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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING ON THE

POTENTIAL CHANGES TO THE

U.S. NUCLEAR REGULATORY COMMISSION'S

RADIATION PROTECTION REGULATIONS AND GUIDANCE

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Tuesday, November 9, 2010

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Salons A, B, and C

Marriott Hotel

255 North Sam Houston

Houston, Texas

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8:30 a.m.

BEFORE: DAN HODGKINS, Moderator

PRESENT:

Donald Cool

Gayle Staton

Tony Yunker

Susanne Savely

Mark Ledoux

Laurie McGowen

William Johnston

PRESENT (CONT.)

Toby Head

Ellen Anderson

Doris Bryan

Jean Staton

Wei-Hsung Wang

Ann Troxler

Steven Campbell

Alice Rogers

Eric Rohren

Leonard Earls

Don Sides

A G E N D A

P R O C E E D I N G S

(8:30 a.m.)

MR. HODGKINS: Ready to rock and roll this morning? Yes. Good morning. Again, my name is Dan Hodgkins. I'll be your facilitator for today.

A couple of housekeeping things. You have evaluations on your tables. Please take some time before you leave to fill it out, as far as we've gotten some good feedback about the sessions, should we continue them, how could we do it better, something that we all want to know and get your feedback on. So please fill out those evaluations. We want to be data driven, use the science of evaluation as a way to make improvements.

How I'm doing? Pretty good? Okay. So today we're going to continue where we left off yesterday, and I think I'll just turn it right -- well, first of all, any questions, comments, any lingering thoughts from yesterday? You know, oh, I wish I said something, you know, I wish someone didn't say this. Any lingering thoughts as far as panelists, anything that you want to, you know, jump into right away as far as comments from yesterday that you want to take back, you want to add to. Anybody?

(No response.)

MR. HODGKINS: And how about from the audience, lingering questions, problems, concerns, amplifications you want to add?

(No response.)

MR. HODGKINS: So are we ready to move on? Well, a little nodding. Try it. Yes.

(No response.)

MR. HODGKINS: You're not going to do it, are you?

All right. Don, it's yours.

DR. COOL: Okay. And good morning. Glad that you have all made it back. Yesterday we started talking about the underlying science and how doses were calculated and the terms. Then we spent a little bit of time on the non-controversial subject of what the dose limits might be, and then we finished off yesterday starting to talk about some of the other bits of dose limit information with a discussion on the dose limits of the embryo fetus of a declared pregnant woman.

This morning first thing, and I don't know that this is going to take a lot of time, but there is one area in the public exposure realm for which some questions have been raised with. We actually hadn't started off with this question on our list as we

started to formulate some things, but people kept asking us about this as we were talking at various society meetings.

And we said, Well, you know, the ICRP limit for members of the public, it's 100 milligrams, and under certain special circumstances you could get up to 500 milligrams. And NRC has the exact same thing. NRC allows you -- it's a separate provision -- to apply the use of the alternative higher dose limit for a specific period of time, you have to justify why the exposure is necessary, all those sorts of things.

ICRP, in some of its most recent publications, including the new recommendations from 2007, has said that because young children are known to be more sensitive to radiation, that, in fact, they recommend that those types of individuals, children, nursing infants, not be allowed to have the provision for a short term circumstance higher than 100 milligrams, that it should be limited to just the 100 milligrams without being able to go any higher.

And so we were asked the question, NRC, are you going to restrict the application of that requirement. Now, this shows up in two places. Primarily it shows up in Part 20 in this provision, which I'm sure anyone has ever actually used, haven't

heard anybody tell me they've ever actually needed to apply for this alternative type thing.

The other place that it shows up is in the medical area related to release of patients who have been administered radioactive material as part of a diagnosis or therapy. And in the medical area there is already additional guidance that is required, additional instructions that physicians are required to provide to the treated individual before they are released in order to try and ensure that young children, nursing infants wouldn't be exposed to greater than 100 milligrams.

So it's not -- in that case, the decision was made not to change the regulation, but rather to add to and strengthen the guidance, particularly since in that case no one can actually control a patient once they've been released from the hospital. And while most of them do the right thing, it's sometimes really tough for them not to go hug junior or whomever. Not so bad if they go and hug their cat, or different than -- that's a different set of issues, I suppose.

But we wanted to just a brief discussion around this. We've got lots and lots of discussion in LA last week because we had all the doctors and they

didn't want to discuss Part 20 at all, they wanted to discuss the patient release criteria and how I shouldn't change any of that.

But the options here, first of all, we can just leave it alone, it seems to be working and no one seems to be using it, so why bother expending any effort associated with it. Or we could actually change the regulation to specify that more sensitive populations should not be provided the additional allowance, should anyone ever decide they want to do it. Or, as in the case that was pursued with the patient release criteria and medical exposure, we could just add to the guidance, put out a statement associated with what the NRC's expectation would be should someone ever decide that they needed to do this.

And so with that brief introduction, we can see what folks would like to add to this conversation.

MR. HODGKINS: Okay. You guys know the drill. Who wants to start and then we'll walk around the room, go around the room. Any takers? Go for it, Steve.

MR. CAMPBELL: This is Steve Campbell with TC Inspection. I'd like to first off clarify the

difference of guidance and regulation in my mind, rule. Guidance to me is, and is it to the NRC, like a road map from here to Dallas, I can take any road I want. Opposed to a regulation being I have to go up I-45 to get to Dallas. Is this an accurate statement?

DR. COOL: In part. Let me come back to that a little bit. The regulation specifies what you have to do. And if it were a specific detailed, you have to take I-45 to I-67 to I whatever, okay, that might be the regulation. We try in general, in fact, to have it be a bit more performance based; the dose limit is.

Now the guidance is an acceptable approach to complying with the regulation. Absence something else, if you apply the guidance, you know that you will be in reasonable compliance as you're working through that. Licensees always have the alternative of proposing something else which the Commission could also consider and approve because the guidance doesn't represent the only way. It's an acceptable way.

And sometimes guidance has multiple acceptable ways, such as in the calculation of effective doses we talked yesterday. There are four or five different formulas, depending on the kind of circumstances you're in. In this particular case, it

would be guidance that would suggest if you wanted to apply for this, here's some of the factors that you would need to address in giving the proposal to have this amendment issued.

Does that help you?

MR. CAMPBELL: Yes, it helps, but in the medical field, would those folks have to put in writing a procedure that they're -- in accordance with a guidance, so to speak, and would they be held to that being as they can't control the general public once they're released from a facility. And say a regulatory individual found something out, would it fall back on the medical people that they didn't follow their own guidance?

Are you going to have to -- clarify guidance. You know, it's a pretty broad word when you're saying he's going to have to write something, guidance that controls this and then he really has no control, but he's going to do his best. Is that --

DR. COOL: In the patient release context, and I'm going to let Eric address it from the Society of Nuclear Medicine standpoint, because that's what they do every day, in that context they're required to provide instructions orally and in writing, and the guidance provides information about additional things

that needs to be part of that instruction that is required by the regulation.

And inspectors will go in and they will look at it to see if the guidance addresses those sorts of problems. It does not specify how they do it, exactly the words that they use, although there is a model.

MR. HODGKINS: Eric, do you want to just take it from here since they've used your name so many times in that last --

MR. CAMPBELL: Sorry about that.

DR. ROHREN: No, it's fine. That's fine. Eric Rohren, Society of Nuclear Medicine. And I can actually get some help from my colleague in the audience too who is the author of our program.

But that's indeed the case. So patients will receive most commonly radioactive iodine for treatment of thyroid cancer, hyperthyroidism, and based on the amount of administered activity, some basic modeling of how much we think is going to be residual in the body following that treatment, we'll do dosimetry and predict the transit time of that radioactive iodine through their body. And then based on these limits, we'll give them discharge criteria.

Now a lot of patients can be treated as an

outpatient. So they'll come in and receive their therapy, and even upon termination of the administration and spending a little bit of time in our facility, they can be safely discharged with instructions and keep the exposure to the public below these limits.

At higher doses they will require hospitalization and we need to wait for that radioactive iodine to clear because then that exposure is being administered to people who are considered radiation workers. And then they can be discharged as such point that are measurements indicate that they're safe to discharge.

Our instructions are fairly specific, and it comes out as written instructions as well as verbally going over it with the patients, and includes things like sleeping alone, staying a certain distance from other people, using your own restroom for a number of days, you know, basic radiation protection issues like that. We don't have control over the patients when we leave, and so these headlines you see in the *New York Times* and other places, you know, that's where the whole process falls apart a little bit.

That we instruct the patients, we educate

the patients, we educate the people taking care of those patients, but -- and once they're discharged, like you said, you know, they basically can choose to lead their own life and if they choose to go to the airport and hop on an airplane and take a five-hour flight sitting next to somebody, you know, that is against the instructions that may have been given to them, but not something that's under our direct control.

In terms of how these changes would affect us from a medical standpoint, you know, whatever dose limit to the public is eventually arrived at, we can incorporate that into our calculations. But what happens is that it significantly changes the practice of medicine in the case of radioactive radioisotope therapy.

So a patient who may be able to be treated as an outpatient and discharged from the facility, if we lower the exposure limits to the public and redo the calculation, it may say that patient now needs to be hospitalized for three days. Someone who might be in the hospital for three or four days now might need to be in the hospital for 10 days.

And they're not in the hospital because they medically need it, they're in the hospital

because they need to be isolated from a radiation standpoint. These are things that are obviously going to increase costs in an era when we're trying to decrease the costs of medical care.

So these are the sorts of things we look at from the medical perspective is, you know, we want to do our best to protect the public, but recognizing that, you know, there is a certain amount of exposure that is going to result from our therapeutic administrations for that particular patient. But we're very careful about providing written and oral instructions for that patient to protect themselves and protect their caregivers and the public.

MR. HODGKINS: Thank you. How about your colleague, would they like to say any -- add anything to that discussion?

MALE VOICE: Not now.

DR. ROHREN: Not at all.

MR. HODGKINS: Okay. John.

MR. MILLER: Yes, I just got a question on patient exposure and dose, and we talked about it a little bit yesterday when the question was raised, if we go to the -- from the 5 rem to the 2 rem, would that affect patient care. And, you know, I understand, after a patient has already been given a

dose, you know, if that patient goes into distress, you know, the patient is the, you know, the primary concern, and so people will pick up an extra dose taking care of the patient.

But do you see, even with the public exposure and the possibility of going down to a lower dose where a medical provider might say, You know, this person really could use 50 millicuries of I-131, but, you know, our nuclear medicine techs are pushing the limit and we've got to be sure to hit these public dose criterias, maybe we could get by with giving them 30 millicuries, and so is there a possibility that there's a reduction in patient care?

DR. ROHREN: I don't think that that would be the case, just because our approach to these patients is fairly well regimented as far as, you know, if you see this extent of this disease then they need to be treated with this amount of radioactivity. You'd get into an issue that you really wouldn't be practicing according to the standard of care if you started adjusting the doses like that.

There would probably be a little bit of wiggle room, and we see that in treatment of patients with overactive thyroid glands. We've come up with this magic number of 33 millicuries of radioactive

iodine, and it wasn't arrived at for medical reasons necessarily; it's just that in some Agreement States that's the most you could administer and discharge the patient as an outpatient afterwards really without doing any additional assessment.

So we kind of arrived at this 33 millicuries as an upper limit of our therapy where in fact the patient could theoretically benefit from 40 millicuries or 50 millicuries, but it would require more paperwork in that case. But, you know, again, that's an accepted standard and we feel that the patients benefit from that.

So I think you've see a little bit of that where you might modify the dose slightly to get over or under exposure limits, but it wouldn't be a dramatic change, and certainly not the kind of thing that would convert somebody from a hospital stay to an outpatient purely for sake of convenience, because, you know, it's pretty laid out what you need to do in that particular case to treat the patient effectively.

MR. HODGKINS: And good question, John. And I just want the other medical folks to have an opportunity to respond, echo to that, or anybody else on the panel.

How about from the audience? Looking --

yes, did you want to -- I mean, just because I know there's a few of you that have had some experience and may want to echo, or you don't have to.

(Pause.)

MR. HODGKINS: You know what, you got to do the microphone. Come on. We're a patient group.

MS. NEMETI: Krisztina Nemeti, and I'm actually radiation safety at the University of Texas, Med Science Center.

MR. HODGKINS: Can you -- speak into the microphone. There you go.

MS. NEMETI: I'm trying to, yes. I just came to know that some states actually release patients after 100 millicurie of iodine 131 administration, and the patient goes to the hotel. And, you know, they're using the hotel room because he or she got actually the information that, okay, you cannot go home, you cannot have children have on your lap, you cannot actually really be close to people.

Now, this patient goes to the hotel, isolating himself or herself, basically isolation, he thinks, but then he's going to soil the bed, he's going to soil the, you know, the bathroom and everything else.

So there are actually so much more

involved than just a piece of paper given to the patient. And of course, you know, it definitely depends how much you give the patient.

What my practice was when I was in nuclear medicine in a hospital, that was actually in Alabama, we were not allowed to give the patient more than 30 millicuries and basically 30 millicuries the patient can leave.

Anything above, up to 250 millicuries, of course, that's what we could give the patient as a therapy, basically the patient had to stay in the hospital until it goes down to 30 millicuries' worth of exposure.

So I understand the business point of view that basically you have pay so much for the hospitalization. But we're talking about, you know, public exposures and, yes, iodine has a fairly long half life and of course, you know, patients with 200 millicuries, 150 millicuries, they're going to carry that exposure a little bit longer. And, you know, they're going to be in the, you know, public. They try to isolate themselves, but if you go to the hotel, it's not really an isolation.

MR. HODGKINS: So as far as A, B, or C, are you coming down on any particular choice here, or

just amplifying what's been said?

MS. NEMETI: I'm just amplifying actually because I really have no right to say anything yes or no, but I would like that somebody is going to, you know, make a decision that this is the -- so it's not only that the state can actually choose, but also, you know, the hospitals get some help with that.

I understand that's basically a lot of money involved because the patient gets in the hospital for two days or 10 days, it's a big, big, big difference. But, yes, I -- somehow in between we have a line here, because that's important, I think.

MR. HODGKINS: Okay. Thank you very much.

DR. COOL: Okay. Before you walk away for a second, we'll come off of Part 2 just for a second, because the question of hoteling, which you have mentioned here, is, in fact, a very active discussion with the group that is looking at our medical regulations right now, because this has been an issue.

There have been circumstances where some states -- the one I can think of immediately was in Illinois -- came in and found iodine contamination of the room and had to spend a fair amount -- do you have any specific suggestions that we could pass along to them? -- because that's an active consideration right

now.

MS. NEMETI: Well, I don't know actually what would be the best, because what people would be -- more listen to, it would be a fine for that. But how are you going to find those people? You cannot walk around with a Geiger counter, you know, and then see actually who is radiating and who are not.

So what would be best, I am not sure. But definitely it's up to the discussion to decide this, because that's -- I think it's a very important issue because more and more people get these kind of therapy and, you know, radiation you cannot detect by smelling, seeing, feeling, only if just walk around with a Geiger counter, so I mean -- that type of radiation with a Geiger counter -- but I mean it's definitely we have to talk about it because this is a serious exposure to the public. So that's all my --

DR. COOL: Thank you.

Let me just suggest we go back on this particular topic, but if people here want to provide any views and suggestions on that, we will make sure that they get to the right individuals so that they can factor that in as part of their considerations because that's yet another rule making. There are

lots of things going on in the Commission at the moment.

So thank you very much.

And, Dan, we can go back to --

MR. HODGKINS: Did you want to say anything more, Eric?

DR. ROHREN: Well, you know, just to kind set of the tone for discussion too, I would urge people to remember that, you know, there are thousands of these patients that are treated each year. I think it's important not to lose sight of the big picture for the fact that there's one or two case examples where somebody goes to a hotel room and, you know, is incontinent, wets the bed, whatever, results in aberrant exposure of iodine.

You know, the majority of the patients are treated effectively, are well below the exposure limits for the public, you know, you don't set policy I believe to try to catch the outlier. I believe you set policy to try to address the place where most people are going to fall, and that is that most people are treated very effectively and successfully with a limited exposure to the public.

I think the purpose of the regulations and what we need out of the NRC is to be a voice of reason

to say that a certain amount of exposure is okay. You know, we're all sitting on that slippery slope where it's easy to say zero exposure is our goal. And if we all go down that route, then we're going to hurt our industries, we're going to hurt the industrial side, we're going to hurt the medical side. There's no way that we can achieve zero exposure for everybody.

So we need to all accept the fact that there's going to be a certain level of exposure, be it to radiation workers, be it to the public, that's going to be acceptable. Gayle had said yesterday in the issue on fetal dose, you know, when they have someone declare pregnancy, they move them off the job and put them in a basically zero exposure environment.

That's a different matter than what we were talking about earlier in the day when we all kind of agreed that radiation workers, there was an acceptable degree of exposure that we considered to be safe. And I think you could say the same thing for fetal exposure that, you know, although it's easy to say we don't want any, I think we have to be open to the fact that there probably is a safe level exposure and to set those limits and keep the people within that limit.

And I think the same is true with regards

to these discharge criteria, you know, we're never going to reach the point -- we can't keep the patients in the hospital until radioactive iodine with an eight-day half life has decayed completely away, you know, weeks later. That's not going to be the case. We're not going to get them down to zero. So there's always going to be some exposure to the public inadvertently by these patients who are discharged from the facility.

It's our job to minimize that and keep that below a certain threshold, but where that threshold lies is really what's open to debate. And I think being a little on the rational side and saying that, you know, we need to aim for what's going to cover the most patients and the most members of the public, and keep that dose exposure recognizing that patients are pretty creative and they're going to come up with ways of doing things that are going to not follow our rules and not be predictable resulting in, you know, one or two case examples that, you know, is going to end up on the headlines unfortunately.

But if we try to protect ourselves to the extent that every last contingency is covered for, then I think we're going down that slippery slope of towards zero exposure consistency, and I don't think

that that's an achievable end.

MR. HODGKINS: Thank you.

How about let's just go around.

Leonard, anything to add to the conversation?

MR. EARLS: This is Leonard Earls. Keep in mind that we're talking about 100 millirem here as the number. And just remember that the background radiation variation across this country will easily give you the plus or minus 100 that means, for example, children in a higher elevation, say Denver, are probably going to get this 100 from cosmic rays.

So we're talking about situations that we can control here. It's not a matter of absolute protection of the individual, otherwise we'd probably send, you know, messages out that if you live above a certain elevation you shouldn't have children there.

MR. HODGKINS: Don.

MR. SIDES: Don Sides, Stork, no comment at this time.

MR. HODGKINS: Gayle.

MS. STATON: Gayle Staton, Acuren, no comment.

MR. YUNKER: Tony Yunker, Baker Hughes, no comment.

DR. SAVELY: Susanne Savely, I want to say what you said, Eric, makes so much sense, and it's a very practical approach to this situation.

Another thought I had was that, you know, we think in terms of hospital or home, hospital or home, but what if, in some cases, there was something in between, a hotel area reserved for these types of patients that was decontaminated by hospital personnel or radiation safety personnel and sort of have a halfway house, someplace -- if they didn't want to go home, that they could stay that would be cheaper than staying in a hospital and running up your insurance tab.

MR. HODGKINS: Mary Ott and I have a side business here.

MR. LEDOUX: Mark Ledoux, EnergySolutions. I had a question on 3.2C. Currently right now if you want to do -- you've got to maintain at a 100 millirem, and that can take into account occupancy factors, in other words that there's not a person at your boundary 24 hours a day, seven days a year, and if you want to go greater than that, then you have to get permission to do that and you have, you know, go to your regulator, do your study, maintain ALARA, and it's a short term.

So now 3.2C you're saying add -- now this is not currently in the rules. Right? Am I correct? I don't believe it is.

DR. COOL: Correct.

MR. LEDOUX: So when you say we require licensees to demonstrate, so you're going to affirmatively in your application say, We did not address sensitive populations? Is that what you're asking? Or we did?

DR. COOL: Since that the moment the rule doesn't say anything about it, the proposal was to make sure through adding the guidance that would need be part of the application that you specifically address the consideration as part of the proposal, rather than having to change the rule.

The rule requires you to apply, and, in fact, I'm quite interested because I don't know of anyone who has ever needed to do this, so it may well be a moot point. But should someone wish to apply, 3C would be an option that just says, As part of the format and guidance of things that need to be addressed, that this would be a specific topic that needed to be addressed because of that added sensitivity, rather than doing anything in the regulation.

MR. LEDOUX: Okay. Well, now I'm going to come out and say I would recommend 3.2A, no change, because it is -- you are required to maintain it at 100 right now. If you want to go above that, you can petition the state regulator and in your petition you would document your modeling, why you got to where -- and if you, for example, have a daycare center outside your restricted area boundary, then you're going to need to address how you're going to make sure that you're going to be within your limits and so forth and go that route, so.

DR. COOL: Okay.

MR. HODGKINS: Thank you.

Laurie.

MS. McGOWEN: Laurie McGowen, Lamco. This really, you know, as far as industrial, we've never used it, so it seems to me like Eric's got the right answer in that they're already doing it, so I say no change.

MR. HODGKINS: Eric has the right answer. Don't you love hearing that?

(General laughter.)

MR. HODGKINS: I be you hear that --

DR. ROHREN: I hear it all the time.

(General laughter.)

MR. HODGKINS: Toby.

MR. HEAD: Toby Head, H&H. Eric, I agree with you, man, 3.2A, no change.

MR. HODGKINS: John.

MR. MILLER: Yes, no change, same basis that Mark alluded to, the regulator has to make the approval anyway, so I mean that would be considered in the approval.

And on the other question, or the other aspect is, you know, when we demonstrate compliance with 100 millirem public dose, this is a theoretical member of the public. You know, we were discussing this at dinner, nobody hangs out on my fence line picking up this dose, you know, so really it's a 100 millirem if somebody really was there receiving the dose.

MR. HODGKINS: Ann?

MS. TROXLER: Ann Troxler, I agree with Eric also. There's enough flexibility in the no-change option to allow a medical profession to function in the way that it should to protect the public, and also to be able to protect the patient.

MR. HODGKINS: Thank you, Ann.

Wei-Hsung?

DR. WANG: Wei-Hsung Wang. I support no

change, the existing rules already provide adequate protections.

MR. HODGKINS: Jean.

MS. J. STATON: Jean Staton with METCO. I believe no change. I will admit that that 3.2A had me second guessing myself the way it read. I thought you were telling me we were allowed to have a dose limit of 500 MR, and I'm going, I'm second-guessing myself. If I would have had the *Texas Register* with me, I would have looked at that. But I know we're allowed no more than 100 MR a year.

MR. HODGKINS: Doris.

MS. BRYAN: I agree with no change, and I think one item that the NRC should take into account is insurance coverage. I know -- I have a son who's a physician, so I am aware of how hard it is to get insurance companies to pay for things. And if these folks have to start keeping people in the hospital three days instead of one day, 10 instead of three days, then are they going to have to change who they give the administration to, or how it gets paid for? Are the patients going to be able to pay for this extra stuff that insurance companies do not?

MR. HODGKINS: Thank you.

Ellen.

MS. ANDERSON: Ellen Anderson, Nuclear Energy Institute. We support the no change for the many reasons that have already been discussed.

MR. HODGKINS: Steve.

MR. CAMPBELL: Steve Campbell, I support the no change. I'm an example of the iodine treatment at Anderson, and their policies and procedures satisfied me as a patient there.

I would like to follow with Eric a little bit on an impact to, say a facility like MD Anderson. If I went to a lower dose, I had the high dose iodine, if I was -- if they were to restrict the dose limits, and it would be an option to my team that's over my care to lower that dose limit, that would further my treatment.

If I wouldn't be mistaken, or come back for a follow up treatment of more, which would, again, cost me, the consumer, more, and would it impact, because I've read up on Anderson, I'm going to use them as an example, receive some 8,000 patients a day year round. And if I was to stay in the hospital for five days versus the two, that would impact your care of other patients needing that care, if I'm not mistaken. I see it going it that way. I support no change.

MR. HODGKINS: Thanks, Steve.

Alice.

MS. ROGERS: Alice Rogers, Texas, I have nothing to add.

MR. HODGKINS: You feeling supported, Eric? Anything you want to add?

(No audible response.)

MR. HODGKINS: Okay. Anybody from the audience want to add to this? So let's review the questions -- oh, did I hear -- see, yes. Yes, please.

MS. NEMETI: Krisztina Nemeti, radiation safety, University of Texas Health Science Center. Just one thing, I'm not sure I'm saying anything new, that was in my mind, that patients with this high dose therapy, Iodine 131, if the -- I was just actually giving to Doris Bryan a comment that if the insurance would actually support that the patient can go into a facility, not a hospital, but this separate facility where they can actually keep the patients a certain amount of time until that person goes down less than 30 millicuries of radiation, and, you know, the insurance would help actually with these, that would be actually a great, great help for the medical community, and our hospitals as well, physicians and everybody.

So, you know, there would be actually a lot of people with, you know, like internal medicine technologists and maybe doctors that could actually help these patients get through this time. But that would be a big help if we could have this facility built and also, you know, the -- especially that the insurance would pay for it.

MR. HODGKINS: Thank you.

MR. FONTENOT: Mike Fontenot with Thermo Fisher Scientific. This is a little bit off topic, but Eric's comments about impact made me think of this. As we drive occupational exposure and public exposure down, it has impacts in all of industry. We're seeing that now. We sell our products internationally, and in the EU and in China and India where these -- some of these changes have already taken place, they take those numbers and drive them back.

If you want to set a certain dose limit for the public, they'll push that to source sizes for exposure rates around equipment. So there are certain areas where we can't get our products into the market, or we're having to take smaller sources and put them in larger and larger shielded devices so it's hampering industry.

It's just sort of an idea I wanted to give to the panel that there are other things other than just worrying about, Oh no, I've got a couple of guys that aren't going to make the 2 rem per year. It may affect your product, it may affect the cameras that the industry radiographers can use, that sort of thing.

MR. HODGKINS: Thank you.

Anybody else from the audience want to add to this before we get to the questions? Let's see how we did with the questions.

DR. COOL: Okay. I'm pretty sure that we've addressed the first two, so I'm just going to quickly go through them and look to see if anyone has anything associated with additional impacts to this. I haven't heard any of you address any. Did we miss anybody's opportunity?

Most of the heads are perfectly still. There are a couple of -- you know, we may need to stop for coffee sooner than I thought.

(General laughter.)

DR. COOL: Okay. Well, I'm going to keep going.

MR. HODGKINS: Or get on to the constraints.

DR. COOL: The second was there were any differences in the options, and what I think I heard you saying was that you don't feel that any change is needed, that there's already enough flexibility built in. So the third one, and I didn't hear anyone say it, but I'm going to ask the question one more time, has anyone ever needed to actually use this provision, either in the NRC regulations or corresponding things in the state's regulation?

(No response.)

DR. COOL: The transcript should note that the heads are shaking left-right.

(General laughter.)

DR. COOL: All right.

MS. ROGERS: Don -- Alice Rogers, Texas -- we actually do environmental monitoring around two of our licensees who are manufacturers of sealed sources who regularly come pretty close to the 100 millirem, and we'd be glad to give you that data, and it's already, I think, publically available on our website.

DR. COOL: Very good. Thank you.

That being the case -- Mark?

MR. LEDOUX: I just have a question on that, are those licensees -- or does Texas allow them to use occupancy factors, that's including occupancy

factors?

MS. ROGERS: We do allow the use of occupancy factors. These particular data are taken at the fence line.

MR. HODGKINS: Any other questions, comments, concerns, amplifications to this last issue before we move on to incorporation of dose constraints?

(No response.)

DR. COOL: All right. A lovely topic which hides what we're really going to talk about. I saw Mark was over there, he was rubbing his hands. Everybody's now getting ready, the energy just jumped one order of magnitude in the room. That's a good thing.

I'm going to start with a brief description because this topic and the whole topic of optimization of radiation protection is the place that all of you, as in other meetings, have said where the real improvements of radiation protection lie.

The use of constraints and the consistent use of optimization is, in fact, the biggest single change that the ICRP latest set of recommendations put in. A more consistent use of planning values, a more consistent use of optimization no matter what the

exposure situation.

So ICRP 103 places an emphasis on all the exposure situations and recommends constraints as planning values, values that you would use in advance to help understand where you wanted your protection program to be as part of your process. It might be best practices, it might be a variety of things, to help you know where your exposures ought to be in this situation. I'm talking with my ICRP hat on for the moment.

Through a long discussion, ICRP tried to make clear, I say tried to make clear, the constraints were not intended to be limits, because that was the biggest point of discussion, back and forth everyone said, Well, it's just another way to have limits. It's just a different way to force values down.

They were saying, No, we don't want it to be a limit, we want to be a perspective value that you use in your program, and I believe what they were trying to do was recognize more formally in the recommendations what many of you do on a daily basis as part of your radiation protection programs.

There is, needless to say, a rather robust and ongoing dialogue about how that should be built into the regulations. This is a place where the rest

of the world is doing the exact same thing we're doing. What do we do with this concept, do we write it into the requirements or not, if so, how do we go about doing that process.

So a couple of benchmarks for us, if you will, at the moment. International Atomic Energy Agency, in their draft basic safety standards -- I've just highlighted a couple of points taken from the draft text, this from one of the early paragraphs that specifies what a regulatory body should be doing in setting up the program, saying that we should establish requirements for optimization, and that makes sense, you need to optimize your protection.

And should require some documentation of that. Okay. That makes sense. And establish your approved constraints or the process of establishing constraints that are used in that optimization protection process. Pretty generic. It says basically you ought to work on optimizing protection, you ought to write down what you did, and you need to do some planning that's part of it. Fairly straightforward and simple, nice 3,000 foot level, most people could probably agree with that.

Our friends in the European union have said actually similar sort of things at the moment,

that the dose constraints are to be established for workers and members of the public. Now, that reads a little bit more firmly. It's not exactly clear from that paragraph the extent to which that might start to quack like a duck that has no limit label on its back. But that's what they've said.

And they went on to elaborate on it, and this is where it becomes a little bit more clear that they were also thinking in the context of an operational tool rather than as a legal limit and boundary. So lots of words there, you have them on the slide. I'm not going to spend a lot of time trying to go through that.

Now, we, the NRC, and the Agreement States, only require a licensee to develop, document, and implement a radiation protection program. So all of that case is in place, it's been in place for a number of years. Licensees are required to use procedures and engineering controls to achieve doses that are as low as reasonably achievable. The words don't actually say planning, but that could well be just an implicit assumption you can't do this unless you do some planning. So that's what the regulation says.

It does not specifically require today the

licensees establish planning values as part of their programs or as part of the ALARA. So some folks that come in, for example, over the last couple of weeks back up in DC, we've had a group of 20-something folks from around the world in conducting a review of the NRC's reactor regulatory program.

Yes, we get reviews too. All the states that think about the IMPEP program and reviews and all of you think about inspections, we just had a two-week inspection, if you want to view it that way, where a whole bunch of folks came in, looked at all of the different regulatory programs related to the reactors that the NRC has.

They made a number of observations. We're happy to say they found a number of really good practices that they're going to write up in the report. They had several suggestions. One of their suggestions was in the radiation protection area, that we try to more closely align ourselves with the international standards and with the limits and various and sundry things.

So this gets attention within the agency. So when they start to look in details, this is where people start to say, Well, it doesn't say to do that, I'm glad everyone is maybe doing that as a best

practice, but it sure would be nice if there something in the structure so that we knew everyone was going to do it.

If I'm sounding a little bit like a lawyer at the moment, it's because we are a somewhat observed -- you know, the discussion yesterday -- a litigious system; we have people that look specifically at the regulations, trying to look for some of these holes.

And I admit that I was there at the time when we spent a lot of time with the EPA which resulted in the only known place where constraints are in the NRC regs today, because constraint's actually a defined term in Part 20 already. It says, A value above which specified licensee actions are required. It doesn't specify what the licensee actions are, it just says it's a value.

Now, the actual requirement applies to airborne effluents from non-reactor facilities. And we go there as a result of a, back and forth negotiation would be a nice way to put it, with the Environmental Protection Agency, folks in their Clean Air Act office who were looking at the implementation of the Clean Air Act for different categories of facilities.

And when they looked at the reactor facilities they said, Ah ha, here's all of these things, reactor regulations, and here's the specific thing that has specific very small little numbers as planning values that the reactors have to have to various types of effluents, airborne effluents, water effluents, direct exposure, all of that.

We, NRC, see this -- we, EPA, sorry -- EPA, we see this and we see all that detail and so we have confidence that there is the right planning to keep exposures very low, and so we do not need to do anything under the Clean Air Act to make sure that exposures from airborne effluents are appropriate.

And then they went to the material side of the house, the non-reactor side of the house. They said, Okay, show us where those numbers show up on the non-reactor side of the house. And there wasn't anything. There were the dose limits, there was the general requirement to be ALARA.

And they said, This isn't good enough. We're going to get sued, because that's what people love to do to EPA -- I'm sorry; that was probably politically incorrect -- and so they went looking for some more detailed specification, a piece that had to be in place.

That resulted in the NRC actually adding this requirement to our regulations so that there would be a number, it's 10 millirem, from airborne effluents for non-reactor facilities, so that EPA could then choose not to regulate materials facilities under the Clean Air Act. We avoided doing regulations and all the process associated with that.

Unfortunately what that means is there's a number in the regulations that's called a constraint and the actions that a licensee has to take, if 10 millirem is exceeded, is to tell the NRC and take appropriate corrective action. So a violation in that case is not the fact that you had 11 millirem, but it would be a violation if you didn't tell us and if you didn't fix it. In other words, get back under 10.

And many people have said, all very nice, it's sort of nice the fact that 11 millirem in and of itself isn't a violation, but it sure still makes us behave as if it's a limit because we have to get back under it, we have to take corrective actions, and we have to tell you, and any time we have to tell you something, that's a really big deal.

So this particular circumstance, while it uses the word constraint, is set up in such a way that a number of the parameters around it make many people

feel, or at least that's what we've been told in the previous couple of meetings, you'll get your chance in a moment, that this is still like a limit.

So, as we start to go about this discussion, I want to broaden us back out. Let's start with the fundamental standpoint of what are the right things to have in place for good radiation protection, for optimization of protection.

Now, you don't find the NRC regulation actually saying optimization. We say reducing exposures as low as reasonably achievable. That's what ICRP defines as optimization, so we can use those two terms sort of interchangeably, I believe.

Should we just leave well enough alone, you're required to have a radiation protection program, you're required to reduce exposures as low as reasonably achievable using procedures and engineering controls, well and good. The fact that people do their planning and generally use planning values is a nice good practice, let it be. Don't need to see the lines all connected together so that people have a basis from which to do that.

Now, I will tell you that we have had some people say, Well, ALARA is the most difficult thing to inspect in the force, because it's this sort of

clerical do the best you can do, how can you really know whether you've done things, what is the way that you can gauge whether people are doing the right things?

And so quite frankly some people have come to us and said, Well, it would actually help -- perhaps on both sides though, it was inspectors I think who told me this -- it would help to have something that we knew we could go look at.

So second option, make a little bit of change, require that licensees establish constraints or planning values or planning criteria -- I'm not at all wedded to a particular set of words -- as part of their programs in the implementation of ALARA. That way everyone knows that you need to be doing the planning and that there needs to be some criteria associated with the process.

The third step in that equation that came out in some of the discussions was, Well, maybe because we don't want to change the limits, we heard that lots and lots of times, that we should, in addition to telling people they have to have some planning values, we should in some way establish what the goal or the criteria or the constraint numerically should be for occupational exposure so that there's

something when everyone goes to look and see, did you align the regulations where they could find the occupations dose values, the average of 2 rem while still allowing flexibility because it wouldn't be something that would be a legal limit, it would be something that the licensee had in their planning program.

So the suggestion was made, well, what if you not only required them to have a planning criteria, but you told them that at some macroscopic level that that planning ought not to be above 2 rem per year for any given individual in an occupational setting.

This is just the occupational part. The part about having planning and having criteria would equally apply whether it's occupational exposure, your effluents, or any other piece of the puzzle.

So there are a lot of components to this, there are a lot of different directions that you could go with it. At the moment let me reinforce no decision has been made, there's nothing that says it would have to be reported, so the pros and cons associated with is it good to plan, is it good to tell somebody about it, should it just be inspectable, all of those are pieces that we're seeking feedback on as

to whether there's something that we should do to add some structure and some consistency for everyone or not, and if so, what it would be, how it would be most beneficial to everyone in the process.

Those are the three options. I'm actually going to go back to the first pair. I think everyone can recognize that the question of putting a number in there is on the next slide, but I doubt that you'll forget that as we go about the discussion.

Dan, let's go at it.

MR. HODGKINS: All right. John.

MR. MILLER: Just a clarification, so B and C really would add the requirement to have constraints into the regulation, but C would specific some fraction or some number that would be like a constraint that is applied industry-wide. So, you know, for B it would be up to the licensee to figure out what their constraint value is, and that would vary from licensee to licensee, industry to industry.

But for C, the licensee would require to have a constraint in their program and those constraints would be standard across industry and from one licensee to another. So, you know, if you're constrained, it's 2 rem per year, everybody's constraint's going to be 2 rem per year. If you have

a constraint for contamination levels or dose rates or something like that, that's going to be standard across the board for C.

DR. COOL: Almost. As this discussion started, it was put a cap on the value that people could use as the starting point. So rather than saying everyone had to use 2, or 1.8, or something else, say, You get to establish your own number but don't pick a number greater than X, or don't pick a number like 4.5.

Although certainly another option is to say, For any given individual licensee, you have to have a constraint of 2. Every time you start to do that, you move it a little bit closer perhaps to it being a limit because then you're tightening it down. But part of what I want to have you explore is the value of that verus the value of flexibility.

Does that help?

MR. MILLER: Yes, that helps, and it just makes me want to say this is a very bad idea.

(General laughter.)

MR. HODGKINS: So are you voting A?

MR. MILLER: If I start the voting, I would vote for A.

MR. HODGKINS: Okay. Toby.

MR. HEAD: I agree with John, A, no change.

MR. HODGKINS: Laurie.

MS. McGOWEN: Laurie McGowen from Lamco. I say no change. I see a lot of problems when you start putting the numbers in there and then you're going to starting what you have to report and the inspector's going to get to come and evaluate and they might not think it's good enough , or it is good enough, or -- the ALARA program like it is right now it seems to me like you can evaluate that by whether or not the individual's dose goes down from month to month, or from year to year, and once you start putting this in, this is just another thing for the inspectors to have a discussion about whether you did it right or not.

MR. HODGKINS: Okay. Mark.

MR. LEDOUX: Mark Ledoux. I would say no change, and let me just explain a little bit. The first thing is at EnerySolutions, and I'll give this as an example, we have a corporate radiation safety program, and the keystone of that is the ALARA philosophy.

And each one -- in that program, every one of our licensed facilities and licensees is required

to have the radiation safety committee meeting quarterly, and those meetings are -- the minutes are calculated and in those at the beginning of each year they're required to come up with ALARA goals for collective dose, max dose, average dose for their work that they're going to be -- they're planning to do for that year.

All that is basically the same thing, even though it may not be written specifically. So I'd say that we already have -- EnergySolutions, and I believe in general most everybody else does the same thing, under the ALARA philosophy, the ALARA requirement in 10 CFR 20. That's already taken care of, and we -- whether you call it a constraint or whether you call it an ALARA goal or limit, it's the same thing.

And I guess I got to say it, I know the constraint thing and if it comes in, it'll be a limit, and that's the way it's going to go. And I don't think that's a good idea. So thank you.

MR. HODGKINS: Ellen

MS. ANDERSON: Ellen Anderson from the Nuclear Energy Institute. I agree with Mark 100 percent. As soon as you start putting a number in, it becomes a de facto limit, and we don't need any more limits.

MR. HODGKINS: Okay. John.

MR. MILLER: In addition to melding into a limit, it kind of gives the regulator a comparison as well. And, you know, my pockets might not be as deep as Mark's pockets, and so my constraint might not be as good as his constraint, and so there are these comparisons that are made across the industry and, you know, you should be doing this better because they can do it.

And as far as having a regulator inspect constraints and how well -- it's very, very subjective and I don't know how you would design an inspection criteria to, you know, to inspect a licensee against a constraint.

MR. HODGKINS: Alice.

MS. ROGERS: Alice Rogers, Texas. As a general philosophy for regulatory programs, I think having soft items in the rules is not a good thing. It's difficult to inspect, it's hard to enforce, it's complex, it's expensive for everybody, and there's no health and -- public health and safety benefit.

MR. HODGKINS: So that being said --

MS. ROGERS: I'm here to observe and learn things, I'm not here to vote.

(General laughter.)

MR. HODGKINS: Yes.

MR. CAMPBELL: Steve Campbell, TC Inspections. Define planning value.

DR. COOL: Okay. I'm going to start and then I'm going to hold up the mirror. When ICRP was talking about it, they were talking about the individual doses that you would expect to see for particular jobs or particular activities as you were doing the analysis. I could easily imagine that it wouldn't necessarily be always in dose, that it could be associated with particular activities or particular other criteria that were more easily measurable is not the right word, but defined from an operational standpoint to help guide how you were going to do things when you were going to specify things, that that was part of the discussion.

MR. CAMPBELL: Okay. On that I'm speaking from the industrial side, radiography side. Planning values would be impossible. If I tried to set the values as a constraint, or a number, I would fail, 100 percent I would fail, because we're driven by the oil and gas industry, and other issues that drive our work to peak to nothing -- from peak to nothing numerous times a year. So there's no way to have a planning value on the industrial side, I don't believe and to

follow that in any way.

DR. COOL: So how do you do your ALARA planning then?

MR. CAMPBELL: ALARA planning is driven by our operating emergency procedures and the training that we do with the individuals. And it's my job to monitor that, and the only way I can monitor it is, you know, weekly, monthly -- monthly because we use badges monthly, so it's monitored monthly, but I have no way of telling Don for instance, so he picked up 100 millirem last month. Hey, I'm planning on you picking up 200 next month because -- well, that may not be the case. The job I had lined up fell through, someone else got it, or whatever.

So those planning values wouldn't be applicable to the radiography end, I don't believe. I vote no change.

MR. HODGKINS: Okay. Yes, Doris.

MS. BRYAN: Doris Bryan, Radiation Technology. I vote for number 4A, no change. I think that we can be "constrainted" out of business. We started out years ago with ALARA, then came along with the increased controls program, which we all had to implement and have been inspected against, we had to go with the fingerprinting program, now we've got Part

37 coming up. Where does it end? You know, we need some relief from some of this. I vote for no change.

MR. HODGKINS: Okay. Anybody else?

Yes, Gayle.

MS. STATON: I vote -- this is Gayle Staton, Acuren Inspection, I vote for no change because basically I believe we're already using constraints with our radiation protection program and our ALARA program. And I don't believe there's any statistical evidence out there that we're not. I mean show me something that says we haven't improved. We have improved our exposure over the years, and we're very proud of it. And it almost seems like we're being punished for doing a good job.

MR. HODGKINS: Did I -- I think I ended with Mark.

Susanne, did you say something? You're going to pass?

Tony.

MR. YUNKER: Tony Yunker, Baker Hughes, I vote for no change.

MR. HODGKINS: Okay. Back over to Don.

MR. SIDES: Don Sides, Stork, no change. It's not broke, don't fix it.

MR. HODGKINS: Leonard.

MR. EARLS: I'll pass at this time.

MR. HODGKINS: Eric.

DR. ROHREN: I would vote 4A no change as well. Like I said before, you know, I think we need the government to set hard caps above which we think that there is a danger to the public, danger to the workers, but, you know, I don't think it should be a regulation what our ideal target should be, because that's what we're doing ourselves with ALARA, is setting what we think is a reasonable target for radiation exposure and keeping that as low as possible.

But I think the minute you turn it into a constraint, which I think we all agree would turn into a limit, you know, then we're kind of legislating the ideal and not legislating what we think is true safety.

MR. HODGKINS: Alice, you want to amplify anything you said before?

(No audible response.)

MR. HODGKINS: Steve, you want to amplify you said before?

MR. CAMPBELL: Yes, I'd like to, I'd like -- even though Alice is here to observe -- don't hit me --

(General laughter.)

MR. CAMPBELL: -- as a regulator to follow up on Gayle's comment about we have, on the industrial side, achieved lower dose rates and things, and we've done it through when the ALARA come out, it all started. You know, the adage goes you can't teach an old dog new tricks, but, hey, this old dog had to learn new things. And in that, you know, I've learned to teach employment perspectives that, hey, this is the way we do things now, and, you know, throw out an example of what I used to do, just to scare the hell out of them, you know.

But anyway, I would ask Alice if she wouldn't mind commenting because she does inspections and things, if she's in agreement with what I'm saying, if you've seen a change in the past on dose rates and doses and things, and is it still in a good path or a bad path.

MS. ROGERS: Well, I have to agree with him, I think the dose has reduced and the number of incidents have reduced. In fact, I think Bob Emery took our data and analyzed it and did a paper in *Health Physics Journal* about how much radiography dose has gone down since the mid `80s.

MR. HODGKINS: Okay. Ellen.

MS. ANDERSON: Ellen Anderson, Nuclear Energy Institute. The power reactor community supports the no change option for a number of reasons, one of which is that since the implementation of ALARA program we do have rigorous job planning in our power plants, sometimes down to, you know, 50 millirem, 20 millirem jobs, where we actually do have dose -- not only dose estimates but dose goals for each of the jobs.

And as a result of that, you can see a substantial reduction in radiation exposure at the power plants in the next -- in the last 10, 15 years. So we support no change.

MR. HODGKINS: Doris, any additional?

(No audible response.)

MR. HODGKINS: Jean?

MS. J. STATON: We support the no change. We have the ALARA which is limiting the dosage my technicians are receiving. If we keep throwing more rules at them, they're just going to get disgusted with it. When we have a planned special exposure, we have rules for that. I think what we've got right now is more than sufficient.

MR. HODGKINS: Okay. Wei-Hsung?

DR. WANG: Wei-Hsung Wang at LSU. I

support no change. I believe this current ALARA program already has been very effective and we don't need anything added.

MR. HODGKINS: Okay. Ann.

MS. TROXLER: I'm for the no change -- Ann Troxler -- I'm for the no change option also. I think industry has it under control with the ALARA program. Any place I've ever inspected, they had their monthly reports, they had their own specific numbers, not a regulated amount.

And they've reviewed what their people were getting against that, but also against what kind of job did they do, did they do a pipeline, are they x-raying a ship, what kind of curie amount was in the camera that day. There's a lot more to an industrial radiography job than just the camera and the person.

There are so many variables, you can't put a number to say we're not going to go above this this day, because it will change the minute you get to the job. So I'm for the no change option.

MR. HODGKINS: John, did you want to amplify anything you have said?

(No audible response.)

MR. HODGKINS: Toby?

(No audible response.)

MR. HODGKINS: I think we've gone around the room then. Are we ready to open it up to the audience? Is there any comments, amplification, anything anybody wants to add? I'd love it if just one person got up. There we go.

Your name, please.

(General laughter.)

MR. HURT: Tim Hurt with the United States Navy. A couple of questions that I would ask. First of all, we have limits that we have developed based on a risk. Okay. What are we going to accomplish. What are you going to base your constraints on? And before you ask me to turn the mirror around, I'm going to say to you, damned if I know. Okay.

The second thing is, I'll tell you we use ALARA in the Navy in a unique fashion in that we say -- okay, our radiographers have a 50 millirem per year limit. They start out with a 50 millirem every year. When they achieve 50 millirem, when they get to 50 millirem, the RSO has to stop and talk to the man and ask him what he or she feels they can do differently to reduce their exposure, keep under -- they also go through and evaluate how much work has this person been doing, why they were doing specific jobs, they ask the supervisor why they assigned this

guy, and this guy over here has 4 millirems for the year.

It ends up being a conversation and it's not put there as a don't go above this number, which is the way, and maybe I've got the wrong impression, but the way the constraints that you've described, that's what it sounds like to me, it's just another limit. It's a trigger to get us to think. Perhaps if it was approached that way, I might buy into it.

But quite honestly, the ALARA program that we've got right now, if you're conscientious, and I think most radiation safety officers are, is a conscientious -- they're doing things to try to reduce dose. Isn't that what we want? So that's -- 4A.

DR. COOL: Okay. Don't go away for a second, because I will offer the reflection that there are a number of ways that people have talked about the picking values, but it sounds to me like the Navy has picked 50 millirem and they're using it in a process and a dialogue as part of their boundary and understanding and taking some additional discussion exactly the way that ICRP would have suggested that the constraint be established and used.

MR. HURT: You may have -- I didn't get the -- when you described it, sitting in the bleachers

listening, I got the impression there was just another limit. Okay. I don't have a problem with saying, Hey, we've picked a number to do an internal review. This is a trigger number to grab the RSO and say, Hey, think about stop for a moment.

But the way it was described, it was I'm with the -- Hi, I'm with the NRC and I see that you've got somebody that got up 1.99 rem and, you know, you haven't taken this guy out of work, why haven't you, he's going to exceed his 2R, and stop that, you're not doing the right thing. There's a difference between a number that says this is -- and I use 50 millirem because the vast majority of our gamma radiographers use 50 millirem, the command -- Navy commands to do gamma radiography. We have a 30 millirem for the Naval Air Stations commands that do x-ray radiography. Okay.

We regulatorily don't say set, this is your number. What we say is, You need to have something that prompts your RSO to do a review, stop and think. Okay. And it's really -- that's the way we try to do it is be nebulous. It gives flexibility. I think that if you go any further than that in the regulations, then you're telling people how to be flexible. That doesn't -- that's a hard one for me to

work on, so.

DR. COOL: Okay. The problem with trying to define options, we always have to define some options to get some people to discussion, is that it makes it difficult to sort it out. I believe -- and I'll take off the NRC hat, I'll put on my ICRP hat for the moment -- I believe that what our colleague from the Navy has described is what ICRP, or at least the majority of the ICRP Commission members, had in their mind when they were thinking about this.

There needed to be some values that the licensees established that helped them know when to go start doing some internal checking, figuring out if there's other things that can be done, some improvements that need to make in other ways. Many people -- wearing my ICRP hat now -- many people have wanted to glom on to this and add things to it so that it becomes more restrictive, more rigid, more controlled in other ways.

That's the problem that I see with the piece of the discussion. A part of what I'd like to do as we continue this, and I very much appreciate what you were saying, is if we back back out, do people agree with that as an approach to radiation protection that you're already using, and then does it

make any sense to have that as part of the requirements that you're already using so that people can see that we are doing this, or to just have it as a standing practice because there may places that are not doing planning. I don't know whether people are or not and how that works.

But that's part of the dialogue that we're trying to create, because if there are situations where people are not doing planning, then an inspector coming in and saying, What are the planning criteria, what do you do, that would, for me, my ICRP hat on, be the question that the inspector should be asking, not, Huh, the guy down the street's doing what looks to me to be a similar thing is getting less dose, how come you're more.

That's not -- my ICRP hat on -- the right question. It's what do you do for planning, how do you do it, you have some numbers and what do you do when bump into one of those, and you're description would have seemed to be very good.

MR. HODGKINS: Tim?

MR. HURT: Tim Hurt with the Navy. I guess I'm cautious because I don't like putting numbers on to things. I really don't. I'm trying to -- the way the Navy has taken the ALARA, we turned

it into a regulation here a while back. The way we looked at that was, Okay, guys, make a conscious effort to do your best and reduce exposure.

And so now I'm fighting with I've got x-ray radiographers shooting F-18s to the tune of eight hours a day, seven days a week and these guys are getting zeros because of the way we've gotten them doing business. When I get a zero and I turn around to this RSO and I say, What's your ALARA look like, Well, I looked the utilization level performance, I looked at training, I looked at data, and they go through -- and I say, Okay, you've done a great ALARA review.

Does putting a number out there like 10, 50, 100, 2R, whatever you pick, is that number going to motivate people to be more conscientious about doing their work? I would -- the reason I would say 4A, I might consider 4B if instead of specifying regulations or constraints, have the NRC come out with a document, a reg guide, or a guidance document that said, Here are good practices that we have identified and some things to consider in ALARA -- in your ALARA review, here's some help, as opposed to you'll align -- we're from the NRC and we're here to help, is so worn out but true.

So I don't know. It's my -- I just resist the temptation. I don't like to put numbers on people because I find that instead -- we've got numbers on the -- like my granddaughter taking these SOLs, they've got to get above this or they're not going to get funding. Well, what does it do? It doesn't teach her why World War I was fought and what the ramifications were through history, what it does is say, Remember 1917, remember 1919, remember the -- that's what it does, and it stops them from thinking.

So as opposed to using limits, I'd prefer to have a conversation that encouraged thought process.

MR. HODGKINS: Thank you, Tim.

Yes, Mark.

MR. LEDOUX: Just to add on to that, I believe that the current NRC rules and new Reg 1556 and the new reg I was talking about yesterday, which wasn't 1556, which explains 10 CFR 20 in detail, reg guides -- I think there's already literature out there right now that basically says the same thing that you've got -- that the ICRP wants, and I don't -- again, I don't think you need to add anymore to that.

MR. HODGKINS: Anybody? Yes, Susanne.

DR. SAVELY: I think part of the

difficulty is there's so many different groups using radioactive materials in their work in the United States, and so to set a random -- or non-magical number of 2 rem, which everyone could certainly design around, just like we've designed around 5 rem, would be doable but I think it's almost that we need different constraint numbers for different industries.

In research and academia we hardly ever bump up against two. Some of our doctors do, but in medicine it's a lot more common, that it would be a lot tougher to comply with a 2 rem constraint or limit. So I think what industrial radiographers do is so much different than what we do in research and academia, it's almost impossible to come up with one number.

And I think that way everyone's doing it right now, using ALARA, I think everyone has that spirit of, you know, they have some internal administrative constraints already in place, most folks do. I mean there are a few that are aiming for the 4 rem and sometimes it's out of habit or sometimes it's out of necessity that the doses are really quite up there, so.

MR. HODGKINS: Thank you.

Steve.

MR. CAMPBELL: Steve Campbell again, TC Inspection. I'd be willing to wager that, for the sake of numbers, at least probably 90 percent or greater of licensees that are dose regulated, which they all are, have a trigger number in place already that Tim spoke about. I can't imagine somebody not. I mean the people I know in the industry have that number. It's related to them through their film batch supplier, or their dosimetry suppliers, which they separate it from the regular roster of folks.

And then secondly, when you start using verbiage like shall and specify and require, that tells me you're heading into making a rule instead of getting away from the definition of a constraint, which allows flexibility. You use those three specific words, and you're headed to a rule.

MR. HODGKINS: Okay. Anybody else?

Jean.

MS. J. STATON: Steve's right. Most of us do have a certain number that we look at and we call our technicians in and we want to know the why, where, how, what could you do different. So we already -- we constrain ourselves. We don't need the government putting more rules on us.

MR. HODGKINS: Gotcha.

To the audience, and your name first, please.

MR. SNELL: Warren Snell, Methodist Hospital Research Institute. You already do this -- regulators do this to a certain extent in the license review process, the license application process. You can't get a radon controls license unless you provide a set of operating and safety procedures, a radiation safety manual that says you will certain things, so, and that is included in the ALARA philosophy, so we're already doing this to a large extent. And as several speakers already said, we're already self-regulating ourselves in this area.

It was touched upon about the inspection process. This should not be to make it simpler for inspectors to find a violation that we have imposed upon ourselves by putting a number within, say within the infamous tie down condition that we are tied to that is lower than -- you know, instead of 5 rem we've tied ourselves to a 2 rem limit so we've exceeded the 2 rem so we've become a victim of our own attempt to reduce the dose and maintain safety in our facility.

MR. HODGKINS: Okay. Any more?

(No response.)

MR. HODGKINS: Okay. Anybody, comments?

Steve, you want to comment? Hold on, let's see if they want to -- go ahead.

MR. CAMPBELL: Can I go ahead? This is Steve again. Don't hit me, Alice --

(General laughter.)

MR. CAMPBELL: -- I'd like to reflect back on the -- when the ICs were put into place. To give an example, there was some verbiage in there about the flexibility of licensee to do what they seemed to be the responsible thing for their facility, such as build a vault, whatever it happened to be, to secure the sources, whether it be video, alarming the facility, armed guards, yada, yada, yada.

But the verbiage was it was up to me to determine what was best for my facility. Okay. And the first rattle out of the box wasn't Alice, it was another inspector comes --

(General laughter.)

MS. ROGERS: Who works for me.

MR. CAMPBELL: -- comes in and says -- to inspect my ICs the first rattle out of the box, and wasn't satisfied with what I had in place, and an NOV followed, which at the time, if I'm not mistaken -- Alice, you can correct me on this -- the first or second time through on an IC's violation since you've

directly escalated enforcement.

MS. ROGERS: You did.

MR. CAMPBELL: You're asking the regulators to put theirselves in that position again where I hate her when she comes around.

(General laughter.)

MR. CAMPBELL: You know, if you put that constraint on me and she comes in and defines that I haven't fulfilled my end of a constraint, which is a broad word, and then she has the flexibility to give me an NOV. That's not the intent of this, I don't believe.

MR. HODGKINS: Did you want to add anything to that?

MR. SNELL: Yes, I mean I guess not directly on that issue, but there's always an issue of trust between the regulator and the regulatee are we going to do our jobs, are we going to be professionals, are we educated and trained, do we care about the company we work for, do we care about the people that we're trying to protect. And I say in a large part, obviously we do. You know, we're not -- most of us work under pretty severe budget restraints, but we try to get what we can to expand the resources.

And, you know, I think in large part I

would like to say, in Texas I feel that they recognize that. I have been a regulator, I worked for the department, what the Bureau of Radiation Control, for about seven years, so -- seven or eight years, so I know, I think I know what they are trained to understand and do as far as regulating within the state of Texas. They are not here to drive the regulated community into a position where we can't operate and use radioactive materials, use the radiation producing machines that we want -- we need to use.

MR. HODGKINS: Okay. Thank you.

Anybody else?

Yes, Alice.

MS. ROGERS: I'm sorry, I just can't not -- but I do have to keep my finger on the button to respond, don't I. I really want to restate, I think, that putting soft requirements in rule is a mistake. You've heard from a couple of licensees that this is going to create inconsistency with inspections, certainly across the state, probably across the nation.

I think after we've done enforcement against a couple of you all, you know, they'll look at the two or whatever their constraint number is, and

they'll start pencil whipping their records and that's silly. I mean it's just there's no benefit from this. We're trying to protect public health and safety, we need a good firm number that we think is safe and that's the one we're going with.

I think that dictating means and methods for how people really do their jobs is a mistake. Each industry is different, each company is different, each individual is different.

MR. HODGKINS: Doris, do you want to say --

MS. ROGERS: I guess that translates, by the way, to a vote for 4A.

(General laughter.)

MR. HODGKINS: Well, you wouldn't necessarily --

DR. COOL: But she's not saying that.

MR. HODGKINS: Okay. Anybody else? Audience?

John.

MR. MILLER: Just one other point. You know, ALARA, it raises the question how much safer can we make safe. You know, I mean we can all agree let the limits, as they are right now, we have a safe work environment. So licensees' ALARA programs ensure that

the licensee is not going to exceed those limits. It definitely does that, and that's why I'm certain that every licensee has a constraint, because they don't want to exceed the limit.

It also reminds the worker that -- you know, to keep on top of things. You know, I can't tell you how much safer the work is going to be by going from 2 rem to 1 rem to 50 millirem to 30 millirem. I mean those numbers are negligible. But the importance is, one, we are ensuring that we in compliance with what the hard limit is, and we keep that work environment -- it constantly reminds the employee that they're working with hazardous material and they've got to keep on their toes.

MR. HODGKINS: Okay. Any other questions, comments, concerns?

Yes, we have one more coming to the table -- to the microphone I mean. You can come to the table.

Your name first.

MR. ANDERSON: My name is Lloyd Anderson with High Tech Testing. And I just wanted to add to what has already been said; Alice really addressed it pretty good. The constraints would need -- if you decide a number, to make that number a viable number,

you're not only going to have to look at the different types of licensees, you'll have to look at the different types of licenses within those groups.

Just for instance, if you have a company that does field radiography versus a company that does shielded room radiography, they both have industrial licenses. It wouldn't be a -- how would you put a number for industrial radiography that would be fair and equitable to both of those entities. I don't believe you can do it.

ALARA already takes into account the differences in the way that different companies operate and the methods that they have. And I don't think we need to change from what we're doing right now. So my vote is for 4A, no change.

MR. HODGKINS: Thank you.

Anybody else?

Yes, Mark.

MR. LEDOUX: Mark Ledoux. The discussion we're having right now about ALARA and robust program, I just bring that back to the discussion we had yesterday about the 5 rem, 2 rem. A little off bases, but that's another reason why we don't need to change the rules because everybody's got a good program, everybody's doing a good job on that rule, so.

MR. HODGKINS: Okay. Steve -- Roger's on the mike.

(General laughter.)

MR. PEDERSON: I'll stand over here so I'm not behind you.

Yes, Roger Pederson, NRC. I'd just like to point out that there's actually two questions in play here. One is whether it's appropriate for the NRC to require that people put constraints into place in general, and if you interpret the ICRP recommendation the way Don did, which is that a constraint is just a general trigger point like the Navy has established, and it sounds like most of you have established, then the answer I hear from that is that putting a requirement in place doesn't actually have any value added, that you're already doing that, and so there's no real benefit for that.

The other question, however, is 4C, and it's not up on the board, is given that constraints have some flexibility, whether it would be appropriate to use a constraint to provide some assurance that doses wouldn't exceed more than 2 rem on average over some averaging period, as opposed to putting a hard limit as was mentioned earlier.

Rather than having a hard limit at 2 rem

per year, which a number of countries have put into place, the proposal was floated in previous meetings, which I think is what we're trying to generate a discussion on, whether it would be more appropriate to put something more flexible like a constraint in place at 2 rem that would require you to do something, and again, if that something was as little as additional counseling, to try to ensure that that individual, over the long run, stayed below an average of 2 rem as opposed to having a hard 2 rem per year limit in place.

Now, in that case, that's a little different spin on what a constraint is there for. And I guess I really haven't heard, other than a no change vote, I really haven't heard a discussion as to whether that would be more preferable than a 2 rem per year limit, or even a 10 rem over five year limit.

MR. HODGKINS: John.

MR. MILLER: Yes, I think if something like 4C went into place, what you'd end up seeing is a constraint against the constraint.

DR. COOL: Would you like to elaborate on that a little?

MR. MILLER: Again, it isn't going to make the work place any safer, you're to going to be able

to measure any real value. The only reason you would see a constraint against the constraint is so that the licensee can ensure and feel confident that he's going to be compliant with the regulation. You know, I mean that's what I would be thinking.

MR. HODGKINS: Laurie.

MS. McGOWEN: Laurie McGowen with Lamco. I think if you put a constraint in, then as the industry changes, sometimes you're busy, sometimes we're not, and sometimes, you know, then when can we change the constraint? Because maybe this year I could get my people to stay at 2R because we're not real busy, so I put a constraint of a higher number, and then next year the bottom falls out and we're blowing and going, can I change my constraint, or do I need you all's permission to change my constraint, and then you all are going to want to know why I changed my constraint.

MR. HODGKINS: Eric.

DR. ROHREN: I was just going back to the discussion yesterday. I mean I think we all failed to be convinced that there was a substantial safety benefit by lowering the limit from five to two. That being the case, if you put a constraint at two and I have people in my medical facility that are

consistently pushing or going over that 2 rem limit, functionally, I don't see how that's different than having a hard cap at two.

You know, I can bring that interventional cardiologist in and say, Look, you exceeded 2 rem again, you know, how am I going go counsel that person you need to do shorter procedures, you need to take care of fewer patients. You know, that person, by nature of what they do, is consistently going to be over that limit.

So a constraint is fine as a target, but once you put it in writing like that, it does turn into a goal that essentially morphs into a limit that repeated violations obviously are going to raise red flags. And so what do we do with that person that approaches that limit or exceeds that limit on a regular basis because of what they do? And I don't think that their behavior in that setting is putting them at increased risk compared to what we have now with the 4 rem limit.

So, you know, I just see that problems -- and again, getting back to the issue of if it's not broken, don't fix it. You can say we all have programs in place, that we target certain levels that raise alarm bells and we bring that person in and try

to counsel them. If we're already doing that anyway, I don't see that we would benefit from having a regulation that requires additional paperwork to assure that we're complying with that.

Implicit in all of this is the R in ALARA. You know, it's reasonable, what's reasonable, and we've touched on it before, John said it, you know, what's reasonable for the Navy may not be reasonable for a smaller company, may not be reasonable for Mark's company. You know, each company has to make decisions based on their resources about what is a reasonable target for them to achieve.

And ALARA takes that into account. Once you start getting into 4B and 4C, you take away that R and have the government start to say, you know, here's what your target should be regardless of what you consider the reasonable factor.

MR. HODGKINS: Roger, did you want to add --

MR. PEDERSON: Yes, I'm still mystified by the constraint on a constraint concept. Are you saying that if there is a 2 rem constraint in the regulation, then people would put additional constraints on their own operation so that they never got to that constraint, is that --

DR. ROHREN: Yes. Yes.

MR. HODGKINS: Okay. And then, Leonard, you were nodding ferociously.

MR. EARLS: This Leonard Earls. I didn't comment earlier because I know at my facility we do extensive planning, we have all kinds of constraints, to use the term of the day, in place regarding dose per entry for a particular job, depending on the radiation work permit. We have administrative -- well, we call them administrative action levels, they're limits per se, but if you get to this point, you have to jump through other hoops to go above that point, and I think that's what our friend from the Navy was talking about.

So in concept I think we all implement constraints, is what I've heard this morning. As far as a given number, you can't do that industry-wide reasonably, and I'm talking -- I'm not talking about nuclear power industry, I'm talking about the industrial radiography, the medical byproduct licensees, academia.

Setting a 2 rem number on an individual's dose for a year as a constraint is probably not practical in an industrial radiography setting, and I'm going to speak a little bit out of ignorance here.

I suspect there are industrial radiographers that jump from company to company depending on who's working right now. Laurie can probably control what she gives the individual, but she can't control what he's going to get after he leaves her, or before he came in.

And it makes it very difficult to set a number on an individual's dose that is a constraint. Now if it's a hard limit, she has to control it. But a constraint is essentially only for the facility that the person is working at, at the time.

MR. HODGKINS: Okay. Ellen.

MS. ANDERSON: Ellen Anderson, NEI. I'd like to add to what Leonard just said. In the commercial power plant community we have refueling outages and we have transient workers who go from plant to plant to plant. And I can see this now, if we had -- if that person brought with them a 2 rem per year constraint, they come to my facility -- and again, having been a radiation protection manager, I understand this -- bring them to the facility, he's sitting at 1.8 for the year, I take him over 2, I've got something to do to -- I'd be responsible to do something about his dose when in practicality I didn't give him all that dose.

So the bottom line is, I'm not sure how we could do that from a licensee perspective when our own power plants, our own licensees we could do something like that, but we do have this transient population that we have to address, and I'm not sure we can do it in a practical manner.

MR. HODGKINS: Yes, Susanne.

DR. SAVELY: Well, looking at the field of medicine, you have a prominent radiologist much in demand. They start cranking up towards 2 rem. They're salaried, they're not hourly; you can't lay them off. I don't know how we would handle that administratively. So they get to September and they don't do any more procedures for the rest of the year? Their schedules moves back till January? I don't -- I just -- I don't know how we would handle that, other than to redesign how they scheduled.

MR. HODGKINS: Okay. Yes, Don.

MR. SIDES: Don Sides, Stork. I'm thinking more -- I like the term target better than a constraint. I'm thinking that maybe we should target 2 rem a year and try to keep everybody under that, but still have the 5 rem max. That would be a whole lot easier than to have a cold set -- I think I just like the term target better.

MR. HODGKINS: Okay. Anybody else from -- oh, come on. Don't be shy.

MS. JONES: Cathy Jones, Service and Compliance. And again, I appreciate the thoughtfulness about the medical community, and the things that the good doctor said were right on. But something else we need to think about as far as the regulatory agencies. If we were to, say, shoot for 2 rem instead of 5 rem, what does that -- then we're submitting license applications with shielding calculations, or shielding calculations for radiology or whatever. Let's say you have a PET facility and everything has been submitted and approved that your restricted areas are going to keep restricted personnel below 5 rem, then even though this is not -- this is just sort of fuzzy 2 rem number, the next time you start submitting PET applications, are you going to have to do shielding for 2 rem because we put that number in there?

And then what about when existing facilities come up for renewal, it's just like every 10 years we pretty much have to scrap everything and resubmit, justify everything again, and redo calculations, and they -- and then -- and we have existing facilities that have been shielded for 5 rem

restricted areas. And I just see a potential for a lot of aggravation, cost, confusion in the field, and a lot of expense, a lot of additional expense for what good?

And that's why I would say no change. I think people are doing a very good job. And I know when I do shielding calculations, for instance for PET, I'm always very conservative. I got caught one time doing shielding calculations for a facility when they said, Oh, probably we're going to be max eight PETs a day, and they ended up doing 12. Well, the calculations for 12 didn't work for eight, and we had to go back in and reshield. It was very expensive.

Fortunately they didn't fire me. They realized that we were all doing the best we could at the time, and I was real glad that they were very busy. But it does make an awful lot of difference in cost and thought process, and then again, back to that thing, if you put in that number of 2 rem, what's that going to do at renewal time to additional expenses to more shielding because we're not at 2 rem, we're at 5, and, you know, we based everything on 5 rem.

So I think it really needs to be thought through very carefully because everybody has done a lot of work based on that 5 rem unit, and if we don't

have any good science to tell us, you know, again, because the international community jumps off the cliff, do we really have to do that, and do we really want to take on that additional burden?

MR. HODGKINS: Panelists? Alice.

MS. ROGERS: I just want to point out that we were talking about unintended consequences yesterday, and an unintended consequence that's not in NRC's jurisdiction at all is that these protection standards will spill over in many states to become the protection standards for x-ray facilities as well. So her comment about the extra expense of shielding and everything goes into a whole huge number of registrants that you guys don't even have jurisdiction over.

MR. HODGKINS: Okay. Anybody else? Panel -- yes.

DR. WANG: Wei-Hsung Wang. And, Don, may I ask two questions? The first one is do we view ALARA as comparable with the basic safety standards adopted by IAEA and EU? And the second question is, the option 4C requiring numerical value for a licensee, who determines that numerical value?

DR. COOL: Okay. The answer to the first question, our requirement for licensees is to reduce

exposure as low as reasonably achievable is seen as being the general equivalent of IAEA requiring licensees to optimize, or subject their exposures to the process of optimization, or whatever the phraseology ends up being. So, yes, at a macroscopic level with little bits of details perhaps.

The second question, who sets the number. Well, that's part of what this dialogue would be about, if people thought that there was a value to having a numeric value. The 2 rem number is up there because it has been previously suggested that this might be a less restrictive alternative to setting up a comparability with international standards, international activities, people doing international trade and other sorts of things.

So that too came in as an example because of the dose limit recommendation for an average. It doesn't need to -- mean it to need to be that number. That's set there as an example for that particular reason, that we're open to suggestions.

MR. HODGKINS: Yes, Steve.

MR. CAMPBELL: Yes, it's Steve again. On 4C you just mentioned that that number is just out there kind of floating around. Correct? 4C has that --

DR. COOL: That rule number?

MR. CAMPBELL: Yes.

DR. COOL: That one right there. Okay.

MR. CAMPBELL: Yes, it's that floating around. 4C has that dreaded word in it twice in the first three sentences, requirements and require. You're going to a rule again, instead of just what you said, a number floating out there as a number to use. You're going to a rule.

MR. HODGKINS: Anybody else?

(No response.)

MR. HODGKINS: Audience?

(No response.)

MR. HODGKINS: Tell you what, before we go on to the questions, we'll take a 15 minute break. We're a little over time as far as when we were supposed to do that. It is 10:20, so we will be back at 10:35.

(Whereupon, a short recess was taken.)

MR. HODGKINS: All right. I think we will start with the questions then, Don?

DR. COOL: Yes. Okay. So welcome back. The questions are not intended to reaggravate the previous positions or suggest that we weren't in any way listening, but rather as an opportunity to check

if there's any additional use and thoughts about some of the key things that we will need to develop and eventually present to Commissioners.

So the first one, significant benefits and impacts to imposing constraints as part of the licensee's program. And what you've already said is that most of you do planning, that most of you have some sorts of criteria, have -- we didn't actually go around and see whether or not you were going to win your bet or not, but that's okay, in terms of the group doing it.

So there is at one level a view that you already do the things that ICRP has suggested constraints were intended for, but that there are lots of downsides when they become ensconced in a regulation. And, yes, we're talking about whether or not we're going to do rule making, whether or not this becomes something that would be part of a rule making or not. So the words had to say those magic words.

So I would open it up to any additional views and thoughts on any of those benefits and impacts. And as Roger pointed out, and I think that was probably useful, there are several different levels to this question, and the numeric part of it is only one piece of it, and maybe a piece that we never

would get to because there are yet more negatives that you've already described for each of the sorts of -- kinds of things.

But the first one is just the idea of having values that you use for yourself as part of your ALARA program. I'd like to construct it in that way.

Dan?

MR. CAMPBELL: Steve with TC Inspection. I'd like to -- if Roger doesn't mind, we just had a little conversation back there, could you, for the audience, Roger, the constraints you mentioned, could you define that the way ICRP looked at it, just for the audience?

MR. PEDERSON: Okay.

DR. COOL: No, he didn't say that.

MALE VOICE: Oh.

(General laughter.)

MR. PEDERSON: Yes, there's a little bar over here that's -- Roger Pederson, NRC. I think what Steve is referring to is the ICRP actually uses the term constraint in a couple of different ways. One of them is this level at which you have to do something, which is fairly consistent with the definition that we currently have in our regulation.

Now that becomes important or not important depending on what you have once you reach that level. And I think that's the way we're trying to use the term constraint in this proposal that we're asking for comments on about having a constraint at say 2 rem that you have to do something to ensure that over the long run someone doesn't get more dose than is deemed appropriate.

The ICRP also uses the term constraint as a tool in your ALARA program to spread the dose out amongst your work force, or to spread the dose amongst the exposed individuals, whether that's occupational or public. They're concerned and they articulated in the document, in one of those three, that a small percentage of the population shouldn't take all the risk, and a larger percentage of the population gets the benefit.

So as I've heard some people are more efficient at their job, they get the hot jobs, the get more exposure than other people that you have working for you. What I pointed out in our little side bar is that that's not what we're talking about here. I don't believe the NRC is proposing to use, or to put constraints in the regulation to spread dose.

That topic actually came up back in 1990

when we put the requirement for ALARA in the regulation. And I think the NRC's position, and I can't really speak for the entire Commission, but I think the current position is that we allow the licensees and the employee to work that out either through a union or through some employee concern program.

There's another connotation to the term constraint and it has to do more with public dose, and that is that -- another way and ICRP uses the term constraint I should say -- and that's to ensure that an individual member of the public doesn't get more than 100 millirem, that you would put a constraint on different sources of radiation. If that member of the public was exposed to two or three different sources of radiation, you'd put a constraint on each of those sources so that they didn't add up to more than 100 millirem.

Now that's not what we've been talking about here, but that might be more appropriate for when we talk about public dose, you know, dose limits to members of the public. I don't think we are -- I don't -- well, actually the constraint that we actually have in the regulation that Don pointed out, that 10 millirem, kind of looks a little more like

that kind of a constraint. But that's -- you know, we're not debating whether that 10 millirem should be in the regulation or not.

MR. HODGKINS: Steve, did he give what you wanted to hear?

MR. CAMPBELL: Yes, just because it struck me the way he defined to me. And I was talking with Jean, I'm also involved -- I'm involved heavily with the radiation safety part, but I'm also involved as an operations individual in industrial. Okay.

And when he mentioned constraints and the way they looked at it about spreading the dose, I put it to Roger like this, I'm going to find a horse, I'm going to saddle him up and ride him. Okay. And he's probably going to get more radiation than an individual -- because I had a job that had to be completed in a certain time frame, and the industrial people know what I'm talking about.

And it's not impossible for -- as an operations person to say, When I catch that flag that I've got in my radiation protection program that targets an individual as being up in here in May for instance, well, as an operations guy, I have the responsibility to make the adjustments within my operation to take care of that individual, of course,

school him and all that, but to replace him or move him around or put another as qualified individual with him and start sharing the dose. That's achievable there.

MR. HODGKINS: Okay. Panelists?

(No response.)

MR. HODGKINS: Audience?

(No response.)

MR. CAMPBELL: Just one other comment, it would -- excuse me, it'd probably be harder for the medical industry to spread that, because like Eric was talking about, you've got that heart surgeon that's, you know, well renowned over the world, this, that, and the other, that would be an impact on your people, I'm sure.

MR. HODGKINS: Go ahead, Tim.

MR. HURT: Tim Hurt. I noticed earlier that the word constraints is plural, but we've bantered about 2R pretty vigorously. Sorry that I haven't read in depth because it's only about a ream and a half of paper, the ICRP 103. I did print it; what a mistake that was.

What additional constraints, other than that 2 rem, does the ICRP look at? What else are they -- do they recommend we have constraints on?

DR. COOL: Okay. That's a good question. ICRP doesn't actually have a 2 rem constraint. The question of applying a particular number was a suggestion that's come up in the previous discussion.

What ICRP suggests if that you establish planning values and, just as several folks have mentioned here, as in the power industry, there may be lots of different numbers with each of the different kinds of jobs and activities, hence their use of the word plural, as I understood it.

MALE VOICE: (Away from microphone).

DR. COOL: And we're not -- I do not believe -- and I'm going to put my ICRP hat on --

MR. HODGKINS: Don, can you just repeat the question, because he wasn't at the microphone.

DR. COOL: Okay. The question, because he wasn't at the microphone, was whether this was similar to the derived air concentrations, annual limits of input, the DACs and ALIs.

And with my ICRP hat on, I would say, no, it's not a numerical value used to demonstrate compliance because it's easier to measure.

It's rather, I think, from ICRP's perspective, some criteria that you might set, it might be in dose, it might be in air concentration or

something else I suppose, but it's something that you set in planning based on whatever information that you have about the job situation, the surveys, the number of shots, the size of your source, all of those sorts of things to understand what your expectation would be for the kinds of dose and whether there's any things that could be done in advance to further improve that as part of your planning process up front.

MR. HODGKINS: Okay. Any other audience members want to echo, amplify? You just want to stand up at the mike and say something?

Yes, Eric.

DR. ROHREN: This is Eric Rohren, Society of Nuclear Medicine. I'll make a quick comment on this that, you know, are there any anticipated benefits. Well, I think we, like most people, are already -- already have programs in place with targets for what our exposure rates are going to be that are below the hard cap of 5 rem per year. So I don't see a benefit by legislating what's already taking place. I think that the detriment would be additional paperwork and additional oversight for a process that already is working pretty well.

You know, we don't have the portability that I've heard reflected in some of the industry

comments. Our workers tend to be those that have trained and gotten into the position and generally excel and advance based on their degree of expertise. So we can't just change out people based on availability in the workforce in general. Those stuck with the higher exposure are those that are doing so because they're good at what they do and are necessary for patient care.

So I think it's going to put us into a position once you start having these constraints, caps, whatever, you know, recommended levels, whatever you want to term them, it's going to put us in the position that there are certain scenarios in the medical field where we will consistently be coming up against these without a recourse and without really a good plan for how to address that, apart from what we're already doing with ALARA; that is, you know, are there any reasonable steps we can make -- we can take to assure that that dose is as low as we can reasonably expect.

MR. HODGKINS: Okay. Come on up. Name first. Okay?

MR. LANIER: Norm Lanier, Traceco. I must apologize. I left about two hours early yesterday, I had to take care of some business. But I guess I must

have missed something because it seemed like yesterday we talked about just 2R and 2R, and I thought it was pretty much an agreement around here. I don't think anybody's hands went up saying, We buy into the 2R. And now we talk today about constraints, which I don't like to use the word constraints; I like to use the word maybe recommended action levels. But we set our own levels that won't be a citable offense.

But I then I listened to Don just say something about when the gentleman asked about ICRP's requirements about restraints, and I think, Don, you commented though ICRP don't say anything about the 2R restraints. And I think that Roger keeps bringing up the 2R.

It seems like this 2R is being bounced around again and again and again, almost like it's been discussed in the bowels of the NRC for some time so that three or four years from now they can come back and say, Well, yes, I remember we talked about that back 2010, and this is just the way it is.

And I think sometimes this 2R level, from what I understand, is sort of set by this, well, we wanted to keep it now to 100 rems per individual's life time over 50 years. Well, I don't know about you all, but I don't know very many 68 year old, assuming

they started at 18, 68 year old industrial radiographers out there still taking a pill and getting exposure.

So if we had to sit on a lifetime level, I don't have a problem with the 100 rems a year, but I'd rather see it backed off 100 rems over 25 years. I know there may be a few dinosaur RSOs in this business in here, but I doubt seriously any of you all are picking up any exposure today. I know I started back about almost 40 years ago and I received most all my exposure going out as a hot cell operator, and I got a pretty good dose back in the `70s.

But as I went up, you know, after I got into being a full-time RSO, my level -- I ain't got any exposure at all. My level just totally dropped off. So I think most people's exposures can get within hopefully after about 20 years in this business you've worked yourself up into a position, maybe you're behind a desk or something like that, or you're in the room right here, because we're talking about people's exposure that's not in here today.

It's all of our workers out there in the field right now making the money that allows us to be here to talk about their fate. And so I think that, you know -- and there's nothing that says we've got to

go to 2 rems a year. If we want to set it back now, we're going to set ourselves -- we're saying -- well, let's figure 20, 25 year average dose of 100. Why not make it 4 rems.

That gives four people -- that gives people a 20-year occupational dose limit, or 25-year occupational working, God forbid they're working 25 years in this industry still cranking a pill or something, at 4 rems a year, and that's pretty reasonable.

But I just feel like that this 2 rems keeps bouncing around, bouncing around, here it comes, folks, you know, bear and grin it. Thank God I'm going to be out of it. Being here today is part of my retirement plan to let me know how -- like many of you all, I'm not going to see this, other people are, but -- and I think this is developed -- you know, I think our -- the information that we got for all of our doses are going down, they've gone down a lot from when I was in industrial radiography for sure. Better equipment and you want dose information, go to people like Landauer, stuff like that, look at their, you know, look at their records.

And I'm just afraid the direction we're going in, and like going back to the constraints

business, I have no problem with action levels. I know Canada, they tried to get us to do action levels, and that's the level that we set ourselves.

We say, well, an individual gets over -- you know, if you have 5 rems a year, let's say my action level is going to be 25 rems -- or 2500 millirems per year, so based on that and quarterly -- on monthly badges, if I've got an individual that exceeds 1 to 200 millirems a month, I sit him down and talk to him. But I don't want it to be a citable offense. Because I go back to the tie down clause. You put something in a tie down clause, that's a citable offense, you know, but.

MR. HODGKINS: Thank you.

Any reactions, comments, Panelists?

Yes, Don.

MR. SIDES: Don Sides, Stork. I am a working radiographer. I still get some radiation. In our organization, once you move up to a certain management level, everybody wears at least two hats. So I still shoot. I don't get the radiation I used to. Most of my work now is with x-ray tube, however, I do a large part of the cobalt work in there, because I like those gravy long shots, I get some break time.

But -- and I have a radiographer that's

been doing this 50 years. He's still cranking a pill, when he remembers.

(General laughter.)

MR. SIDES: But, agreed, the 2R thing, we're beating it to death. You know, we all have to realize sooner or later, unfortunately it's probably going to happen, we don't have to like it, but I think we're just going to have to deal with it. Hopefully common sense will take over and we won't have it, but who knows.

MR. HODGKINS: Panelists? Roger.

MR. PEDERSON: The purpose of this meeting isn't to debate, it's for us to get information from you all. But I would like to address the implication that we've already got our minds made up on 2R somehow, some way, and that this is just for show, and that's not what's going on here. We really do want your opinions and the perspective as to how, you know, different things might impact you.

The reason I think we keep going back to this 2R is that the NRC is required by legislation to ensure that the industries out there provide adequate health and safety to the workers and the public. What does that mean, what's adequate protection? We've used the ICRP as that standard for years, you know,

what their recommendations are.

So the ICRP made this change to a lower dose limit more than 10 years ago; 1990 actually, it's quite a bit more than 10 years ago. And you're right, that question has come up over the last number of years continually, why haven't we lowered the dose limit to 2 rem per year.

So we're trying to collect information, arguments on both sides of that issue, because we are -- the NRC is going to have to address that eventually, and in the near future why we did or we didn't change the dose limit.

MR. HODGKINS: Ellen.

MS. ANDERSON: Ellen Anderson from the Nuclear Energy Institute. I believe that our community, as probably as well as the other communities, would accept a 2 rem per year if, in fact, there was -- ICRP provided us with scientific basis for that decision. All of us are concerned about public health and safety, that's why we're in the business that we do, that we're in now. However, if there is no scientific basis behind it, there's no reason to make a change.

The 2 rem could be 3 rem, it could be 1 rem. We don't know what that is because there is --

the ICRP has not provided a scientific basis for that number.

MR. HODGKINS: Echo? Amplification? John.

MR. MILLER: Yes, this is a very simplistic analogy, but we could always ask ourselves how much slower than the speed limit do we drive and when we approach the curve in the road and it tells you to slow down to 35, do we slow down to 25 because the potential of, you know, sliding off of that road is reduced when you're at 25 millirem -- or millirem -- miles per hour.

(General laughter.)

MR. MILLER: You know, the HP in me. But you know where I'm getting at. It's like how much safer can safe be made? You know, it gets to a point where you're trying to do something that really has no measurable benefit. And so why go down that path? Why go down that windy road?

MR. HODGKINS: Anybody else?

(No response.)

MR. HODGKINS: We're moving on question number two.

DR. COOL: Which had to do more specifically with any thoughts related to inspection,

compliance, reporting. As I know that what's in the reg today for the airborne effluents requires a report, there is nothing that would suggest that that would have to be done for other things, so that was part of the description process.

And please also recognize, and I'll reiterate what Roger said, there has not been any decisions made. I'm very serious about that. You have to frame questions in such a way that you can get the underlying data. So this is your opportunity, if there are any other inspection issues. Alice has said a couple of times that she sort of favors squishy regs, is I think what you said. I'm not quite sure about that and now is the time to elaborate.

MS. ROGERS: A very clever way to force me to talk.

(General laughter.)

MS. ROGERS: Alice Rogers, Texas. Soft regs is what I called them. I'm very concerned if you have -- if you put in the regs a 2 millirem level at which a licensee must do something, that after we've enforced against a couple of them for doing nothing, that they'll start pencil whipping their records.

And this is not true for you well-heeled, well-resourced industries, but for some of the smaller

businesses I'm very concerned about that. It's the forcing -- it's the requiring people to do something, but don't really know what the something is that is so difficult, and really not very protective.

And then just to flat out answer your question, for I think it was 4A no change, then the answer is no, and for other two the answer is yes, all those things will have to be changed, training, forms, all that.

MR. HODGKINS: Echos, responses, contradictions, amplifications, ideas?

MR. EARLS: Don, this is Leonard Earls. The issue partly comes down to how any constraint would be inspected. I know in the nuclear power arena we have what's called NRC cornerstone things, would missing a constraint value be a cornerstone hit, as we call it. And reporting to the NRC when, well, I planned it for X and I got X plus 5 percent, so I've got to tell the NRC now. I can see that being what I would consider onerous.

MR. HODGKINS: Okay. Steve.

MR. CAMPBELL: I'd like to ask Don a question on this question, a little clarification, the reporting. Who are you -- who is the question asking him to report to, the NRC or the agreement state

authorities?

DR. COOL: It would be -- if such a requirement were put in place, it would be reporting to whoever your regulatory authority was. So since you keep elbowing Alice, I suppose that it would have be reporting to Alice. For our gentleman in the Navy who'd be reporting to us probably.

MR. CAMPBELL: Which I would ask Alice, and I'm sure she'd be in agreement, that would be an impact. The regulators up there to first off get the paperwork, and find out where they're going to put it, what they're going to do with it. And for the NRC I could see an impact.

I don't know if you're, Don, when the ICs come out or heard, but when we initially did the fingerprinting, I talked to a lady in Washington, DC twice. They had rooms the size of this hotel full of fingerprint cards. We're over indemnificated, whatever, overwhelmed with fingerprints cards that were never anticipated to be like that. And it took months to get something back on your individuals.

Now in Alice's case, I can see something where we put this target in place and if you're asking us to report it, and their regulators are short handed as it is because the states are under-funded, so now

they're swimming in paperwork, now you're swimming in the back log, and that would be hard to regulate, very difficult to regulate because she'd be on the road all over the state of Texas four days a week.

MR. HODGKINS: Laurie, any comment?

(No audible response.)

MR. HODGKINS: Toby.

MR. HEAD: Toby Head, H&H. I've got a question for Ann or Alice, what would the benefit of reporting be, what would you all do with it? What would be the difference from reporting over 2 MR to R versus 5?

MS. ROGERS: I asked Don yesterday how -- some similar question was reflected in his agencies emphasis on performance based inspections. The way we do inspections right now, you wouldn't be reporting to us unless you bumped your 5 rem. However, we would want to see these records upon inspection.

Again, it's a -- this is soft -- if you're talking about what would happen if you went over the two constraints, this is a soft requirement and I don't think that we, unless NRC made it an item of compatibility, would make you report it directly to central office.

MR. HODGKINS: Ann?

MS. TROXLER: Ann Troxler, and that's the same answer for us. Just like we go in now and look at what your numbers are and when you go and investigate and retrain and do all the other things you do. We don't want a copy of it.

MR. HODGKINS: Anybody?

(No response.)

MR. HODGKINS: Audience? Yes, come on up.

MR. KIRK: Good morning, Scott Kirk, Waste Control Specialists. I would go back to the air emission constraints. Now there is a, as you had mentioned, 10 millirem per year air emission constraint, which is in Part 20. And if I recall correctly, and correct me if I'm wrong too, I think the provision is, if you exceed that 10 millirem constraint, you still have a requirement that you report it, but more importantly there's also a statement in Part 20 that I think says that you also need to report on the actions that you would take to further ensure that you don't exceed that constraint.

So I think a lot of people would see a similarity if you put a 2 rem per year constraint in the regulations, it would also give you a reporting requirement, but it would also trigger other actions that you would need to take to ensure that you comply

with the constraint which is, as Alice said, is a soft regulation. It's not a constraint, it's viewed as a limitation.

DR. COOL: You are correct on what is required right now for that particular constraint. And part of the reason we're asking the question is that we know that that set of requirements, because of how they got put in place, do not really match what ICRP was saying they envisioned by the process now.

So that's why I'm encouraging you to think in terms of the different possibilities and the extent to which reporting is or isn't necessary and which type of actions might or might not be done in all of those pieces, because, in fact, while there is that currently in the regulation, that doesn't necessarily need to serve as a model.

MR. HODGKINS: Roger?

MR. PEDERSON: Yes, Don said exactly what I was going to say, but if -- and I'm not defending, I'm just -- this is I'm playing the devil's advocate here, and maybe I shouldn't do that.

Again, Roger Pederson, NRC. You're right, constraints are constructed that it's a trigger point that you should do something. In the current constraint that we have in the regulation, that

something is to put something into place to get down below the constraint value. That's not necessarily, as Don said, the model that needs to be followed.

You could construct a constraint that would require you to do something. What that something is, there's a lot of flexibility there. One thing could be that you would take additional actions to ensure that the individual didn't get more than 10 rem in five years, or in the last five years, or in the next five years, or something. It wouldn't have to be that you would get down below the 2 rem this particular year, but there would be some action that would be required.

MR. HODGKINS: Scott, did you want to --

MR. KIRK: I should have just stayed at the mike. I think that the current framework that you have, or the guidance that you have, which puts it into the realm of no dollars spent per rem of dose avoided is probably the best constraint because if you could take additional action that you should probably evaluate it based on socio and economic, you know, considerations.

So I think that the current sort of framework for optimization is what, you know, should hold as you guys move forward with this rule making.

MR. HODGKINS: Okay. Anybody else react to that?

(No response.)

MR. HODGKINS: Echo, amplify, justify?

Steve.

MR. CAMPBELL: Just kind of thinking in a regulator's mind again, I think I said this prior too, if we put something in our procedures or safety standards that says we'll alert at this point, we were bound to do something. Okay. It's not a rule, I'm going to take it away out of the rule. It's not a rule. It's just part of my program.

And again, if a regulator comes in to do an audit, administrative audit, and finds out I hit this target area with this fellow, and I did something, but that regulator doesn't seem to believe that's sufficient. So then I'm leaving it up to the regulator to interpret my operating procedures.

And I don't believe that's a fair thing for -- you go back to the ICs again, what I mentioned about the IC. You left it up to me to do this, let me say what I'm going to do, let the regulator come in and observe that I did it with no consequences. Don't leave it up to the regulator to define what I've done here, whether it be good or bad.

MR. HODGKINS: Okay. How are we doing? Any other comments, concerns, questions?

(No response.)

MR. HODGKINS: Let's do the next question.

DR. COOL: Well, we've talked around this because one of the things that we had been asked, or suggested to us previously was the relationship of the constraint and limits. And as Roger pointed out, one of the things that I should have talked about was you do your planning in order to avoid exceeding the limit. Well, that's why all of us do our planning, that's what the whole purpose of ALARA is.

Some people had suggested, and the whole reason of the discussion of two or some other number, was that in other forums over time people have suggested this was a different mechanism for achieving those kinds of levels which didn't have the same degree of odoriferousness, probably not a word, but --

(General laughter.)

DR. COOL: -- it's not quite as stinky --

MR. HODGKINS: It could be a word actually.

DR. COOL: -- as -- not quite as stinky as calling it a limit itself. But see if anyone else would have anything to suggest since it's already, I

think, pretty clear that everyone has said, We don't really like the idea, we really don't the idea of a number. But now's your chance to add anything else you'd like to the discussion.

MR. EARLS: This is Leonard Earls. Well, obviously just mathematically you can't have a constraint above the dose limit. It would do you no good. But I don't --

DR. COOL: Interestingly, that was actually specifically suggested in Los Angeles.

MR. EARLS: I think we need to take that one off line.

(General laughter.)

DR. COOL: The doctors are very creative individuals --

MR. EARLS: I can't see any point in tying the concept of constraint with the dose limit specifically in terms of 1 rem, 2 rem, whatever. I think this concept of constraint is embraced by everyone that deals with public health and safety when it comes to radioactive materials and radiation. We do constraints. Now we don't call it constraints, we call it ALARA planning, or whatever the term may be.

The thing that kind of -- I think is getting everybody is the term constraint itself is --

it's a restraint. It's a limit. Okay. And I think that's where everybody's hung up. And you're talking about it being odoriferous to put the 2 rem in there as a constraint versus a limit. Well, it might qualify as slimy maybe is a better term.

MR. HODGKINS: Ellen, were you going to say slimy?

MS. ANDERSON: No, not quite.

(General laughter.)

MS. ANDERSON: Ellen Anderson for Nuclear Energy Institute. What I was going to say is, if a constraint is a number in a regulation, we are not -- as licensees, obviously we don't want to go anywhere near any regulatory numbers, so I'll use the number 2 rem because that's the number we've been playing with here, we use a 2 rem per year constraint, that means that our -- we will have an administrative constraint limit. Okay. So it's going to be somewhere below that.

As we currently operate our ALARA programs, if we go over one of our planning values, whatever that value is, then we institute our own corrective actions because they're written into our own procedures. I just can't imagine what would happen as a licensee if you went over that value that

has been established in a regulation. Now it is no longer our program, it's something that we have to react to.

Again, and I can just see it now, that 2 rem constraint would become something quite a bit lower than that, so we actually will be operating in a smaller increment there.

MR. HODGKINS: Okay. Anybody else, comments, concerns, questions, amplifications?

(No response.)

MR. HODGKINS: Question number 4.

DR. COOL: This really gets to the heart and soul in one sense of it, whether or not it's inappropriate to require planning and the use of planning values, or whether you simply leave it as the good practice that we say most everyone does.

MR. HODGKINS: Mark.

MR. LEDOUX: Mark Ledoux. Well, I would say it is inappropriate, and for a lot of the same reasons that have already been said. Once you make it a regulatory requirement, then it's no longer a philosophy and no longer provides the -- or allows the licensees the flexibility to do what they've got to get done within the rules and the requirements that they have to have, so.

MR. HODGKINS: Anything else, guys? Comments, concerns, questions?

Excellent, Gabe. Start with your name first.

MR. HOLLIER: Gabe Hollier, National Inspection Services. It's definitely inappropriate. As the industry has shown improvement, and that's on all sectors of it, we're able to take care of it ourselves. We're very efficient at it, we do it well. The government is not efficient. Very, very inefficient, it takes you seven, eight years to make a rule. I mean, come on, if we -- we'd all be out of business if we go on that pace.

So it's inappropriate. We don't need it. There's no -- there's absolutely no need for it. It's more confusing, and more regulation, more requirement. For what? For no benefit, no safety. There's no added anything to it. So we don't need it. Inappropriate.

MR. HODGKINS: Ellen.

MS. ANDERSON: Ellen Anderson. I'd like to just add on to what Gabe just said, and we have the data to prove that we can do it on our own. We don't need the government to regulate our ALARA programs. We do it now.

MR. HODGKINS: Okay. Did you --

MR. CAMPBELL: Yes.

MR. HODGKINS: Okay. That was Steve, by the way.

(General laughter.)

MR. HODGKINS: Gabe, did you want to add anything to what Ellen commented, echo?

(No audible response.)

MR. HODGKINS: Anybody else? Panelists? Yes, Susanne.

DR. SAVELY: I'd like to say in support of our federal government employees, that it's nice to live in a country where at least we're asked our opinion of the regulations that have been proposed. So I want to thank you for the opportunity we've had here the last two days.

MR. HODGKINS: Okay. Is that a yes, Steve?

(General laughter.)

MR. HODGKINS: With a baby added.

DR. COOL: It's actually an interesting comparison, because if I recall the federal papers correctly, the whole process was deliberately established to be slow and slightly cumbersome so that things wouldn't just suddenly happen on the whim of an

individual, which is the same reason that we in the agency have specific requirements to do regulatory analysis and prepare issues papers and to think things through and do that further analyses.

So you're right we're a little bit slow, and we're trying to listen in the process so that when we finally get there perhaps the answer is much better informed by the whole -- what really happens in the world.

But let's mush on.

MR. HODGKINS: Yes.

DR. COOL: You waxed eloquent for a moment there.

MR. HODGKINS: Yes.

DR. COOL: The last two questions are related to each other, so I'm going to do -- read -- let you read this and then actually go to the last one, because I think this discussion has already pretty clearly demonstrated that people are sort of familiar with the content, not necessarily with the specifics for the individual term.

But what I'm really interested in, in one last round, whether anyone else would like to share exactly how you do your planning. We've had several examples of how numeric criteria, or in some cases

not, are applied within their ALARA programs.

And part of developing the paragraphs, and I'll go back that, when I'm writing the paragraphs to the Commission on this, I can start out, I think, by saying most everyone in the meetings were talking about how they do this and how they do ALARA activities, and the record recorded in the performance of those is coming down, but -- and then what do I write about how people actually do that so that someone can take credit for it, if you will.

And I hate to use this analogy, but because of how I was involved in the discussions with EPA, I am just a little bit gun shy when people come in and say, you can't show me the line, therefore it must not exist, irrespective of performance, because I will tell you in that case, all of the performance data that the agency laid out played not one whip in the final decision process. So help me out a little bit here.

MR. HODGKINS: Mark.

MR. LEDOUX: Mark Ledoux, and I already spoke a little bit about the way we do radiation safety committees and so forth at EnergySolutions, but on the back side of that now, once the year is done, we have an annual report of EH&SQS, environmental

health and safety that's rad, industrial, quality, security and so forth that goes to our senior management.

And I do the rad side of that, and in that I compare where we were -- or where the ALARA goals were for those, you know, for the different business units and so forth, and also looking at incidents that we could improvement on and so forth. And then that report comes out and it goes in with the rest and it goes to our senior management so they see how we're doing on an annual basis.

On another part, I also on monthly basis help put together a senior staff report, which is basically industrial health, OSHA statistics, rad health and the metrics between the different work groups and so forth that we have established in quality. And in that we allo have our ALARA goals and how they're doing year to date with respect to the different units. So it's got high visibility and it's something that I know I do, and a lot of other people keep track of, so it's an example of how we do it.

MR. HODGKINS: How about let's go around. Laurie, any examples, any highlights that you don't like to give, or not?

MS. McGOWEN: Laurie McGowen, no comment.

MR. HODGKINS: Toby?

(No audible response.)

MR. HODGKINS: John?

MR. MILLER: Well, you know, we're a small company, but I think we have a very robust safety program, both industrial and radiation safety. We have quarterly meetings and, you know, when we develop constraints, or what we refer to as ALARA goals, those are based on a lot of things, it's based on the specific task, whether or not a person is manufacturing cobalt-60 sources or whether this person's distributing iodine-131, it depends on what they're doing.

You know, there's certain skill sets, we're a little bit limited to where we can swap people over, but there are times when we might have a person that's working in cobalt-60 moves over to iodine-131, and we have to change the monthly goal for that person, because we know that the doses that are received for that task are different.

The other thing we look at is how much money do we have to spend. The reasonable in ALARA requires you to take that into consideration. And if I only have, you know, X dollars to spend to design and purchase a hot cell, I need to make sure that my

constraint, and for the case of cobalt-60 we use 2 rem per year based on two guys working there full-time, and what we anticipate the work load to be.

You know, the constraint has to be able to match what our budget is to get that system in place. And, you know, to date it's been working perfectly. I wouldn't change how we do business at all. I'm happy maintaining our constraints inside of our radiation protection program, and leaving it at that.

MR. HODGKINS: Ann.

(No audible response.)

MR. HODGKINS: Jean.

MS. J. STATON: When we have planning values, we are automatically alerted if a person exceeds 417 MR. I will then call them in. While they're coming in, I will find out their history, what jobs they've been working on, and depending on what their history shows, I may bring them in and keep them away from the radiation area, or I may put them on a different job where he's not receiving as much.

So we do have, if you want it constraints. But it's not regulated by the NRC or the state, it's us. We are there, have the training and you either trust us. We've got our TWIC card so evidently you trust us for some things. We can do our job if we're

let -- if we're allowed to.

MR. HODGKINS: Doris?

MS. BRYAN: Doris Bryan, Radiation Technology. We also are a very small company, and I'm limited in the number of people that I have that can do work with sources or with radiation, since I don't do much work anymore. But we do have procedures, I do have constraints, dependent upon the individual job. I monitor those very closely. We've had our ICs inspected, they're working well, and I think we're doing a good job. Don't change it.

MR. HODGKINS: Ellen.

MS. ANDERSON: Ellen Anderson. I'll defer any specifics to Leonard, because he is a power plant person.

MR. HODGKINS: Steve?

MR. CAMPBELL: Yes, our SP works well also, just as I'm sure everyone's does. The parenthesis up there, planning values, I think I mentioned earlier industrial is, in my business, is regulated by the gas pump, and regulated by Don calling me to do a job. I shoot from the hip, so planning values is very difficult over a 12-month period in call-out work.

And when I mentioned the gas pump, when

the prices go up on oil, that means there's nothing going on probably. When they go down, that means there's something good going on. That's the way my work load is regulated.

MR. HODGKINS: Alice.

MS. ROGERS: I don't have anything to add at this time.

MR. HODGKINS: Leonard? Speaking for two today.

MR. EARLS: Leonard Earls, South Texas Project. To give you an idea of what we already do, and I'll try to keep this fairly short, with respect to individual doses, we have what's called administrative action levels. If a person reaches the first trigger level, it requires what we call a dose extension, which means they meet with the radiation protection manager. They're supervision has to -- they have to ask for this dose extension, and it'll be processed. And it's all below the 5 rem per year. Our first number for an administrative action level is 1500 millirem for the year.

Now, with respect to planning, all jobs are planned inside our radiation -- radiologically controlled area. We operate under radiation work permits. There is a dose target for that particular

radiation work permit for every -- for all of the work that's going to take place under that permit.

Then individually there is a dose per entry that we establish, and that's the way we set their -- we use electronic dosimetry and that's the way we set their particular dose values on the electronic dosimetry. That depends on what work they're going to do. We have a work control system that uses what's called work authorization numbers, and typically that combination of radiation work permit and work authorization number is used to establish what the dose value for that entry is going to be.

For outages, we call them shut downs or whatever in other -- in the oil and gas industry, but we're essentially shutting the reactor down typically for refueling. That whole outage is planned. There is a target value for the outage as a whole. There are target values for each project section, you might say. If we're doing steam generators, there'll be a dose target for steam generator work. For refueling there'll be a dose target for refueling work.

As you can see, the planning is quite extensive. Planning for an outage is at least a six-month to -- four- to six-month research into the work

that's going to be done and working with the various crafts to figure out what they're doing, where they're doing it, the man hours it's going to take, the radiation levels that they'll be exposed to based on surveys and historical data. There's extensive planning.

For normal operations we still use radiation work permits and we set targets for this is how much dose we're going to get during normal operations time. Radiation work permits that exceed their target value, if they exceed it by a certain percentage, requires a review of that radiation work permit and the work that's been done under that permit.

So you can see that in nuclear power -- and this is just the South Texas example, I probably haven't covered all of it -- you can see that there's extensive planning already taking place with target values, goals, administrative action levels, that sort of thing associated with radiation exposure. I may have left something out, but I think that's enough.

MR. HODGKINS: Has he left anything out, Ellen?

MS. ANDERSON: Ellen Anderson. One other thing I just thought I'd bring up, and this is very

similar to all power plants, and what -- by the way, what Leonard said is very similar at all power plants, not just the South Texas Project. But a lot of utilities have daily dose goals and those dose -- and whatever they -- it's almost like a bet, they take money -- like we take money out of a bank, we take dose out of a bank per day, and then that's even broken down by department.

And if you go over a department goal on a daily basis, if you do go over, at the morning meeting with the -- we have a morning management meeting, you have to tell the plant manager and/or site vice president why you and your department went 2 millirem over your goal yesterday. So we are very regimented in our industry.

MR. HODGKINS: Don.

MR. SIDES: Don Sides, Stork. As everyone -- you know, we all have an ALARA program. I have a trip point set up with Landauer. We've been using those guys for 35, 40 years probably. I get a phone call and a fax, and the trip notification from Landauer is a little higher than what my ALARA trip point is.

Normally we don't have -- I haven't had a notification from Landauer in a while -- normally I

review all of the badge reports, I'm the first one that gets them obviously. And the first thing we do is we have a form, you got to have that paperwork. We have a form they have to explain why they went over, what they think they can do to avoid it, and then depending on how far over they went the ALARA point, they're probably going to have a little one-on-one time with me.

MR. HODGKINS: Thank you.

Back to Gayle.

MS. STATON: Gayle Staton. Acuren Inspection is a very large company, and we actually have our planning values are structured very similar to what Mark talked about in the beginning. We have metrics that we meet monthly and discuss, and we go from year to year to year and compared. And just so you guys can know that over the last five years we've continued to drop in our annual dose exposure. So, yes, we do have constraints, in-house constraints in place already.

MR. HODGKINS: Tony?

MR. YUNKER: Tony Yunker, Baker Hughes. I'm kind of proud of this because we have constraints in place that would probably make a lot of people in here cringe. But we're also a big -- a major company

that has ability to do that. Our engineering control's in place and everything else.

Our radiation protection program is beyond reproach in my book. We don't even get to the triggers that we get, but we still call the guys in and talk to them if I think something doesn't look right. So we watch our people religiously and they watch themselves, which makes me very proud.

MR. HODGKINS: Thank you, Tony.

Susanne.

DR. SAVELY: Susanne Savely, I don't have anything to add right now. Thank you.

MR. HODGKINS: Okay. Audience? And you know what, I think we're bereft of a medical person here as far as the round table discussion, and so if there's any medical folks out there, just to get that perspective. Not necessary. Not necessary. Don't want to force you all up here. But comments, concerns, questions?

Yes, come on up.

MR. KIRK: Scott Kirk, Waste Control Specialists. I would say that part of we do at Waste Control Specialists, you know, we process and we'll dispose of some pretty hefty radiological waste materials. And, you know, what we've undergone lately

is a safety culture initiative that we won't -- before we start processing waste, we -- or handling it, we starting asking ourselves through a process, you know, what could go wrong, because we want to ensure that our doses are minimal and not only from normal operations, but for possible upsets.

We also do extensive mock up training before we even begin the work, and we set out thresholds. So once we calculate what potential doses are, we go through a formal process and even share that with our radiation safety committee to see what we can do to further reduce those doses.

We're a material licensee, we're not a Part 50 licensee, but a lot of us in our company comes from that same sort of an environment, so we adopt that same concept and philosophy as well. And if it comes to major waste campaigns, oftentimes as part of our operational readiness review, sometimes we even hire outside experts to come in and take a look before we even begin to, you know, start the work to begin with.

And so what our thought is, is that, you know, we need to embrace some institutional learning within our staff in large part because that is our knowledge base and, you know, we're in West Texas, and

when I tell people the strength of our facility is that it's an arid and remote environment, but at the same time, you know, that's also a weakness because sometimes it's hard to get qualified trained staff and be able to keep them out there.

So we really embrace the whole concept about safety culture and looking at ourselves to say what we -- how we can do to improve our operations.

MR. HODGKINS: Okay. Anybody else? Come on up.

MR. COLWELL: Dan Colwell from Westinghouse Electric Corporation. Our dose reduction program comes under our continuous improvement initiatives and ever since 1999 when Westinghouse was owned by a foreign entity, we've had a 1.5 rem dose constraint in place anyway. But we've had an aggressive annul campaign to reduce the dose by 10 percent a year since 2004, and we're now reaching some threshold values as a result of that. But we have been very successful.

We monitor maximum average, cumulative department, internal, external, we set ALARA goals every year for all of those parameters. We have quarterly status reports and based on projections we take corrective action to make sure we have a very

good chance of meeting all of those goals by the end of the year. And we do an annual report with five year trending.

Internal dose we have as half of our dose, so we monitor that daily. We have weekly limits that are reported to management, we have monthly and quarterly limits as well that are reported to management. So we've have lots of planning values in place for a long time, and they have been effective.

MR. HODGKINS: I saw that head nod back there against the wall. You talked yesterday, you want to talk today? All right. Here we go. We got somebody.

MR. MACHO: Mike Macho, Comanche Peak. I'm going to just echo exactly what Ellen and Leonard have said. The utilities do self-regulate themselves very well, and the challenge that every utility takes is to meet the upper 10 percentile of minimizing the power ops and outage doses. So it's a rigorous challenge to always be the best.

So another thing to add is when we have outages, and even before the next year starts, we always plan what our power ops and outage goals are going to be, and we'll close -- you know, we'll set our goals well before eight weeks or several months

beforehand for outages, because -- and then we'll just set that in. We aren't going to -- we won't add things to it, to the outages, or the -- you know, it's a goal that we shoot for and it's -- and the utilities are very set at meeting these goals.

MR. HODGKINS: Thank you.

Any more?

(No response.)

MR. HODGKINS: Don, any kind of --

DR. COOL: This has been very useful. I appreciate it. I'm going to ask one final little question which I think might even be as simple as a yes or a no. For the descriptions of your processes and activities and the things that you do, are those written down some place the kind of processes you use? And I'm not expecting that it's tied down in your license, although for some of you it probably is.

But is it written down in your sort of organization of how you would behave, because that's a useful piece of information to let people -- not only do they do all these good things, but if I were to go visit them, they would actually be able to show me where in their internal process this could be that it's written down that they're going to do these sorts of checks.

I think Gayle shaking her head yes, and yes, yes. Let the record reflect all the heads were going up and down.

(General laughter.)

MR. CAMPBELL: Hey, Don, this is Steve, you want to make that wager yet that I proposed to you earlier?

DR. COOL: No, I think you know the results of your wager now. That was sort of the final way to get that cross-check which is very helpful.

With that, I think we are done with this issue, unless anyone has something deep and burning. So this goes to any -- now any other item that you wanted to bring up that we haven't touched on here. We had the parking lot, and I think we took the second one off already.

I'm not sure whether there was something that someone wanted to raise related to cesium chloride sources, and if there were any other issues related to possible changes to Part 20 and the radiation protection requirements that you wanted to raise, because this is sort of your opportunity to put on the plate the thing that you just love most about the regulation.

MR. HODGKINS: So, Don, just as a process

should we first do the cesium chloride --

DR. COOL: Ask if there's --

MR. HODGKINS: -- sealed sources?

DR. COOL: -- anything that people wanted to raise on cesium chloride.

MS. BRYAN: Yes, I'm the one that brought that up only in the light that it did affect internal dosimetry. However, it's not something we need to address today because you do have another publication out that's up for review and comment.

DR. COOL: And, in fact, a number of your colleagues are spending two days in Rockville, actually these two days that we've been here, talking a lot about cesium chloride and next steps and otherwise.

MR. HODGKINS: Okay. So that's off the table, or is there somebody else who'd like to talk about it?

(No response.)

MR. HODGKINS: Done? Okay. Now you guys this is your chance, any lingering questions, concerns, comments, anything that has been brought up through these last two days?

(No response.)

MR. HODGKINS: If we can just kind of talk

about then the content, what it is that you would like to see with this information. I mean come on the menu is broad, the slate is clean, tabla rosa, and just for a check step, I am going to go around the panelists to make sure that we, you know, considered everything and there's a verbal affirmation for that.

Anybody want to start with a lingering issue, and then we'll go around?

All right. Steve.

MR. CAMPBELL: Me again. Question. I'm just curious, you mentioned the other two meetings you've had in DC and LA. Can you give me a consensus on the dose limit change from those regions in the United States, for or against, strongly for or strongly against?

DR. COOL: I wouldn't use the word consensus, but I would say that each of the meetings had almost exactly the same flavor as here.

MR. HODGKINS: Ellen, and you've been at two of them?

DR. COOL: Three of them.

MR. HODGKINS: Three. So how about from your perspective?

MS. ANDERSON: Ellen Anderson. The discussions were all different, the medical folks

got -- really got into the dose to the embryo fetus, I mean a long time. But overall, if I was to say, you know, how did everyone -- if everyone voted, how did the votes come about, I would say that for every meeting pretty much we gave the same message to the NRC. So basically everyone voted the same on all the issues.

MR. HODGKINS: Okay. Steve, you want to verbalize that?

(General laughter.)

MR. HODGKINS: Yee haw. Touchdown.

All right. Alice, we're going to go this way.

MS. ROGERS: Alice Rogers, Texas. I don't have anything further to add.

MR. HODGKINS: Leonard.

MR. EARLS: Leonard Earls, it's been a good meeting, and I think this is a necessary way of collecting information. I would, just from a scientific basis, when the risk factor, the published risk factor changed from 1 times 10 to minus 4 to 5 times 10 to minus 4 in 1990, that was based upon the linear no threshold hypothesis, and in that particular hypothesis any radiation exposure is considered to carry with it some risk.

Where we are in regulation is regulating down to equating dose with risk. We can control dose, therefore we'll control dose to control risk, and that's the whole thrust of this examination. It's an open question, as Don has mentioned earlier, whether that particular hypothesis of radiation response versus risk has any scientific credibility at the doses that we're talking about.

So just keep this in mind, that we are down in extrapolating data to arrange that we do not have any firm answers, but as I said before in an earlier session, whatever that response curve looks like at low doses, we know the effects are low because we're not seeing them.

MR. HODGKINS: Don.

MR. SIDES: Don Sides, Stork Testing. It's been a very interesting meeting. I pretty much echo everybody's thoughts on the 2 rem dose limit. I've had -- been having this conversation with some of my technicians over the past few months, and basically their reaction's unprintable, because it consists of mostly four-letter words.

MR. HODGKINS: And that ain't love.

(General laughter.)

MR. HODGKINS: Gayle.

MS. STATON: Gayle Staton. Thank you very much for allowing us to come and share our views and our opinions here, and that's what we like about dealing with the NRC, they always give us that opportunity first. And I hope everyone will share their comments in writing to the NRC also.

MR. HODGKINS: Tony.

MR. YUNKER: Thanks for the invitation. It's been very informative and I look forward to doing it again some day.

MR. HODGKINS: Susanne.

DR. SAVELY: I just want to say thank you, I've enjoyed it, and learned a lot here today.

MR. HODGKINS: Good. You learned a lot, go deep. Any surprises, any -- you know, go a little bit deeper, you learned a lot. I'm going to put you on the spot.

DR. SAVELY: Well, I think I wasn't that as familiar with industrial radiography issues, and the nuclear power plant issues before I came today.

MR. HODGKINS: And how did that make a difference to you?

DR. SAVELY: Well, I think it's always interesting to see it from a different point of view because, you know, as I've said several times, you're

not necessarily going to be impacted by a -- much by a 2 rem limit at our institution, but to see how many other people would be affected was eye opening for me.

MR. HODGKINS: Thanks.

DR. SAVELY: Thank you.

MR. HODGKINS: Mark.

MR. LEDOUX: Mark Ledoux, and it was really a great meeting and I appreciate the opportunity to participate. That's important. Thank you.

MR. HODGKINS: Okay. Laurie.

MS. McGOWEN: Laurie McGowen. I think it was a great meeting, and on the industrial side, we learned a lot about the medical and why they couldn't do certain things that we could.

MR. HODGKINS: Okay. Toby.

MR. HEAD: I just want to say thank you for the invitation and opportunity to express our views on this stuff.

MR. HODGKINS: Appreciate it.

John.

MR. MILLER: Yes, I really appreciate the ability to engage with the NRC on this, on proposed rules. On what comes next on your fourth bullet there, I really think it's important for the NRC to

consider up front what the financial impact is going to be, you know, whether you go and, you know, to figure out what direction you're going to go into.

You know, the proposed Part 37 rule making had a financial impact to industry that was given a range for 500- to $ 1 billion without any quantifiable benefit. And so, you know, if we would change our regulations to reduce our dose limits, you've got back fit requirements because there's plenty of facilities that have been built and designed based on 5 rem per year limit.

Going in and having industry accept all those costs to achieve a federal limit much lower than that would not only be, you know, direct out-of-pocket expenses, but for companies that are in global industry, it makes it very difficult to compete with foreign companies that may not be footing the bill to hit that 2 rem per year limit. Thanks.

MR. HODGKINS: Thank you.

Ann.

MS. TROXLER: Thank you for having me here. I really enjoyed it and I enjoyed seeing the interaction between our licensees and the NRC, and I enjoyed the fact that now they see you are approachable, you can be talked to, but we'll see what

happens.

(General laughter.)

MR. HODGKINS: Wei-Hsung.

DR. WANG: Wei-Hsung Wang. This is good meeting and I think that dialogue is always healthy between the stakeholders and the regulatory agency, and also the transparency of the process is very helpful. Thank you.

MR. HODGKINS: Jean.

MS. J. STATON: I want to thank you to be on the panel. I have enjoyed it, I have learned about the difference on the nuclear regulatory -- their views. And then I've learned different things on the medical aspect of it, and on the Nuclear Energy Institute. It's been a very good meeting, and I hope I'm asked again to contribute.

MR. HODGKINS: Doris.

MS. BRYAN: Doris Bryan. I also have thoroughly enjoyed this. I think your Part 37 meeting a couple of months ago in Austin was very valuable. This is valuable and I commend for letting stakeholders come in and attend.

MR. HODGKINS: Thank you.

And last but not least, or I saved the best till last. Ellen.

(General laughter.)

MS. ANDERSON: Ellen Anderson. On behalf of NEI and our members, in particular the power reactors, I would like to, again, thank you for allowing us to participate in all three of these meetings. We will be providing written comments to you by the January 31 deadline. And we do look forward to dialogue with you pertaining to this issue in the next months and years to come. Thank you.

MR. HODGKINS: Thank you.

Okay. Audience, your chance. Any last lingering issues, questions, comments, concerns, and also ways to improve this? Come on up. One. Come on. Yes.

MR. SNELL: Warren Snell, Methodist Research Institute. I'd like, as everyone else has said, I'd like to thank the opportunity to come here and be involved in being in this meeting. And my remark is really closing says that the Commission believes that the current NRC regulatory framework continues to provide adequate protection of health and safety of the workers, public and the environment.

MR. HODGKINS: Thank you.

Come on, Scott.

MR. KIRK: Scott Kirk, Waste Control

Specialists. I, too, commend the NRC for their efforts in putting together this stakeholder meeting. It's always refreshing for me to see the diversity that our industry has, whether it's from fuel cycles, from power reactors, to radiographers. We are diverse and I think that health and safety is our, you know, first and foremost concerns for all of our workers and members of the public, and I encourage you folks to move forward and go with this rule to better update the technical basis of Part 20. Thank you.

MR. HODGKINS: Tim, want anything?

(No audible response.)

MR. HODGKINS: Dan?

(No audible response.)

MR. HODGKINS: You've talked. Come on, you guys have said some things, say some more.

MR. HURT: Tim Hurt. You know, 103 is an intriguing conversation we've have the couple of days. My question is, you know, has the NRC got anything in their hip pocket that they're really considering into Part 20 and changing other than 103, i.e. I hope we don't end up with little weird orange signs that we have people running away from x-rays or any of that kind of stuff? Do we -- I mean there's a lot in Part 20, have you got anything that we can see coming down

the line that's going to end up being changed?

DR. COOL: At this point I don't see other major things. There are always the opportunities, hence the reason for this last question of things that may need to be looked at.

As I mentioned, we know that EPA is working on things related to the factors associated with tritium. We know that ICRP and others are taking another look at the issues around eye dose, which is particularly important in some of the medical sectors because dose to the lens of the eye -- there's a growing body of scientific information that says that that's more hazardous than previously, so there may be some additional recommendations coming there.

So there will continue to be things that we will watch and monitor. So I cannot make you any predictions that there won't be other things out there. But these were the ones that -- these issues are the key issues that we identified looking at the initial alignment with the international recommendations.

MR. HURT: Thank you very much for the opportunity to come and see you all. We had a fellow in Washington that participated and he was equally impressed with the openness and the good work that you

all are doing.

I'd like to commend you for doing a good job of keeping the -- keeping all the --

MR. HODGKINS: Keeping you in control. Right?

(General laughter.)

MR. HURT: God bless you if you can do that. My wife would like to know how.

MR. HODGKINS: Roger, other than you and Steve reconciling in these two days, are there any other comments or closing remarks you'd like to make?

(No audible response.)

MR. HODGKINS: Yes.

MR. EARLS: Since this has to do with other things in Part 20, that's what we're talking about right now, in the nuclear power business we deal with some contamination. In releasing items off site, essentially the guidance that we have on that stems back to the early `80s, actually late `70s, early `80s, and there is no number at which we can release something off site if we know it has an atom in it that may be radioactive except through the liquid and gaseous effluent method. There's nothing on solids.

This has been an irritant for me personally, this is Leonard, not South Texas Project,

just as a health physicist. As the equipment has gotten better and better at detecting very, very low levels of contamination, it's become very shall we say challenging to meet the not one atom release of material.

And that's something that I'd like to see the NRC get their hands around. I know Don remembers well the BRC thing with lots of trepidation. But it's something that I think that is present in the European community. There is a number that they have to look for and if they don't see that number, life is good. But it's something that I think would have a benefit, at least for the licensees. Now as far as public perception and that sort of thing, I'm not going down that trail.

MR. HODGKINS: Okay. Alice.

MS. ROGERS: I'm sorry. I have one more thing before Roger closes out. I would urge that you guys create I believe it's management directive 5.2 working group and include agreement state representatives and/or CRCPD representatives on that group to help you with this rule making.

MR. HODGKINS: Okay. Roger.

MR. PEDERSON: Roger Pederson, NRC. I'm not sure I'm closing anything out here. In fact, I

might be opening up a whole new issue. As we mentioned yesterday, parallel to the change in Part 20 we're looking at conforming changes to Part 50, Appendix I. So we've already identified that that's currently a problem. The difference between the technical basis and the current Part 20 and the current Appendix I has caused some problems already, so we're looking towards aligning the two of those.

I guess my question to everyone else here is, is there another part of our regulation, whatever part that might apply to you that you could see could be problematic if we did make a change to Part 20 and it didn't line up to that other regulation. Is there something we should be looking at in terms of possibly doing conforming changes to other parts of the regulation if, in fact, we change Part 20?

MR. HODGKINS: I think Roger asked a question. Anybody got a response?

(No response.)

MR. HODGKINS: Hmmm, clump.

MR. PEDERSON: Well, then I would like to --

MR. HODGKINS: We'll let you --

MR. PEDERSON: -- personally close out my participation here --

(General laughter.)

MR. PEDERSON: -- and thank everybody for participating. And it's been a real interesting dialogue.

DR. COOL: Okay. Well, with that, I think I will use that as a segue for the one last reminder that as you leave and drive back or fly back or whenever you get back to your jobs and picking up the kids at the buses and all of the other stuff that goes on, and a thought trips back in your brain somewhere, please send it in to us. The comment period remains open until the end of January. In the *Federal Register* notice, and there's a copy in each of the books and available for everyone, there are multiple ways to send things to us, and we would encourage you to do that.

I, unfortunately, have been around the agency long enough that I remember the last time we did a revision of the rule. I knew well the set of folks that did the proposed rule from `81 to `85 and getting out that proposed rule, and they had this little mantra, it was based on the technology at the time, it said, Keep those cards and letters coming. Well, now that's sort of emails and other things, but the sentiment is the same.

Simply because in a moment or two we're going to finish this meeting doesn't mean that clunk, stop, everything goes into a box and it starts processing. We're still looking for your feedback and opportunities, formally through the 31st, but even then the process will continue.

The NRC staff will go to the Commission, try and prepare an accurate reflection of all the things that we have heard and recommendations on some of the directions that come out of that. The Commission goes through its own decision process as part of that. Your guess is as good as mine exactly what may come out of that. Sometimes it's exactly what the staff suggests, and sometimes it's not. Okay. Fair enough. It's part of that process.

In fact, there have been times when the Commission has made those documents available almost immediately upon receipt by the Commission and has even held its own meetings with some stakeholders as part of that process.

Whatever comes out of that, and only if it is directioned to actually change some things in Part 20, that we then proceed to continue to work on technical basis, the regulatory analysis, the cost analysis of the directions that would be taken so that

we could start to move towards a proposed rule, which also has its own comment process. So this is but one step in a continuing process.

I am very grateful to each of you for spending two days of your time with all of the costs and things associated with that time, effort, to share your ideas with us. It really is very important and I'd like to thank you very, very much.

We have a feedback form. NRC always looks for feedback on our meetings, what went well, what you like, what you didn't like. We do take a look at those. Try and help us continue to understand, so I'd encourage you to fill those out. You can send them back in to us or just leave them on the table.

I'd like to say thank you to Dan, who has facilitated all of our meetings; kept me sort of in line some of the time; kept me on my toes. I'm going to use this last opportunity to specifically thank Kenyata Morgan Butler, who actually did most of the calling and working with all of you to get this set up. She hasn't had much face time up here, but she's every bit as important and more important, if not the least of which is she may be around when this all gets finished.

(General laughter.)

DR. COOL: And with that, again, keep your cards and letters coming, and we thank you very much, ladies and gentlemen.

(Whereupon, at 12:11 p.m., the meeting was concluded.)