I imagine it generates power for the region to some extent.

The reprocessing plant is well along. They were getting ready for, I guess, cold uranium testing.

VICE CHAIRMAN CROFF: I believe they were in cold uranium testing --

CHAIRMAN RYAN: They were in cold uranium testing.

VICE CHAIRMAN CROFF: -- while we were there.

CHAIRMAN RYAN: And doing shakedowns of systems and all that. So they are well along. And they have fuel on site ready for reprocessing. They had probably what -- one and a half -- well, let's say 25 percent of their fuel capacity in storage was already there or fuel elements, something like that. We got a glimpse of the fuel pool.

So they're up and running. Of course, they have the fuel fabrication plant up and running. And there is a MOX plant planned which will start construction about three years down the line.

Their low-level waste site has been up and running for more than a decade. All the low level waste is handled remotely from the time it arrives on the truck to the time it goes into disposal position, it's all remote handled. It's all one waste form.

DR. LARKINS: Is there MOX facility going to be similar to the French Cogema design?

CHAIRMAN RYAN: The French are involved in the design. Yes, the French are partner in the design. So whether it is a newer design or similar to what is existing, they weren't real -- we didn't get a lot of detail. But it's three years down the line.

DR. LARKINS: It may be very similar to what we're going to build here.

CHAIRMAN RYAN: I imagine it will be bigger.

DR. GARRICK: Allen, what's the reprocessing technology based on? Is it a purex process?

VICE CHAIRMAN CROFF: Purex plant, yes.

DR. GARRICK: Purex plant.

VICE CHAIRMAN CROFF: I think they had a lot of help from France there, too.

MEMBER WEINER: Is it like the Cogema process or like --

VICE CHAIRMAN CROFF: Yes. Cogema.

CHAIRMAN RYAN: The low-level waste site, they're in Phase 2 of the site. And they're now designing Phase 3. Also at the Rokkasho site is an intermediate depth disposal study boring tunnel. It's actually quite a huge excavation. I mean I think Bill you were taking note of the fact it was a very large opening. And they're looking to study the placement of intermediate depth waste.

For the purpose -- I think it was fairly clear that they were really just trying to get the intruder scenario out of play by going down several tens of meters instead of just, you know, a few meters. So that intrusion -- the high-low level or

the intermediate or the low-high level. I'm not sure exactly where the line would be drawn for waste that had higher activity concentrations yet were not persistent out into the tens of thousands of years time frame.

And that seemed to be -- the study tunnel is nearing completion in terms of construction. And then shortly thereafter, I think they were going to start, you know, testing and placement experiments of one sort or another. So that was up and running.

The visitors center, which was a fabulous facility, with, you know, great audio/visual and other kinds of presentation materials puts 100,000 citizens per year through the facility. There is a very clear outreach program where busloads of people, school children, senior citizens groups, all sorts of groups are buzzing through the facility every day.

DR. GARRICK: Now where is that?

CHAIRMAN RYAN: It's right at the Rokkasho area. And you can stand in a panoramic observation tower and actually through telescopes and whatnot, view every one of the facilities around the complex: the windmills, the oil tanks, the reprocessing plant.

By the way, all of the shipment of fuel, spent and new, is by ship to the reactors, which are

all on the coast.

VICE CHAIRMAN CROFF: And low-level waste.

CHAIRMAN RYAN: And low-level waste. So it's similar to Sweden in that regard. And they have a rather extensive seaport area, the Takahiko Seaport that takes in the oil for the oil repository, takes out fuel, takes in spent fuel, and does all the shipping. It's a rather well established seaport. And there is a sole-use road to bring everything in and out of the Rokkasho complex.

MEMBER CLARKE: They have a virtual repository, too, that's incredible.

CHAIRMAN RYAN: Yes, it would rival a Disney ride actually. You are taken inside a --

MEMBER CLARKE: It takes you right down into --

CHAIRMAN RYAN: -- in a waste package. And you follow -- you actually become a cesium atom bouncing, you know, back and forth.

MR. HAMDAN: So what kind of organization do they have government-wise? They have an executing agency, a greeting agency, or it is one in the same.

CHAIRMAN RYAN: It's a single-phase program.

MR. HAMDAN: That's why they can do all of

this.

CHAIRMAN RYAN: How many permits does a reactor get in Japan to start up and run? One. So it's -- and the low-level waste site, there is the NSC. And they're the advising agency to the government on yes or no.

MEMBER WEINER: What's been their accident experience with their reprocessing facility?

CHAIRMAN RYAN: Well, they haven't operated it yet so --

VICE CHAIRMAN CROFF: Not the big one.

MEMBER WEINER: Oh. Okay.

CHAIRMAN RYAN: Let's see, so that's really the stops we made. We then went down to the Tokai research facility and saw the pilot plant operations of the various components. And saw a little bit more of the details there.

We visited the really formidable geosciences laboratories that were -- you know they did some interesting tests, for example. They used big bentonite rings around every waste package. And, of course, there is a seismic question there. In a seismic event, what happens is the waste packages twist in the bentonite and the bentonite takes the hit whereas the waste package remains intact.

So they put it into a medium that will undergo a defamation and preserve the waste package, which is a pretty slick idea. And they've actually done scale testing of that.

They've done fracture flow modeling that's unbelievable. They put fractured rock chunks, I mean big chunks under pressure and actually modeled flow through them under pressure. You know they decided they wanted to actually get pictures -- x-ray photographs of fractures under pressure so they bought their own CAT scanner, which, you know, is not a trivial purchase. It's about a five million dollar piece of equipment.

So on they go. It's a pretty impressive scientific staff in terms of their knowledge and their experimental program. And they are really designing to get at every phase of everything from, you know, package performance right on through the various components of what they anticipate as their system. And they're measuring things as they go along.

Pretty impressive.

DR. GARRICK: How much was the bentonite decision based on chemistry? And how much was based on it being plastic bed for the --

CHAIRMAN RYAN: I don't know if they

actually made a distinction. They just recognized it had both elements of value and they have modeled both in the total system. They've treated it as a system.

They didn't decide on bentonite because it was plastic or because it would have good radionuclide retention properties. They said boy, it does both. That's a good idea. So I think it was both rather than one or the other or, you know, a choice of one and good luck, we got the other one, too. They really seem to be pretty systematic in their thinking about it.

Their modeling that they demonstrated on the screen to us, for every radionuclide, they've actually modeled time to either decay or time to break through from the bentonite so that that's how they developed their source term for longer-term modeling.

DR. LARKINS: So what's the waste package?

CHAIRMAN RYAN: The waste package is -- they've got a couple of different versions. They've got, I think, a copper liner inside a stainless steel alloy container. And I don't recall the alloy off the top of my head.

VICE CHAIRMAN CROFF: I think it is a fairly standard one. It's a glass cylinder, oh, 18 inches or so in diameter and about a meter tall, I

guess. They're a lot shorter than ours. But, of course, destined to go into basically a reducing environment so they followed the rest of the countries in the world and it's relatively cool so they're putting bentonite around it.

PARTICIPANT: They're the same size?

CHAIRMAN RYAN: Yes, they're all the same size.

VICE CHAIRMAN CROFF: Yes, everything is standardized.

MR. HAMDAN: So what will happen after the bentonite deforms the first time? Then what? Do they have to do anything? Or it just continues to perform?

CHAIRMAN RYAN: It seems so. I mean we didn't get into, you know, a really thorough detailed conversation. But, I mean, that seemed to be the conclusion that they reached that the bentonite, you know, would deform but would continue to do its job.

VICE CHAIRMAN CROFF: An expected condition is the repositories, these are saturated. And when the water hits the bentonite, it swells and seals. And so as long as it remains saturated, it will sit there unless certain bad chemicals get in there.

CHAIRMAN RYAN: And it will self seal once

deformed again. I mean it will do that.

VICE CHAIRMAN CROFF: Yes.

MEMBER WEINER: How do they guarantee a reducing environment other than just the bentonite?

VICE CHAIRMAN CROFF: No, it's the geology which is the reducing environment.

MEMBER WEINER: Oh, okay.

CHAIRMAN RYAN: Subsurface. It's beneath the water.

MEMBER WEINER: The subsurface.

CHAIRMAN RYAN: Yes.

MEMBER WEINER: So they figure they have a saturated --

CHAIRMAN RYAN: They don't figure it, they know it.

VICE CHAIRMAN CROFF: They know.

MEMBER WEINER: And saturated is a reducing environment.

VICE CHAIRMAN CROFF: To get to what Mike was saying, the variability is they are looking at clads over this stainless steel, between it and the bentonite. One is copper and one was titanium. I think it was titanium.

CHAIRMAN RYAN: Yes, they're looking at different options.

The other thing to mention, too, of course, is that they're not going to be burying spent fuel. Just to, you know, make sure we cover the base. They're going to be burying glass, reprocessed glass high-level waste.

By the way, they already have an inventory of several hundred glass canisters delivered back to them, I believe mainly from France, that they've gotten back as part of a reprocessing contract with Cogema.

VICE CHAIRMAN CROFF: And others made by Tokai.

MEMBER HINZE: And what are they doing with it? Where is it?

CHAIRMAN RYAN: They have a high-level waste well storage facility.

MEMBER HINZE: Well storage?

CHAIRMAN RYAN: Yes, it's basically a very deep concrete structure with, you know, lifting capability and all that. Of the -- I don't know, I'm going to guess, Allen, of the hundred or so, Jim, canisters, they said about a third of them were full -- or a quarter, something like that.

VICE CHAIRMAN CROFF: Yes, of the wells, they --

CHAIRMAN RYAN: And the wells had, I don't know what was it -- eight, or nine, or ten canisters each?

DR. GARRICK: Do they recover anything more than uranium and plutonium?

CHAIRMAN RYAN: As far as I know, no.

VICE CHAIRMAN CROFF: I don't believe so. They haven't gone beyond that -- in that study but they haven't gone beyond it in application. Well, I don't know which one they're using but Tokhai's were processed. Remember they said they were processed like -- was it a hundred tons of fuel?

CHAIRMAN RYAN: And, again, all that is sort of pilot study. And I think the Tokhai glass rods were the ones that ended up in the storage facility.

You know they were very interested in the role of the ACNW. We provided them with a CD with all of our letters going back and the organization of those materials.

DR. LARKINS: Is that a gift or punishment?

(Laughter.)

CHAIRMAN RYAN: I think for the staff folks that needed to go through them, probably a

little bit of a task. A richly rewarding one.

And, you know, of course we invited them to come and visit us. And visit here.

DR. LARKINS: I was just mentioning to Sharon, you know, we are having this technical exchange next year with the French, Germans, and Japanese for the ACRS. It may be, from all that you mentioned, worthwhile inviting the Japanese, French, and maybe the Swedes for a technical exchange with the ACNW next year or the year after.

CHAIRMAN RYAN: Yes, that sounds like a great idea actually. I think we were warmly welcomed. I think they were genuinely interested in our, you know, what is happening in the United States' program and where we are and how the ACNW works. And we were genuinely interested in learning how they were doing things so we could bring it back. But it is fascinating to see, you know, and I would welcome the opportunity. I mean we can maybe have the meeting in Nevada and give everybody a tour of Yucca Mountain for example.

VICE CHAIRMAN CROFF: Sure.

MR. THADANI: And that would include the French certainly?

DR. LARKINS: Yes, well I was thinking the

Japanese, French, and Swedes.

MR. COLEMAN: I'd like to just add the Japanese were very interested in the risk-informed approach. And I've sent them several of Dr. Garrick's papers. They were interested in any substantive, large studies involving risk assessments outside the reactor area. And I sent them the staff's latest sensitivity study with the TPA code for Yucca Mountain which they were very interested in.

DR. LARKINS: Well, we met with the Japanese, French, and Germans in Berlin in, I guess, two or three years ago. They were doing performance assessments at that time. So both for high level and low level. So they are using performance assessment methodologies now.

CHAIRMAN RYAN: I think that's a good idea, John. That would be very timely with what they are interested in. And I say let's do it.

MEMBER HINZE: May I ask in terms of publications of their research, are any significant numbers of these available? And are they in English? And do you have a list?

CHAIRMAN RYAN: I think we have a list of many of their publications. Some, of course, are in Japanese and they provided some materials in English.

And we would be happy to --

DR. LARKINS: Our library gets a lot of the publications, foreign publications. And periodically we get a list of things. They are typically a year or further behind.

MEMBER HINZE: Well, I noticed in the list of things that were brought back are largely pamphlets. And don't seem to be documents. And it would be interesting to see the research that's going on, particularly in these two underground sites. And if you can give me any clues to where I can access that.

DR. LARKINS: Yes, well maybe we can get Neil to check with our library. If we don't have it, a lot of times they'll go out and get it for us.

CHAIRMAN RYAN: One other thing we could do is we do have contacts with two of the NSC senior staff people. And if we had a specific area where we said, you know, could you give us your top ten high-level waste geohydro, you know, study publications for the last year or so, I'm sure they'd help us track them down.

MEMBER HINZE: So I'll work with --

CHAIRMAN RYAN: Sure.

MEMBER CLARKE: I think the major research

programs have their own websites as well. I don't know how much of that is in English.

CHAIRMAN RYAN: You know that's a problem.

They are very sensitive to the fact that part of the international community, of course the web -- a lot of it is in English and many of their websites have both. So I would start with that.

MR. COLEMAN: I would mention that a lot of the materials in the two-page list at the end of the trip report, a number are pamphlets, as you mentioned, but the others are the overhead presentations that we saw at each of the organizations that we visited that are just filled with technical material. And there are also a number of policy papers, detailed policy papers in English there. There is much more, of course.

CHAIRMAN RYAN: Yes, that packet that we brought back would be a good packet to start with. But it was a very productive trip. And it's clear they are on the edge of a lot of interesting technical issues.

MR. THADANI: Did you visit Toboksu -- I think that's correct -- the seismic --

CHAIRMAN RYAN: No, we did not.

MR. THADANI: It's incredible.

MEMBER HINZE: Along the same line but I was wondering about the volcanic studies, the igneous activity. Certainly they have to be more than interested. And I've seen some work on that but I'd like to see a little more in depth of what they're doing.

MEMBER CLARKE: Bill, the candidate sites, they don't have any candidate sites but the geologic area that we're characterizing in study sites, the one we went to was, you know, selected to be sedimentary rock that was really highly fractured.

MEMBER HINZE: Yes, but that doesn't mean that a volcano was going to come along.

MEMBER CLARKE: No, but they have a requirement --

CHAIRMAN RYAN: The low-level waste site is in the Takahiko formation, which is an old volcanic formation. I mean vulcanism and seismicity is not something they shied away from. They've had to deal with it for hundreds of years.

MR. THADANI: They are world leaders in that.

CHAIRMAN RYAN: So they figured it out in a way. But it would be interesting to pursue it.

MR. COLEMAN: Before we close on this, I

wanted to mention on the record an appreciation for the work by Dr. Yoshio Murao and also Dr. Ando of the Nuclear Safety Commission of Japan. They coordinated our visit among many nuclear organizations in the country. That made it possible to visit so many facilities in a very short time with no hold ups at any point. I just wanted to recognize their special efforts on our behalf.

CHAIRMAN RYAN: And we'd be remiss, Neil, if we didn't also recognize your contribution and your help in getting us around. Because without you communicating with our two hosts, we would have been standing by the airport wondering where to go next. So thank you very much as well.

DR. GARRICK: Neil, were you the staff person that arranged that? Would you object to me having our staff person who is arranging our trip to Japan contact you so that, you know, we maximize what we get out of this?

MR. COLEMAN: Please have them get in touch. It would be my pleasure.

DR. GARRICK: Her name is Paula Alpher -- Paula Alpher. And I'll have her call you. Thank you.

CHAIRMAN RYAN: Yes, and, John, we'd be happy to give you any of our reports or, you know,

pamphlets, or anything we have to help you prepare for your trip.

DR. GARRICK: Yes, thank you.

CHAIRMAN RYAN: All right. Let's see. Where are we?

PARTICIPANT: We're at a break.

CHAIRMAN RYAN: We're at a break?

(Laughter.)

CHAIRMAN RYAN: What is this break business? Dr. Garrick, you started this bad trend of allowing breaks.

(Laughter.)

CHAIRMAN RYAN: Oh, I'm sorry. Okay. So we're on break until 4:15 and we will reconvene on the record.

(Whereupon, the foregoing matter went off the record at 4:02 p.m. and went back on the record at 4:18 p.m.)

CHAIRMAN RYAN: Okay. If we could take up our agenda please at the Occupational Safety and Health Administration's Request for Additional Information on Ionizing Radiation?

As members have discussed, we have actually gathered information and studied the question

related to what OSHA is looking for. And OSHA basically is asking for a request for information that asks about workers being exposed and perhaps not being properly monitored or cared for but in a very vague way. And they ask a bunch of other questions that are not really focused on any particular point.

What they said was interesting. But what I think was not said was more interesting to me. And that was that there wasn't any particular focused problem they were addressing. It was kind of a net they were casting to see if anybody would respond to identify a problem.

And, you know, as we took this question up, the Committee has thought about well, what does the infrastructure look like? The Atomic Energy Act authority to the NRC controls the main body of radioactive material in the United States, reactors and nuclear materials across a broad spectrum of uses, agreement states, 33 are authorized to carry that out at the state level.

As the Committee reported a couple of months ago, the IMPEP Program is successful and vital at bringing the states' performance in those programs to the attention of the Commission. The same organizations in states regulate non-AEA radioactive

material and also regulate permitted electronic product radiation sources, x-ray machines and medical devices of various kinds and so forth. Also accelerators that are in NAP, natural accelerated produced, again, non-AEA, are regulated by the same staff and the same technical infrastructure at the state level as the AEA material.

So the reason I say all that is if we have confidence they're doing their job on the AEA side, there is no reason to assume they're not doing the same job on the non-AEA side of the state's house.

There is also, apart from the strict regulatory delivery end of radiation protection practice, we all use and apply generally applicable radiation standards that come to us from the EPA, which address emissions and address, you know, performance of facilities at the boundary and things of that sort. And that relationship is well established and governed by MOU and other kinds of well-established relationships with the NRC.

Apart from the regulatory structure, there is a robust infrastructure that supports agreement states. The Conference of Radiation Control Program Directors has had for many decades suggest state regulations which have been updated and are compatible

with NRC and the states use on a regular basis.

There is implementation guidance for all of those parts of the suggested state regulations, again, to support the state programs in a wide variety of areas.

The organization of agreement states is an organization that actually was put forth out of the NRC on its own because it had matured and was taking on its own identify and being very effective in that effort.

There are advisory bodies, which include the National Council of Radiation Protection and Measurements and even emerging issues as the use of backscatter x-ray units for inspection of containers and things of that sort relative to post 9/11 questions, there's current guidance on the street on those issues for states and others to use and implement.

You know, there's lots of other professional organizations that offer guidance in radiation protection matters of one form or another.

So just in summary, when you look at this landscape of radiation protection regulators, professional organizations, and guidance organizations that are available to any radiation protection program

in the United States, I ask the question, "What's broken? What problem is this OSHA information-gathering effort aimed at solving?"

And I've come up dry. I don't have an answer that there is any solution that needs their attention at this moment. You know we do recognize that OSHA is the principle occupational inhalation protection source. We use OSHA respiratory protection guidance and that is integrated into NRC in agreement state regulations. And that, again, is well established and up to date and not anything that needs a crisis.

There was a hint in the request for information that there was some segment that was unattended. You know I thought about states that have NORM and T-NORM questions.

But, you know, from my own firsthand knowledge, those state programs address those issues in Florida or Texas or Louisiana. I mean there are suggested state regulations for CRCPD on NORM and T-NORM. And there is an implementation guide. And states have their own regulations and have adopted those as appropriate. Some states don't deal with NORM so they don't necessarily have to address it.

So I just wonder what the net is being

cast to try and capture. And I guess I come up with the answer not much.

I'd be happy to have anybody else's view on what it might be. Or if I'm off base or on target.

MEMBER HINZE: In view of John's statements earlier about consistency between regulatory agencies, what about units, this type of thing? Is there any area here which can be improved upon?

CHAIRMAN RYAN: Well, frankly, I mean OSHA doesn't really deal much with radiation units. And, in fact, they're out of step with the fundamental bases for their regulations in their IRCRP-2, which is guidance developed in 1955 and published in '59. So, you know, they'd have a lot of catching up to do if they wanted to do something.

But that's sort of a secondary question to me of what problem are they trying to solve? What is the untended problem that needs their attention as opposed to the infrastructure that is out there for radiation protection now?

MR. HAMDAN: Can't we ask them?

CHAIRMAN RYAN: Well, I mean we certainly could as individuals. But I guess I'm working in the context that, you know, we've studied this question

and we'll report our findings to the Commission.

And, you know, leave them with this answer that we see a very robust radiation protection infrastructure in the United States and, you know, go through some of the details that I've highlighted to you with a little bit more, you know, referencing and so forth.

And say we don't see that there is problem that needs their solution at this point. We don't understand what they're actually reaching for because they have not identified a specific problem they're trying to address.

There is a very generic thing about well, you know, radiation exposure is increasing. Well, it isn't in workforces. NRC data shows it has been decreasing steadily for the last decade or more in reactor and non-reactor areas. So what do we do with that? I mean you know the facts are that there doesn't seem to be an increase in there.

Now in the popular media, we've heard about self-referral CT scans and, you know, specialized kinds of CT scans, spiral CT scans and so forth, that the patient dose per exam are higher. But, you know, that's specifically exempted in NRC regulation. No exposure in this part shall be

interpreted as limiting the intentional exposure for a patient for the purpose of diagnosis or therapy.

And, you know, the machines are regulated. And that's a whole other area. The Center for Devices and Radiological Health under the FDA has a very, you know, robust program for, you know, performance testing and acceptance testing and, you know, all of that. The NEX Program for mammography quality and, you know, all those kinds of quality programs exist to address the quality of the exposure of a patient.

But the actual dose part of that is not on the radar screen. That is a, you know, medical practice area. So that's off the radar screen.

Yes?

DR. GARRICK: Mike, I would think that one document that might be an excellent overview for them on this whole issue would be about the first 50 pages of BER-7 report --

CHAIRMAN RYAN: Yes.

DR. GARRICK: -- because it has a very nice public statement together with the executive summary. And taking those two sections together is a very nice compact review of all of these issues, including the CT scan business.

CHAIRMAN RYAN: All of that, yes, that's

a good point, John. In addition, I think they raised the specter that, you know, there's a risk of radiation. They're very vague about it in the write-up and the BER-7, in spite of some of the popular press reports, has really affirmed the same risk estimators. And, in fact, a few of them have gone down.

DR. GARRICK: Right.

CHAIRMAN RYAN: So that from a policy standpoint, the use of a linear no-threshold approach in policy setting is affirmed. And we're basically at the same square where we were the day before BER-7 came out.

So, you know, I think all of this comes together to say, again, what problem is OSHA trying to solve with this information gathering exercise. Until that's clear, you know, what's being missed, you know? I personally don't see why it should proceed.

Have I missed anything? Does anybody else have any comments or agree? Disagree?

MEMBER HINZE: Are we going to hear from anyone in the NMSS? Are they approaching this problem at all?

CHAIRMAN RYAN: Well, you know, based on the schedule, you know, we kind of took on our own

information gathering, which you've seen, you know, a bit of. And if the Committee is disposed to do so, I'll draft a letter and we'll read it out this week and get it -- again, I'm not going to go into a broad, you know, detailed view. I'm just going to cite some of these components of the programs federally and states that we've talked about. And give a little bit more detail and so forth.

And make the conclusion that we just -- you know we would recommend to the Commission that they advise OSHA that they don't understand what problem it is that is being solved.

MR. THADANI: Mike, I might just note that OSHA was looking for comments by August 1st. And to get to the Commission probably would have to be this week.

CHAIRMAN RYAN: Well, we will be done this week.

MR. THADANI: Okay.

CHAIRMAN RYAN: I will have a draft of it tomorrow hopefully if I'm excused early from dinner.

MEMBER HINZE: Has the NMSS staff or some staff done anything for the Commission on this?

CHAIRMAN RYAN: Well, actually Dan Cool is on travel in France and was unable to be with us.

MEMBER HINZE: Right.

CHAIRMAN RYAN: But he is, you know, briefing on this as well. But, you know, and I did have an occasion to actually just tell him that we were taking up our own consideration of it. And he was at the health physics meetings briefly. And I simply told him we were looking at it. And he said well, you know, he'll advise on his own and so will we.

MEMBER HINZE: So we're not going over to France to check with Don is that what you're saying?

(Laughter.)

CHAIRMAN RYAN: If you want to put in a travel request, Bill, have at it.

(Laughter.)

MR. HAMDAN: See, they went to Japan.

CHAIRMAN RYAN: In any event, so any other comments? Or are we ready to proceed?

MEMBER WEINER: I have a question.

CHAIRMAN RYAN: Okay.

MEMBER WEINER: They made the point in their Federal Register notice that there is increased exposure from all the x-ray machines in airports in the security screening. And you successfully answered that for me and said that no, there isn't.

I think that's a point that since they made the point in their Federal Register notice, that we might address.

CHAIRMAN RYAN: Yes, and again, there's three components here that are very important. One is people are not x-rayed in airports. Baggage is x-rayed. Workers who x-ray the baggage are monitored radiation workers just like any other have been for a very long time. X-ray machines in airports are not new. They're not 9/11. They were there before.

There may not have been as many. But it certainly was a, you know, radiation worker segment that was well monitored. And I'm sure all of you observe the dosimeters on folks as you travel through airports. They are there. And they use them.

For more of the, you know, homeland security area, there's two -- there's actually three documents from the NCRP that address backscatter x-ray units which have been used in, you know, theft control in diamond mines, for example and other examples.

And the doses there are microrem per exam. And, you know, the NCRP has developed, you know, guidance to provide for those uses. They are not so widespread. But, again, I see that as a problem solved, not a problem unaddressed because the NRCP was

explicitly solicited for how that was going to be done.

And again, taking into account current thinking on exposure of members of the public and, you know, the value of the exam versus, you know, security and radiation exposure questions and all that. So there is guidance out there. It's not something that is oops, we forgot about it. It has been addressed in detail.

So, yes, Ruth, I think we could certainly address it and point out what these documents are. But there's guidance out there on those topics.

DR. LARKINS: Sounds reasonable.

CHAIRMAN RYAN: Proceed with the letter?

MEMBER WEINER: Yes.

CHAIRMAN RYAN: Okay. I have my homework assignment.

Well, thank you very much. And on we go.

I think it's time to call Alan Pasternak back.

DR. PASTERNAK: Hello, Alan Pasternak.

CHAIRMAN RYAN: Alan, Mike Ryan, how are you?

DR. PASTERNAK: I'm okay. Thanks for calling.

CHAIRMAN RYAN: Good. We have you on a speakerphone and you are on the microphone and we're on the record.

DR. PASTERNAK: We're on the record, great.

CHAIRMAN RYAN: Alan, I wanted to take just a few minutes and discuss with the Committee and other individuals present that the ACNW is now kind of on its Draft 2 of low-level radioactive waste white paper or management paper.

And where we are -- and I'll just outline for you, you know, what the content is. We've really tried to put in one place the history of low-level waste regulation, starting, believe it or not, with the Atomic Energy Act of 1946.

And kind of working ourselves through its current status with the current operating sites and those under license development and the history of compacts and all of that with the idea of really just educating ourselves and thinking about its regulatory structure and with the idea of, you know, what is risk informed, what is not, and what do we think about that.

So we really haven't gotten to what are our conclusions or observations phase. We're really

at the information-gathering phase.

I anticipate that we'll finish up a draft of that probably at this meeting. And then we'll take it to think about between now and our next meeting. So that's kind of where we are.

And I understood from our staff that you wanted to offer us some comments and insights as we complete this first step.

DR. PASTERNAK: Yes, I would appreciate a chance to do that.

CHAIRMAN RYAN: Okay. Well, we're at that point. So please let us know your thoughts.

DR. PASTERNAK: Okay. Thank you very much.

First of all, let me say I appreciate the phone hookup. I'm sorry I'm not there. But I do look forward to attending a future meeting of the ACNW.

Cal Rad Forum, short for California Radioactive Materials Management Forum is an association of organizations that use radioactive materials in the four state of the Southwestern Compact. So our members include universities, utilities with nuclear power plants, biotech firms, industries, medical centers, and a number of professional societies in radiation safety and

medicine.

Let me ask you at this point if you can hear me all right?

CHAIRMAN RYAN: We can hear you just fine.

DR. PASTERNAK: Good.

CHAIRMAN RYAN: Is everything okay with the recorder? Yes, we're fine.

DR. PASTERNAK: Okay. The statement I want to make on behalf of Cal Rad Forum is that we would like to urge the ACNW to expand the scope of the white paper to include a discussion of the failure and unwillingness of the states to implement the Low-Level Radioactive Waste Policy Act and the Amendments Act of 1985. And the consequences of that failure, the lack of assured access to disposal facilities for organizations that use radioactive materials.

As you are aware, on July 1st, 2008, the disposal facility at Barnwell, South Carolina will be restricted to the member states of the Atlantic Compact. And at that time, organizations that use radioactive materials in 36 states will have no place to send the more radioactive categories, Class B and Class C, of their low-level waste. No place to send it for disposal.

In addition, they will have only one place

to send a subset of their Class A waste, and that will be the Envirocare Facility at Clive, Utah, which will then have monopoly control over disposal of most of Class A waste, not including sealed sources and not including biological tissue, at least under current license restrictions.

Should the Texas effort be successful, and we hope it will be, that would reduce the number from 36 to 34, I believe. But it's significant that today, 25 years after passage of the Policy Act of 1980, Texas is the only state with a program to develop a new disposal facility.

Other states, including the host state of the Southwest Compact, California, have lacked the political will to move ahead on that process and develop new facilities as needed.

And our thoughts on this are explained in more detail in our testimony to the Senate Energy and Environment Committee on September 30th, our written testimony.

With respect to the regulations, in 10 CFR 61, we believe those regulations are good. In fact, as one looks at the disposal system in the country today, perhaps it's the only stable and reliable part of the disposal system. While regulations can always

be improved, doing so at this time does not focus on the real problem which, as users of radioactive materials and generators of low-level waste, we believe to be the lack of access, assured access to disposal facilities in the years ahead.

That July 1, 2008 deadline is only three years away. The California effort, the only one to ever issue a license under the Act, took 13 years. Ten years from enactment of legislation to issuance of the license, 1983 to '93. Another three years for litigation. The license was challenged but it was upheld along with the EIR, both of them were upheld by the California courts.

And unfortunately, the transfer of land for the Ward Valley site was opposed by the Clinton administration. And in 2002, at the urging of ex-governor Gray Davis, the Legislature passed a law cancelling the Ward Valley Project and putting in place some requirements that we think are probably incompatible with NRC requirements for development of any future facilities.

So the time is extremely short. It's three years. And there isn't time to start development of a new project. The Texas project may make the deadline. But we'll see. I hope they do.

Finally, I would like to reference the comments of the Nuclear Regulatory Commission incorporated in a report issued by the General Accounting Office last June. And just briefly, a portion of those comments are the following:

The future availability of disposal capacity and the cost of disposal under the current system remain highly uncertain. And low-level radioactive waste generators need predictability and stability in the national disposal system.

We believe it is in the national interest to begin exploring the alternatives identified in Appendix 2 that would potentially provide a better legal and policy framework for new disposal options for commercial generators of low-level radioactive waste.

That's a portion of the NRC comments. They also pointed out that no new facilities have been developed in all of the years -- at that time, 24 years -- since passage of the Policy Act. And it seems to me it is a pretty strong statement for a regulatory agency, a strong statement in the policy and legislative arenas.

So we hope that the white paper will provide some focus on the problem on this crisis in

proper disposal of low-level radioactive waste in the Class A, B, and C categories. And you might also want to comment on the greater than Class C, although I understand the Department of Energy has started work on their EIR for their responsibilities in that area.

This problem effects commercial generators of low-level radioactive waste, institutional generators such as universities and medical centers. It effects government agencies at both the state, federal, and local level, federal agencies such as NASA, the Department of Defense, Veterans Administration, hospitals all depend on access to the commercial disposal facilities. And that's where the problem lies.

So it effects users of radioactive materials in 36 states along with the federal, state, and local entities that use radioactive materials in those same states. The Department of Energy has facilities for its own radioactive waste but accesses to those, at present, is restricted to waste owned or generated by the Department of Energy. And I've discussed this in a little more detail with your staff.

So as you move ahead, we'll be happy to work with you on this. And hope that you can focus

some attention on this problem.

CHAIRMAN RYAN: All right. Thanks, Alan. We appreciate your comments and your insights. And I think we have -- you mentioned testimony you gave to the Senate. I believe we have that for us to consider. And we'll certainly read that as well as review your comments that are in the record today as we move forward. And we'll also keep you apprised of our schedule as we take this topic up on future agendas.

DR. PASTERNAK: I appreciate that very much Mr. Ryan. May I continue to listen to the rest of your discussion on this issue?

CHAIRMAN RYAN: Well, actually where we are is we really have just -- we're finalizing our first draft of the facts. I might mention to you that we do cover the Low-Level Waste Policy Act and its amendments and other milestones in the process. We do mention the site development process and the batting average and so forth.

So we're covering -- just documenting the facts and figures at this point. And we have not formulated any opinions or recommendations as of yet. But as we do that and deliberate on them, you certainly are invited to be with us and hear those

deliberations and participate even by phone or in person if that works with your schedule.

So at this point, we really didn't have anything else to report other than we're at kind of getting to our second draft. And we'll be finishing that up and reporting that back --

DR. PASTERNAK: I see.

CHAIRMAN RYAN: -- next time.

DR. PASTERNAK: I wonder if any members -- you or any members of the Committee have any comments to make to me at this time?

CHAIRMAN RYAN: Well, again, no. I think we're in kind of the information gathering phase. I certainly don't. But what I'd like to do is kind of study your comments and look at your other testimony and consider that as we move forward.

DR. PASTERNAK: Fine. I appreciate it very much.

CHAIRMAN RYAN: All right. Thank you very much. We appreciate your being with us. We'll be back in touch.

DR. PASTERNAK: Okay. Thank you, Mr. Ryan.

CHAIRMAN RYAN: Thank you. Okay, bye-bye.

DR. PASTERNAK: Bye.

CHAIRMAN RYAN: Okay. That being said, I think there is nothing further on the agenda. Is there any other business to take up this afternoon?

(No response.)

CHAIRMAN RYAN: Dr. Garrick, again, I appreciate your being with us today and sharing your insights. And I look forward to your being with us tomorrow.

DR. GARRICK: I'll be here part of the time tomorrow.

CHAIRMAN RYAN: Thank you very much.

MS. KELTON: Dr. Garrick, it doesn't start until nine-thirty, though.

DR. GARRICK: That's all right. I'll be here at six-thirty.

MS. KELTON: Okay.

(Laughter.)

CHAIRMAN RYAN: And we look forward to seeing you. If there are no other comments -- yes?

MS. KELTON: Remind them of the ethics training at eight-thirty.

CHAIRMAN RYAN: Yes, we know that. Yes, that's fine. Are there any other comments?

PARTICIPANT: I think the thing I miss most at the TRB is that.

CHAIRMAN RYAN: You can have one if you like.

PARTICIPANT: I might steal it.

CHAIRMAN RYAN: All right. We'll conclude the record here and conclude the meeting as well. Thank you very much. Have a good evening. We'll see everybody at nine-thirty in the morning.

(Whereupon, the above-entitled meeting was concluded at 4:46 p.m.)