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NUCLEAR REGULATORY COMMISSION

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SUBCOMMITTEE ON TRANSPORTATION
OF RADIOACTIVE MATERIALS

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NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE ON TRANSPORTATION
OF RADIOACTIVE MATERIALS

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Room 1046
Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C.

Tuesday, August 24, 1982

The meeting of the Subcommittee on Transportation of Radioactive Materials was convened at 8:30 a.m.

PRESENT FOR THE ACRS:
CHESTER P. SIESS, Chairman
J. CARSON MARK, Member
MYER BENDER, Member
DADE W. MOELLER, Member
J. LANGHAAR, Consultant
Z. ZUDANS, Consultant

DESIGNATED FEDERAL EMPLOYEE:
SAM DURAISWAMY

ALSO PRESENT:
L. L. GORDON
P. R. HOPKINS
C. E. MacDONALD
W. H. LAKE, Jr.
R. CUNNINGHAM
AL GRELLA
DON SOLBERG
ROSS CHAPPELL

PROCEEDINGS

MR. SIESS: The meeting will come to order.

This is a meeting of the ACRS Subcommittee on Transportation of Radioactive Materials.

I am Chester Siess, Subcommittee Chairman. The other ACRS members that are present right now are Carson Mark on my left, and Mike Bender will be back shortly, and Dave Moeller will be joining us this afternoon. We also have two of our consultants, John Langhaar and Zenon Zudans. Larry Shaflett, who has been a consultant to us on this, is on vacation, I think.

We have two purposes for the meeting today. The first is to discuss a draft of our subcommittee report on the adequacy of the procedures being used by the Transportation Certification Branch for certifying packages for transporting radioactive materials, and the second is to discuss any comments the Subcommittee members or the consultants might have on the proposed revisions to Part 71 of 10 CFR, packaging of radioactive material for transport and transportation of radioactive material under certain conditions.

This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act and the Government in the Sunshine Act. The Designated Federal Employee is Mr. Sam Duraiswamy,

sitting on my right.

The rules for participation in today's meeting have been announced as part of the notice of the Federal Register on August 9th. We are having a transcript kept, and it will be made available, as stated in the Federal Register notice, and as usual, I will ask each speaker to first identify himself or herself, and to use the microphone, and otherwise speak loudly enough so that the Reporter can get your remarks.

We have received no written statements from members of the public, and we have received no requests for time to make statements from members of the public. Actually, as far as written statements from members of the public, we have had the benefit of comments that were submitted on the proposed rule. We received a copy of those and the staff's response to them. I would just like to mention that.

MR. MARK: Chet, do we have with us the members of the public like Chem Nuclear and so forth?

MR. SIESS: Not today, I don't think.

MR. MARK: Okay.

MR. SIESS: So the first order of business is the Subcommittee report, and actually these are two entirely separate things. The review of the rule is something that the ACRS does now, I guess, in response

to its request or recommendations by various people that we take a more active part, and there are certain areas in which we have looked at proposed rules, to comment on them, and as you will recall, those rules come through the Reg. Activities Committee, which I happen to be chairman of, and then we refer them to the various cognizant subcommittees. In this case, this is the cognizant subcommittee.

So, we are reviewing the rule separately from our other activity having to do with the Transportation Certification Branch, but of course anything we learn in one instance helps us in the other. We were given some background on the proposed changes in the rules at one of our very early meetings. I forget which one it was. Now, you have a draft I roughed out of a report, and in fact you probably have two copies, one that Same sent to you earlier and another one that he passed out this morning. They are identical. The type is the same in both of them, but the copy passed out this morning has the paragraphs numbered and the lines numbered for easier reference, and that is the one we can probably use. You have a marked up copy there, and if it is more convenient to use it, that is fine. It won't be that long a job.

Mike Bender has submitted an alternate

paragraph to Paragraph 24, and you can find that one in the one that has the paragraphs marked. We will look at that when we get to it.

John Langhaar has submitted some comments that are being typed, and if we don't get them back before we get to a particular point, you can just bring them up, okay?

Now, it is not at all clear just how this will be handled by the full committee, but let me just explore that for a minute before we start looking at the draft report, because it may have some bearing on what you want to say. One possibility is for the full committee to hear a report from the subcommittee and to essentially accept the subcommittee's report, and transmit it to the Commission as being responsive to their request for this review.

This review did eventually come formally through the Commission. The other possibility is that the full committee would write a letter to the chairman from the chairman, et cetera, and that letter probably -- well, I guess it could be this report, or it could be something else.

I don't really know how the full committee would want to handle it. I would like to suggest to the full committee that they transport this report as a

report from the subcommittee with an endorsement as they wish. It could simply be an expression of confidence in the subcommittee and the consultants to review this matter.

If the full committee wants to write a letter, then I think we will get into a little additional effort, because it is not common for the full committee to write a letter without having the people it is writing about in for a full committee meeting. On cases, we don't do this. This was an internal type of review, and they might want to do it. I don't see how they are going to find time to do it, but conceivably we could have a two-hour session with the staff in and do it, but it would be my suggestion that we submit this to the full committee with the recommendation that they accept it and pass it on.

MR. MARK: I would like to endorse that suggestion. It seems to me this is acceptable except possibly for a little detail, a good report. It seems to me for the full committee we do not need further supplementary comments from the staff in order to submit such a report. I would very much like to see this as our means of proceeding, that this is something we are or you are going to submit to the full committee as a proposal, that they endorse and forward this report.

MR. SIESS: Mike?

MR. BENDER: I agree with Carson.

MR. SIESS: I should mention that in the Procedures Subcommittee, the ACRS Procedures Subcommittee, we did have some discussions a few months ago about better ways of utilizing subcommittee reviews and extensive subcommittee reviews, and just how we might handle this type of thing. I think this might be a model for that.

I would assume that from the standpoint of the staff, something that came from the full committee transmitting such a report would be satisfactory?

MR. CUNNINGHAM: Yes.

MR. SIESS: With that for background, suppose we just start in and read this. I would suggest that since everybody has had a chance to read it, and I am sure everybody has, that we just go through paragraph by paragraph in somewhat full committee procedure, but not reading it all the way through to begin with.

MR. MARK: I think that is fine. I do have the feeling that somewhere in this report, possibly as an additional paragraph, so it won't come out in the paragraphs as they stand, there ought to be more said along the lines -- I was not at the April meeting, but I was much impressed with the results of the discussion

there. The need of saying more than I believe this report says is about the absolute need for more reporting on the incidents, more mandatory reporting on the incidents as viewed by the receivers of the packages. I don't think that is clearly or very clearly brought out here. I think it should be a main point, at least a very easily identifiable point in this report, and I do not think it is in there. Otherwise, I really have no objections.

MR. SIESS: Okay. Good point.

I am looking at Mike's alternate paragraph, and I don't see that it's an alternate to Paragraph 24, Mike. It deals with regulations.

MR. BENDER: Let me look at Paragraph 24. I didn't have Paragraph 24 numbered at the time I looked at it.

MR. SIESS: Your paragraph addresses the format of the regulation, Part 71, and Paragraph 24 doesn't.

MR. BENDER: Well, I didn't intend to put it in as something that I thought -- Paragraph 24 was as good a place to put it as any.

MR. SIESS: You might watch for it. There are two places in this report where we talk about the regulation. Of course, we will have more to say about

Part 71 revised in a completely different context, but in Paragraph 9 on Page 3, where I listed the scope of the review, which was really what Cunningham stated originally, one was the adequacy of guidance to applicants and staff. I consider the regulation is part of that guidance, or the Reg. Guide as guidance.

Then, in the findings, I summarized. I tried to mention in Paragraph 19, Part 71 as guidance. I mentioned that there is a proposed revision, and the only other place that the guidance was mentioned was in Paragraph 23, where there is a comment on the QA Appendix E made earlier.

So, either we find another place to put this, or -- part of this can go in our comments on revised 71, and part of it can work in here somewhere, but watch for it as we go through.

MR. BENDER: The point I am trying to make, in looking at Paragraph 24, while I generally agree with the point that the TCB staff is keeping this business on track pretty well and are doing it conscientiously, it would seem to me like if that is what we are relying upon, then you could hardly say that the regulations themselves are not in good shape. I thought it wise not to put -- at least I think what we found is not minor in importance. I think we have not exposed any public

safety problems, but what I think we have found is probably indicating some things that really ought to be done differently, and then hopefully the regulation will fix it up.

MR. SIESS: I agree with what you said, Mike, except I don't think it replaces 24, because 24, in the first place, comes under the heading of recommendations regarding the TCB, and much of this deals with either the regulations or I&E, which should probably go under the comments on the overall regulatory environment, so let's keep that in mind and as we go through try to find the appropriate places.

MR. BENDER: I may have misinterpreted what your intent was. I had interpreted the report itself as an assessment of the TCB per se, but more with the procedural aspects of what they are doing, and that is why -- well, I think we can work on it. We are just talking about editorial things.

MR. SIESS: Go ahead.

MR. MARK: I have another question. I think some of the things which were said at the April meeting, and Mike was involved in that, why don't you learn more quickly than what you have at present in managing to learn about the way the system works? It comes to my mind when I read about the long-range plan to have some

of this, some amendments in effect by FY '83 or possibly by FY '84, and I don't know why they are not in effect by September of calendar '82, about reporting, about doing things which it is perfectly clear ought to be changed.

Why are we stuck with the idea that it is going to take a year or two or so to make a change which is quite obviously called for?

MR. SIESS: Which long-range plan are you talking about?

MR. MARK: I am talking about this fat thing that Sam sent me, Part 71, and it really says that, you know, by and by, we will get around to modifying this, and I see no reason why we should put up with that sort of wonderful thing. Now, maybe the staff can comment on that. Why can they not, for example, within a matter of weeks, institute a requirement that receivers start sending reports? Surely it doesn't take until 1984 to do such a straightforward thing. This is a question, and you understand the situation better than I, but it just makes me wonder.

MR. SIESS: I wonder if that should be something we comment on in connection with the proposed revision rather than --

MR. MARK: Oh, look, how we comment on it does

indeed require some thought.

MR. SIESS: Let me try to review something, and get our perspective straightened out. We were asked originally to review the activities of the Transportation Certification Branch and that was the scope as envisioned when the request came in. We expanded that simply to understand where TCB fit into the picture, to look at the whole process, and we developed some ideas there.

What I tried to do in the report was to divide the report into two parts. The findings and recommendations regarding the TCB, which was the original scope, was one, and then these additional comments on the overall regulatory environment, as far as I&E, and state programs, and DOT, and DOE, and IAEA, and so forth.

MR. MARK: Where would you say that split comes?

MR. SIESS: Well, if you look at Paragraph 11 on Page 4, where it talks about the scope of the subcommittee review, it says, although the requested review is limited to the activities of TCB, we looked at a lot more, okay?

MR. MARK: Yes.

MR. SIESS: And then it says, although not

requested, we include in this report some general comments on the multi-listed agencies and so forth. Then, the next section of the report is entitled Review Procedure, which says what we did. Then there is a chapter or a section beginning with Paragraph 18 on Page 6 called Findings and Recommendations regarding the TCB, and then on Page 8, at the bottom of the page, are the comments on the overall regulatory environment.

So, I tried to divide it up into those two parts. Now, you will recall that we agreed in our second meeting, and this is stated in Paragraph 13, that we would limit ourselves to reviewing what the TCB did and how they did it, and that we would not comment on the adequacy of the regulations, particularly in terms of the environment. We knew a study was in progress, and so forth.

I made the point that what we should keep in mind was that if there were changes in the accident conditions or something like that, we might keep in mind whether the procedures would be as adequate for that as they are now, whether the procedures were adequate to cover another spectrum or some extension of the spectrum of accidents, but that a review of whether it should be a 30-foot drop or what point there should be on the puncture device was something that could well be left

until the research was finished.

MR. BENDER: Chet, I --

MR. SIESS: And that scope was agreed on, and from then on we sort of concentrated on the other things.

MR. BENDER: I am trying not to be a nitpicker about this thing, but when I read the statement by Cunningham which you have quoted in Paragraph 8, to obtain an independent evaluation of the Transportation Certification process to determine if the review procedures will provide reasonable assurance -- I guess I am not sure whether the letter concentrates on the process or on the procedures. I think the process that they are using has picked up the problems that TCB can pick up, but whether they are doing it by procedures that result in that process or whether it is just because they have their own understanding of how to do it is, I think, a debatable point.

MR. SIESS: I think that quote may be misleading, if taken by itself, because that quote referred to the Transportation Certification Branch. Everything we were asked came from that. Now, we extended the thing from the procedures to the branch to the overall picture just to find out where that fit in, but again, we were asked to see how good a job TCB was

doing within the framework that they are operating in.

MR. BENDER: I am not sure, I guess. When we started out, I guess I have always started that TCB has done a good job. If they didn't, chaos would exist in the shipping of radio nuclides. So I have never thought that what they themselves were doing was really in question. I thought the original intent, and Cunningham is here, was to try to expose whether the system which they had written down for doing things provided the right kind of guidance.

Now, I don't know. Maybe you can comment on what you are really shooting for, and that may help us in what kind of letter we want to write you.

MR. CUNNINGHAM: First and foremost -- I am Richard Cunningham.

MR. SIESS: Why don't you sit up at the table, Dick? There is a mike up there.

MR. CUNNINGHAM: I am Richard Cunningham, Director, Division of Fuel Cycle and Materials Safety.

To answer your specific question, Dr. Bender, our first and foremost interest was to examine the performance of the certification branch within the context of the regulatory framework that they must work in. Now, I believe you are going a step beyond that and looking at the regulatory framework.

MR. BENDER: I see.

MR. SIESS: I have tried to separate those two aspects of the report.

MR. BENDER: Well, that is a clarification. It is helpful. I don't think it would hurt to review the process any.

MR. CUNNINGHAM: Certainly not, but our objective for coming to the ACRS was to look at how the certification branch performed within the existing framework.

MR. SIESS: You see, Mike, if you look at Paragraph 25, it says, "Our findings and recommendations above relate only to the activities of the TCB. This branch, however, has only a relatively small though important role in regulating the transportation of radioactive materials. A substantial portion of our review is devoted to the roles played by others."

Now, the others in this case to me meant I&E, Region 3, which does vendor inspection, the other I&E's, state programs. The whole question of feedback and operating experience, et cetera, et cetea, is outside of TCB, but it is part of the process. So, I think we need to separate our thinking into the two parts. What TCB does within the framework of the existing regulations, which is what I have tried to do in one subset of

comments of findings and recommendations, and then the other part.

Now, since the other part was not a part of our original charge, I tried to separate it out, and as you will recall, we at one time proposed to write a letter saying, look, we think somebody needs to look at this whole picture. In the meantime, we will concentrate on what we were asked to do, and we decided not to do that at that time, although that was a decision we made, and from that point on in our review we didn't look outside of essentially TCB activities.

So, we have incorporated some of those comments into here. They may not be as extensive or as strong as you want, and you have seen the memo to Dircks which addresses many of those things. Carson?

MR. MARK: Chet, I really need a great deal of assistance and clarification. I really do not have any large complaints about the way in which TCB proceeds to do the things which they are charged with doing. I do have some considerably larger worries about the way in which the system works, the interrelation between what TCB does, is charged with doing, and so forth, and the relationship between that and DOT and the agreement states.

I think it is a pretty hideous mess. I wonder if Cunningham could help me. What would it take to make more sense of what is going on and what we in fact have? Now, in that I have in mind, amongst other things, and this may be the main one, someone has got to be in the position to receive reports about what actually happens. TCB is evidently not. Nobody is charged with that responsibility.

The agreement states don't do it, and there is no place to send them if they did. And those are the -- well, it is an instance, at least, of the kinds of things which if you do not know those, you cannot say too much about how we stand.

Now, can TCB call for these and get them and do them on a short time, or does it take all of this mechanical nonsense of saying, well, we have to put out a rule for public comment and wait two years, and maybe at some time we will get there.

MR. SIESS: If it is outside of NRC, it is DOT.

MR. CUNNINGHAM: Well, that is a rather large question, Dr. Mark, and of course I have pretty strong personal views on how this should be done. I believe you have a copy of the paper we plan to send over to the Commission, and I spent a lot of my time personally preparing that paper. Probably the paper itself does

not go as far as I personally would like it to go, but I think it provides a framework of some of the direction we feel is needed.

Certainly, as this subcommittee has recognized and as we have recognized, we need to have stronger centralized management of transportation. Someone has to have an overview of transportation within this agency.

MR. MARK: I don't like your use of the word "management." It seems to me what you really must have is information.

MR. CUNNINGHAM: Well, we must have information, but we also must have an organization that can do the things necessary to obtain the information. Now, with regard -- there are a number of things that should be done. As I said, the subcommittee has that memo that set these forth.

With regard to the reporting requirement, obtaining more information, I assume you are talking about some reports that would require a rule change to obtain information from the industry. I personally think rules take too long to get around here.

There are some practical problems with obtaining information from the industry. We do have to go to OMB and get clearance any time we issue a rule which requires the extraction of information from the

regulated industry. That in itself takes time. I understand that OMB is not approving a large number of these reports that require information, although if it is justified, I believe we can obtain it. It does take time.

But there are some practical problems with issuing a rule. I personally do not think it should take two years. I suspect if we have to go through a notice of proposed rulemaking, which I am sure the lawyers would require us to do, and then a final rule, I would say it could be done in six months.

MR. SIESS: Carson, again let me try to put this, well, not in perspective, but in the framework I had in mind when I drafted the report. In the section dealing with the TCB --

MR. MARK: Understand I am not complaining.

MR. SIESS: In the section dealing with TCB, I have a Paragraph 22 that addresses reporting of incidents as it affects TCB's activities. This says, and I will read the paragraph with the few changes I have made in it, "We note that most transportation incidents involving potential exposure of the public to radioactivity have resulted from deficiencies in procedures for handling and transportation and not from deficiencies in the design of packages. We note further

that the feedback to the TCB for package users and transporters, from IE and from the DOT is far from complete.

"We believe that more extensive feedback is desirable and that the TCB should review the incidents or accidents with a view toward changes in package design that might reduce the probability of serious procedual errors. We recognize that it is not possible to design a foolproof package, and we believe little attempt has been made so far in this direction."

Now, that addresses the external, I would say, aspects, external to TCB as they affect TCB's activities, which is package design and package approval.

MR. MARK: Look, Chet.

MR. SIESS: Let me finish.

MR. MARK: The modification you have made in that paragraph helps me a great deal.

MR. SIESS: When we get to the comments on the overall regulatory environment, I tone those down. I simply brought it down to calling attention to this extremely complex interaction in international, Federal and State agencies, and the need for somebody to take a look at it, and recognizing that Cunningham has already started that with this proposed SECY thing, with the idea that that was outside of our scope originally and

it would be sufficient to just call attention to it, that it is a morass.

I did mention somewhere -- at the very end I said in Paragraph 31 that this dispersion and complexity of responsibility is statutory in origin, and I think the Congress may be involved before you get everything cleared up because the DOT has certain statutory responsibiities and the NRC has certain ones, and it has been a real mess trying to get them straightened out.

Let's go back. The specification package was something that bothered people, but abolishing the specification policy is a tremendous step. It is not something anyone wants to go into lightly. As has been pointed out, there are thousands of them around, and this would be a burden -- I guess it would be a burden on everybody, the industry and the NRC, if the specification package is all of a sudden becoming unusable.

And I am not sure there is any reason to abolish the specification packages. They have contributed relatively little to public risk in the past, and I am not sure that strong and tight isn't a pretty good criterion. But again, philosophically I have tried to address the TCB and its activities and the outside activities as they bear on it.

Then the others, I have said this is the problem but we are not going to go into a lot of detail. Now, within the NRC's capability on reporting of incidents, obviously there could be better feedback from IE to TCB, or IE activities could be increased. And I guess something could be done with DOT as far as a memorandum of understanding is concerned. But incidents are DOT's job, and as we heard from DOT, they put radioactivity incidents pretty low on their list compared to the other stuff they are worried about being spilled around the country, I guess for two reasons. There is a heck of a lot more toxic stuff going around than some of the things that we are dealing with, and the record on radioactivity has been pretty good, radioactive materials.

So again, I anticipated this problem because we have had it all the way through our review, separating out the TCB activities from the rest of them. I tried very hard to separate them here.

MR. MARK: Look, Chet, I think you have actually done at least close to the job that was possible. I do not myself have specific criticisms at all of what TCB is managing to do within the constraints that they act or have the power to act. I think, as you said, there is a morass that we are looking at, and to

the extent that we feel we can make any useful comment on that, I believe we should. I think it might come out stronger than you have done in your report, although it is not clear to me just where and how they need better reportage of things that actually happened.

The packages, for heaven's sake, are swell. They are fine. As long as we knew that they were the packages used. We do not know that well enough, but we know that the packages called for are good enough, and that is partly I&E rather than TCB, and partly the general attention of the DOT and others to this question.

Are the packages used, the packages we have described, or are they not? And we do not really know that. That ought to be known better than it is.

MR. SIESS: I think we did hear from IE that they are stepping up their inspection of shipments a lot more than they were. Zenon?

MR. ZUDANS: I would like to make a comment relative to this new paragraph that Mike wrote. I think it fits nicely, maybe with just a minor adjustment, with your Paragraphs 31 and 32 as a completely self-supporting paragraph because it gives more detail to the same subject, and I would suggest not to touch 24.

MR. SIESS: I would have a problem with that, I think, but let's wait and look at it. I think some of

it fits better on our comments on the proposed Part 71 change.

MR. ZUDANS: Yes.

MR. SIESS: Which we have not looked at yet.

MR. ZUDANS: Mike's paragraph is a really good one. I would like to just discard it because --

MR. SIESS: What bothers me, it starts by the format and content of the regulation, which sounds more like a comment on the revision to Part 71 than anything else.

MR. ZUDANS: That is all right.

MR. SIESS: We have to write another letter on that.

MR. ZUDANS: I made a recommendation.

MR. BENDER: One perception of this letter may be different from another, but in trying to put myself in the position of a reader reading your letter, who doesn't quite understand the context in which Cunningham asked us to review the thing, it seems to me we must have some way of differentiating between how well the TCB as an organization does its job and how well the information it has which guides them is set out as a basis for this. And it is very hard in reading your letter as it is prepared right now to discern that difference. That was the main reason why I wrote that

paragraph.

MR. SIESS: I don't see where your difficulty comes because it states very clearly what the request was, the purpose and the scope, and -- I had that problem in mind when I wrote it, and I tried to make very clear what we were requested to do, what we did, and to separate our comments into those relating to the request and those we are offering gratuitously. And if I didn't succeed, let's see if we can fix it up.

For example, if we had written a separate letter six months ago that said we were asked to do this, we have been looking at the overall picture and we find this morass, we call that to your attention and now we will go about our business of reviewing the TCB, then this letter would have ended, I think, with Paragraph 24 or thereabouts. So I tried to write the letter in two parts.

About six months or a year ago we saw this problem and it was proposed that we could dispose of this overall picture by calling attention to it and then getting back to the specifics. We have done two things here: we have reviewed the TCB and we have reviewed the overall activities. I have tried to comment on the other activities which affect the TCB separately from others as they affect the general area of transportation and

safety.

So let's go through paragraph by paragraph and see if we can figure out where we can clarify the objectives and the scope so that this gives us a lot to think about as we go through it. I am not going to read everything, but Paragraph 1 is fairly straightforward with the typo in Line 4 corrected.

Paragraph 2 lists the meetings, and in Paragaph 3 I have listed all of the subcommittee members, including Steve Lawroski, who is no longer in the committee, but he was at the first meeting and I didn't see any way of listing just those that were at two or more meetings. I didn't feel like putting which meeting they attended.

Does anybody object to the complete list? I have listed the consultants because this is a subcommittee report. A full committee report normally would not name the consultants, but in this case, since it is the subcommittee report, I thought I would take advantage of that since they have done a tremendous amount of the work on this and have been very helpful.

The first line on that page 2, the last word should be "expert," expert in one or several phases of the activities.

I have tried to list the various groups we met

with. Does anybody have any questions there?

MR. ZUDANS: No.

MR. SIESS: It was a pretty impressive list.

MR. ZUDANS: Except for the typo in the last line.

MR. CUNNINGHAM: I was just handed one.

MR. SIESS: Take one of the "t's" out of "corporattion," I guess. You can also fix up "headquarters" in Line 30.

Okay, now I am going to read beginning on page 3. This has a subheading, "Request for Review." "In September 1980, R.E. Cunningham, Director, Division of Fuel Cycle, Material Safety, NMSS, requested the ACRS to review the activities of the TCB as they relate to the review procedures for certifying packages for the transportaion of radioactive materials. This request was discussed with representatives of NMSS and the ACRS Subcommittee on December 1980, and the request for the review was transmitted to the ACRS in my memorandum dated 6 November 1980.

"During its 248th meeting on 5 December 1980, the ACRS discussed the requested review with the Commissioners, and such review subsequently was requested by the Commission."

I think that could be one paragraph.

MR. BENDER: Chet, it might help, I believe, if the heading were "Request for ACRS Review" instead of just "Review."

MR. SIESS: Okay.

MR. MARK: What did you say, Mike, 7 should be joined to 6?

MR. SIESS: The request for ACRS review in the subheading. I think it would be worthwhile to make that all one paragraph. I just wanted to get a little background in there, for the ACRS as much as for anybody else, or to the Commission. They may not remember what they did.

MR. MARK: Sounds good.

MR. SIESS: "The purpose of the review, as stated by Mr. Cunningham" -- this came off one of your slides -- "was to obtain an independent evaluation of the transportation certification process to determine if the review procedures provide reasonable assurance the regulations will be met."

Now, those words did not include transportation certification branch, although those words are in the first paragraph, Paragraph 6.

MR. ZUDANS: The scope would appear to be much broader than just TCB if you take that sentence.

MR. SIESS: Yes. We could take the quotes

off. This was really what we were requested to do, and I would hate to take the quotes off. I want to attribute it to Cunningham. And since the line at the very top of the page says to review the activities of the TCB --

MR. BENDER: I will repeat the point I made earlier, just because it may not have been intended that way, but if you literally read the statement, it says to determine if the review procedures provide reasonable assurance. I think what we have determined is that the "process" provides reasonable assurance.

MR. SIESS: I don't get your distinction between procedures and process.

MR. BENDER: Procedures are an established or written set of actions that are followed to get a result.

MR. SIESS: I see.

MR. BENDER: And a process is just an arrangement that goes on without any specific pre-established pattern. It just goes.

MR. SIESS: You interpret procedures, then, as being strictly applicable to TCB, and the process as extending outside of TCB?

MR. BENDER: That would be my interpretation of it. I don't think that it is necessary that it be the right one. I am just reading the words literally.

MR. SIESS: So that by quoting from Dick the word "process," it has effectively expanded the scope in your mind.

MR. BENDER: I'm not sure whether it has or not. I think if I were sitting in the position of somebody sitting on the outside looking at the situation, I would say what is written down in the regulations that says this is how these guys do these things, and the answer is there isn't anything. There is an understanding that it is done in a certain way, and that is quite acceptable.

MR. SIESS: If I go back up to Paragraph 6 where it says that Cunningham requested the ACRS to review the activities of the TCB as they relate to the review procedures for certifying packages, that uses the words "activities" and "revew procedures," and we simply deleted Paragraph 8, which doesn't add a hell of a lot --

MR. BENDER: I think that would help out, but I think the literal reading of that thing will focus attention on something that perhaps wasn't wanted.

MR. SIESS: Any objection to deleting Paragraph 8?

MR. ZUDANS: No.

MR. SIESS: All right. Paragraph 8 is deleted.

MR. MARK: Coming to 9, then.

MR. SIESS: Paragraph 9 I included because there were there three things mentioned and I tried to address all three later on.

MR. MARK: TCB is a part of NMSS or not?

MR. SIESS: Sure. It is a branch within the Division of Fuel Cycle Safety, which is under the Office of Nuclear Material Safety and Safeguards.

MR. MARK: Then in 9 you have statements from NMSS which are either identical with or not identical with comments from TCB. They are, in fact, the same part of the house.

MR. SIESS: Yes, this was the request. He asked us to review the adequacy of the technical review and the technical documentation.

MR. MARK: I am thinking, then, that in the first line of Paragraph 9, that there could be something clarifying if one should say that NMSS -- it sounds here as if it is a different thing from TCB.

MR. SIESS: Okay. TCB didn't ask for this. Why don't we start it off by saying we were asked to review the following.

MR. MARK: Is that what Cunningham had in mind?

MR. CUNNINGHAM: Chet, are these quotes attributed to me?

MR. SIESS: Well, they came off the slide.

MR. CUNNINGHAM: Well, then, if you attribute them to me, this would carry it on from the first sentence in Paragraph 6.

MR. SIESS: Yes.

MR. CUNNINGHAM: Because this is what I wanted you to review.

MR. SIESS: These came out of the slide. We don't have to put in NMSS at all. We can say --

MR. CUNNINGHAM: Okay, as envisioned in the scope of the review.

MR. SIESS: We can just say we were asked to review the following in relation to the activities of the TCB. Would that be more specific?

MR. BENDER: I think that would help a great deal.

MR. SIESS: I will try those words.

MR. LANGHAAR: What are those new words?

MR. SIESS: "We were asked to review the following -- now just a minute -- "aspects of the activities of the TCB." Is that all right?

MR. BENDER: That would make it fit better.

MR. SIESS: Okay. That gets a little more specific. And I have addressed each of those, incidentally.

MR. ZUDANS: You would take the quotes off, I

assume?

MR. SIESS: We can take the quotes off.

MR. ZUDANS: And put bullets on them?

MR. SIESS: Yes. The three things we were asked to look at and we did look at were the adequacy of the technical review to provide assurance that existing regulations are met, technical review and the existing regulations, the adequacy of the guidance to applicants and staff, which I interpret later on as essentially being the regulations and the reg guides, although I did not comment on the reg guides, except I mentioned you might use reg guides to explain the regulations. Then the adequacy of documention, which are SARs, SERs, which we did address specifically.

MR. ZUDANS: That sounds fine.

MR. BENDER: Just to be -- and again, I may be nitpicking a bit -- the term "documentation" can be so broad that it is very hard to know what we mean. Somewhere in here -- I didn't find it but it may be in here. Have we defined what we mean by documentation?

MR. SIESS: We made two specific comments in here about documentation. One is correcting errors in SARs, and the other was documenting judgments or exceptions.

MR. BENDER: I guess the point I am trying to

make is, in order to be sure that the people reading this thing will know what we are saying, we ought to say we are talking about the documentation as SARs and other materials submitted to the NRC review. Is that what you are saying?

MR. SIESS: Mike, whenever I write something, the first thing I try to do is figure out who is going to read it.

MR. BENDER: That is what I am thinking of, too.

MR. SIESS: And this in part, in the first part of it, at least down to the first couple of pages, maybe a little beyond, I expected the readers to be the ACRS, and perhaps the Commission to know why we are doing this and refresh their memories, to tell them who took part in it and so forth. Beyond there, down through the part that addresses the complete regulatory environment, to my mind the reader is going to be Dick Cunningham, who asked us to make the review, and the TCB staff. And then for the last part, which is the other activities, that was addressed mainly to the Commission and to Dick.

MR. ZUDANS: Chet, I think it would help to understand the document if we qualified the documentation by saying documentation of the licensing

process used, how they do it.

MR. SIESS: Of the licensing process what?

MR. ZUDANS: Of the licensing process by the TCB, because that is what we addressed. We looked at what is it you find afterward in the records to show that the particular package was properly qualified, and that was the SAR, and that also could be to the extent that engineering judgments have or have not been documented.

MR. SIESS: Yes. In view of what we say about documentation, let's see if we can find some words. Since we don't have quotes, we can put whatever we want in here. "Adequacy of documentation of the review"?

MR. ZUDANS: That is all right.

MR. CUNNINGHAM: I would say perhaps the certification process.

MR. ZUDANS: Yes, that is the word. "Certification" is better.

MR. SIESS: "Adequacy of documentation of the certification process"? Would that help you, Mike?

MR. BENDER: That would certainly help.

MR. LANGHAAR: I have a problem with the word "process" there. We are not talking about documentation of the findings.

MR. SIESS: What if we said the certification

revi(.

MR. ZUDANS: Certification process. It's not just findings, because there are conclusions.

MR. LANGHAAR: The process is one thing, but what is found out from the process if another thing.

MR. MARK: But you have modified that, I believe, by saying subsequently the AEC or the NRC or somebody, does something. So the specifications need not be overdone.

MR. SIESS: I don't mind getting it more specific if we can agree on what specificity you want, but so far I have three different versions.

MR. BENDER: Well, that is why we are having this discussion, to find out what we really mean.

MR. ZUDANS: Is it the process or is it the procedure?

MR. BENDER: It seems to me, if I interpret what went on here properly, what we are trying to say is that what has been submitted in the way of SERs and SARs after correction is adequate with some exceptions.

MR. SIESS: But this is prefaced by activities of the TCB. These things now follow a colon. They come after TCB. So it is the documentation in the TCB activities.

MR. LANGHAAR: How about documentation under

review and the basis for certification?

MR. BENDER: That is probably a good, comprehensive description.

MR. ZUDANS: I have no problem with that.

MR. SIESS: That narrows the scope to include what we commented on, which is a post hoc type of operation.

MR. ZUDANS: John, would you repeat it again?

MR. SIESS: What it doesn't mean is adequacy of the QA procedures. We didn't really look at that.

MR. ZUDANS: We did touch on that.

MR. BENDER: They are not in the TCB scope, as I understand it.

MR. SIESS: That is right.

MR. BENDER: We are trying to find out --

MR. SIESS: That is IE, right?

MR. MAC DONALD: Yes. We approved the findings.

MR. CUNNINGHAM: I'm sorry, I didn't hear what Mr. Langhaar's recommendation was. It is a little bit wordy, but it is adequacy of documentation which substantiates conclusions and findings of the certification review. That is what I think we are really talking about.

MR. SIESS: They were originally your words,

Dick.

MR. CUNNINGHAM: That is right, but that is what I had in mind.

MR. BENDER: With the benefit of this committee's interpretation.

MR. ZUDANS: That says it exactly. It says the same thing I tried to say.

MR. CUNNINGHAM: Somebody said it in shorter words than I did.

MR. BENDER: We have an interpretation with the original words.

MR. SIESS: Let's get the words. I will use that. Your words, Dick, includes --

MR. CUNNINGHAM: "Adequacy of documentation which substantiates conclusions and findings of the certification review."

MR. ZUDANS: That is exactly what I had in mind.

MR. SIESS: I will change your "which" to a "that" - "conclusions and findings of the certification review." Does anybody object to that?

MR. ZUDANS: Could you read it back? I lost it.

MR. SIESS: It will say "Adequacy of documentation substantiate conclusions and findings of

the certification review." What about "documentation to substantiate conclusions and findings"?

MR. ZUDANS: Yes.

MR. CUNNINGHAM: Yes. That would be better.

MR. SIESS: Okay. Shall we go to the next page? It says, "The review was to be limited to those packages required for Type B and fissile Type A quantities: that is, those packages which must be certified to resist accident conditions as well as normal conditions of transport. Spent fuel casks are included in this category."

MR. ZUDANS: That is a good correction. I was going to --

MR. MARK: That was one thing I had. Fine. However, could someone remind me, Type B and Type A, which is which? One is more horrendous than the other.

MR. SIESS: Which is the larger quantity?

MR. MAC DONALD: Type B.

MR. SIESS: Type A is smaller quantity by fissile. The important distinction is the certification for accident conditions. John?

MR. LANGHAAR: I have a little problem with the fissile Type A. For one thing, we are also concerned with fissile Type B, but I have been wondering if we are not concerned with fissile materials in even

less than Type A quantities. Are they of any concern? The regulations do cover fissile materials in less than Type A quantities.

MR. MARK: Why would they be of a concern?

MR. LANGHAAR: Well, they may be exempt, but they are in the regulations.

MR. MARK: Are they of concern perhaps because of proliferation-type worries or radioactive-type worries?

MR. LANGHAAR: They are of concern because of their fissile nature.

MR. SIESS: As I understood it, and it is sort of late to be misunderstanding things, I guess, the chief concern was those packages that must be certified to resist accident conditions. Am I correct?

MR. CUNNINGHAM: That is correct.

MR. SIESS: That that is really the definition that defined our scope. Now, I don't know whether the Type B and fissile Type A covers that completely or not, but that was intended to be the scope of the review: If less than fissile Type B doesn't require a package them to withstand accident conditions, it was not within the scope. Am I correct?

MR. ZUDANS: I think that is correct. That is the way I understood it.

MR. SIESS: This was the language we were given, and I interpreted it as simply a means of defining those packages that must withstand accident conditions rather than just normal. That is why I added that in, because I think that is the operating part of the definition.

MR. MARK: I would like to --

MR. SIESS: And I wanted to add it in for the benefit of those who didn't know that that included spent fuel casks because that seemed to be the major concern.

MR. MARK: I would like to raise a question, Chet, on this Paragraph 10. The review was to be limited to those packages required for Type B and fissile Type A quantities, period. These are the types of packages that must be certified to resist accident conditions as well as normal conditions in transport, period. You put that second period in yourself. Spent fuel casks are included in, now not this category, but Category A.

MR. CUNNINGHAM: Type B.

MR. MARK: Or B, whichever it is.

MR. SIESS: Don't worry about that. I could say spent fuel casks are included, period.

MR. MARK: Well, but it wouldn't hurt --

MR. SIESS: The category I had in mind is the second category, accident conditions. If you break it into two sentences, you can leave the last sentence like it is.

MR. MARK: Very good. It wasn't clear to me in my mind whether spent fuel is A or B.

MR. ZUDANS: But the category refers in this case to the review, the group being reviewed.

MR. SIESS: Can we leave the first sentence with a "that is" and then say spent fuel casks are included?

MR. MARK: That would do.

MR. LANGHAAR: Should that be a separate sentence?

MR. ZUDANS: It is. If you do it that way, you have to put it in parentheses, that whole sentence.

MR. SIESS: Why?

MR. ZUDANS: Because it doesn't stand as a nice, strong sentence by itself. The way it is now is okay, but the category does not refer to Type A or Type B. The category refers to --

MR. SIESS: Accident conditions.

MR. ZUDANS: To the one we reviewed.

MR. SIESS: Well, what Carson proposed was to make the first sentence two sentences.

MR. ZUDANS: That would be all right the way you said it.

MR. SIESS: Then the category in the second sentence would refer to the accident condition category.

MR. ZUDANS: That is what it does now.

MR. SIESS: Well, he thought the category could be B or A.

MR. ZUDANS: That is not what it refers to, at least the way I understand it.

MR. MARK: Well look, I confess this is out of my own ignorance rather than -- that area has not previously been explained.

MR. ZUDANS: The fact is making a new sentence is not a bad idea.

MR. SIESS: We put a period where there is a semi-colon, this includes those packages. Okay?

MR. MARK: Fine. And then you have to face accidents.

MR. SIESS: "These are" is better. "These are the packages that must be" --

MR. MARK: That suits me great. That just sounds fine to me.

MR. SIESS: Then another period. "Spent fuel casks are included in this category."

MR. MARK: Do you want to say "this category,"

or do you want to say Category A or Category B?

MR. SIESS: How about just "are included"?

MR. MARK: That is fine, too.

MR. SIESS: They are included in the review, they are included in everything else. The important thing is that they are included.

MR. MARK: Right.

MR. SIESS: The only important thing.

Okay, it now reads, "The review is to be limited to those packages required of the Type B and fissile Type A quantities. These are the packages that must be certified to resist accident conditions as well as normal conditions of transport. Spent fuel packages are included.

MR. BENDER: Can I suggest that we put, between "to" and "those" in the first line of Paragraph 10, the words "TCB activities concerning," so that it reads, "Review was to be limited to TCB activities"?

MR. SIESS: Well, how many times do you want to repeat that?

MR. BENDER: The darned thing keeps appearing to talk about the review of the packages rather than the review of the activities, and even though it is in here somewhere, the reader has his troubles with it. I guess I don't --

MR. SIESS: Well, you have gotten away from the statement four lines before, that we were asked to review the following aspects of the activities of the TCB, adequacy of this, adequacy of this, adequacy of that. The review was to be limited to those packages. It follows five lines after it says TCB activities.

MR. BENDER: But when you read it, it says just that, the review was to be limited to the packages, and that sounds very confusing.

MR. ZUDANS: There may be some confusion there. I think it could be misunderstood that we are reviewing the package design rather than the process by which the package is certified.

MR. BENDER: That is all I'm saying.

MR. SIESS: Well, let's just say, then --

MR. BENDER: Limited to --

MR. SIESS: When you read the thing straight through --

MR. MARK: Who is going to do that?

MR. SIESS: Anybody else but us. The review was to be limited --

MR. ZUDANS: To the certification process of --

MR. BENDER: What I said was to TCB activities concerning --

MR. BENDER: Concerning those packages.

MR. SIESS: Relating to those packages.

MR. BENDER: Fine.

MR. MARK: That looks awfully good to me.

MR. SIESS: The next section says "Scope." It says, "Although the requested review was limited in scope to the activities of the TCB, the Subcommittee considered it desirable to become familiar with the entire spectrum of the regulatory activities relating to transportation of radioactive materials in order to place the activities of the TCB in perspective. To this end, we have presentations from and discussions with representatives of other NRC offices, from the DOT, and from industry as listed above. Although not requested, we include in this report some general comments on the multiplicity of agencies involved in the regulation of transportation of radioactive material." There is a typo in there.

MR. MARK: I wasn't at the April meeting, Chet.

MR. SIESS: April? I'm not not even sure which one that was.

MR. MARK: The one before this.

MR. SIESS: The one with industry.

MR. MARK: And there you did indeed hear from Chem Nuclear and the other.

MR. SIESS: Nuclear Assurance Corporation.

MR. MARK: But at that time you did not hear from DOT.

MR. SIESS: We heard from DOT at the second or third meeting.

MR. MARK: That is what I wanted to cover.

MR. DURAISWAMY: May 20th, May 1981.

MR. MARK: And we did have DOT people there?

MR. SIESS: Oh, yes. We found out they had one health physicist.

MR. MARK: And 17 accountants and 37 lawyers.

[Laughter.]

MR. SIESS: Lots of experts in toxic chemicals, which I am very pleased to see they worry about since I live a lot closer to a railroad than I do a nuclear plant. Okay. "Our review fell chiefly and in depth with the TCB activities relating to the technical review of package design for conformance with 10 CFR Part 71, and it is a review and approval of operating procedures and QA programs for both the manufacture and use of packages."

That I thought described the scope of TCB's activities.

MR. MARK: Does Cunningham also think so?

MR. CUNNINGHAM: Yes.

MR. SIESS: "The Subcommittee agreed that it

would not review or comment on the adequacy of the current regulations but would limit its review to how they were applied and enforced. In this respect it should be noted that an extensive revision of 10 CFR Part 71 has been proposed and is being reviewed by the Subcommittee. However, the proposed revisions are of such a nature that they would not change the findings or conclusions of this report."

I think that is reasonably correct, except the one about their inscrutability. It is written in plain English. We should mention that. Okay, that concludes the scope of what we did and what we didn't.

MR. MARK: Are you proposing to add in here somewhere that crack about plain English?

MR. SIESS: No. If we find any, we will comment on that, too.

[Laughter.]

MR. SIESS: That is not TCB and that is not NMSS. That is Research. They are the ones that write them.

MR. SIESS: Okay. The review procedure in the next few paragraphs, it starts off: "To assist in our review of the technical activities of the TCB, we were provided with complete copies of the Applicant's Safety Analysis Report, SAR, and the TCB Staff's Safety

Evaluation Report" -- a word got left out --"SER, for three packages: a fresh fuel shipping package, a waste shipping package, and an irradiated fuel shipping package. Each set of reports was reviewed by one of our consultants, and their questions and comments were addressed by the TCB staff at the meeting of the Subcommittee on 12 October 1981. That is one phase of our technical TCB review.

"In addition, we were supplied with extensive correspondence relating to technical issues that had been raised by two former members of the TCB staff. These were reviewed by Subcommittee members and by the consultants." And gentlemen, we did not formally comment on those and I have said no more about them. They were part of the background material that we had and I thought we should acknowledge it. And they were not called differing technical opinions because they did not go through that process, as I recall.

MR. BENDER: Can you strike out the second "by the" and say "were reviewed by the Subcommittee members and consultants"?

MR. SIESS: Fine.

MR. MARK: Would you remind me, Chet. I found this Paragraph 15 quite intriguing in reading it on the plane yesterday because I had totally forgotten what we

had heard from former members. Were they wild objections to what TCB is doing, or what?

MR. SIESS: No, they were differences of opinion arising chiefly from what I would call, and I will use the word carefully, misinterpretations of the regulations of the requirements, a lack of background in the development and history, I would say to some extent the lack of really mature judgment in applying the regulations, and they never reach the point of being a different professional opinion, which is a very formal status in the NRC. They never went through that process.

We had their comments, we had the responses by the Staff. It was all at a technical level, and I thought it did give some insights into how the Staff worked. But we did not reach any conclusions on it except that they did not bring up any signficant questions regarding the operations that we thought should be pursued.

MR. MARK: Then I do think there is a use for saying just a phrase more in Paragraph 15, that we were supplied with stuff by former members, these were reviewed by the Committee and the consultants, and these points have been taken into account, or they didn't change the review, or something which says we heard from them. As it stands, we heard from them. It doesn't say

that we have taken them into account. It doesn't say that it affects our views. I believe both of those are correct statements, and at least one of them should be in here.

MR. SIESS: I think that what I have said is as far as I want to go in talking about the review procedure if we did not reach any conclusion as a result of those and did not reach any findings. You see, I would hate to add anything to this that gets into the next section on findings. This is just information.

MR. MARK: Okay.

MR. SIESS: If we don't mention it in the findings, that means we didn't find any importance to it or didn't have any findings relating to it. That is how I was trying to divide this up. I don't want to give it too much weight. I felt we had to mention them but I don't want to give them too much weight. I think they helped our insights, but they didn't affect our judgments.

MR. ZUDANS: There would appear to be a slight contradiction there. We made such a comment on Paragraph 13, saying the proposed revisions don't affect the report.

MR. SIESS: That was setting the scope. Paragraph 13 is in the preceding section. That was the

definition of scope that we made at the beginning.

MR. ZUDANS: I have a little bit of sympathy with Carson's question. We do have to point out some place --

MR. MARK: We have got to be a little careful, I believe, as we have learned in some of our letters, that not mentioning or stating something is taken as either concurrence or something and is read as meaning something. I believe there would be room in the last sentence of this paragraph to say that these were reviewed by the members and the consultants and, if you like, the significance of these is included in our report or in our subsequent comments. That is, just to say that they were reviewed does not quite say if we learned anything or changed anything or felt anything as a result.

MR. SIESS: Well, Carson, you have to go back to the first paragraph and say something, because as far as the three SARs we got, I said each set was reviewed and didn't draw any conclusion. That was just part of the input, just listing here the things we did.

MR. MARK: Yes.

MR. BENDER: I guess I have begun to believe that we have to establish the relevance of the information in some way. Putting it in without stating

its relevance invites questions. I don't mind saying we didn't find anything relevant in it, because I didn't, but that is just my personal opinion.

MR. SIESS: I think if you want to say that, it belongs in the findings and not in the procedures.

MR. MARK: Well, that is fine if we pick it up later.

MR. SIESS: I listed here the input we had and draw no conclusions regarding the input.

MR. MARK: Right. Do we pick it up later?

MR. SIESS: I have listed findings but I don't relate them back to all the details. I don't know whether we need to. It seems to me that you can review a lot of things and you can integrate them, consider them all and come up with some findings without relating each finding to a particular bit of evidence.

Now as we get into the findings, if you want to state that this finding was based on this and that finding was based on that, we can do it, but I think it is mistake because this has been an integrated review. I know the judgments I have made have been based on everything I have heard.

MR. BENDER: I think that is not quite the issue in this case. In most cases you are exactly right, but because of the sensitivity of this kind of thing, when there are dissenting opinions --

MR. SIESS: It was not dissenting opinions, Mike. It never reached the stage of being a different professional opinion.

MR. BENDER: It was not a formalized situation, but in fact the correspondence that I saw at least created an aura of circumstance that to my mind suggested that there was far from unanimity between the supervisory staff and the working level people.

MR. SIESS: That is right.

MR. BENDER: I know that anybody going back and looking at that would be conscious of whether it was sorted out properly.

MR. SIESS: Let us wait and look at the findings and see if you want to reference this someplace there.

MR. MARK: I would be awfully happy to have it referenced right here to the extent of saying that these have been taken into account in our findings.

MR. SIESS: I will insist if we do that that a similar statement be added to each of the paragraphs, because I think that the first part -- the material in paragraph 14 -- was taken into account in our findings with a great deal more weight than that in paragraph 15, and that the material in paragraph 16 was taken into account in our findings, intermediate between the two.

Now we could argue about the weight, but I do not think we can single out any one of these things as being taken into account in our findings any more than the other.

MR. MARK: Yes, we can, Chet, and, in fact, I think we should. Here we are referring to a couple of guys who are complaining or so. Now 14 and 16 we are much more nearly referring to facts and we should be sensitive, I think, to saying that we have heard from these guys. We have taken into account what they had to say. That is quite different from taking into account some regulation.

MR. SIESS: I do not see the difference.

MR. MARK: In this day's world, there is a difference.

MR. SIESS: I do not see it.

MR. MARK: You live in an isolated little place up there in Urbana.

MR. SIESS: No. If this had been a different technical opinion that had gone all the way up --

MR. MARK: If you were down at the World's Fair in Knoxville --

(Laughter.)

MR. SIESS: I think it gives entirely too much weight to this. I do not think it influenced our findings that much.

MR. MARK: Another possibility would be not to refer to it at all.

MR. SIESS: That is a possibility, too.

MR. MARK: But I think if we refer to it as it is here, it is really intriguing and then later we do not find out whether these guys had anything to say or not. Now I was agreeing with you entirely that they have nothing to say, but if we are going to mention them we have to in some delicate way say they had nothing to say.

MR. BENDER: Well, I think there would be something to that effect in that paragraph.

MR. MARK: That is a possibility.

MR. BENDER: I never was quite able to satisfy

in my own mind that I understood the relevance of what we were presented. We saw some correspondence. I guess my own view was that the question raised had more to do with the interpretation of the regulations than anything else.

But whether they were entitled to be raised and whether they were resolved properly I think really --

MR. SIESS: These were submitted to the consultants and the members and I am not sure whether we got written responses. John Langhaar sent us a written response. We discussed it at the meeting at Oak Ridge and I think we devoted maybe 20 minutes to it. We really did not ask the Staff to defend it, as I recall, and what benefit we got was primarily from reading it.

Now I would entertain a motion to delete it since it played a relatively minor part, in my opinion, in our review. To me it gave me some insights into how the Staff worked and the judgments they applied and how they interpreted the background they needed to interpret the regulations and stuff.

I got some feeling for how the Staff operated from it, but I would not object to taking it out.

MR. BENDER: I move we delete it.

MR. SIESS: Carson, do you agree?

MR. MARK: I do not absolutely agree. I rather think that is what is said here.

MR. SIESS: There are only two votes -- yes and no.

MR. MARK: Yes, I understand. I am aware of the difficulty. I do not know whether to second this motion or make a different one.

MR. BENDER: If there is no second, there will not be a motion, and that is all right too.

MR. MARK: I would prefer to leave the paragraph in, but add to it we have taken this into account in our conclusions, indicating that we did receive that information and we are aware of it --

MR. SIESS: I cannot buy that because to me everything we did was taken into account in our conclusions, and to select that more or less trivial item to make that comment bothers me.

MR. MARK: Well, look, rather than leaving this as it is, I would second Mike's motion to take it out.

(Laughter.)

MR. LANGHAAR: I wonder if it really is trivial because here were a couple of persons who worked for TCB who had the opinion that the application of the regulations was not proper. So it seems to me it was

incumbent upon this Subcommittee to take their comments into account.

MR. BENDER: Well, the main reason -- if we could put something in there that establishes relevance, I think that would help. The only thing that I could judge from what I saw was that the Regulatory Staff or the TCB Staff, supervisory staff, made a legitimate effort to consider or take into account the concerns of those people, and in doing so I think they did not turn out to agree with the points that were raised.

And I believe there was some management problem associated with the thing -- a personnel problem -- that had to be dealt with as well.

MR. ZUDANS: Our review actually did not call for arbitration in this type of decision, so taking it out would be all right.

MR. BENDER: And I guess what I am saying is I think if we are going to say we reviewed it, it was only to take into -- to determine whether there was adequate provision for dealing with differing opinions. That is about all I can say.

MR. SIESS: Sam brought me the minutes of the October meeting and we devoted two full paragraphs in the minutes. I had raised the question as to whether these differing opinions was the reason that Dick

Cunningham had asked us to review the activities of the Branch. We were never quite sure why you wanted us to do it, and we said gee, well, maybe that is why. So it turned out he was not sure whether that was the reason or not, but they were looking at all areas and they just looked at TCB and picked that first.

But to quote from the minutes, Dr. Seiss says he does not believe either the Transportation of Radioactivity Subcommittee or the ACRS Full Committee need to become involved in this issue of differing professional opinions, because the individuals who made the allegations are no longer with the NRC Staff.

Further, although NRC procedures provide for differing professional opinions be submitted to the ACRS for consideration and/or for possible resolution, we did not do so. However, he suggested that the consultants look at the technical issues raised by these two individuals and provide their opinions on the merits of these issues to the Subcommittee.

Now those are correct minutes, but what I said was wrong in that these had never become differing professional opinions. I am sure they did not go through that process.

MR. MARK: In that case, I wish to underline my seconding of Mike's motion that we not refer to it

here because we will do nothing but intrigue someone.

MR. SIESS: These did not go up through the whole process.

MR. CUNNINGHAM: Chuck, do you recall?

MR. MAC DONALD: At the time the second one was made, we had draft procedures with differing professional opinions. We followed those procedures.

MR. SIESS: The point I made was that within the procedures there was an appeal to the ACRS.

MR. MAC DONALD: Yes.

MR. SIESS: Mike moved we take it out and Carson seconded it.

MR. MARK: Yes.

MR. BENDER: We have talked about it.

MR. SIESS: It is in our minutes, gentlemen. We are not concealing the record from anybody. We are just not calling attention to it.

Let's go on. Paragraph 16.

MR. BENDER: This part of it is for Cunningham and I think we are more comfortable in not having it in.

MR. SIESS: Paragraph 16, instead of "And finally", it simply starts off "Our discussion with representatives of the industry were devoted chiefly to operational and Quality Assurance procedures.

Chem-Nuclear systems is the operator of the Barnwell waste disposal site and both owns and transports packages. The Nuclear Assurance Corporation manufactures, owns and leases spent fuel casks."

That is just to give some background. Is that correct?

MR. MAC DONALD: Yes.

MR. SIESS: "Our discussions with representatives of other NRC offices and with the DOT related chiefly to those aspects of the regulation of transportation that lie outside the scope of the TCB. However, in these discussions we attempted to determine the interfaces and communications between the TCB and the other offices or agencies."

MR. BENDER: I suggest in the first line taking out the "with," the third word from the end.

MR. SIESS: "Representatives of other NRC offices and the DOT." Done.

MR. LANGHAAR: Could we go back a moment to paragraph 16?

MR. SIESS: Sure.

MR. LANGHAAR: The Nuclear Assurance Corporation, it is my understanding, they do not actually manufacture spent fuel casks, but they procure them so I just wonder about that word "manufacturing."

MR. BENDER: That is a good point.

MR. SIESS: Can we just delete that word? That is, they are not a manufacturer and do not have to have a QA program for manufacturing?

MR. LANGHAAR: But they will procure, so if they do the procurement they either have to have a QA program or they have to make sure that whoever does the manufacturing has a QA program.

MR. MARK: Can this not be solved by "they own?"

MR. LANGHAAR: They own, they procure.

MR. MARK: If we just say "owns and leases," is that all right?

MR. CUNNINGHAM: That is an indication of their business.

MR. SIESS: I have changed it to say "Nuclear Assurance Corporation owns and leases spent fuel casks." That is good enough, I think.

Okay, now we are down to a heading called "Findings and Recommendations Regarding the TCB." There is a certain logic to this. There were the three items: The adequacy of the technical review to provide assurance that the existing regulations are met, the adequacy of guidance, and the adequacy of documentation. I have essentially addressed those three

plus some other things, but I tried to hit those.

The first paragraph is general. Well, it addresses the adequacy of the review. It says, "We find that the TCB is doing a generally excellent job of reviewing and certifying packages for the transportation of radioactive materials in accordance with the requirements of 10 CFR Part 71." One sentence; one paragraph.

"We find that the guidance to applicants and Staff is generally adequate in content but not in form. Part 71 is an exceedingly and unnecessarily complicated document. The fact that it is used correctly in most cases by both Applicants and Staff results more from their experience in its use and their understanding of its background and intent than from its clarity or organization. A proposed revision to 10 CFR Part 71 is now under review. Unless it is vastly improved in clarity, it will be difficult to use because there will be little experience with the new provisions it contains." And I am not too sure about that last sentence. There is no mention of Reg Guides in this connection.

MR. MARK: I had a thought when I read this and thought of slightly different wording in line 106. Results more from their experience, not so much in its

use as with the needs of the situation and their understanding, because 71 is a mere mess and the idea that they are skillful in using such a mess is an unwelcome compliment.

MR. SIESS: That is what we intend it to be.

MR. BENDER: If you just left out the "in its use," you would settle the matter well enough.

MR. MARK: That would do it for me -- "From their experience and understanding." That does it, you see, rather than how skillful they are in using Part 71, which no one should be skillful at.

MR. SIESS: Well, there is a limited number of people that have to use it, just like reactor licensing with 70 or 80 different organizations there would have been screams to high heaven by now. But the people that have to use Part 71 is relatively small.

MR. MARK: Well, I like Mike's suggestion to just striking "in its use."

MR. SIESS: I do not object to that, but I object to an implication you made that Part 71 is adequate because people know things beyond Part 71.

MR. MARK: The reason they know things is because they know them and not because of the help they get from Part 71.

MR. SIESS: Yes, and that is exactly what I am

finding a problem with, because what I am trying to address in this paragraph is the adequacy of the guidance in Part 71, not the adequacy of the review process by the TCB. We covered that in the previous paragraph.

My point is that I think Part 71 covers everything that it needs to cover and does give adequate guidance. But finding it is a little difficult. If you have got one of those decision charts, it helps. That is why I said "experience in its use," not the experience in regulation as such. That is covered previously.

This is supposed to address the adequacy of the guidance.

MR. ZUDANS: I think the key in that was the Reg Guide -- just a second -- that helped me understand it, because without that Reg Guide I would not have. Maybe that is what should be mentioned.

MR. SIESS: Yes, I think that is a deficiency here.

MR. ZUDANS: Oh, which one was it?

MR. BENDER: The Reg Guide is an interpretation.

MR. ZUDANS: Regulatory Guide 7.9.

MR. SIESS: What is the title of that one?

MR. ZUDANS: A Standard Format and Content of Part 71 Applications for Approval of Packaging of Type B Large Quantity and Fissile Radioactive Material.

MR. SIESS: You see, there is a whole package of Reg Guides. Are they all out?

MR. ZUDANS: This is the one that puts the whole thing in perspective.

MR. BENDER: Well, isn't that the one that says what is to be put in the SAR?

MR. ZUDANS: Yes. How to do it, which paragraph applies to what. There is also a chart.

MR. SIESS: Are all the Reg Guides issued active?

MR. MAC DONALD: 71.9 I think is the last one we have. The ones on the review process are the 71.9, the 71.6 and 71.8, which have to do with the stress allowables, load combinations and then Regulatory Guide 7.4 that has to do with leakage tests -- essentially, I guess, four out of the nine that directly apply to the review process.

MR. SIESS: Really, a lot of what I have got in here I am not to happy with and I am not too happy with the last part either. But I think the first sentence is important. It says the guidance -- well, really, the first two sentences. The guidance is

adequate and Part 71 is very complicated. But I think it should say that the Reg Guides provide a great deal of assistance or something of that sort and maybe let it go there.

MR. ZUDANS: The guidance really means this. I do not think you need to make reference to it. It is clear enough.

MR. SIESS: What I would like to do, if we can agree on it, is to sort of take the first two sentences there and then go on with reference to the Reg Guides. I think Part 71 could be approved and I do not think the current draft is that much of a change, is it?

MR. ZUDANS: Oh, yes. Yes, it is.

MR. MARK: I think it is longer.

MR. SIESS: The changes in the current draft are more in content than in format. Am I correct?

MR. HOPKINS: There are large format changes.

MR. MARK: How many pages in the new one compared to the old one -- a factor of five-thirds or --

MR. HOPKINS: Sorry, I do not have the foggiest notion.

MR. MARK: Well, if it should have been one-half, I think it would have been correct.

MR. HOPKINS: I can assure you it is not

one-half.

MR. SIESS: Look, gentlemen, what I would like to do --

MR. MARK: Is delete the third sentence?

MR. ZUDANS: No.

MR. SIESS: I would like to leave the first.

MR. MARK: The first, of course, and the second also.

MR. SIESS: And the second one refer to the current Part 71. Let us make that change to begin with.

MR. MARK: The current Part 71 is -- fine.

MR. SIESS: Now let us take out the next sentence.

MR. MARK: Good.

MR. ZUDANS: Why do you want to take it out?

MR. SIESS: Because I just do not want to get into that much detail.

MR. MARK: Now you are going to say a proposed revision?

MR. SIESS: No. Before I get to that --

MR. CUNNINGHAM: I find that third sentence rather useful.

MR. ZUDANS: Yes.

MR. CUNNINGHAM: I think Part 71 is going to

have to be changed substantially in the future in addition to whatever changes come out of this proposed revision to make it more clear. Certainly we have a limited population that looks at Part 71 now. That is going to expand in the future as we move into repository licensing and just a larger body of people must understand Part 71. I do find some statement like that helpful.

MR. ZUDANS: Plus, I also think that that sentence you could add a reference to Reg Guides. It is not only experience but correct use under the guidance that the Staff provides.

MR. BENDER: I think Zenon is making an important point because in fact Reg Guides are really what are being used to guide the industry now and not Part 71.

MR. SIESS: I am trying to write some words on that.

MR. BENDER: Could I go back to line two in paragraph 19 and just strike out -- suggest we strike out the "and unnecessarily" because I do not know that it tells much. The new document is going to be as complicated as the old one.

MR. SIESS: I am not sure it is necessary, though.

MR. BENDER: It may not be, but I do not see any way out of it.

MR. SIESS: We are writing codes and standards that are exceedingly and unnecessarily complicated. I make a strong distinction between something that is complicated and something that is unnecessarily complicated. There are some things that at just complicated, period. There is nothing you can do about it except write Reg Guides and decision paper.

And I am not sure that it is unnecessarily complicated, but it is my impression that it is. I would be willing to put a "probably" in front of "unnecessary."

MR. ZUDANS: It is easy to make that statement. However, if you say "unnecessary," then you have to be able to come back and point out which parts are unnecessary and that becomes more difficult.

MR. BENDER: You may not mean "unnecessary," and neither do I. I think the question has to do with whether we can make it more uncomplicated than it is. John was there long before we were.

MR. LANGHAAR: I am sure it could be made less complicated.

MR. ZUDANS: Okay.

MR. MARK: My suggestion is that a factor of

one-half should be applied to it.

MR. SIESS: There is a distinction --

MR. LANGHAAR: Reducing the complication is not necessarily reducing the size.

MR. SIESS: I make the distinction between the word "complexity" --

MR. BENDER: That is a bitter battle.

MR. SIESS: I make the distinction between "complexity" and "complication." "Complexity" is inherent in the nature of the problem. There are many different things and it is a complex area. The "complication" means difficult to understand, difficult to follow.

MR. ZUDANS: Yes.

MR. SIESS: Everything that is complex does not have to be complicated. Complex is the inherent multiplicity of things that has to be considered. You can reduce complexity, but you may not find that desirable. You may want something to be complex to cover a lot of cases, but it does not have to be complicated.

I use the word "complicated" here. Would you buy "probably unnecessarily complicated?"

MR. BENDER: Leave well enough alone, Chet.

MR. MARK: I still like Mike's proposal to

delete the last three words in line 106.

MR. ZUDANS: That is already done.

MR. MARK: The fact it is used comes more from their experience and understanding.

MR. SIESS: Again, I have been dealing with things like this for a number of years. We come out with a new ACI building code and the first two years we get complaints about how complicated it is. The people are not familiar with its use. By the time we get ready to come out with the next edition, which is six years later, everybody has found out where things are, what they mean, and there are no longer any complaints about it being complicated.

A couple of textbooks have been written, so experience and use tends to reduce the difficulties of complication, not the experience of the people, just experience in use. I can take the most experienced engineer in the country and give him a reformated code and he is going to call it complicated because it is new to him. So that is why I put it in.

Now here are some words I have got. I will read the whole paragraph, I think, the way I have got it and I will have to fix it up.

"We find that the guidance to applicants and Staff are generally adequate in content but not in

form. The current Part 71 is an exceedingly and unnecessarily complicated document. The fact that it is used correctly in most cases by both applicants and Staff results more from their experience and their understanding of its background and intent than from its clarity or organization.

"We note, however, that the interpretation of Part 71 is aided significantly by the several regulatory guides available. Moreover, the proposed revision to 10 CFR Part 71 is now under review." And I have stopped there. We could say we hope it is better, but --

MR. BENDER: I think that is a good place to stop.

MR. MARK: That sounds very good. I will buy it.

MR. BENDER: That is a good place to stop.

MR. SIESS: Let me get those words in there.

MR. ZUDANS: Chet?

MR. SIESS: Yes.

MR. ZUDANS: Is it possible for you to figure out a way to make reference to the guides right after, in line 106 where you say "their experience as reflected," or something of that nature, because that is an integral part.

MR. SIESS: I have got it right after the next

sentence.

MR. ZUDANS: Except that then it gets secondary emphasis and I think it should have the primary emphasis.

MR. SIESS: Where do you want to put it?

MR. ZUDANS: Someplace where --

MR. SIESS: I do not see how to put it into the middle of that sentence.

MR. ZUDANS: It is the most important demonstration of the Staff's experience in that field.

MR. BENDER: Are you thinking about some words like "more from their experience and from the interpretation of Part 71 in regulatory guides?"

MR. ZUDANS: Yes. I think that gives it more emphasis because I believe that is a key issue.

MR. SIESS: That is easy to say, but it is not easy to put in that sentence.

MR. BENDER: I am not trying to put it in that sentence. I am just trying to --

MR. SIESS: Right now, I have a sentence that comes in in line -- after "organization" in line 108. See, what I have done now is to say, you know, guidance is adequate but it is complicated and it works. But we note that the guides help a lot and there is a revision under review.

MR. ZUDANS: Let me try a shot as it. Suppose the fact that it is used by both Staff and applicants results from their experience and understanding of Part 71 background and intent as demonstrated by a number of Reg Guides issued in this area? It is not good English, but --

MR. BENDER: I think if you are going to do that, it ought to say "as interpreted."

MR. LANGHAAR: The Reg Guides do more than that. They do more than merely interpret the regulations. They go beyond the regulations. Would you consider, Chuck, that they are merely an interpretation?

MR. MAC DONALD: They give a basis, if you follow the particular Reg Guide, that would be found acceptable by the Staff. It is a means of complying with the regulation.

MR. LANGHAAR: And a method of application of the regulations, which I think is different from interpretation.

MR. MAC DONALD: Yes. I think we go sometimes to extremes not to say that this is the way one must present the information, but if you present the information in that format or style and cover those particular items, it would be acceptable to the Staff.

MR. LANGHAAR: As a matter of fact, the regulations state that the only real interpretation comes from the Legal Staff.

MR. ZUDANS: The Reg Guides provide the method.

MR. SIESS: I say something about Reg Guide. "We note, however, that the interpretation and implemention of Part 71 is aided significantly by the several regulatory guides that have been issued."

MR. ZUDANS: That is good.

MR. SIESS: Interpretation and implementation.

MR. SIESS: We still haven't figured out where to put that differently than where I proposed.

MR. ZUDANS: I take back what I said. I think it will be all right there.

(Pause.)

MR. SIESS: Okay, I have a sentence here. I will just stick it in.

Now, the next paragraph, the next two paragraphs relate to documentation, maybe the next three. I am not sure. It starts off, "We note two problems with the adequacy of documentation. In some instances, errors in the applicant's SAR have been allowed to go uncorrected if the TCB staff has found them to be unconsequential or if the acceptability of the design has been demonstrated by the staff's independent calculations. This practice permits an erroneous document to exist and could be troublesome if the same or another applicant tried to use or reference it in connection with another application."

We don't say what to do about it. It is obvious, I think, what you do about it.

MR. LANGHAAR: I wonder if the word "error" is the correct word to be used. There are sometimes changes in the applicant's SAR, changes that are required as a result of review, but they are not

necessarily representing errors.

MR. ZUDANS: I think in this case we are referring to errors.

MR. LANGHAAR: But even changes should be properly documented.

MR. ZUDANS: I don't know about changes, but we specifically in the Oak Ridge meeting --

MR. LANGHAAR: We found some errors but also changes that in my opinion did not represent errors.

MR. ZUDANS: But the staff did not base their licensing decision on the SAR. They did their own calculations, and they found things were satisfactory. They didn't go back and direct the applicant to resubmit an SAR with corrections.

MR. LANGHAAR: That's correct. There are errors, but there are also changes required by the NRC staff, changes required in an SAR or sometimes the applicant himself will make a change in the SAR which would not represent a correction of an error.

MR. SIESS: If he makes the change, that is all right. We are talking about things that aren't changed.

MR. LANGHAAR: But the final form of the SAR is one that should be on record, and sometimes it is not.

MR. SIESS: Yes. Now, that I don't remember we discussed. We were talking about leaving in existence erroneous SAR's. Now, in the reactor licensing, the applicant has to update its SAR and resubmit it. I just got one the other day. I had to turn it off before I got 60 of them, but I don't know what the procedure is here. That really was not our concern. I had assumed that somebody has a completed SAR corrected. Don't they issue amendments or something?

MR. MAC DONALD: Yes, there can be amendments to the SAR. As we looked at the comment, as we discussed it, we thought that there would be a section in the SAR that could be in error, but the staff would independently make a judgment or an independent analysis that that was correct, that when we did our safety evaluation report, that we should point that out in that report, that even though the applicant did a certain procedure or so forth, the staff took exception to that and would document that, and that would be one means of, say, correcting the SAR, or we would have the option of going back to the applicant to have him correct that particular section.

MR. SIESS: Yes, because I think that anybody who wanted to use a previous SAR would have to relate it

to the SER.

MR. MAC DONALD: Yes.

MR. SIESS: So it has to be documented either in the SER by an amendment or in the SAR, and that would satisfy me.

MR. ZUDANS: Well, it doesn't quite satisfy me. It doesn't quite satisfy what I perceive the role of an SAR to be. The role of an SAR in my understanding is a documentation of the adequacy of the design. The SER is only the review of the SAR, and if they do not believe the methodology the SAR presents, they may do an independent analysis, but I think a particular package is designed and described by the SAR. That's the way it should be, but it should be self-supporting. Someone else should be able to go to the SAR and review it without putting the SER in parallel to it. I don't think that is ever done anyway.

MR. SIESS: Yes, but if somebody has a new application and he wants to know how to do it, he picks up somebody else's SAR.

MR. ZUDANS: Then it had better be correct.

MR. SIESS: Not only that, but he ought to know what the staff liked or didn't like about it, and on what basis the staff found it acceptable.

MR. BENDER: It seems to me the way --

MR. SIESS: The concern was very clear. There are uncorrected errors. The staff said, if there was time available, he will tell the applicant to correct his SAR, but if it is going to hold up the review for no good reason, they will simply go ahead and let him get by without correcting it. What we are essentially saying is that we think you ought to correct it.

MR. ZUDANS: Yes. I like that paragraph. It is a key issue in the whole thing.

MR. ZUDANS: I think the question John has raised is a little different, and if we want to say anything about it, it ought to be an additional paragraph. That has to do with an updated final SAR, and not just with errors. If the staff finds they haven't done an analysis and they want them to do it, essentially don't you require that that be an amendment to the SAR?

MR. BENDER: I think Dick Cunningham wanted to make a comment.

MR. CUNNINGHAM: I was just going to say the difference between the word "errors" as opposed to "changes" is particularly significant. I think it is a very important point. I think this sentence ought to stand by itself, "correcting errors".

MR. SIESS: With specific examples.

MR. CUNNINGHAM: Yes. I can see the difficulties this would lead us into at a later time if these errors go uncorrected, even though we recognize them in the review.

MR. BENDER: I really don't think this is the place to decide whether to make a correction in the SER or the SAR.

MR. CUNNINGHAM: I think you made you point here.

MR. BENDER: We don't have to say it.

MR. ZUDANS: Okay.

MR. SIESS: Now, I said there were two areas, and this is the second area. It says, "There are many areas in which the staff can or must exercise judgment in determining whether a package design is acceptable. We are satisfied that these judgments have been made in a competent and professional manner and with appropriate conservatism. However, it is not clear that the bases for and existence of these judgments have always been documented for future reference. This has the potential for inconsistent decisions in the future as well as a loss of a basis for revising or clarifying the regulations."

I am a little bit uncertain about that last line. I propose tentatively to put a period after

"future". I had an idea that if there were enough instances where the staff had to exercise judgment and it could have been corrected by the Reg. Guide or changes in the regulations, that documentation might point this out. I am not sure I know the mechanism by which anybody would go through the documentation and find it. I suspect the staff sort of accumulates their knowledge as they do it and decides maybe they ought to formalize it somehow. It is more likely to be a Reg. Guide than a regulation.

So, I propose to delete the last line there and put a period after "future". Is there any objection?

(No response.)

MR. SIESS: Other changes, comments?

MR. BENDER: In Line 121, I would be happier if the word "appropriate" were changed to "adequate".

MR. LANGHAAR: I think that is better, too. I think it might be more required, but who cares?

MR. SIESS: I have no problem with that. I think either word is sufficiently poorly defined. That is what we call a weasel word. Anything else in that paragraph? Okay.

MR. ZUDANS: I think that the sentence before the last in Paragraph 21, the one that starts, "This has

a potential," I think this has to be replaced with something more substantial, like, "This practice," or "Such an approach," or "This section."

MR. SIESS: You are right, and I thought about that. Did I do anything? I am not looking at my marked copy. No. "This practice," or "This lack of documentation?"

MR. ZUDANS: Yes. Something more than "This."

MR. SIESS: Let's just make it "This practice." That is with a somewhat indefinite antecedent.

MR. ZUDANS: Maybe "Such practice" would be more appropriate.

MR. SIESS: "Such practice?" Okay.

MR. LANGHAAR: What practice are we talking about here, the practice of not documenting? Is that a practice, when you don't do something?

MR. SIESS: Yes. "This lack of documentation?"

MR. ZUDANS: Okay.

MR. SIESS: We can make it as detailed as you want.

MR. ZUDANS: Then you can say, "Lack of documentation," "Lack of such documentation." It becomes more and more comprehensive. "Lack of such documentation."

MR. SIESS: "Lack of such documentation." What we are talking about, I think, is a memo to file type of thing.

MR. ZUDANS: Yes.

MR. SIESS: Or SER type. Ideally it would be in the SER.

MR. ZUDANS: It is not uniformly lacking. It is just that sometimes it doesn't show up.

MR. SIESS: It says, "have always been documented." It wasn't clear that they had always been documented. Okay, are you ready for the next paragraph?

"We note that most transportation incidents involving potential exposure to the public resulted from deficiencies in handling of the transportation and not deficiency in the packages. We note further that the feedback to the TCB from package users and transporters, from IE, and from the DOT, is far from complete. We believe that more extensive feedback is desirable, and that the TCB should review the incidents or accidents with a view toward changes of package design that might reduce the probability of serious procedural errors. We recognize that it is not possible to design a foolproof package, but we believe that little attempt has been made so far in this direction."

MR. ZUDANS: Would this --

MR. SIESS: This does not address the point that you made earlier about feedback from receivers.

MR. ZUDANS: The last sentence I don't understand. I don't quite understand why it is there.

MR. SIESS: That can be taken out. We discussed at some point if you could design a package where you couldn't get a faulty gasket in it.

MR. ZUDANS: But it has no reference to what you said before, and it kind of stands out.

MR. SIESS: No, it does. "Package designed to reduce the probability of errors."

MR. ZUDANS: What does "little attempt" refer to?

MR. SIESS: To design one that way.

MR. ZUDANS: Design a foolproof package?

MR. SIESS: Yes. Or to design one that --

MR. ZUDANS: That is not true. We all try to design a good package.

MR. SIESS: Well, I am willing to take it out. Does anybody object to taking out the last sentence? I am not in love with it.

(No response.)

MR. ZUDANS: That is the only objection I have to your entire report.

MR. SIESS: Okay, let's take it out.

MR. LANGHAAR: Line 126 refers to "deficiencies in procedures," and I wonder if we are not also concerned about failure to follow a procedure. The procedure may be fine, but if it is not followed, we can still have the potential for exposure of the public and sometimes that happens. We have a good procedure, but somebody fails to follow it.

MR. ZUDANS: I think you are right.

MR. SIESS: I think you are exactly right, and that is sort of what I had in mind.

MR. ZUDANS: We are talking about the application of procedures.

MR. SIESS: Procedures are what they do, and to you it is what they --

MR. LANGHAAR: There was a little discussion a while ago about procedures and process.

MR. BENDER: I was talking about it for my purpose.

MR. SIESS: I have a fine distinction in my mind between quality assurance and quality.

MR. BENDER: For those of us that have been in the operating business a long time, procedures are written instructions on how you do things.

MR. SIESS: What do you call what people do?

MR. BENDER: Actions.

MR. ZUDANS: In Sentence 127, after "deficiencies," you should probably say, "result from deficiencies in following the procedures for handling."

MR. CUNNINGHAM: Or just "procedures" --

MR. BENDER: What are we working on now?

MR. LANGHAAR: Line 127.

MR. SIESS: First sentence, Mike. Dick says --

MR. CUNNINGHAM: Looking at Line 127, you could just delete the word "procedures" and say "results from deficiencies in handling and transportation, and not from deficiencies in design of packages."

MR. LANGHAAR: That would do it.

MR. BENDER: You might become a member of this subcommittee if you work at it hard enough.

MR. SIESS: "Deficiencies in handling." I was going to say we note that both transportation incidents resulted from this until we looked at it, I think. Well, that helps a lot, I think.

MR. BENDER: Let me offer a parenthetical remark that is relevant to the sentence we deleted. Some of these deficiencies go to the fact that not enough thought has been given to foolproof design, but I don't know that we can make that point here.

MR. SIESS: Well, it is really covered in the

preceding sentence, with a view toward changes that would reduce the probability of errors. That handles it. The last is pretty gratuitous.

Now, Zudans brought out the point earlier that we had discussed some, and it is not brought out specifically here about reports from receivers of packages. I thought we had made enough of that point in our discussions and in our minutes, that it was sort of subsumed in feedback from users, user, receiver, shipper.

MR. ZUDANS: The user shippers came in and showed us what forms and procedures they had. I think the significance of that lack of a form that followed the package that the receiver had to mark up kind of disappeared. I think they have a very, very comprehensive package paper that they use.

MR. SIESS: It is covered here. We talk about feedback from users. We are talking about users, transporters, IE, and DOT. Now, DOT is certainly going to feed back on transportation incidents. That is part of the system now. We recognize that. IE is supposed to feed back on their inspections and programs and so forth, but when we put users and transporters in, that is where the feedback has been -- you say it is there. You have got some pretty good indication of how formal it is. Are you satisfied with this?

MR. ZUDANS: It is all right.

MR. SIESS: Anything else in this paragraph?

(No response.)

MR. SIESS: The next one deals with Appendix E. It is a comment that I think nobody made but me once, and if you want to we can leave it out. "Appendix E to 10 CFR Part 71 contains requirements for quality assurance applying to design, purchase, fabrication, handling, shipping, storing, cleaning, assembly, inspection, testing, operation, maintenance, repair, and modification of packages. Since not all of the requirements of Appendix E apply to all of these activities, and since not all licensees will be involved in all of these activities, we believe that there would be merit in rewriting and reorganizing Appendix E to make clear what applies to whom. Alternatively, but not necessarily preferably, this could be done in one or more Regulatory Guides."

Are there any?

MR. MAC DONALD: That is what we are working on. It is ready for finals.

MR. GORDON: It is in the final process of being edited now.

MR. SIESS: All right. So let's put something in that they are doing.

(Laughter.)

MR. GORDON: 7.10.

MR. SIESS: When you get the Reg. Guide written, you can go back and rewrite the regulations so you don't need the Reg. Guide.

MR. BENDER: Is there any reason for not recognizing that this work is in progress so somebody won't be coming in and saying, why aren't you doing this?

MR. SIESS: They know we are doing it. Well, we are not sure what they are doing. I am not, anyway. If anybody wants to --

MR. BENDER: I don't want to press the point.

MR. SIESS: The last paragraph is a sort of a summary. "As indicated above, we found that the TCB is doing a generally excellent job. Our adverse findings are relatively minor, and our recommendations are for improvements rather than corrections. We that believe our favorable findings result in large part from the high degree of competence and extensive experience of the members of the TCB staff. They are professionally well qualified and the members in the various disciplines work well together to provide the necessary coordination of the review process."

MR. BENDER: I think I would -- maybe what we

found was minor, but I think that would be a matter of judgment. Why don't we take out that first phrase?

MR. SIESS: "Our recommendations are for improvements rather than corrections"?

MR. BENDER: Yes.

MR. SIESS: Now, gentlemen, this isn't intended to be simply a pat on the back to the staff with a warning that the reason things work well is because they've got good people, and the sort of suggestion that if you don't have good people, they are not going to work nearly as well.

MR. ZUDANS: It is certainly not predictable what would happen.

MR. SIESS: That is, they are not working within the kind of a framework that will work for anybody.

MR. ZUDANS: Did you take something out of this paragraph?

MR. SIESS: Mike suggested in the second line we begin, "Our recommendations are for improvements rather than corrections," that our findings are relatively minor.

MR. BENDER: I just thought maybe the "minor" --

MR. LANGHAAR: You are taking out the words

"relatively minor?"

MR. SIESS: We are taking out everything down to the second "our." It now reads, "Our recommendations are for improvements." Is that what you wanted, Mike?

MR. BENDER: Yes. I think that states it.

MR. SIESS: The "relatively minor," et cetera, has been deleted. Okay, now we are into the heading Overall Regulatory Environment. If anybody can think of a better subheading, I am open to suggestions. I didn't like the use of the word "Environment."

MR. ZUDANS: Procedures?

MR. BENDER: Process, really, is what it is. I think that might suit that particular heading.

MR. SIESS: I hate to dignify it by the word "Process."

MR. ZUDANS: But it is a process. It sits in some environment that is complex.

MR. CUNNINGHAM: I would say it is more structure than environment.

MR. SIESS: You like "Structure?"

MR. BENDER: I wouldn't argue with "Structure," although it is lack of it --

MR. CUNNINGHAM: Yes, but that is what we are talking about.

MR. BENDER: If Dick likes structure, he is

reading this letter, and he knows how it will have to be used. I wouldn't argue.

MR. SIESS: "Our findings and recommendations above relate only to activities of the TCB. This branch, however, has only a relatively small though important role in regulating the transportation of radioactive materials, and a substantial portion of our review was devoted to the roles played by others. Responsibility for regulating the transportation of radioactive materials was divided among several state, federal, and international agencies with widely different interests, concerns, and capabilities." That last one referred to DOT.

"Within the NRC, the responsibilities are shared with IE and OSP. IE is responsible for inspection of manufacturers of spent fuel casks and of NRC licensee shipping and receiving activities." Is that correct? Region 3 does the manufacturing, and it only deals with the licensees, right?

MR. MAC DONALD: Yes, the licensees.

MR. SIESS: "OSP is responsible for approving programs in agreement states and maintaining liaison with them. Research is responsible for writing and revising regulations and regulatory guides."

Now, I didn't include Research up there

because it is not a responsibility and isn't shared in the regulations and certain Reg. Guides.

MR. ZUDANS: But you have to include them because you detail three units, and only mention two.

MR. SIESS: Yes, I said, the responsibilities are shared with I&E and OSP. Research could be added up there. Let's put I&E, OSP, and Research. Let's get all three of them in. "The DOT is responsible for the regulation of the actual transport of packages and also for the specifications regarding certain types of packages. Federal Emergency Management Agency is responsible for actions following an accidental release of radioactivity from a package in transport. Several agreement states have complete responsibility within their boundaries for those activities not involving NRC licensees, and DOE's activities relating to the transportation of radioactive materials are outside the jurisdiction of any of the other agencies where strategic materials are involved."

I didn't define IAEA's activities, because I don't know what they are.

MR. ZUDANS: DOT also has the liaison responsibility for IAEA.

MR. SIESS: I didn't mention IAEA.

MR. ZUDANS: Maybe that should come in here.

MR. SIESS: Well, it is complex enough.

"Now, this dispersion and complexity of responsibility are statutory in origin, and there may be little the NRC can do about it. The NMSS staff is aware of the problems, at least in a general way," and that is referring to Dick's memo and what he had told us, of course, "but it is not clear that anyone inside or outside of the NRC has or could reasonably be expected to have a clear and complete picture of the full spectrum of activities in this area and of the effectiveness with which they are being carried out in actual practice.

"The divisions of responsibility and authority among the NRC, DOT, the agreement states, and the DOE do not seem to be clearly defined or understood in all cases."

MR. ZUDANS: I think "division" should be single.

MR. SIESS: "As one example, it is not clear who is responsible for the safety of interstate shipments involving DOE specification packages."

Now, this recognizes that NMSS knows there is a problem, but it sort of says, we are not sure that even they understand all the aspects of it, and I don't think anybody is going to until they start looking at it

in a lot more detail than they already have.

Now, the last two sentences I don't think add a heck of a lot. If anybody wants to delete them, I would be happy to do so. It just seems to be going on and on.

MR. BENDER: I think the last sentence doesn't help very much.

MR. SIESS: That was intended to go with the next to the last, when it says, "In all cases," and then we get down to one little case that we asked about that we never did get, I think, a completely satisfactory answer from the OSP, as to whether it is a pure interstate carrier, and he said, yes, he follows DOT regulations, but he doesn't have to, and we don't know what the states require.

MR. ZUDANS: But don't we really think that somebody should sit down and look at the entire process?

MR. SIESS: That is the next paragraph. I am just setting it up in this paragraph.

MR. LANGHAAR: The last two sentences of the next paragraph.

MR. SIESS: I am talking about the last two sentences of Paragraph 31.

MR. ZUDANS: Those are not needed. I agree

with you.

MR. SIESS: Does anybody object to deleting those?

MR. BENDER: The message is already there.

MR. ZUDANS: It is just a repeat.

MR. SIESS: Now we get down to the last paragraph. It says:

"We believe that a review of the entire regulatory process and organization in this area is needed. We recommend that the NRC undertake such a review, including at least the NRC offices involved and their interfaces with the other agencies, but preferably including all of the agencies now sharing responsibility."

Now, I don't see how the NRC can look at the whole thing.

MR. CUNNINGHAM: I would like a little bit of an expansion of that from the subcommittee, if it is possible.

MR. BENDER: I was going to suggest that you consider putting this paragraph which I wrote originally for Paragraph 24 in somewhere at this point.

MR. ZUDANS: That is exactly what I thought.

MR. BENDER: I think that would serve Dick's interests indeed.

MR. SIESS: Let's see what it is expanded to.

MR. CUNNINGHAM: Well, a few words on the objective of the review would be helpful. I have my own idea of what might be necessary, but if you could provide a few words which would explain what we would do with this review, so that we could perhaps better organize and structure it -- we have to have some objective in mind in the review. The review is, I suppose, to bring a certain amount of order to the extent that the NRC can in this rather chaotic system.

MR. SIESS: Dick, I don't know what the objective would be. That's the trouble. I think until somebody got into it, that they don't have much of an idea what could be done.

MR. CUNNINGHAM: Well, I believe you have hinted at some of these things in your paper here. One is more clearly defined roles between the various agencies. Perhaps a need to relegate to the individual agencies those things that they can do best from a technical standpoint and an administrative standpoint. I think there are a number of things that could be done, and you might -- I don't want to suggest to the subcommittee that they have already drawn conclusions that these can't be done, but I think if you can point out certain things we might look at, it would be

somewhat helpful.

MR. SIESS: I think I know what you have in mind, and I have some opinions of my own, but I really think that since we have given this recommendation essentially a sort of subordinate thing that says we have opened up a new can of worms, we really haven't looked at it that much. For example, I have some opinions. I think that packages ought to be concentrated in one area; split between DOT and NRC is ridiculous. I am not convinced that OSP looks at the state's activities in connection with transportation in the same light as they look at other activities.

I read a couple of their reviews of state activities, and I am not even sure it says if the state has to have requirements equivalent to Part 71. The list that they checked Part 71 was not a requirement. That was on one that I looked at a year ago. And yet I am not sure it is a great big problem anyway. The exposure to the public from shipment of transportation of radioactive materials isn't a real high priority, when I look at the history. There are millions of packages being shipped, and the things that have happened have been relatively negligible. So, I think we have taken too much time to try to give you that kind of advice, and I think as you get into it you will find

that out for yourself, and I will let other people get into it.

MR. CUNNINGHAM: I wasn't suggesting that you do further investigation. I thought the only possibility was if you could add a few words there as a result of what you have done.

MR. BENDER: I have some thoughts I think we ought to cogitate on a little bit. While I don't think that we can draw a conclusion about what the review will say, I think the nature of the review is worthwhile thinking about a little bit, and that is about what you are thinking, isn't it?

MR. CUNNINGHAM: (Nods affirmatively.)

MR. BENDER: Certainly a review of the relationship between the several organizations is appropriate, particularly those within the NRC's control, and certainly I guess my own intuition is that when the Part 71 regulation is altered, some of the responsibilities that may be put upon the licensees could be modified somewhat to account for the fact that you can't change the governmental process. It might be worthwhile to look at whether that is an alternative to changing what the government does.

MR. SIESS: I think what Dick is looking for, though, is something that would support some arguments

for a different division between the NRC and the DOT which I think is really the hard spot in this whole thing.

MR. CUNNINGHAM: That is one thing we are examining, of course.

MR. SIESS: The DOT has not gotten the capability of the NRC to do some of the things it is doing. The reason it doesn't have the capability is, it has a different priority. NRC doesn't think about anything but radioactive materials, and DOT looks at all the toxic materials, and their viewpoint may be more reasonable in one sense.

MR. BENDER: On the other hand, the NRC would have a difficult time managing much more than it is doing now.

MR. ZUDANS: There is no need to even suggest that the responsibility in transit should lay with the DOT.

MR. SIESS: But they have a package responsibility.

MR. ZUDANS: That is an historical thing. They don't license new packages now. The new packages are being built to the old specifications.

MR. CUNNINGHAM: There are a whole category of Type A packages.

MR. ZUDANS: Type A packages. Why would you be concerned about Type A packages anyway? I think what is lacking in this whole process is a polarization. If you looked from outside, you wouldn't know where to go to find your way through. There is no channeling. There is no single organization that has the last say-so. So, the definition is somewhat fuzzy as to where it ends.

MR. SIESS: The states in their regulation of transport, what we heard about the shipping transportation rules for states, what hours, what permits, and so forth, gets to be very sticky, because that requires some kind of a ruling on federal pre-emption, which we have for nuclear plants. It has gone to the Supreme Court once, but it is still not a settled issue. We just had a suit in the state of Washington. That, to me, the DOT-NRC division, can be, I think, worked out. As to which way it should go, I don't know. The state pre-emption business is -- I don't think it is helping public safety one bit to have a truck sitting there at a truckstop waiting overnight so that it can go across the state the next morning. The longer those trucks are on the road, the more possibility there is of exposure to the public. So, I think the thing is not working in the public benefit.

But these are things we have touched on so lightly, I would just as soon sign off now.

Mike, let's look at your paragraph.

MR. BENDER: I will read it, and it may turn out, after having massaged the whole letter, that not much of it is worth adding, but let me just read it as it is written.

"Although the above discussion indicates a need for improvement in the format and content of the regulations, there is no evidence that the public safety has been jeopardized by the imperfections. The TCB staff is conscious of the need for correcting such imperceptions, and has dealt with them in the regulatory process to the extent of its control. Much depends upon the inspection and enforcement aspects of the transportation regulatory program, and the I&E portion may need attention if there is a substantial increase in the volume of radioactive material to be transported under NRC regulatory control. The anticipated modification of the regulations and related regulatory documents should eliminate most of the identified documetary imperfections."

I know we don't need the last sentence any more.

MR. SIESS: Okay. But the first sentence has

a statement that I don't agree with. We didn't indicate a need for improvement. We said the content of the regulation was okay, it was the format. We already discussed that. It seems to me the point you are making here that has some bearing on these last couple of paragraphs is that in a review of the thing, the NRC should consider whether I&E activities should be changed substantially.

MR. BENDER: Well, I think that is a major point here. I wouldn't quibble about whether there should be a change in the content of the regulations. We chose not to look at the content. I think that was --

MR. SIESS: We looked at the content to the extent of knowing what is in there regarding requirements for accident conditions. We said we wouldn't look at the adequacy of those requirements, just how they were being applied. We looked at all of the accident conditions specified, and how the packages are certified. We looked at that. It seems to me the point you are trying to make here in connection with an NRC review, including at least the NRC offices involved, it says that we think that they should look at the I&E portion which is -- if there is a substantial increase in the volume. The I&E has two functions. Region 3 has

a better inspection program.

MR. MAC DONALD: Region 4.

MR. SIESS: Have I got that right in here? Yes, I've got it right. Region 4 has the inspection program. The other regions inspect licensees' QA programs. That is all I&E does right now, right?

MR. MAC DONALD: Yes.

MR. SIESS: You are talking about both functions of I&E?

MR. BENDER: Well, yes. I am talking about both functions of I&E, to the extent of saying that we know that their regulations say they are going to have a QA program, but there is very little that I can see in the regulation that tells you what the QA program should have in it.

MR. SIESS: That is in Appendix E and the Reg. Guide.

MR. BENDER: Well, it may cover that point.

MR. SIESS: That is TCB's job. That is not I&E's job.

MR. BENDER: The other has to do with Carson's point he has made a number of times. It is very limited in the way in which it receives information.

MR. SIESS: On incidents or on QA violations?

MR. BENDER: Incidents and QA violations.

Safety significant QA incidents are reported. I don't know if that is exactly the phrase he used. And others are not. And QA violations, as I understand, are not reported unless there is some release of radioactivity.

MR. SIESS: I think what came out was that whereas a reactor operator has to submit an LER on anything that violates a tech spec, even if he corrects it, that the shippers, for example, did not have to report things they found and corrected themselves. Didn't that come out in one of the meetings?

MR. BENDER: That's true, and receivers do not have to report anything that is not explicitly -- doesn't explicitly involve some kind of contamination or radioactive release.

MR. SIESS: These follow procedures that don't -- if they don't lead to anything, they don't get reported. I won't argue for the LER type system, which reports an awful lot of things that don't amount to anything, they just clutter up the landscape apparently, but again, there is nothing comparable to that here in terms of reporting things that could with enough feedback lead to some improvements either in the QA procedure or factory design or anything else.

MR. BENDER: My thought in writing this paragraph was more to draw attention to looking at that

area. I think maybe a sentence somewhere in here to deal with that -- it doesn't need to be this paragraph.

MR. SIESS: I am thinking we could add to the last paragaph a sentence which would say, "In a review of activities within the NRC, particular attention should be paid to the inspection activities" --

MR. ZUDANS: Chet, I think if you strike the last sentence in Mike's paragraph and the last two sentences in your 31, then what is left of Mike's paragraph would fit nicely between 31 and 32, with maybe some changes in wording.

MR. SIESS: I don't agree, because between 31 and 32 are comments on the general regulatory structure, and the first couple of sentences don't deal with the general regulatory structure. They deal with the TCB.

MR. BENDER: What I would like to suggest we do is insert a sentence between the first line in Paragraph 32 and the second, which has the following sentence, "We believe attention should be given particularly to the manner in which the regulatory process deals with the reporting" -- well, reporting is the wrong word -- "with quality deficiencies that arise during handling and shipping of materials."

MR. SIESS: Now, this is something that would go outside of NRC?

MR. BENDER: Well, it may --

MR. SIESS: It involves the states?

MR. BENDER: It involves at least the regulated industry. I am not sure that it has to involve the DOT and the states.

MR. SIESS: You see, the first sentence talks about the entire process. Then we talk about a review. What I thought you were saying was that in the review, the IE portion may need attention if there is a substantial increase in the volume of radioactive materials. I am looking at the words you have got.

MR. BENDER: Yes, and I believe that. As a matter of fact, I not only believe it, I know that it is necessary.

MR. SIESS: The IE portion is internal. I would prefer to say after we recommend that NRC undertake such a review, include at least the NRC offices, and then add "In its internal review, special attention may be needed to I&E if there is expected to be a substantial increase in the volume."

MR. BENDER: That would be all right.

MR. MARK: Explain --

MR. SIESS: You are really thinking of spent fuel.

MR. BENDER: I really am, because I really

think we haven't had very much of it yet, and also radioactive waste that is sitting there to be moved. There is a lot of it around.

MR. SIESS: You said NRC controlled high level waste, but I would think that if that is what we want, it belongs at the end.

MR. BENDER: I would be happy to have you try to develop some words. I am not married to mine.

MR. MARK: It would be a sentence which is in the middle of Paragraph 32.

MR. SIESS: I would put it at the end, after we say, undertake the review, when we say, "In such a review, we think it would be appropriate to give special attention to the Inspection and Enforcement aspects as" -- and I will try to develop some words. What I will try to do is pull out as much as I could.

MR. BENDER: I think you have the sense of it, and I would be happy to have you put it in there.

MR. SIESS: Okay, let's take a short break, and I will try to fix a sentence up for that, and we will come back.

(Whereupon, a brief recess was taken.)

MR. SIESS: Gentlemen, with regard to the report, there are still some things to be covered. First, in connection with the last paragraph, I want to try some wording, partially something that Dick Cunningham suggested and then what Mike has. Let me just read what the pragraph would sound like.

"We believe that a review of the entire regulatory process and organization in this area is needed in an attempt to more clearly define the role of each organization, and to adjust those roles as might be useful and practical. We recommend that the NRC undertake such a review, including at least the NRC offices involved and their interfaces with the other agencies, but preferably including all of the agencies now sharing responsibility.

"In a review of NRC functions and activities, we believe special attention should be given to the inspection and enforcement function if there is likely to be a substantial increase in the volume of radioactive material to be transported under NRC regulatory control."

The whole thing?

(Everyone nods in agreement.)

MR. SIESS: Okay. Let me take a second to put that in here.

(Pause.)

Now, I have a copy of a note here that John Langhaar sent where he raised another item or two. Let's see, in the last paragraph, John, do you think that is covered?

MR. LANGHAAR: That is already covered in your report, yes. And what I discussed in the first paragraph, I am afraid it's a little late to bring that up, but I did at least want to call it to the subcommittee's attention.

MR. SIESS: I agree that it is a little late. I wonder if it is not at least partly covered in the talk about documentation of judgments and things of that sort.

MR. LANGHAAR: To a certain extent it is. The point that I was trying to get at here is that there may be need for more guidance to certain reviewers and to applicants with regard to what is expected of them and what constitutes an acceptable demonstration.

MR. ZUDANS: Something like a standard review plan equivalent?

MR. BENDER: Well, I am in sympathy with John's view but I think it is a fact of life that human nature causes some people to pick at things that other people would say are unimportant. I don't know that you

can do anything about it except by administrative control.

MR. LANGHAAR: It is a matter of guidance, and I don't know what can be done about it either, but it is a matter of considerable concern, I have found out, to applicants and members of industry.

MR. SIESS: He asked about a standard review plan. Do you have anything like that? Have you thought of anything like that?

MR. MACDONALD: The closest we have come to that would be the Regulatory Guide 7.9, which is a format plan which gives the type of information we would like to see in an application. And then using that, essentially, to review an application.

MR. SIESS: I don't want to make a pitch for something like the standard review plan because I think it has some serious disadvantages. And to a large extent, the standard review plan for reactor licensing is written by the lawyers. It tells you how the paragraph has to be written, what kind of findings you can make before the hearing board and so forth. But the standard format certainly ought to help.

MR. MACDONALD: It does. And I think as we have looked at the reactor guidance, a lot of that is just the interaction within that organization of what

parts are done where, and to make sure that all the pieces come together.

Now, we do not have that particular problem in the transportation branch.

MR. SIESS: And it doesn't really tell you how deep you go into anything.

MR. ZUDANS: The standard review plan tells specifically what aspects technically will be reviewed. I think the main emphasis is on coordination because there are so many branches that need to be coordinated.

MR. SIESS: But it doesn't tell you the depth of the review. It tells you what you have to include. That is all going to be in the eyes of the beholder.

MR. ZUDANS: You can't get uniformity.

MR. SIESS: The point John made is that there is a change in assigned personnel during the course of a review and there could be inconsistencies. I presume it is really a case of a new man asking for more, not asking for less. Nobody every complains about that.

MR. BENDER: The reg guides would help John's problem some I think, because it states what is acceptable. But for the numbers of different kinds of cask designs that you might have to deal with, it might be pretty difficult to get anything that would have that kind of control.

MR. LANGHAAR: That is right, Mike. Another matter of concern to the applicants is that in some cases, a very detailed and costly analysis is being required for some detail of design that has no practical importance. And how do we get around that? I don't know.

MR. SIESS: Incidentally, --

MR. BENDER: If you get enough examples -- we could get enough examples around to look at.

MR. SIESS: Standardizing is one of the problems. The reg guides, as you know -- there are two kinds of reg guides, or there used to be. Well, there are still two kinds if you go back far enough.

But the original thought was that a reg guide was going to put down those things that the staff had found acceptable. And I used the past tense there very significantly. These are things that have been hashed out with applicants over a period of time, and in the process of give and take, the staff has said okay, this way of doing it is acceptable.

Now, that lasted for about two years. Then reg guides began to come out on what the staff would find acceptable, where it was not putting down on paper the things that had been established by precedent, but were simply statements of the staff's solution to the

regulations that would be acceptable. And there was quite a difference in those two.

It is obvious, if you look at reg guides the way we do, that some of them represent staff positions that the industry has never heard of, so they have not been worked out together.

It seems to me that in some areas at least in the certification of packages, there are things that have been found acceptable. And if those were incorporated in the reg guides, that would help a lot. That distinction got lost somewhere along the line -- what a reg guide was.

MR. CUNNINGHAM: I think it is coming back, though. I think there is a strong push to make reg guides just that, and not be a substitute for regulations.

MR. SIESS: Reg guides, of course, that ignore standards are the result of an interaction over a period of time as to what is an acceptable implementation of the regulations.

MR. CUNNINGHAM: Yes.

MR. SIESS: But a lot of them are de novo. They have given us a lot of trouble, and the industry a lot of trouble. They are useful ones. You have got them, I guess, to know what the staff will accept.

MR. CUNNINGHAM: Well, it is the development of the guide and how it is developed that is extremely important.

MR. SIESS: The earlier ones took a lot less time to get approved than the new ones, and that is part of the reason.

Well, John, you feel that we could --

MR. LANGHAAR: As I mentioned, I believe it is a little late to bring this up, so I am willing to forget about it for the time being.

MR. SIESS: We will make the staff aware of it.

Gentlemen, we have made some revisions of various sizes and shapes. I would suggest that we get this retyped with these revisions in it and pass it out later today for you to look at, and not necessarily go back through it item by item again. This isn't the full committee, and there will be time to get some additional changes in before the next full committee meeting.

What I would intend to do is have this typed up in what I would call a final form, single-spaced, et cetera, and submit it to the full committee with a letter of transmittal that would include our recommendation or suggestion or proposal, and the full committee could transmit this to the Commission with its endorsement to whatever extent they want to endorse it.

Endorse their confidence in the subcommittee or the thoroughness of the subcommittee, et cetera, et cetera. And that will come up at the September meeting. Is that okay?

MR. MARK: Look, it is okay with me. I am wondering whether Cunningham feels it is going to cover the case.

MR. SIESS: He said earlier that he felt it would.

MR. CUNNINGHAM: Yes, I think so.

MR. SIESS: Whether it is the full committee chairman to chairman letter or this kind of thing, you don't care?

MR. CUNNINGHAM: Yes. But I would that this report, through some mechanism, gets to us.

MR. SIESS: Oh, yes. The only alternative I can think of is for the full committee to write a letter and delete about two pages; rewrite the first couple of pages in the standard committee format and so forth, and I think that is ridiculous.

The committee has been looking for a way of putting more responsibility on the subcommittees, and, in effect, they have endorsed subcommittee activities in connection with reg guides and rule changes in the past. So I think that is an acceptable procedure.

MR. BENDER: More than likely, what is coming from the subcommittee will be similar to what is here. Does it cover all the substances you wanted, Dick?

MR. CUNNINGHAM: Yes, it really does. It --

MR. SIESS: I asked him if it covered too much.

MR. CUNNINGHAM: No. We started out to have it cover the functions of the branch, and that is fine. We were very pleased with that. Then it went beyond that and it covers the more broad picture that has become increasingly important, and I think that is just right.

MR. SIESS: Okay, gentlemen. The other item of business today is the proposed revision to Part 71. I would suggest that we break for lunch and take it up after lunch. Do you mind going to lunch this early?

MR. BENDER: No. Taking it up is going to be difficult, no matter when it is.

MR. SIESS: Dade Moeller will be here this afternoon, and Don, you will be running -- ?

MR. HOPKINS: Don Soberg and I.

MR. SIESS: Do you have a new decision table for us? Somebody brought in a decision table. We got it from an applicant, didn't we? I sent them some stuff on decision tables at the Bureau of Standards, and somebody brought in a decision table. You guys made it

up?

MR. MACDONALD: That is the ANSI standard.

MR. SIESS: Oh, the ANSI standard.

MR. HOPKINS: And the reg guide, too.

MR. SIESS: I always figure if you do a decision table before you write the rule, you come out with a better rule.

MR. MARK: I wonder, Chet, if I could ask Cunningham: there have been several references, and I have forgotten just where they pop up, with budgets' reduced capabilities, such as we would like to inspect more things than we manage to inspect, and here we are faced with the prospect of being able to inspect less. Things like that. How serious a problem is that?

Obviously, the inspection of packages, the inspection of things which are going on the road, is, well, the word "minimal" isn't strong enough. It is almost non-existent, and it is becoming less existent.

The capability or the hands in which to put reports, this package broke apart halfway between Tulsa and Oklahoma City -- there isn't a very good mechanism for it, even.

Certainly, you could say about that general aspect of things, because it is said and it is true, that while it sounds like a trivial problem to me, from

the public point of view, it is a serious problem.

MR. CUNNINGHAM: Well, I believe it is a serious problem. It goes, I believe, beyond just the public point of view. I think had we had better inspection -- not better inspection, but more inspection three years ago when the governor started shutting down these waste burial grounds because of inadequate packaging, just putting the package together properly in low waste burial grounds, that problem might have been avoided at that time.

We changed our regulation to bring increased inspection to bear on waste packages after that, and for a while it did work. Then after the crisis passed, we were hit by budget constraints and need for inspectors at other places. I think that certainly, we are looking at the whole transportation program, both within NRC and our relationships with other agencies.

I think one thing that will fall out of that will be some clear need for more inspection of packages and more reporting of incidents or trends or inspection findings by which we can see where we should packages or procedures related to those packages.

We are trying. We recognize that even in this day of reduced budgets if we go forth with any program, as I have indicated in that draft memorandum for the

Commission that is available to the committee, it is going to take more resources. That the Commission will have to face up to. We hope to get some of those resources by efficiencies in other parts of the materials program, but nevertheless, I believe that in the future, probably more resources will have to be devoted to this particular area.

MR. MARK: Could you say just a word about what we might be talking about here? At present, perhaps there are six guides or maybe a dozen, and more resources would correlate with what? An extra dozen?

MR. CUNNINGHAM: I don't have a number. I can't give you a number.

MR. MARK: I used numbers, but I didn't mean for you to answer it that way.

MR. CUNNINGHAM: Because of the way it is set up I can't give you a number now, but I think that it is not only a matter of resources but what we look at in inspection. I think we have got to do a better job in identifying the key places to conduct inspections and the key things to look at in inspections. It is not just merely a matter of a number of inspections; it is being more selective.

MR. MARK: No, but it is highly important. If we are talking of six people, we can think about it in

those terms. Are we talking about 100 people?

MR. CUNNINGHAM: Oh, no. When I talk about increasing resources, these increasing resources will be some fraction of the present resources. We are not talking about doubling the resources or tripling the resources.

MR. MARK: What kind of resources would you think of as being presently applied to this effort?

MR. CUNNINGHAM: Just the inspection of the total program.

MR. MARK: Inspection I believe is the main thing I was trying to picture.

MR. CUNNINGHAM: Al can give me a better feel for that because you see, one of the problems, it is hard to pin down the resources that apply to enforcement. If I take the materials program, for example, where people are putting together packages to ship their waste --

MR. MARK: Oh, look, the packages are swell.

MR. CUNNINGHAM: Let me explain the problem. An inspector will look at the packaging as part of his total inspection program at that facility. What fraction of time he spends looking at transportation as opposed to the other facility is hard to pin down. So the amount of resources you are devoting strictly to the

transportation activity is a little bit difficult to pin down, but I think Al can maybe give some feel for the total staff year resources in transportation.

MR. MARK: The impression I have is that packages are not the thing. They really work. The question is whether the lids are screwed on right.

MR. CUNNINGHAM: That is exactly what they are supposed to be looking at; quality assurance in putting these packages --

MR. GRELLA: I am Al Grella, Inspection and Enforcement. I think Dick has summarized it pretty well. What he didn't say is we do not have dedicated inspectors; we don't have inspectors solely for the transportation activities. Whether it is a fuel facility, a reactor or a materials licensee, the transportation aspect is integrated into the regular radiological safety inspections by that inspector of the facility.

So that he will look at transportation during the course of his regular inspections. And those inspections are based on the same priorities that are established for that facility.

It is difficult to put a number on resources. We have approxiately 50 inspectors who look at materials at fuel facilities. Some are on that order of

magnitude, and a somewhat lesser number probably that look at the rad safety factors in reactors.

Back in 1979 when the program was augmented, there were some staff years that were added to cover this increased look at transportation. The emphasis on the coverage of transportation at some facilities has been somewhat de-emphasized since that time, but it is now a regular part of the program.

As Dick was saying, I would guess that if there is any increase in the future it would be by giving it an increased priority and probably adding some staff years to the total effort. But I don't have any numbers, either.

MR. MARK: But the number is in the ballpark of some number not as big as 10, and if you increased it, you would be increasing it by some number, probably not as much as 10 staff years per year.

MR. GRELLA: Again, I am not sure of the number, but one could either do it that way or one could go dedicated inspectors. That is another option.

MR. MARK: Well, that sounds like a dull job.

(Laughter.)

MR. GRELLA: Another point is we don't have a policeman on every corner type program where we would attempt and try to inspect every outgoing shipment. I

believe the state of Florida has just passed a law whereby starting this fall, the state inspector is going to have to inspect 100 percent of every waste shipment going out of Florida.

MR. MARK: Out of? What about coming into Florida.

MR. BENDER: I expect TVA has part of that, too, after that labeling fiasco a while ago.

MR. MARK: We are talking about a few man years per year, which might seem worthwhile and required.

MR. GRELLA: Yes, I would agree. I think you could do an awful lot with not too many man years in terms of increased inspections.

MR. MARK: That was the reason for my question.

MR. CUNNINGHAM: Chet, I won't be here this afternoon for the Part 71 meeting. Since you are drawing your subcommittee work to a conclusion, I would like to take this opportunity to thank all of you. I know that it became more complicated as you got into it. One of the most complicated parts about it is that you have to understand the total picture before you can look at the activities of the certification branch.

And I certainly appreciate both your comments on the certification branch and your more general comments on the total picture, which I think, as you

understand, we have been devoting our attention to in recent months.

So I do want to thank you. I might way that I am very pleased with your conclusions on the certification branch work. I think your rather complimentary words you used will probably give me trouble when I will be hit for raises en masse.

MR. MARK: I hope you realize how unusual it is that there should be some complimentary words.

MR. CUNNINGHAM: Well, I don't have a lot of experience with the ACRS, but based on the experience I have had, I believe that is unusual. And I do appreciate it.

MR. SIESS: It may be all taken out before the full committee endorses it.

(Laughter.)

MR. CUNNINGHAM: I see. Then I won't have the raise probelm so much. But I do want to thank you very much.

MR. SIESS: We appreciate very much the cooperation we have gotten from everybody. I think we have gotten excellent cooperation from the staff and patience. We have extended this a lot longer than I thought we would. Everybody we needed here is here, and we got a lot more answers to questions than we

frequently get.

(Laughter.)

Okay. We will be back at 1:00 o'clock.

(Whereupon, at 12:00 noon, the meeting was recessed for lunch, to reconvene at 1:00 p.m. the same day.)

AFTERNOON SESSION

(2:15 p.m.)

MR. SIESS: The meeting will reconvene. The subject is proposed revision to 10 CFR Part 71, Donald Hopkins from the Office of Research.

How about giving us some history -- oh, you've got the history in there.

You're not going to use slides, just these handouts? Has everybody got the handouts? Sam passed them out earlier.

Okay, you've got the floor.

MR. HOPKINS: Thank you, Mr. Chairman.

What we have prepared as a brief introduction into whatever questions the Committee would like to ask consists of three parts. One is a short introduction which includes the primary changes which we are proposing to make in Part 71 for compatibility with IAEA. The second part of that would be the major changes since the proposed rule was issued in August of 1979.

So much for the short introduction.

The next thing would be a series of a few viewgraphs on the way in which changes were made to part 71 to resolve the latest comments from the office of NMSS, which I understand you have copies of.

And the third part of our prepared presentation is to present a short synopsis of the staff view on the ACRS comments thus far, which consist of the letter from John Langhar.

I do have viewgraphs to show for the listening audience, unless you prefer not to darken the room. They consist of the same things you have in front of you.

MR. SIESS: Who doesn't have the handouts, including the audience?

Okay. We will provide copies to everybody. Some of us read at this distance much better than we do off the screen anyway.

MR. BENDER: Some of us can't read, period.

(General laughter.)

MR. HOPKINS: This final amendment of 10 CFR Part 71 represents half the United States' efforts to implement internationally recognized transportation standards and domestic regulations. The other half, of course, is a parallel action by the Department of Transportation to amend its regulations in Title 49 of the Code of Federal Regulations. These changes are expected to be published and made effective together.

MR. MARK: Could I ask here, I had seen reading some of this stuff reference to forthcoming IAEA

standards.

Is that a certain and known thing, and when does it come, and to what extent do we know that that is going to happen?

MR. HOPKINS: The international standards are developed under the auspices of the International Atomic Energy Agency. They have made it a practice to consider changes to these regulations on a frequency of approximately ten years. The IAEA regulations which we are presently trying to implement are those which were put together in 1973.

MR. MARK: There are some new ones coming out within Europe now or something like that.

MR. HOPKINS: The new ten year review started in about 1979 and is expected to produce a new set of IAEA regulations in 1984.

MR. MARK: That is the kind of thing I was thinking of.

Now, what do we know about that from the point of view of knowing what is going to happen?

MR. HOPKINS: We know a great deal about it being as we participated in its development. We have drafts. We are working on the third draft now of the IAEA regulations, of which I have a preliminary copy. The official copy will be coming out later this year and

will be subjected to public comments in the United States, and the U.S. comments will be sent to the IAEA.

There is one final regulatory meeting that the IAEA will host, at which time the final rules will be sent to the IAEA Board of Governors for approval.

MR. MARK: Okay.

To what extent are we comforted that what is now being proposed by you or by us, by the U.S., us the Committee, will conform with what comes out in 1984?

MR. HOPKINS: We are not at all sure they will conform. In fact, there are likely to be changes in 1984 IAEA regulations which are not included in the regulations which we are now considering. For example, the IAEA is expected to adopt both the deep immersion test for packages, and a substantial crush test, far and above what we have in Part 71.

MR. MARK: We have proposed things of that sort, but not up to that level, is that it?

MR. HOPKINS: We have a shallow immersion test in the regulations, but it is nothing like the 200 meter test which the IAEA is expected to have in its regulation, and we have no accident crush tests in Part 71.

MR. ZUDANS: Is this the only incompatibility with Draft 3 that you have in your hands now, or are you

going to discuss those incompatibilities that exist between the new 10 CFR Part 71 and the Draft 3 you made reference to?

MR. HOPKINS: No, I didn't intend to discuss them in any detail. The Part 71 is not intended to become compatible with the 1984 revision of the IAEA regulations. It is intended to become compatible with the 1973 version.

MR. ZUDANS: That sounds sort of shortsighted.

MR. HOPKINS: Well, this draft was begun in 1972, when we first knew what the IAEA regulations were going to say.

MR. ZUDANS: Are we to be ten years behind all the time, or are we now ten years ahead?

MR. HOPKINS: Whether or not we stay ten years behind depends on what the policies are that our Commission adopts with respect to compatibility with international rules.

MR. ZUDANS: Of course, if you adopt an excellent set of rules, you could influence the IAEA to adopt them.

MR. HOPKINS: We do have great influence on IAEA.

MR. MARK: Are they likely to be more

prescriptive or limiting than the ones we are talking about now?

MR. HOPKINS: With the adoption of the new test, they would be more limiting, yes.

MR. MARK: Well, apart from tests. I mean, they would insist on tests which we do not at present insist on. But our practices might still be as good as the ones they are talking about.

MR. HOPKINS: That is certainly true, and people who can anticipate international transport with their packages recognize the need to satisfy both sets of regulations.

MR. MARK: I agree. There is a good reason for trying to meet both sets of regulations. We do hope to export stuff, and we are bound to have to import stuff.

Now, we can import it even if the packages are more demanding than our rules. We can't export them unless our criteria are as demanding as the rules.

MR. ZUDANS: Is it feasible just to have one set, such as an international set of regulations, and live by it?

MR. HOPKINS: Almost all the other major countries in the world live that way. The United States and Japan are the notable exceptions.

MR. ZUDANS: From what you have said, I conclude that it would be feasible for us to be part of the team as well and not have our own regulations, theoretically.

MR. HOPKINS: It is certainly my view that that could be the case.

MR. MARK: Now, as far as you know, the forthcoming IAEA regulations might be met by us by simply insisting on a couple of tests.

MR. HOPKINS: The two additional tests I think would be the major things which would separate us from the 1984 IAEA regulations. Our present procedure, by the way, since we are currently working to the 1967 version of the IAEA regulations, is to recognize we have different regulations than those enforced internationally, and for package to be used internationally, our package review team is willing to do an evaluation against the IAEA regulations and to certify that the package does in fact comply with the international regulations as well as our own.

MR. MARK: Now, where does this kind of discussion really come up? I mean, we may get some package from France, and we have to make sure it meets our regulations. But if we want to send something to France, we have to make sure that it meets theirs.

Where does this occur, on the dock or where?

MR. HOPKINS: In order for the package to be acceptably received in the United States, there must be a United States approval of the package design. This takes place within the Department of Transportation. Without the approval of the Department of Transportation, a foreign country could not ship a package into the United States.

MR. MARK: But I still got the impression that we could accept any package which IAEA said was okay, but we couldn't necessarily send the package.

MR. HOPKINS: This is also true. We do have a provision in our regulations and in the regulatory system which includes the Department of Transportation that any package which is approved to the standards of the IAEA by another national competent authority, foreign national competent authority, is welcome in the United States if it is approved by the Department of Transportation.

MR. MARK: Wow.

MR. HOPKINS: It doesn't necessarily have to satisfy Part 71. That is the crux of what I just said. As long as it satisfies the IAEA standards and is reapproved by the Department of Transportation, we accept it in the United States.

MR. CHAPPELL: Accept it for the import shipment, but the domestic shipment would require NRC approval and a certificate.

MR. HOPKINS: The transportation is issued only for export and import.

MR. BENDER: That means you could get it for the shipment dock at the coastline, to the shipment dock, at the coastline or at the airport, and that is where it has to stand until, a I understand it, you get something further to license it for domestic transport.

MR. HOPKINS: The import approval is for final destination within the United States.

MR. SIESS: It can't be reused.

MR. HOPKINS: You can't use it for reuse in the United States.

MR. BENDER: What are these additional tests we are debating? What are those two tests?

MR. HOPKINS: What are they? One is an immersion test which is strictly applied to spent fuel casks. The immersion is to a depth of 200 meters, and there cannot be structural failure of the cask. This is to protect the people who might recover casks from deep water loss.

The other test is a crush test, and the specifications of it are the dropping of a heavy weight,

the weight of which I don't recall, onto a package as opposed to dropping the package onto an immovable surface for impact. The crush test is to drop a heavy weight onto the package. And then, of course, it has to maintain its --

MR. BENDER: What is the motivation for that test?

MR. HOPKINS: The motivation is a recognition by a lot of people that the impact test does not provide adequate crush resistance for very light packages. Forces that you obtain from the impact test for very light packages does not measure up to that you could get by a crush from a heavier package.

MR. SIESS: You crush the package? We also looked at immersion for the package, didn't we?

What was the deepest lake in the U.S.

MR. MARK: Lake Superior, I thought.

Look, I am still interested in this.

To what extent and on what occasions would they not meet the provisions that we require? Skip the test business, but packages we might use would be found unacceptable, apart from tests, but I mean actually the fact. Are we using packages which they would say are deficient?

MR. HOPKINS: At the present time that is

certainly the case because our regulations are based on the 1967 international rules. The rest of the world is --

MR. MARK: Please separate, if you can. The regulation is the regulation. The package is the package. Are our packages weak and vulnerable compared to the ones they insist on, or would they pass the test if we thought or felt like applying it?

MR. HOPKINS: No, I don't think they are weak. It is just the standards by which they must be evaluated for international transport.

MR. SIESS: If they haven't been evaluated, they don't meet it.

MR. MARK: They would meet it if we evaluated them mostly? I mean, 250 meters, that is a trivial test.

MR. HOPKINS: The way to get an answer to that question I think would be to ask the Licensing Staff whether any of the packages, the U.S. packages they have reviewed against the international standards have failed to meet the test.

MR. MARK: Yes, I guess that is the kind of question I would like to hear a comment on.

MR. SIESS: Can somebody answer that?

MR. CHAPPELL: Well, I don't think we have a

deficiency in our packages. I think packages used in the United States are equal or superior to those used by other countries. One problem with the IAEA is that they have a number of prescriptions in their standards which we don't have which we don't regard as significant and are nuisance values. For instance, they have a requirement that a package not collect rainwater, which we don't have in Part 71. But that is not a valid reason for denying someone's application because of some kind of judgment that you don't collect rainwater, but because -- there are other examples, too -- but because we don't have those, we can't say that our packages meet international standards.

As far as the two drops, the immersion test and the crush test, those are proposed. They have not been adopted by IAEA, and no other countries' packages have been evaluated against those particular tests either.

MR. SIESS: Those are new requirements?

MR. CHAPPELL: Those will be new requirements they have adopted.

MR. SIESS: Let me get something clear. The IAEA covers all types of packages, normal conditions of transport and accident conditions of transport, or are we just talking about accident conditions?

MR. HOPKINS: It covers all packaging requirements.

MR. SIESS: Including what we call exempt packaging?

MR. HOPKINS: Yes.

MR. SIESS: This could be radiopharmaceuticals?

MR. HOPKINS: That is correct.

MR. SIESS: Or spent fuel?

MR. HOPKINS: That's correct.

MR. MARK: Do pharmaceuticals have to withstand a crush test?

MR. HOPKINS: In fact, pharmaceuticals have to withstand normal conditions of transport, which includes a crush test, normal stacking crush-type test.

MR. MARK: How about the immersion type stuff?

MR. HOPKINS: No, strictly spent fuel is to be subjected to the immersion test.

MR. ZUDANS: So, then I guess --

MR. SIESS: You wouldn't try to recover the pharmaceuticals, but spent fuel you would go after.

MR. ZUDANS: But your comment, the current set of working regulations is not different?

MR. CHAPPELL: That's true. The real

substance of our regulations is the same as used by other countries.

MR. ZUDANS: It might even be more stringent here than elsewhere, based on 1967 IAEA?

MR. CHAPPELL: I would judge it was.

MR. ZUDANS: So they are proposing a difference now, but they are not significant?

MR. CHAPPELL: There are some instances where we are already more conservative than IAEA. For instance, IAEA doesn't have the double containment provisions for plutonium. We are going to have LSA rules that I think are going to be more stringent for LSA materials than IAEA has.

MR. MARK: Chet, it seems to me that what I read about the Part 71 gave me the impression that we were going to catch up with the IAEA next year; that is, we were doing now what they were going to ask rather than doing now what they already asked 15 years ago.

MR. MOELLER: Yes, I wanted to pick up on that, too, because I agree with Dr. Zudans. Just to bring the U.S. up to 1973 is totally inadequate. In fact, in the written material we were given, I read and read about 1973 and was totally dissatisfied, but finally I found the following paragraph which satisfied me, and now I hear that what I read is incorrect. It

says that during September of 1980, the IAEA convened a new panel to look, and they are scheduling a 1974 revision of their they say transportation regulations, and I agree with Cunningham that they are not regulations but recommendations, but going on, the paragraph tells us that the objective of the revision of 10 CFR Part 71 is to make it compatible with the anticipated 1984 revision by the IAEA. It even goes so far as to say that the new NRC regulations will not include those IAEA recommendations from their 1973 proposal or '73 standard or whatever you wanted to call it that are expected to be removed by the newer revisions.

So I find I am totally confused.

Are we aiming for '84, or are we only aiming for '73? And if we are only aiming for '73, why was I given this written paragraph in a discussion of the revised regulations?

MR. HOPKINS: The two points you make are not incompatible. In fact, what we are doing is trying to make our regulations compatible with the 1973 version of the IAEA regulations which are in fact regulations, not just recommendations.

The paragraph that you are talking about there came about because of our advanced knowledge of what we

anticipate lthe 1984 regulations are going to be, and because of our influence, they are going to be more in line with the present U.S. regulations than they are with the present IAEA regulations. That is, '84 IAEA regulations are coming back toward what we think is the best prescription.

So what we decided to do, the NRC and DOT in concert, was not to impose in this current revision those rules which are in the 1973 IAEA regulations which are going to be removed in the 1984 version. What we are doing is not to impose in the short three or four year period new requirements which the IAEA is rejecting now.

We are, in fact, only trying to be compatible with '73, and we are taking into account some of the things we know in the '84 version.

MR. MOELLER: That helps me, but tell me about the fact you stated that the IAEA standards or whatever we want to call them are regulations. What makes them law? What is the title, as you read the title of the document?

MR. HOPKINS: The title of the document is "Safety Series No. 6 of the Atomic Energy Agency." It is entitled "Regulations for the Safe Transport of Radioactive Materials." I would like to just read from the first page of the document, which descibes the categories of IAEA safety series.

MR. MOELLER: Thank you. Do that.

MR. HOPKINS: It lists four categories of documents that the IAEA issues, the first of which is called IAEA safety standards, which is what this is. It reads, "Publications in this category comprise the Agency's safety standards as defined in the Agency safety standards and measures approved by the Agency's Board of Governors on 25 February 1976 and set forth in IAEA Document" -- and it gives the name, number. They are issued under the authority of the Board of Governors and are mandatory for the Agency's own operations and

for Agency-assisted operations. Such standards comprise the Agency's basic safety standards, the Agency's specialized regulations and the Agency's code of practice. They are distinguished by the wide red band on the lower half."

MR. MOELLER: Well, that is helpful because I obviously did not understand.

MR. MARK: Now, if we want to send some spent fuel to France, and I'm not sure we do, we would have to meet the IAEA's '73, '76 standard, and our packages would probably meet except they have never been dunked to 250 meters and therefore we couldn't send it. Is that right?

MR. HOPKINS: The only way you could send the spent fuel cask to France is to have the Department of Transportation issue an approval which says that that cask satisfies the international standards.

MR. MARK: You mean they do that off the top of their head?

MR. HOPKINS: No. After the NRC evaluators review that against the IAEA standards and certify it.

MR. MARK: But don't they have to send it down to 250 meters, if you can find someplace that deep?

MR. SIESS: No, you can do it by analysis.

MR. HOPKINS: Besides, the immersion test is

not yet enforced.

MR. ZUDANS: That is proposed for '84, and you are saying that won't be accepted.

MR. HOPKINS: It won't be accepted unless it can be satisfied to that immersion test.

MR. ZUDANS: In '73 the immersion test is not in. It is proposed for '84.

MR. HOPKINS: Correct.

MR. ZUDANS: You anticipate it is not going to fly.

MR. HOPKINS: I'm sorry?

MR. ZUDANS: It will not fly, it will not be part of '84.

MR. HOPKINS: It will be part of '84, yes.

MR. ZUDANS: Well, in that case your statement is not right, completely: "NRC in consultation with DOT has decided not to include in its final revision those requirements introduced in regulations in '73 which it expected to be removed from IAEA regulations in the '84 revision." Oh. These are not in '73. But that means that you still -- when you explained to Dr. Moeller, I felt that you really were shooting for total compability, but you are not.

MR. HOPKINS: That is correct, we are not. The paragraph that you and Dr. Moeller have referred to,

that is, the IAEA regulations which appear in the '73 version, will not appear in the '84 version which we are not including in Part 71, some further limitations on stress and some additional restrictions which the IAEA has as differences between BU and BM packages. These are ultimately being reversed in the '84 version, so we are not including them in Part 73.

Part 71, therefore, will not be totally compatible with IAEA 1973 because we are not including those things that are going to disappear, but they will be compatible in the main effect, that is, in creating a new system for identifying quantities, Type A quantities, which is the most important thing, and for distinguishing between Type B packages, between BU and BM packages, which is the next most important thing.

MR. MARK: Help me. BU and BM. I have seen it, I am sure, but it doesn't easily come to mind. What is the difference?

MR. HOPKINS: BU package, "U" stands for unilateral improval. The "M" stands for multilateral approval. The BU packages are much more conservative in design requirements and so the world is satisfied to let them travel on the basis of the approval of the competent authority at the origin of the package. All other packages, which have less conservative designs,

must be approved by all countries through which it will pass.

MR. MARK: A "BU" certification can be awarded by you or by DOT or by the U.S. State Department or by whom?

MR. HOPKINS: At the present time, only by the U.S. Department of Transportation after an analysis by NRC, TCB.

MR. ZUDANS: You explain in the text, you say designate as "BU" unless the package has maximum operating pressure and so on and so forth.

MR. HOPKINS: That is the only distinction we are making in Part 71. The present IAEA regulations have more distinctions, but in 1984 the distinctions are to be come less.

MR. ZUDANS: So they will become compatible with this?

MR. HOPKINS: Yes.

MR. ZUDANS: By the way, since we talked about this pressure, I cannot resist but to point out, you said you will make it metric, in essence. You are really not making it consistent with international set of measure units. There is no such thing as threshold of kilograms per centimeter. So you plan to take it to the SI system?

MR. HOPKINS: Not in this one. In the future we may have to.

MR. ZUDANS: Why not? It is such a simple thing.

MR. HOPKINS: We thought it was too much of a change to go from the English system to the international system in one step.

MR. ZUDANS: You state in the document that you will use the metric system and put the English system in parentheses. That is fine, but in the metric system you are not using a sign, you are using something that no longer exists.

MR. SIESS: What do you mean, it no longer exists?

MR. ZUDANS: Not the SI system.

MR. SIESS: Most of the European countries think they are still using metric. They are not using SI, not in my field, anyhow.

MR. ZUDANS: It is not so in the regulations, not so even in our own country. Our own national laboratories work with the SI system.

MR. HOPKINS: Certainly the term is not so unclear as to become a safety problem, the kilogram term.

MR. ZUDANS: I like kilograms because that is how I learned it in school, but Newton is impressive and

Pascal is even more impressive.

MR. MOELLER: You mentioned LSA materials, and I found I had some questions on that. Are spent resins from a nuclear power plant, are those LSA materials?

MR. HOPKINS: As you know, spent resins may be of many different degrees of radioactivity. Some of them could qualify as LSA materials, and some of them undoubtedly can't even in the present system. In the future system, which we expect within the next year, many more of them will not be able to satisfy it.

MR. MOELLER: I am not sure what all of my questions are, but I read that a spent resin did not have to be container-shipper packaged and did not have to be designed to undergo any type of an accident.

MR. HOPKINS: That is correct. Well, not specifically spent fuel, but LSA materials.

MR. MOELLER: Spent resins.

MR. HOPKINS: For those spent resins that qualify presently as LSA material, the packages do not have to be accident resistant.

MR. MOELLER: But if they are of a higher specific activity than LSA, they do have to be so designed?

MR. HOPKINS: That is correct. They only way they could be shipped is in Type B packages, which are

accident resistant.

MR. MOELLER: So that certainly makes sense. There is a sentence in the material that we were given May 24th, the memo from Bernero to others. At the bottom -- well, excuse me, it is an attachment to it, a draft from Dircks to the Commissioners. At the bottom of page 3 it says, "The restriction on air shipment of plutonium included in this rulemaking action was found to have no significant impact on the quality of the human environment when issued as a proposed rule in November of 1981."

What does that mean?

MR. HOPKINS: That is simply carrying forward the determination that was made by the NRC Staff with respect to the final issuance of the plutonium proposed rule. I believe the basis for it was that the orders which had earlier been issued by the Commission imposed these requirements on persons who ship plutonium by air so that the implementation of those orders in the regulations had no longer any significant effect. The effect had come about when the orders were issued.

MR. MOELLER: Well, I still don't understand. I thought it would have said that the air shipment of plutonium, because they had the new rulemaking, would be conducted in such a manner that it would have no impact

on the human environment. But it says the restriction on air shipment of plutonium will have no significant impact on the quality of the environment.

How does the restriction have an impact on the quality of the environment? I don't doubt --

MR. BENDER: I think they are saying it in an opposite way. They say it will have -- that is a legal answer to a question. If you don't ship any, you won't have any impact. Is that the interpretation?

MR. HOPKINS: That is certainly true. I don't think that was the interpretation there. I think the interpretation was that the impact both on the environment and on the industry, that is, cost on the industry and health effect on the environment, was made when the NRC issued its order back in 1975 that imposed the plutonium criteria, and that the mere fact that we exchanged the order for a rule had no impact. That was just an administrative action.

MR. LANGHAAR: Any impact that occurred occurred in 1975.

MR. BENDER: I got a legal answer but it wasn't the one I expected.

MR. MOELLER: If you interpret this literally the way Mr. Bender just said it, as I understand it it is saying that the fact we are going to restrict air

shipments of plutonium, that will have no impact on the quality of the human environment. I guess that means that although we are going to severely limit the number of shipments or the manner in which shipments can be made, it is not going to upset anything. But I still don't even know if that is right.

MR. HOPKINS: I don't think that would be correct. I think the restriction as it is being imposed has a considerable impact on the industry. It has somewhat of a health impact, a favorable health impact, and a rather severe economic impact to those who adhere to it. But the point, I believe, that was made here was that there was no further impact by us issuing this as a regulation over the impact that occurred when we required essentially the same thing by order.

MR. MOELLER: All right. Well, that perhaps I can then understand.

On page 4 of this same memo, or page 5, excuse me, the second line, it says, "States will require minor resources." I am taking it out of context. The previous sentence says "All agreement states and most non-agreement states have instituted that control," meaning the control of the transportation of radioactive materials." And then the final sentence says, "States will require minor resources."

Does it mean agreement states or non-agreement states or what? It is the second line on page 5 of the draft, the proposed draft memo.

MR. HOPKINS: What this is referring to is the way that the agreement states control transportation so as to remain compatible with the NRC control. This is a requirement for them to be an agreement state, and what it is saying is that the way the state does this is a relatively simple technique. All they have in their regulations is a requirement that their licensees comply with DOT regulations, in essence.

Now, what they will have to do is amend that rather simple requirement to refer to the new DOT regulations, and that is the minor resources we are talking about. If, in fact, they had to have a regulation that was compatible or was essentially the same as Part 71, it would require major resources to go through a rulemaking like that in every state. But in fact it is a relatively minor thing so it will require only minor resources.

MR. MOELLER: Is that for the agreement states and the non-agreement, or primarily the agreement states?

MR. HOPKINS: It is for whatever states control their transportation this way, and in fact it is most states.

MR. MOELLER: The state can control it without being an agreement state?

MR. HOPKINS: Yes, and they do.

MR. RAY: Control that part which is DOT controlled primarily?

MR. HOPKINS: Well, as you know, DOT has a statutory limitation on the extent of its control. It only controls shipments in interstate commerce. And the states almost in their entirety, almost all states, have a state requirement which imposes those DOT regulations to the further extent to cover also the intrastate transportation. So virtually all states, I think 50 out of 52 or something like that, have this requirement. All the agreement states have it.

MR. SIESS: We have 52 states now?

MR. HOPKINS: Forty-eight out of fifty.

[Laughter.]

MR. MOELLER: Help me again. Let's say I am in a state and I am doing intrastate shipments of NRC-licensed material, and I am an agreement state, so I guess I control it. If I am a non-agreement state, I thought you would control it or DOT.

MR. HOPKINS: Yes. Non-agreement states, all 50 of them, or all 50 of the agreement states, the DOT regulations do prevail. There are some limitations,

however, on the NRC jurisdiction. We don't control, for example, radium or other artificially-produced isotopes, so the non-agreement states also have what is a useful supplement to all the Federal controls by imposing the DOT regulations on the things which they control which neither we nor DOT control.

MR. MARK: You mentioned radium in there. We have no controls on radium?

MR. HOPKINS: No, absolutely none, to the extent I am aware of.

MR. MARK: Wow. Of course, not much of it is around.

MR. SIESS: Chem Nuclear said they couldn't accept it at their burial ground.

MR. HOPKINS: The limitation is historical. Radium was controlled by the states long before the AEC existed.

MR. MARK: I am aware of that, but how it fails to come into our present regulations -- I mean if I had it, I could send 10 curies of radium through the mail?

MR. HOPKINS: If it was not controlled by the state itself, by reference to DOT regulations you could, yes.

MR. MOELLER: Well, I thought DOT regulations

-- I remember this report, 30 years old, that Grobely Evans wrote, who chaired the Committee on Transportation. I thought it applied to all radioactive materials. You are saying it did not?

MR. HOPKINS: Yes, but only in interstate commerce, and the congressmen writing the Atomic Energy Act limited us so that we do not control radium. So both Federal jurisdictions in combination do not cover the whole picture.

In further answer to your question, there are post office regulations that limit what can go into the postal system.

MR. LANGHAAR: In that case, Don, should radium be included in this table?

MR. HOPKINS: It is included in this table because it is included in the IAEA tables, but we have no jursdictions over it. It is not an effective control. I guess there is some control that we think we exercise over radium, and perhaps that would apply to Transportation as well.

In Part 20 we say that our licensees cannot exceed certain exposures due to controlled material in combination with uncontrolled materials. That is, they have to limit the exposure of the controlled materials so that the dosage from that controlled material do not

exceed the limits in combination with the doses that come from uncontrolled material.

You may say that that same kind of argument applies here, but it is something that has not been proven in the system, in the legal system.

MR. ZUDANS: This is where you have some controlled material. That is interesting. I would hope that we were more definitive. It seems like there is still lots of diverging directions. It is very difficult and really not less confusing.

MR. HOPKINS: No, that doesn't add to the lack of confusion.

MR. SIESS: Just think how interesting it would be if we had IAEA regulations on nuclear power reactors. There are some diverging opinions there, too, I think.

MR. ZUDANS: Maybe I am less concerned about this projected inconsistency between '84 IAEA and the currently proposed 10 CFR Part 70, as I am more concerned about things like the NRC does not control things like radium. It makes really very little sense.

MR. SIESS: Don't start applying new criteria to the regulations. Making sense is not a requirement.

MR. ZUDANS: I guess you are right. Maybe we should figure out why it takes longer to write a

regulation than it does to build a nuclear plant. When did you say you started on this, Don, '73?

MR. HOPKINS: Late 1972. What makes it takes so long is there is not an NRC commitment to adopt international rules. Until we have that commitment, it will probably take us ten years to catch up each time.

MR. SIESS: The only alternative would be simply to adopt the IAEA rules.

MR. HOPKINS: Many countries do this. They have statutes which require them to adopt the international rules as soon as the international rules are adopted by IAEA.

MR. ZUDANS: And this is not without having an influence on the national rules, because you fight for it just like other countries do.

MR. HOPKINS: That is correct.

MR. SIESS: But NRC does not give in when they lose.

MR. ZUDANS: They just issue a reg guide, right?

MR. SIESS: That's right.

[Laughter.]

MR. SIESS: A commitment to do what you said, Don, would have to come from the Commission; is that not correct?

MR. HOPKINS: That is correct, and actually it would not be a new commitment, it would be a commitment to satisfy the provisions of the Trade Agreements Act, which says that we must do exactly that, but we don't treat it with much respect, I am afraid.

MR. SIESS: DOT doesn't either.

MR. HOPKINS: On the contrary, DOT does. They take this chore very seriously.

MR. MOELLER: To what degree has the delay been responsible due to the trying to coordinate things within the NRC? Now, I note here that NMSS is responsible for the program area management, RES is responsible for research, I&E is responsible for inspection.

MR. SIESS: You should have been here this morning.

MR. MOELLER: I don't see how you ever get it coordinated within the NRC.

MR. SIESS: That is Research's job.

MR. HOPKINS: I am beginning to wonder about that myself.

MR. MARK: What makes you think that they are?

MR. HOPKINS: Most offices, they don't have difficulty with the Part 71 revision. The main differences are between ourselves and the licensing

staff, and of course, the licensing staff must be satisfied because they are the ones who have to implement these regulations by issuing package approvals.

MR. MOELLER: You perhaps covered it earlier today, but does someone compile LERs or something comparable to that in terms of shipping?

MR. SIESS: That has been the subject of several of our discussions, and I rule you out of order.

MR. MOELLER: Okay, thank you.

Well, could I ask also how well they are coordinated with DOE? I notice here it says transportation, technical environmental information center index. Has that been discussed?

MR. SIESS: No. I got that about two weeks ago and read it over the weekend, and I couldn't see much in it that was very useful. A bibliography is all it is. It tells you where to go to look for something about automobile crashes or railroad accidents, and I am sure that -- the modal study contractors must be using it.

MR. MOELLER: Well, it also claims that they can tell you the environment, every aspect of the environment that you anticipate.

MR. SIESS: If you read further, it only gives you references.

MR. MOELLER: Yes.

MR. SIESS: They can't tell you anything. They can just tell you where to go to read stuff.

[Pause.]

MR. SIESS: Where are you, Don?

MR. HOPKINS: To follow up on one question, as far as our just now becoming compatible with 1973 international rules and whether it is foolish of us to undertake this, I would like to point out that once 1984 rules are issued, it would be three additional years before we could implement those in our regulations, so we are really talking about 1987 when the new regulations would show up in the United States.

MR. SIESS: Do you have any concern that the health and safety of the public in the United States is affected by these lags in implementing IAEA regulations?

MR. HOPKINS: No, the issue is not health and safety; it is one of being able to make shipments with the least amount of interference.

MR. SIESS: Well, that is not a safety question; that is a commercial or trade communication type of thing.

MR. HOPKINS: That is correct.

MR. SIESS: How many of the comments you got were related to these questions of international

shipments? What proportion thought this would help and which thought it wouldn't?

MR. HOPKINS: Are you talking about internal comments or public comments?

MR. SIESS: Public comments. Internally I wouldn't expect comments to relate to anything except health and safety, considering the mission of the agency, or the common defense and security.

MR. HOPKINS: As a result of our publishing the proposed rule in August 1979, the primary health and safety questions we have received had to do with the low specific activity rules. The rest of the changes are not so substantive that the level of safety was changed in any way or in any significant way.

MR. SIESS: I really meant in terms of international shipment other than health and safety. I would expect the industry to have commented one way or the other on that.

MR. HOPKINS: I would expect probably half of the public comments were comments having to do with the international aspects of shipping.

MR. SIESS: How many were favorable?

MR. HOPKINS: All comments were favorable in adopting the new rule. They were supportive.

MR. MARK: Gee. That gives me an interesting

feeling.

MR. SIESS: That doesn't mean they are perfect.

MR. MARK: That means the old one was bad. I'm looking at the new one.

MR. ZUDANS: But you see, the new one will still not eliminate the need to go do another parallel process to qualify the package by certain international rules, because there is no total comparability. It is not intended.

MR. HOPKINS: But it is intended to get much closer.

MR. MARK: Now you, I presume, are here to defend the rule that we have got in our hands.

MR. HOPKINS: I believe that is correct. I am not here alone, though. I don't make these decisions by myself. I am not the sole processor of decisions but the licensing folks help me make many of them.

MR. MARK: Chet, I don't want to screw up the progress here, but --

MR. SIESS: We have a number of ways to approach this. As Don indicated, he has got slides here to discuss what the major changes are. I want to discuss the NMSS comments and how they are being resolved. We could dispose of that by asking NMSS if they are satisfied, and if they are, we could say that

is good enough.

And then he has got some -- well, you have got quite a bit on the NMSS. Then John Langhaar sent in a number of comments to us in the same category as those, the comments from the Subcommittee.

MR. MARK: I suspect the things --

MR. SIESS: Would you like to go through the other items?

MR. MARK: The things that troubled me are probably the responsibility of someone in NMSS because I don't understand the correlation between enrichments and amounts. It makes absolutely zero sense. And the numbers which are attached to them might have been drawn out of thin air, and they evidently were.

MR. SIESS: Let me first see if I can dispose of one aspect. Where do you stand in relation to NMSS comments?

MR. HOPKINS: We have found ways to resolve all of the NMSS comments.

MR. SIESS: Is NMSS satisfied?

MR. MAC DONALD: Yes, I think we are. I believe we still may have some discussion on the reporting of packages defects, and early reference to Part 21 will in fact take care of that concern.

MR. SIESS: Okay. Well, let's say we do not

have to go into that in any detail unless somebody here has a comment that relates to one of those. We could separate those comments out from ours.

And now let us just go into the Subcommittee's questions and our comments. We have got three Subcommittee members and two consultants. Research has had the benefit of John Langhaar's comments in writing, and they are prepared to address those one by one. I would propose that we do that at the appropriate time. I will start it on my left, as we usually do, and ask the members to go through their comments rather than to try to go through this page by page.

MR. MARK: Well, Chet, I do have some questions.

MR. SIESS: They can be questions or comments.

MR. MARK: I am not sure to whom they should be directed.

MR. SIESS: We have people from both groups here.

MR. MARK: I can't believe Research came up with these ridiculous numbers, so it must have been NMSS, or it could possibly have been IAEA. I am looking in particular at Table 1, permissible mass of uranium 235.

MR. SIESS: You are looking at the current

draft, right?

MR. MARK: I am looking at page 48 of the draft that I have. Now, I had thought of 10 CFR 71 having something to do with transportation safety, concerns about, you know, the packages and what would happen in the middle of the Atlantic and things like that. But obviously, these permissible amounts of U 235 have nothing whatever to do with that.

If they have anything to do with anything, it must be in some imaginary world in which they are worried about proliferation of nuclear weapons, perhaps, something like that. It has nothing to do with transportation. I don't see why the numbers are here nor why the numbers that are here are those numbers. Three hundred grams of U 235. Even NMSS can't make that critical if they stir it around with water. Research couldn't. So what is it? Is it a proliferation kind of number that snuck into this that has nothing to do with safety?

MR. HOPKINS: No. In fact, we control not only package integrity such that will withstand normal and accident conditions; we also control the package contents, for several reasons. One, so that it doesn't develop so much heat that it will burst the package from within. Another is so that it doesn't have so much

radioactivity that the outside radiation levels would be too high. And we also control fissile materials so that there is virtually no chance in combination of a number of fissile material packages. There could be a criticality incident. That, in fact, is the purpose.

MR. MARK: I agree that 300 grams of U 235 could make it critical, but to have 200 grams total, you can't possibly make it critical. You can try as hard as you like.

MR. HOPKINS: Table 1 refers to the critical mass in fissile Class II package. That is such that you take an individual package and assign a transport index number to it. Carriers during transport can have up to 50 total transport index in a single vehicle, so that if a single transport package had a count of 1, 50 such packages could go into a single transport vehicle.

What we are saying here is that you cannot have any more Uranium 235 in a single package such that if you had not 50 but 250 in a single vehicle, it would still be subcritical.

MR. MARK: Okay. So 0.92 percent enrichment. I think you are going to have probably 5000 packages on the same plane, if you could carry them, with 1200 grams of U 235 per package, because you can't make them critical no matter what you do. Why is the table

carried that far? Just one step more and you would be back to natural uranium.

MR. HOPKINS: Well, as you probably know, the regulatory staff is somewhat conservative in the way they evaluate things.

[Laughter.]

MR. SIESS: What is the transport index for packages that have that 0.92 enrichment?

MR. MARK: It must be .0001 or something.

MR. HOPKINS: The transport index, which corresponds to Table I, as you can see in the title of Table I, it refers you back to the Section 71.20(b)(6)(i), and (d)(6)(i), which is on page 47 of this draft talks about the amount of uranium 235 which could be put in one of those packages. The transport index which corresponds to the amount of fissile material specified is required by Paragraph 7 on that same page. It says the transport index of each package based on criticality considerations it taken as ten times the number of grams of U 235 in the package divided by the maximum allowable number of grams per package in accordance with Table 1 or Table 2.

MR. SIESS: Can we take that example and figure what it means?

MR. MARK: This is about one percent. You can

have 1200 grams per package, so we will multiply 1200 grams by 100, and we will get 1.2×10^5, and probably a plane is going to be in trouble if it had all that packaging in it.

MR. SIESS: Let's see. Ten times the number of grams divided by the maximum allowable number of grams per package? Okay.

MR. HOPKINS: You have to know what you are proposing to put in the package.

MR. SIESS: I'm taking the .92 percent.

MR. HOPKINS: And we are going to put 1200 grams in each package?

MR. SIESS: That is what you allow, right?

MR. HOPKINS: Correct.

MR. SIESS: So the transport index --

MR. MAC DONALD: That table does come from the IAEA recommendations. It is essentially a table that gives you a general license in which one may put that quantity of fissile material in the package without submitting an analysis to show that you do not have a criticality hazard in transport.

MR. MARK: You can't have a criticality hazard with 0.92 uranium regardless of how many grams you have.

MR. MAC DONALD: Unless you have graphite with it.

MR. HOPKINS: Or you are shipping it in water.

MR. SIESS: The package index would be 10?

MR. HOPKINS: That's correct. They would be allowed to have five such packages together in a vehicle to reach a total transport index of 50.

MR. BENDER: I have been trying to figure out a way to understand what the impact of the changes really are going to amount to. There are these things that are being proposed just to make international regulations and our regulations calibrate. What else is going to happen?

MR. HOPKINS: I believe we made the statement somewhere in the preamble to the rule that we do not anticipate a higher level of safety to be achieved by this, only to achieve compatibility internationally.

MR. BENDER: How about comprehensibility? It is all right to use that term. Chet?

MR. HOPKINS: Is that the same as the inverse of inscrutible?

MR. BENDER: Well, in a way it has been used that way. People have said these regulations are difficult to understand and interpret and that they were going to concentrate on simple English.

MR. HOPKINS: Plain English.

MR. SIESS: I do not think plan English. It helps some, but not that much.

MR. HOPKINS: I would like to offer the comment that this regulation has been through the NRC's auspicious plain English review. It is now written in plain English to the best of the NRC's ability.

MR. BENDER: So further clarity is not in the offing?

MR. HOPKINS: No, not unless you have some very good suggestions.

MR. ZUDANS: Do you plan to flowchart it?

MR. HOPKINS: A flowchart was a suggestion. You might have noticed that way back in the beginning under 71.0 we now have an explanatory paragraph. 71.0(d) explains the system a little bit -- page 31.

MR. ZUDANS: It would be useful to flowchart because when you try to follow that case through you have to follow paragraph to another chapter, another chapter.

MR. SIESS: There was a flowchart before. There was a flowchart in the ANSI and someone handed one out once.

MR. ZUDANS: There was one flowchart. That was very useful -- the one for the old regulation.

MR. HOPKINS: A flowchart might be useful for the individual example, but to try to flowchart all the multiple decision you would have to make in a whole regulation would be much more confusing than the regulation itself.

MR. BENDER: May I make the following interpretation? I heard Dr. Siess comment a moment

ago. Having worked on the ACI code activity for a while, we found out if you let the code be used for a couple of years people get used to using it and they will understand it. Is that the principle you are following here -- that people will use the standard enough so that they will understand it even if it is difficult to interpret?

MR. HOPKINS: It is certainly true that the transportation system in itself is not an easy thing to understand and to go through the regulations to follow what is required in the regulatory sense for the transportation system is very difficult at first. It is not something which we would expect you folks as relative amateurs, no matter how intelligent you are, to be able to find easy to understand the first or second time through.

There are a number of licensees who have been using Part 71 to years and, as you pointed out, they like the present Part 71 just the way it is. One of those guys is sitting right behind you.

(Laughter.)

MR. SIESS: I got my way through the present Part 71. Are there changes in here that would make me find it harder to find my way now, or are things roughly the same way they were before -- just different numbers

in some cases?

MR. HOPKINS: Generally speaking, the layout is the same as it is at present. Some of the big changes are that things which we had as appendices before and were easy to find as appendices are now parts of the regulation and much more difficult to find. The reason for this is the general government requirement that you no longer have appendices, which, however dumb it is, is something we are required to follow.

MR. MARK: How many pages are in this one compared to the other one plus appendices?

MR. HOPKINS: Sorry, I have no way to make that.

MR. SIESS: You could get around that last thing just by putting a number of sections at the end and not calling them appendices.

MR. HOPKINS: We do. We include them in the body of the rule.

MR. BENDER: You put them in as footnotes. That is not ruled out.

MR. MARK: I would like to come back, if I may, to this wonderful Table 1, which obviously maybe comes from the IAEA.

MR. SIESS: And it is conservative. Don't forget that.

MR. MARK: Oh, yes, it sure it.

Now Table 2 differs from it. That is in case you have a uniform distribution, although the difference between the uniform and non-uniform is no where I have found explained. Anyway, if I just insisted I got a uniform distribution, I could get 800 grams of U-235 at 1.35 percent, whereas if I got a non-uniform distribution, I could only send 320.

Now is there a logic that would allow me to understand that?

MR. HOPKINS: I think it is common knowledge that you can get criticality better with non-uniform distribution than you can with uniform distribution. That is what you have in a reactor, for example.

MR. MARK: Well, possible. But if I stick in a little boron-rex and have a non-uniform distribution I cannot send as much U-235 as if I had it all in one piece.

MR. HOPKINS: It is true that Table 1 in the general license and the general license at Table 2 is not for the ones that want to do thing their own way and take advantage of the things you can to prevent criticality. This is for simple people who can afford to use the conservative assumptions that are inherent in these tables. They use them just because it is easy to

do and it does not require an approval.

MR. SIESS: That is for general licenses, right?

MR. HOPKINS: Correct.

MR. SIESS: That is an important point.

MR. MARK: I understand you need an approval before you can send it at all.

MR. BENDER: If you do not have to have an approval, life gets very easy, does it not?

MR. MARK: Following very closely after that, I was fascinated by the fact that as long as you do not have beryllium or hydrogenous material enriched in duterium -- wow, it is really wonderful at that. But I can have all the graphite I like. Graphite is just as good a reflector as beryllium, really, but it is not mentioned here.

So why are these picked out?

MR. BENDER: It is cheaper and easier to get.

MR. LANGHAAR: There is a restriction on the amount of graphite.

MR. MARK: Not in 71.24, paragraph 3.

MR. LANGHAAR: Paragraph 3 on the top of page 50.

MR. MARK: Oh, you cannot have more than 150 times. Right. That is getting a little close to the

optimum graphite composition -- 150 times the mass. Actually I think you really want about 200 atoms of graphite per atom of 235 to get your real optimum. All right, but it is curious the way it is written.

MR. SIESS: This is for a general license.

MR. MARK: I know, but I am not applying for a license. I think even a general licensee would like to understand what is being said.

MR. SIESS: I thought the point Don said was that general licensees are not capable of understanding it.

MR. HOPKINS: It is not a necessity that they understand, as long as they follow the prescription.

MR. BENDER: A fine distinction.

MR. SIESS: Let us see. These packages would not be under -- do they have to be certified?

MR. MAC DONALD: No.

MR. SIESS: The class of things people ought to be able to do without knowing too much is this and still not get in trouble?

MR. MARK: Anyway, Tables 1, 2 and 3 are not your own invention. They come from IAEA.

MR. HOPKINS: That is correct.

MR. MAC DONALD: Were the UK authors on these tables, do you recall, Don?

MR. HOPKINS: I do not know.

MR. MAC DONALD: I do not think they were originated in the United States but were proposed by other countries other than the United States.

MR. MARK: That is very curious, very curious.

MR. HOPKINS: My understanding is the USNRC criticality folks are agreed that they provide adequate safety.

MR. MARK: Oh, I do not quibble that they are offering safety. In fact, they all look very safe indeed. They just did not seem to make any sense.

MR. SIESS: Do they make more sense to you in the context of a general license as opposed to a package that needs to be certified?

MR. MARK: Obviously I am not well equipped to answer that question. I have never thought of sending any of these packages.

MR. BENDER: I am still trying to figure out whether we can offer useful comments on the proposed changes.

MR. SIESS: Keep trying, Mike.

MR. BENDER: No, of course. But I think in order to make a review respective we really ought to try to figure out what kinds of things we are looking for.

I think Dr. Mark has made one observation that might be generalized -- whether we understand the logic behind the regulations or whether it is important to understand the logic behind the regulation. I think you just gave a good example.

Are you going to be looking at the logic?

MR. SIESS: I think what was missing as far as the logic when Carson started in is I did not appreciate what a general license was.

MR. HOPKINS: Perhaps it would be useful to go through this 71.0(d), the explanatory material right in the beginning, which tries to point out the logic back on page 31. This was a result of the plain English review. The plain English people also felt that a little instruction would be in order.

Paragraph (d) starts off saying that the exemptions from the requirement for license in 71.3 are specified in 71.10. Section 71.10 has a list of several types of packages for which no approval of any kind is needed. There are no restrictions other than that you go back to DOT and satisfy the DOT regulations.

These are all contained in 71.10. It is really several of them because they are very broad in nature. If you have less than a type A quantity, for example, and you satisfy our very conservative

criticality criteria which we were just looking at, NRC does not want to have anything to do with you. You are a minor package and you just go to DOT and look at the DOT's more simple requirements to satisfy your need.

The next sentence says that general licenses issued are issued in those paragraphs for which no NRC package approval is required. These paragraphs again require that the quantity of radioactive material be less than a Type-A quantity so that we are not concerned about radioactivity. We refer back to the DOT rules for radioactivity and these general licenses all describe criticality criteria so that we do not have to be concerned about criticality other than for the relatively simple and conservative prescriptions which we were just going through.

If you satisfy the less than Type-A quantity for radioactivity, if you specify the less than criticality amounts for criticality, we do not want to look at you any more. Go back to the DOT requirements. They are the only controls that you need.

Now the general license in 71.12, the third sentence points out, requires that an NRC certificate of compliance or other package approval be issued. What this is now saying is that we can no longer rely on it being less than Type-A quantities and less than the

criticality control requirements. We are going to have to have a package which is approved by the TCB in order to provide adequate safety, and it is a general license in 71.12 which describes how that has to be.

Application for the package approval for that package approval which you need to satisfy the general license in 71.12 must be submitted in accordance with sub-part (d) of this part, which tells you what you need to include in your application to demonstrate that your package satisfies the package standards contained in parts (e) -- and I think that includes Part (f), the test for Part (f).

So the logic so far is that you get as far as 71.12, you find out you need a package approval. To get that package approval you have to look to the application provisions in subpart (d) to show that you satisfy the package standards in subpart (a) as it relates to subpart (e) as it relates to the test in subpart (f). It is not all that complicated so far.

The next sentence refers to subpart (g), which is the provisions which are applicable to the transport or delivery of this material to a carrier even after you have had your approval. Even after you have your package approval you still have to look to subpart (g) to find out what tests you have to provide before you

can give this to the carrier.

MR. ZUDANS: So essentially this part (d) gives a total outline of the whole process.

MR. HOPKINS: (g)?

MR. ZUDANS: Which you just went through.

MR. HOPKINS: That is its purpose -- to tell you what is what and where you have to go to find out.

MR. SIESS: Very good, Don.

MR. ZUDANS: Would you greatly benefit if you drew figures like that with blocks saying this is what you do here?

MR. SIESS: That one is so simple --

MR. HOPKINS: That would be a relatively simple block diagram.

MR. ZUDANS: And do you -- I guess I can understand.

MR. SIESS: That paragraph is a flowchart you can visualize as you go through it. It is just that simple.

MR. ZUDANS: If you can focus your eyes long enough to remember every block.

MR. SIESS: Once you get into 71.12 you run into the whole (d), (e), (f).

MR. MARK: (e), (f), (g), (h), and then you switch over and go to (a). Then it depends on 71, Part

5.

MR. HOPKINS: 71 is an afterthought.

MR. SIESS: You are saying do not forget to read that part. That is helpful, Don.

Carson, do you have some more points?

MR. MARK: Perhaps, but I am afraid they are no more serious ones.

MR. SIESS: Mike, do you have any points you want to bring up?

MR. BENDER: I think not. I am puzzled how to review this thing, but I do not think I have any questions.

MR. SIESS: It will not be worse than some Reg Guides we have looked at except we know less about it.

MR. BENDER: I would not really want to use that --

MR. SIESS: Leave it to people who know more. Dade?

MR. MOELLER: I had a couple of things that Don probably could help me with. It talked in here about the explosive sabotage of various shipping packages -- shipments -- and I wondered if someone had looked at the potential for the explosive sabotage of spent resins. Again, I do not mean to have a one-track mind.

Did anything like that enter into the revisions or is it already covered or what?

MR. HOPKINS: Actually, sabotage is covered under Part 73 rather than Part 71. I do not think we talked in here anywhere about package sabotage, although it certainly is interrelated. Part 71 and Part 73 are interrelated at least to the extent that advance notification, for example, of most large quantity packages is required under Part 71 -- the advance notification of spent fuel -- and that is related to the sabotage question as required in Part 73.

Generally speaking, sabotage is not a question related to Part 71.

MR. MOELLER: Thank you. That helps on that.

It refers in here to the recenty-ratified convention on the physical protection of nuclear material. Could you comment on how that relates?

MR. HOPKINS: Again, that is the safeguards.

MR. MOELLER: That is the same thing?

MR. HOPKINS: That is a safeguard consideration.

MR. MOELLER: I see. That is what it emphasized, was safeguards.

MR. HOPKINS: Yes.

MR. MOELLER: Now you also talk in here -- not

necessarily you, but in some of the material we had -- about -- in fact, there is a letter in here from Dircks to someone in FEMA saying we believe that there needs to be a greater effort for emergency planning for transportation accidents. Okay. Is there anything new on that and how does that relate to your revisions of 71?

MR. HOPKINS: There are new things on emergency response. The NRC has done some studies and issued a couple of reports, one on the present state capabilities to respond to emergencies, another on an optimum plan for states and local emergency response to radioactivity material accidents. But this is a program that is under way and is mostly its responsibility now.

The NMSS Staff research is being phased out of that at a rather fast pace and it is mostly also unrelated to Part 71. Part 71 provides safety during transport, but does not even recognize that there is going to be a problem for which emergency response would be required.

MR. MOELLER: I notice too that you also offer to help FEMA if they are willing to ask for the help.

MR. HOPKINS: That is certainly right.

MR. MOELLER: This is just ignorance on my part. You refer in here, and Dr. Mark was referring to different radionuclides, to lead 201. Could you help me? In my field I am familiar with lead 210.

MR. MARK: 208 is a great one.

MR. MOELLER: What is 201?

MR. HOPKINS: 201 is a recent radiopharmaceutical. I guess it is not so recent now. It has been several years since we had a petition from whoever it is who manufactures it to include it in the table, because it is a developing radiopharmaceutical which they wanted to be able to freely distribute under the inherent system in the regulations.

MR. MOELLER: Okay. That answers my question. I simply was just not familiar with it.

In Cunningham's remarks -- and, you know, we agree, you have stated that most of them have been resolved -- but one of the things he asked about was in the environmental impact assessment whether you had taken into account economic impacts.

Could you tell me how that particular criticism was resolved?

MR. HOPKINS: Yes. In our discussion with NMSS on that we advised that we are not at all happy with any economic models we have presently in existence

for transportation; and in particular, the economic models which showed up in NUREG-0170 and in the urban study have numerous errors both in logic and in carrying out the logic in them, and we were not at all enthused about carrying forth those economic models into the environmental analysis of this regulation.

We had, in fact, planned to develor new economic models, but in view of the funding cuts and the priorities afforded other things, these were taken out of the plan.

MR. MOELLER: That is adequate. Thank you.

One item that the committee has been looking at recently in terms of major nuclear power plant accidents is the loss of a major resource. Now, to what extent -- and I am sure you have considered it -- have potential losses of resources been incorporated into your thinking on the packaging?

MR. HOPKINS: We have identified in some analysis large quantities of lead, uranium shielding and other materials that go into the development of packages. The lead in large part, however, is recovered. Large quantities of lead are used in radiopharmaceutical packages, particularly molybdenum 99 generators, but in almost all cases that lead is recovered by the hospitals returning them to the

manufacturer or by transport persons delivering them to other sources for recovery. And the amount of depleted uranium, although depleted uranium is used fairly extensively now in large shielded packages, the amount is very small compared to the large quantities of depleted uranium which are now available.

MR. MOELLER: Okay. That answers one part. There is another aspect to this that I would like to have you respond on. That is, you know you could visualize, and I am sure you have postulated a bridge failing or something and radioactive material dropping into a lake that is a water supply or a fresh water stream that is the well water supply for some city.

To what extent have you looked at that? I know you have looked at it. Can you give me a little discussion of specifics of what you have looked at?

MR. HOPKINS: Well, the environmental analyses which we have done consider accidents, of course, where released material is funneled into water resources; in particular, the very large quantities which are transported in the early stages of the fuel cycle like --

MR. MOELLER: You mentioned yellow cake.

MR. HOPKINS: Yes. I believe the conclusion was that -- I am trying to remember. It has been some time since the analysis was done. I think the analysis

was that the yellow cake is not so soluble in water that it would permeate the entire water supply and all of it would be used for water. I think the conclusion was that it was relatively insoluble, and it would all be located in a fairly small area except for water streams and that sort of thing, and that the results would in fact not indicate that it would be a large environmental effect by having that type of material fall into a water supply.

MR. MOELLER: Is there a report on that or a written memo or something?

MR. HOPKINS: I wish I could remember where I saw it. It does not come to me. Perhaps you can refresh my memory. Was it in the 0535 document?

MR. MAC DONALD: I do not recall. There might be a more detailed discussion.

MR. HOPKINS: I think the argument was developed as a result of the yellow cake spill in either Colorado or Kansas; but where the report would be, it does not come to me at the moment.

MR. MOELLER: Have you looked at spent resin? Again I am beating that drum, but one of these low spent resin shipments falling into the water supply? What woul be the consequences?

MR. HOPKINS: We have never looked at the low

level wastes contaminating the water supply. The higher level of resins are solidified in concrete and of course could be recovered.

MR. MOELLER: Yes.

MR. HOPKINS: The lower level, whether they are water soluble enough to create a serious problem, I cannot answer at this time. The Europeans have considered to some extent the contamination of water supplies and have concluded that they need draw a distinction only between liquids, which they are very concerned with contamination of water supplies, and solids for which they are not so concerned.

MR. MOELLER: Wouldn't we need to have answers to questions like that?

MR. HOPKINS: Well, our concerns have primarily been with respect to airborne contamination of spills. While you certainly have some probability of accidents which spill radioactive contaminants into a water supply, it is certainly a far higher probability that they would be spilled on dry land and be transported through the air rather than through a water supply. So most of our analyses have been in that respect.

MR. MOELLER: But I believe you told me earlier that an LSA material or one that is classified

as low specific activity need not have extensive accident considerations in terms of shipment. Well, then, someone I guess has analyzed this and can tell me that I need not be concerned, and maybe I need not be concerned.

I would like to know more about it, either if there are analyses or reports on that. I would like to see them.

MR. HOPKINS: The analysis that defends the LSA concept has to do with airborne radioactivity, not waterborne activity.

MR. MOELLER: I have heard that, but I can see examples. In fact, I could almost see a truck going off a bridge or a train or something. I do not have the data, but I do not have to strain my brain too much to see some potentiality for that type of an event. So I would like to know more about it.

MR. SIESS: Was it eliminated on a probabilistic basis?

MR. HOPKINS: I do not think so much on a probabilistic basis, although it does have a much lower probability for waterborne material as it does airborne. But I think the corrective action is that you could just shut off water supplies, at least on a temorary basis until you resolved the question and took

whatever action was necessary to resolve it. It is not a hazard which has no corrective action which can be taken.

MR. MOELLER: That is correct. I am sure something could be done, and the volumes of water required specifically for drinking are much smaller than what we use in a normal day total. Again, though, if you could, I would like to -- I do not want you to prepare something special, but I would like to see whatever you do have.

My last item right at the moment is on exemptions for physicians. I wonder if you could comment and clarify that for me.

MR. HOPKINS: All right. The exemption for physicians in Part 71 was introduced into Part 71 at the same time as the provision in 71.5 which requires NRC licensees to comply with Department of Transportation regulations.

That is kind of a long sentence. Did that come through all right?

MR. MOELLER: You might say it again.

MR. HOPKINS: 71.5 requires that NRC licensees comply with DOT regulations. The exemption for physicians was put in the regulations at the same time, and its purpose was to not require that physicians

comply with DOT regulations when DOT chose not to regulate physicians.

Both the Interstate Commerce Commission prior to 1967 and confirmed by the Department of Transportation after 1967 was that DOT did not choose to regulate physicians who transport radioactive material in pursuit of their duties as physicians.

MR. MOELLER: Supposedly what they would be transporting would be just a few radiopharmaceuticals?

MR. HOPKINS: Low-level material, and they are considered to be very responsible people who would take whatever precautions are necessary.

The effect of 71.5 in our regulations would have been, without the exception you are talking about, to force physicians to comply with DOT regulations, even though DOT had chosen not to make them comply. That was the purpose of the exemption. We are clarifying the exemption this time because the exemption was made much broader than that initially and appeared to exempt them not only from the DOT regulations but also from the NRC's regulations.

We are clarifying it now to point out that it is only an exemption from the NRC imposition of the DOT regulations that we are exempting them from.

MR. ZUDANS: That is totally redundant,

because if the DOT does not require it, you do not have to exempt them.

MR. HOPKINS: On the contrary, 71.5 for other people has the effect that even when DOT regulations do not apply to them, like intrastate carriers, shippers, that our regulations make the DOT regulations apply by our authority.

MR. ZUDANS: If you direct them to comply with DOT regulations and DOT has no regulations from that point, what would they be regulated by?

MR. SIESS: It does not say DOT has no regulations. It means they do not apply the regulations to certain things. They have regulations that do not apply intrastate. NRC says we want you to follow DOT regulations even though you are in intrastate. Regulations exist.

MR. ZUDANS: I understand what you are saying, but that was a somewhat different reference than I understood this to be.

MR. SIESS: He is talking about regulations that exist but are not applied to someone.

MR. HOPKINS: Perhaps I can explain it. It says these people shall comply with the applicable requirements of the regulations. So even though the regulations are not applicable under their own

authority, we are saying they must comply with the requirements of the regulations.

MR. SIESS: You did not say that. Does that mean only certain requirements are applicable?

MR. HOPKINS: Applicable in the sense of technical applicability instead of legal applicability.

MR. ZUDANS: It is complicated.

MR. HOPKINS: The entire transportation system is complex.

Dade, did you have some other --

MR. MOELLER: That is fine for the moment.

MR. SIESS: I want to ask one, and then I am going to take a break. If this one takes too long, we will take a break in the middle of it.

In response to public comments, Enclosure F, page 7, the comment from Mr. Corbett of Chem Nuclear Systems, he is talking about leakage measurement. And apparently Reg Guide 7.4 talks about leak tests, and he says in reference to ANSI N 14.5, which has a procedure for detecting gaseous releases, he says you ought to have something on a procedure for detecting a release of solids.

Your answer was you did not agree, but I did not see that the answer addressed his question about leakage of solids. I have this recollection in

connection with the PAT package that it got fairly complicated on the leakage of solids.

MR. HOPKINS: I suspect that what the staff was disagreeing with is the point of the statement which starts in the middle of the comment which says, "In our opinion the NRC should specify the test procedure which would detect a release a solids to a sensitivity of 10 ."

MR. SIESS: Your answer is you are not going to specify it, but if someone proposes one, you will approve it?

MR. HOPKINS: If it satisfies the licensing staff, that is correct.

MR. SIESS: So we have reference to NRC test procedures, primarily the procedures NRC will be approving, and I guess that once you have approved two or three procedures, people know what they are. Is that the thinking on it? Once you have seen enough rocks, you know which one you like, and that will then be an NRC-approved procedure?

MR. CHAPPELL: I have not really read that, but I would agree with the comment that it would be good to have a reg guide on solids as we do on liquids and standards.

MR. SIESS: Or an anti-standard.

MR. CHAPPELL: Right. The problem is developing it.

MR. HOPKINS: In fact, we do support the ANSI work on the leak testing standards, and in fact, I am supposed to be in Seattle right now proposing the ANSI work on that very thing.

MR. SIESS: On solids?

MR. HOPKINS: On solid leak test procedures.

MR. SIESS: How long have they been working on that now?

MR. HOPKINS: They have not worked on it now. They issued under John Langhaar's leadership the ANSI standard regarding gaseous releases which is supposed to be essentially equivalent or conservative to solids; but there has been no further work on that.

MR. SIESS: As I remember, we went through quite a hassle on the PAT package about how much plutonium was going to get out through a 1 mil crack.

Okay. Let's take a break and get back here a little after 3:00.

(Recess.)

MR. SIESS: The meeting will reconvene.

We have had some fairly extensive comments or questions about the proposed rule from a very knowledgeable consultant to the subcommittee, John Langhaar, and Don has a couple of sheets here addressing them, and I think we would like to -- in fact, three sheets. Did you know you had 23 items on there, John?

MR. LANGHAAR: I hadn't counted them before.

MR. SIESS: That's what they counted anyway. They may have subdivided them differently. So I would like to go ahead with that now. We can take them up one by one if you wish.

MR. LANGHAAR: In government you always divide things up into little pieces. That is the only way to get them done. With respect to the letter from John Langhaar dated August 2nd, 1982, the technical staff of Research got together with the technical staff of the licensing office and put together the following tentative responses to John Langhaar's comments, recognizing, of course, that they are his personal views and not the official views of the ACRS, at least not at this time.

With respect to Paragraph 1, I believe the comment --

MR. SIESS: The paragraph is in reference to

his letter?

MR. HOPKINS: Yes, the paragraphs are in reference to the paragraphs in his letter.

MR. BENDER: Sam, do you have more copies of the letter?

MR. SIESS: Sam always has more copies. Does anybody else need a copy?

MR. BENDER: He is just about the most perceptive guy I know. There are a few more, but not many.

MR. MARK: You sent me at least two. That is perhaps why he didn't get one.

MR. BENDER: I got one.

MR. SIESS: This letter caused some problems, because I got it long before Sam got it.

MR. LANGHAAR: Both went out the same day.

MR. SIESS: I know, but his has to go through all these offices. Mine comes directly to me.

MR. BENDER: Excuse me for interrupting you.

MR. HOPKINS: The first paragraph, I believe, gets to the point that it's in the public interest to try to specify performance requirements rather than detailed requirements, and perhaps the conclusion of the paragraph is that these more detailed requirements should be omitted from the regulations and included with

the help of the regulated and regulatory guides. Our only comment to that is that that is the way we see the IAEA regulations as going. They are deleting, for example, stress limitations in the regulations in the 1984 version that are presently in the 1983 version, and of course our response to that is that we are not going to include them at all, so we are trying to stick to performance requirements to the extent we can and then to take up the flack with more details and regulatory guides which offer insight on what the staff will accept, what the licensing staff will accept.

Unless John wants to offer anything else with respect to that first paragraph, that is what we got out of it, that we agree with him that that is the way to go.

MR. LANGHAAR: My principal concern there was that by leaving things out of the regulations and issuing regulatory guides, it gives the people who are preparing these guides a much freer reign than if they had something in the regulation that they had to abide by, and that is something that needs to be watched out for.

MR. SIESS: It is not much easier to do Reg. Guides now than it is to do regulations, unfortunately.

MR. LANGHAAR: Okay.

MR. BENDER: Well, I wanted to add a supplemental thought. It is probably more detail than is appropriate for this phase of the discussion, but I think this question that has come up about the fracture toughness of these containers is a case in point. I think when people put in requirements like that without taking into account both the content of the container and the circumstance under which it is being used, they often wind up setting requirements that might be all right on a general basis, but if they were looked at in the context of how the cask was going to be used, they would probably not be as stringent and there would be some benefit in some cases by having the advantage of using cheaper or more reliable materials for the particular application.

I think that there needs to be some thought given in the regulations to whether this very general kind of requirement that is being set up here that is based on shipping anywhere, any time, any place, doesn't put excessive requirements on some things that just aren't practical. Is any thought being given to that aspect?

MR. HOPKINS: Yes, it is certainly true the regulations suggest a general question and not the specifics of any particular shipping container, but the

regulations do recognize that there are more limiting cases where a package is used for some limited purpose and it should not need to satisfy all the provisions of the general cases, and in fact 71.47(c), I believe, of the regulation is the specific provision which allows the licensing staff to consider environmental and test conditions different from those specified when the controls proposed by the shipper for any individual case such that you specify it or such that the lesser environmental conditions would suffice.

So, we have built in an exception into the regulations so that an exception which could be -- you could have frequent exceptions, as you point out. An exception to the general rule can be easily accommodated. 71.41(c) says environmental and test conditions different from those specified in 71.71 which is the normal conditions, and 71.73, the accident conditions, may be approved by the Commission if the controls exercised by the shipper are demonstrated to be adequate to satisfy the safety of the shipment. I think that addresses your specific case.

MR. BENDER: All right, fine. I wasn't aware that that flexibility was built in there. That is because I am a neophyte in reading this document.

MR. HOPKINS: The second paragraph of Mr.

Langhaar's letter refers to other paragraphs. We didn't respond to that specifically. We jumped to Paragraph 3, which has to do with compatibility with the IAEA regulations, and how the IAEA regulations will be including additional requirements, and whether it wouldn't be in order for us to talk about these additional requirements which we expect but which are not included in the present Part 71 revision.

The response is that in fact we have an established system for people to find out what is happening internationally with the international regulations. Every time a draft revision of the IAEA rules is issued for comment by member states, the DOT puts a notice in the Federal Register and offers a free copy to anyone who wants one. The DOT collects public comments and considers them in developing a U.S. position on the IAEA regulations.

So, this is an entirely separate but comparable system for keeping people informed on what is happening internationally. There doesn't seem to be any real need to include that same kind of information in the 1973 preamble. Perhaps that was more the answer to Number 3 than Number 2.

Paragraph 3, IAEA incompatibility, I guess, had to do with the fact that since IAEA regulations are

in some respects different from U.S. regulations, there may be some U.S. packages which could not be shipped internationally. The only response to that is that people recognize that the U.S. regulations are in some respects different, and if they intend to ship internationally, they should recognize that they need to build their package to satisfy both the U.S. and the international rules. It would be nice if they were both the same, but in fact people do recognize that they are different in some respects.

MR. SIESS: I am not sure it would be nice. If IAEA were more restrictive and all of our packages had to be built for those more restrictive standards, it would not necessarily be good.

MR. HOPKINS: There are some respects in which the IAEA regulations are restrictive, and we have taken the initiative to give relief for domestic shipments, and of course that is readily apparent to anybody who ships internationally, that they couldn't take advantage of that domestic relief.

MR. SIESS: I think what is more important is to determine why they are more restrictive, and we have a good reason for not making ours as restrictive.

MR. HOPKINS: We understand the reasons, at least in the case I am thinking of, the sealed source

type A quantity. We understand the reasons explicitly, and it is an administrative reason, not a safety reason, so we felt capable of giving relief from it.

Item Number 4 has to do with Mr. Langhaar's paragraph which leads off with 71.4. It has to do with the definition of maximum normal operating pressure, and it has to do with whether the one-year period of time which is specified for that maximum normal operating pressure is reasonable. Our response is, if that is what is agreed on internationally, that many experts agree is an appropriate time to be considered.

Whether it should be prescribed in all cases or whether there are controls which allow you to consider a period of time less than one year, there are exemptions available, not built into the regulation, but available through the general exemption provisions of Part 71 to give relief from that one-year requirement if it is justified.

MR. SIESS: What kind of things? If you send them through the mail, a year might not be long enough, but I assume this is not the kind of stuff you send through the mail.

MR. HOPKINS: No, I don't think you have anything going through the mail that would generate any problem over a year's time.

MR. ZUDANS: On this previous comment, where John says that recent studies have indicated that the resistance to crushing is probably one of the most likely causes of package failure, and I guess he suggests, why didn't you include resistance to crushing? There are two things you named as major that '84 might have and you don't. One of them is resistance to crushing. What is your comment to this question that he asked?

MR. HOPKINS: The licensing staff has taken the position that while crushing is something that should be considered, they are developing in the modal study what they consider to be an adequate degree of crush resistance. There is no reason why we could pick up the international crush test in advance of its being adopted internationally, because we don't have an indication yet that this is what we will finally want in our regulation.

MR. ZUDANS: But is this statement correct, that recent studies have indicated this to be the one of most likely causes?

MR. SIESS: Which recent studies were you referring to, John?

MR. LANGHAAR: Some studies done at Sandia a few years ago indicating that crushing would be one of

the more likely modes of failure for certain accidents.

MR. HOPKINS: The most recent study which NRC had done for itself by SRI International indicates that for any real package that we now see, the impact test in fact more than adequately compensates for any crushing effect that we would see in transportation accidents, and that for real packages we have adequate control over the crush environment now.

The IAEA in fact acknowledged that. To the extent that they have limited their crush test, the one that is being considered, to very light packages, similar -- which would be applicable probably only to our light plutonium type packages like the 6M, not to the heavy packages that most Type B packages consist of.

MR. SIESS: You know, the finding that the impact governs over crushing, has somebody looked at it to be sure that you cannot design a package that would survive the impact that would not survive the crush, that the resistance is inherent and not just the function of how things are being done now?

MR. CHAPPELL: No, it is probably true, one could design a package that would meet the impact and not meet the crush. What the SRI study indicated was that crush does not occur frequently, but when it does

occur, it can be a very large force, very large, and that within the realm of reasonableness, that the present 30-foot drop assures a certain level of crush protection. To get a significant additional benefit for protection against crush, you would have to put in a test of high severity that is disproportionate to the other test.

MR. SIESS: Right back to where we were on the PAT package. We could not make the PAT package resistant to the worst case we could think of, so we said, put it in the back of the airplane. I think this is a subject that it is premature to consider, because there is work under way now on revising the environment loadings.

MR. ZUDANS: I think there is more to John's comment than this, because he also further says, how do you refer to Type A packages. As you explained, crush might be significant because you don't have that kind of a drop test. So it should be mentioned some place. You described the package that you are crushing. Resistance capability would be a predominant failure mode. Why not make reference to it some place?

MR. SIESS: Let's see. Let me get something clear. The IAEA now does not have the crush requirement, nor do we.

MR. HOPKINS: That is correct.

MR. SIESS: They are proposing a crush requirement for Type A packages for everything?

MR. HOPKINS: Actually, it is fairly limited. It is for Type B packages which are very light and which have a very large quantity of radioactive material in them.

MR. CHAPPELL: And on top of that, it only applies to packages based on their density, the density of the package. Further, in some instances they permit the crush test to be a substitute for the impact test. Moreover, they have not made any physical connection between the tests they came up with and any kind of an accident that can occur in a transport accident, and they don't have any idea how much additional protection they are buying, if any.

MR. LANGHAAR: Sounds complicated.

MR. HOPKINS: It should be obvious why we haven't included a crush test in Part 71 at this time.

MR. SIESS: It is to me. It is not clear whether we will or will not eventually for certain types of packages. Does the modal study cover all types of packages?

MR. CHAPPELL: Type B.

MR. HOPKINS: Type B packages that have very

large quantities of radioactive material in them.

MR. SIESS: Okay. Are you down to 5?

MR. HOPKINS: We are down to the second paragraph in Mr. Langhaar's letter, which refers to Paragraph 71.4, definition of nuclear waste, where it says it would be helpful to give the requirements of Part 73 also in 71. I didn't exactly understand the full implications of the comment, unless it is to include in Part 71 the requirement that spent fuel -- that there be advance notification of spent fuel. If that is the point, that it was put in Part 73 instead, it is because the information needs to be safeguarded. The advance information about spent fuel needs to be safeguarded by the governors.

MR. SIESS: John, do you want to clarify that?

MR. LANGHAAR: I made that comment primarily because I didn't have a copy of Part 73, and I wanted to know what the heck this was all about.

MR. SIESS: Is there a reference to 73 in the definition? Yes, I see. Okay. I think we can assume that people will get all the parts they need, even if the subcommittee doesn't have them.

MR. HOPKINS: The next paragraph having to do with 71.4, definition of Type B package, questions

whether bolt stretching on a Type B package would be considered to be a pressure relief device or represent a pressure relief device for purposes of definitions of Type B packaging, whether it would be a BU or a BM type package. The licensing staff tells it would certainly not be considered a pressure relief device. They would consider that pressure relief devices are limited to engineered type fixtures for that purpose.

The second part, it was not clear what the point was. I presume it is that it would be better to allow releases even though they were uncontrolled through the bolt stretching technique rather than permitting catastrophic failure, I guess.

MR. LANGHAAR: Well, I guess I was wondering why pressure relief devices would not be permitted for Type BM packaging, because it would seem that in some cases, that is a control type of release, and without a pressure relief device, there might be an uncontrolled release.

MR. CHAPPELL: Pressure relief devices are permitted for Type BM, but not for Type BU.

MR. LANGHAAR: Type B package, let's see. Unless it has an MNOP or pressure relief device under these tests. Oh, yes, you have to look at Paragraph 71.51(a)(2).

(Pause.)

MR. HOPKINS: 71.51(b) prohibits using a filter to satisfy the relief requirement. That is not what you are talking about, though.

MR. SIESS: Let me see if I understand. 71.51(a)(2) would permit the escape of an (a)(2) amount in a week, right?

MR. HOPKINS: That is correct.

MR. SIESS: And John's point is that rather than allowing that much, could you get by with less by bolt stretch? Is that right, John?

MR. LANGHAAR: Now I am beginning to wonder what my point was.

MR. SIESS: I think one point is very clear. It is awfully hard to follow this.

MR. LANGHAAR: Well, there is a point later on with respect to pressure relief devices, and I think that for my own part, I would just as soon go on from this point, not consider this one until we get to the one later on.

MR. SIESS: Okay, fine, we will do that.

MR. HOPKINS: On the top of the second page of Mr. Langhaar's comment is the last question having to do with the definitions in 71.4, and this has to do with the shipping notification quantity. He makes a good

point that there are two definitions having to do with that. One is the shipment notification quantity and the second is nuclear waste, and you have to find your way through those two definitions in order to get to the requirement. So his point is a good one.

Our response is a decision has already been made that we are going to eliminate the definition of nuclear waste and include its provisions in the requirements for advance notification, so that we are back to where we only have the one definition of shipment notification quantity, so the confusion that was there for which the comment is good I think will disappear.

MR. SIESS: At least you won't make a cross reference because there won't be any place to reference it; you won't need it now.

MR. HOPKINS: That is correct.

The next comment having to do with Section 71.10 and the internal consistency -- that inconsistency also disappears because we are eliminating the definition of radioactive material, which was one-half of the inconsistency, which will leave us with an exemption for materials which have a specific activity of less than .02 microcuries per gram, but not that definition in the definition of radioactive material,

because the definition is going.

MR. SIESS: Radioactive material will be a non-quantitatively defined term?

MR. HOPKINS: It will no longer be defined in Part 71.

MR. SIESS: We all know what it means. It is in the name of our committee.

MR. HOPKINS: Well, you wouldn't know what it meant without seeing the definition, because you wouldn't know the radioactive material wasn't radioactive material when it had a low activity. But the definition is still contained in DOT regulations and IE regulations, so not knowing what it means is not a problem.

MR. SIESS: Is radium a radioactive material?

MR. HOPKINS: Yes.

MR. MARK: What about U-38?

MR. HOPKINS: Yes, sir. But the specific activity is higher than that, isn't it? But the halflife is 10^9 years. It could be measured, but it really takes an expert to measure it.

MR. SIESS: Oh, we've got lots of those people around. .02 microcuries per gram.

MR. MARK: That almost gets under the wire.

MR. SIESS: It is not very much. Okay, Don.

MR. MARK: But you will eliminate the definition, and then I would suspect that one could ask whether U-238 is or is not.

MR. SIESS: But then they have an exemption based on the .02 microcuries per gram.

MR. MARK: Oh.

MR. SIESS: Right now it is defined that radioactive material is anything having an activity greater than that, and the exemption is that it is not radioactive now. It will be all radioactive and exempted on the quantitative, not the definition. It makes sense.

MR. HOPKINS: In Table A4 of the draft regulation, it gives specific activity as various enrichments of uranium, depleted uranium, depleted to .45 percent. U-235 has a specific activity of .05 microcuries per gram, so it is considerably above the lower limit.

MR. SIESS: Onward.

MR. HOPKINS: The comment having to do with 71.13(b)(2) is, as far as I can see, an editorial proposal, and we didn't see where that would improve the language any.

MR. SIESS: Especially since it has already been put in plain English, huh?

MR. HOPKINS: It seemed not to say anything different than was already there.

The next paragraph having to do with 71.13(c), where the comment says that it is apparently not required that a licensee submit an application unless he wants to have his package classified as BU; however, this should be clarified. We thought, in fact, that the words were rather clear to that effect. There didn't seem to be any ambiguity that we saw.

The second part of that was would it be required to meet all requirements of this part or only those that distinguished BU from BM. We thought it was also clear that it had to meet all requirements in this part.

MR. SIESS: That is interesting, because I suspect that John Langhaar knows a lot more about this than anybody here, and it wasn't clear to him.

MR. LANGHAAR: The thing that wasn't clear was whether it was going to be required that the applicant -- or that a licensee -- submit such an application. That was a point I thought ought to be clarified. Did the licensee have to have his package classified as BU.

MR. SIESS: What you want to say is the NRC will revise the identification number only after receipt of an application.

MR. LANGHAAR: Yes. Something to that effect.

MR. ZUDANS: What if they don't send in an application? Will it stay as simply B?

MR. HOPKINS: Yes.

MR. ZUDANS: So he does not have to submit the application.

MR. HOPKINS: He does not have to, that is correct.

MR. ZUDANS: Is there a reason why he would?

MR. HOPKINS: If he wants to ship internationally he would have to get a BU or a BM approval.

MR. ZUDANS: So these requirements don't help him internationally anyway. He would have to satisfy another set. So why would he go to the NRC to get that approval?

MR. HOPKINS: After we change the requirements to what is in the draft rule here, we will be designating BU or BM approvals, although you are correct that he would have to look to the IAEA standards for international shipments.

MR. CHAPPELL: There is one other reason that one has an incentive to go from BU to BM. One, we are only extending the authority to fabricate packages that are designated as a B for three years after the rule is

effective. So after three years, unless he has shown that design is BU or BM, he cannot fabricate anymore packages to that design, although he can continue to use them indefinitely. That is one reason.

The second reason is if he makes a change in the design or the contents of the package which affects the operation of the containment vessel, he has to demonstrate that it meets the BM or the BU requirements.

MR. ZUDANS: I see. So sooner or later, he will have to do it.

MR. CHAPPELL: No, he doesn't strictly have to, but if he wants to keep the full use and flexibility of the package, he will have to.

MR. ZUDANS: It is equivalent to me saying that I don't have to eat really, unless I am willing to not starve to death.

MR. HOPKINS: Free choice.

MR. ZUDANS: Free choice. It is not very free, but -- .

MR. SIESS: NRC will approve modifications to the design and contents of a type B package; cannot designate BU or BM. That means they will change the authorization but they will not change the designation?

MR. CHAPPELL: There was a lot of controversy over exactly how this new regulation would be

implemented. Should all packages that are now approved have to meet the new requirements, or none of them, or how would it be phased in?

We decided to compromise so that all new applications received after the effective date of the rule will meet the new requirements. That still leaves the designs that have been approved before the rule was effective. If they make changes to the design that affect the containment vessel, they will have to demonstrate that they meet the new requirements. If they make other changes, for example, change the lifting devices or change some part of the package that doesn't affect the containment system, then we won't force them to go back and re-evaluate the containment system against these new rules.

MR. SIESS: So B says if they come in with a modification and it is still a B package, if they are not applying for a BU or a BM, you will approve the modifications provided they don't exceed (1) or (2)?

MR. CHAPPELL: I am sorry, I don't have a copy.

MR. HOPKINS: That is correct.

MR. CHAPPELL: They could change peripheral devices that don't really affect containment without having to meet these new regulations.

MR. SIESS: Okay, I get it. And then (c) says

that you will re-identify it as a BU or a BM if they submit an application and you approve it.

MR. CHAPPELL: Yes.

MR. HOPKINS: But only if it satisfies all the requirements of the part.

MR. SIESS: And that answers John's question about all the requirements. He says all the requirements are only those that distinguish BU from BM. It seems to me it is BU or BM from B. He answers yes, all the requirements.

MR. LANGHAAR: Yes.

MR. HOPKINS: The next comment, 71.31(b), Mr. Langhaar's comment is it could be taken to mean any modification, even if not safety related to ratchet retainment, and I think he understands -- or he indicates he understands that 71.31(b) is fairly clear.

The earlier requirement, 71.13(b)(2) is clear in that respect, but 71.31(b) muddies the water. We agreed with that comment and plan to change 71.31(b) so that it refers back to the earlier standard as an exception to this general rule.

71.43(b), or 71.43(f), Mr. Langhaar seems to think there is a problem where in one standard we talk about no loss or dispersal of radioactive material, and in another standard we talk about no releases exceeding

10^{-6}, (a)(2). We don't really consider this to be a problem. It is somewhat different, but we don't consider it to be a problem. No loss or dispersal is considered to be a very small number, just like 10^{-6} is considered to be a very small number. And the fact that no loss or dispersal is --

MR. SIESS: You would define 10^{-6} as none?

MR. HOPKINS: One standard says no less than 10^{-6} which definitely means you have to use a test which is sensitive to 10^{-6} A2 and get a negative result from it. The other says no loss or dispersal, whatever mechanism, is considered under these circumstances.

MR. SIESS: How do you define no loss?

MR. HOPKINS: With the test you have you get a negative result. This is the way the regulations have read for years and years.

MR. SIESS: You have a low sensitivity and not detect anything, and that would be all right?

MR. HOPKINS: Well, that would be something that somebody could propose. If the licensing staff thought it was obviously inadequate, then they would challenge it. It is just the non-specific requirement. Now, the 10^{-6} A2 is a much more specific requirement.

MR. SIESS: It seems to me that if you

recognize it as a non-specific requirement, which it certainly is, that you could find some non-specific words to use. No is a fairly specific word. If I were a lawyer, I would give you hell. You guys don't get into litgation that much, but you could say essentially no or practically none, or the kinds of words people use. But no means no. The burden of proof would be on you to prove there was no --

MR. LANGHAAR: It was a very sticky point in the IAEA panel discussions. With respect to Type A packaging, the panel decided not to say anything about what was meant by no large dispersal because they thought what they really meant was zero, but they decided not to try to amplify that.

MR. SIESS: You can't prove zero.

MR. LANGHAAR: My principal concern here was we that we might for fizzle Type A packaging, we might take no loss or dispersal to mean zero, as some people say, for Type A packaging, whereas the Type B packaging we do have a specified amount. But at the same time, this is a problem that I do not see any good way out of and neither did the IAEA.

MR. SIESS: What Don is saying you define Type B, but you don't define it here. That is a very difficult quantity.

MR. HOPKINS: All it means is you will get a negative result from the test you prescribe, the test we perform on the package. You have to get a negative result, or you cannot say no.

MR. SIESS: That's your definition.

MR. HOPKINS: Whether the test is adequate enough is open to discussion, and it will be a point of contention.

MR. SIESS: That's your definition, and you're not a lawyer. I'm not a lawyer either, but I listen to them. If a lawyer and the law says thou shalt not do it, there shall be no release, then it will be up to you to prove that there was no release, and you couldn't do it.

MR. ZUDANS: When I read John's comment, I

understood this as an inconsistency because it first said it's a general requirement for all packages. The next paragraph talks about specific additional requirements on Type B, and that means a relaxation, not an additional restriction. That's why I thought his comment was very good.

MR. SIESS: Your intent is very clear to me. Your words, unfortunately, are equally clear, and they don't agree.

MR. CHAPPELL: Well, Dr. Zudans I don't believe said it properly. It appears that "no" is less than 8.2×10^{-6}, but in application "no" is a more liberal standard than 10^{-6}.

MR. SIESS: I understand that completely. That is why I say the intent and the words don't agree.

MR. ZUDANS: Well, I guess you have to find a set of words that makes the second portion of restrictions more limiting than the first one.

MR. SIESS: Well, I don't see any easy out. You could qualify the "no," and then I think you will get into trouble on the other one.

MR. ZUDANS: I could stick in front essentially no release.

MR. SIESS: That's what I say. Qualify it.

MR. ZUDANS: Put some qualifier in it.

MR. SIESS: The problem is that everybody except some lawyer who gets involved knows exactly what it means. John knows what it means. He just says it's a complication that's been around, and nobody has found a way out of it, right?

MR. LANGHAAR: It is a difficult problem. The IAEA and I suspect the NUS do not want to imply that any release would be allowed from Type A packages. So if the words used were "no significant release," I suppose that would not cause trouble.

MR. SIESS: That would bother a lawyer, too, because then what is "significant?" So it's a dilemma. If we had a solution, we'd give it to you.

MR. HOPKINS: The next comment is a long one having to do with requirements for tiedown attachments. The present regulations have a requirement for the 2, 5, 10g forces, resistance for these tiedown attachments, which of course are not the tiedown cables themselves but are the attachments which are part of the packages.

In the proposed rule we proposed to eliminate these specifications because some of the staff was under the impression that the industry would have preferred it that way, and because they were not very well-defended requirements.

What happened instead was at least some of the

industry wrote in and said what happened to the 2, 5, 10 requirements? Why don't you have them in there any more? So we reconsidered and decided that it is better to have them there even though they might not be the perfect requirements than to have any requirements.

MR. ZUDANS: I think the requirements should be specific in the sense that it refers to a base of a platform, not to the tiedown devices, because that has to be calculated. You could have amplification of "significant," depending on how this thing was defined. And I think that is a point being made here.

MR. LANGHAAR: There is no good technical basis for the 2, 5 10g requirements. There is some basis for saying that those are reasonable figures for the bed of a rail car. But as far as I know from studies that have been made, there is no technical basis for saying that those figures are reasonable for truck transport or water transport or even that they are reasonable for the forces experienced by the tiedown attachments on a container on a rail car. Even though the bed of the rail car may experience such g levels, what the attachments on the container experience may be far different.

So my comment here is related to whether we ought to have requirements of this specific nature that

do not have a good technical basis.

MR. SIESS: John, do you have any idea whether the numbers should be higher or lower?

MR. LANGHAAR: For truck transport, again on the bed of the vehicle, for truck transport they should be much lower.

MR. SIESS: No. I mean on the device.

MR. LANGHAAR: On the device it depends on the tiedown arrangement. There are some tiedown arrangements for which these forces could be magnified. There are other tiedown arrangements for which they would not be depending on what sort of damping and other stuff. Ross has looked into this in considerable detail, I think.

MR. SIESS: What kind of a provision would you propose?

MR. LANGHAAR: I would prefer to see, as was done in the 1979 version, they proposed to see these numbers omitted as they have done in the IAEA regulations.

MR. SIESS: What do people do?

MR. LANGHAAR: People use standard methods of tiedown. Actually, they use methods of tiedown that are probably a little better than the standard for transformers and other heavy objects. But furthermore,

the regulations do not specify the nature of the tiedown system. That is, a container could be designed with this strength for the attachments on the container, but the tiedown itself could be by rubber bands as far as the regulations are concerned.

MR. SIESS: I can make a distinction in my mind between failure of the package because it was overstressed to an eye, whatever you hook on to, and failure of the system so that it rolls down the hill. So I can understand a distinction between a tiedown device which is attached to the package that could turn the package over and something that would just let it roll off the truck.

But if you don't put any numbers in here, what does the designer do?

MR. LANGHAAR: Well, the intent of another paragraph of the regulations is to assure that the package will still be safe even if the tiedown attachments should be torn loose. So if the whole tiedown system should fail, even if the tiedown attachments should tear loose and the package go rolling down the hill, it would still be safe. There is this paragraph in the regulation.

MR. SIESS: That is 3 on the same page, I believe.

MR. HOPKINS: That's correct.

MR. ZUDANS: It would not be very pleasant for those who happened to be nearby.

MR. LANGHAAR: Well, that's true.

MR. SIESS: That takes you back another step.

MR. ZUDANS: I think that something else has to be done. First of all, it is clear that you cannot specify any accelerations anywhere but on the platform surface itself because it is design dependent. There is no question about that. Second, you don't have to specify any given numbers. You just said that you have to design for accelerations on that platform for the transport.

MR. SIESS: That would give the staff an awful problem because what accident do you assume -- running into a concrete bridge abutment, backing into something at 20 miles an hour, which might be worse because you don't have the cab up there to absorb the impact. If you have 3, why do you have 1?

Three says it must be designed -- any tiedown device which is a structural part of the package must be designed so that failure of the device under successive load would not impair the ability of the package to meet the other requirements of this subpart.

MR. CHAPPELL: That is to preclude someone

from designing tiedown devices in an oddball way where they are connected to the cover or they are connected --

MR. SIESS: All right. But you have a statement here that says each tiedown device, if it fails, cannot hurt the package.

MR. CHAPPELL: That's right.

MR. SIESS: Then why in addition do you say that the tiedown device must be designed for the 2, 5 or 10 g?

MR. CHAPPELL: We say, first of all, that we feel that we don't regulate the tiedowns except in very unusual circumstances like the PAT package and one or two spent fuel packages.

MR. SIESS: The tiedown being?

MR. CHAPPELL: What's connected to the material. We feel that that package should not be a weak point in the system. We feel that if the package comes off the vehicle, it's because a tiedown failed, not because the package failed.

MR. SIESS: This doesn't assure that.

MR. CHAPPELL: It doesn't assure it, but we've never had one that failed. Moreover, it's practical to meet this 2, 5 and 10, and it's not hard to design for.

The third thing is we have this even if they do fail, but you're not going to affect the package so

as to really prevent someone from designing real Goldberg-type things. If someone comes up with a way where pulling the eye off or pulling the trunnion off will cause a whole to open up in the containment vessel, we go back to question them on that point.

MR. SIESS: That's suspenders, I guess.

MR. LANGHAAR: My concern here is that 2, 5, 10 g figures have no basis for truck or water transport. They are intended to represent normal conditions of transport, and it is certainly not normal.

MR. SIESS: Well, we heard the argument from Ross that they want extra assurance that it seems to work most of the time. I guess I would be a little wondering about when the industry says why don't you put them back in, it suggests to me that maybe they don't know how to compute them if you don't put them in.

MR. HOPKINS: There's also no reason why we should limit the strength of those tiedown attachments to conditions in normal transport. We could, for example, have set up a requirement that the tiedown attachments would withstand accidents of any kind that we choose, because the stronger the tiedown attachments and the tiedown system, the more resistant you are to accident situations; that is, the more of the forces of the accident would be absorbed in the tiedown system and

therefore not have to go into the package.

So there is no prohibition of our having tiedown attachment standards which are higher than what the normal conditions of transport would indicate. So that even if these are higher than normal indication, that is not a good reason in itself for doing away with them.

MR. SIESS: I am not so sure that a rigidly attached package wouldn't see greater accelerations than if it were allowed to come free from the vehicle and were stopped by something else.

MR. LANGHAAR: This subject is one that has been batting around for some ten years.

MR. ZUDANS: Why do you specify apply to the center of gravity of the package and not to the center of the platform?

MR. CHAPPELL: Because we don't have control over what connects the package to the vehicle.

MR. ZUDANS: You have a controlled package design. This is one of the conditions. You apply it to the platform.

MR. CHAPPELL: The package is typically connected, like a spent fuel package sits on a cradle.

MR. ZUDANS: Sure. You apply it to the rail of the platform. The cradle and the platform form

another structural system.

MR. CHAPPELL: Depending on the frequency of the system, the resining and so forth.

MR. ZUDANS: If it applies to 2g, he doesn't calculate the response. He simply puts on the load and that's it. It's very simple, but it could be totally incorrect.

MR. CHAPPELL: I agree with you, but the problem is we don't regulate that cradle.

MR. ZUDANS: But you can apply the load to the package in any way you want. You specify the platform motion. That is load to the package.

MR. CHAPPELL: But if you imagine the bed of the vehicle as a surface that has a motion and you only calculate the response of the package so you can get the relative inelasticity of that connecting system, you have to know that; and we don't control that.

MR. ZUDANS: You don't have to know. That is what -- sheer will give the load to the package, and if the computed load to the package is no good, you will have to redesign that.

MR. SIESS: Wait a minute. Ross is using -- I think there is a little misunderstanding, certainly on my part. When you say you do not control something does that also mean that when you approve a package you don't

know what the tiedown system will be?

MR. CHAPPELL: That's right.

MR. SIESS: Well, they would have a problem approving the package design for a platform acceleration because the tiedown system is not a part of the package that they would approve. They would have to approve a tiedown system as a part of the package.

MR. ZUDANS: So what do they do? Do you assume rigid support for the tiedown and apply g loads at that range?

MR. CHAPPELL: We don't address it.

MR. ZUDANS: How does the applicant do it?

MR. CHAPPELL: They have eye bolts, or they have trunnions, or they have recessed places for things to hook on to them. We make sure that those packages can take this 2, 5, 10 load without yielding.

MR. ZUDANS: But supported in what way?

MR. CHAPPELL: It doesn't matter.

MR. ZUDANS: Yes, it matters. If it's supported from two points and has a g force in the middle, if I apply the g load you will just fly away.

MR. CHAPPELL: We assume that the load is being applied at the trunnion, sir.

MR. ZUDANS: Well, if you assume, you must assume some way of support before you can apply that

load. What you are telling me, you are assuming rigid support, and that is not necessarily always the worst case.

MR. CHAPPELL: I agree with you. That's not necessarily the worst case.

MR. ZUDANS: I feel that this level of sophistication you could very well specify the motion just like in the way the nuclear power plant design ground motion is specified, and that takes care of all the structures sitting on that ground.

MR. CHAPPELL: I know.

MR. SIESS: But the NRC has the control of all those. His point is that they only certify the package. That's a problem. They don't know what forces it's going to be subjected to because that depends on how it is tied down, what the tiedown system looks like. But they don't control the tiedown system if it's not a part of the package. So they would have no way of approving the tiedown system. They don't regulate it.

MR. ZUDANS: When they evaluate this 2, 5, 10 constraint, the applicant of necessity has to come and show points of support. That defines the tiedown system.

MR. SIESS: No. That only defines the point at which you tie them down.

MR. ZUDANS: It defines the tiedown system as

being perfectly rigid. What I am saying is that perfectly rigid with the same point of support is not necessarily conservative.

MR. SIESS: There is no question as to whether this is conservative or not. John made the point, and everybody has agreed, that they don't know what these forces are in an actual cask, in an actual vehicle.

MR. ZUDANS: Well, I understand with the railroad platform.

MR. SIESS: There have been some tests made on railroad platforms, but different tiedown systems can still get different results. They can be rigid or they can be flexible depending on whether they were on springs or rubber.

MR. CHAPPELL: I have been working on this problem for 10 years on ANSI committees, and we are not any closer to a solution.

MR. SIESS: What we have got is perfectly arbitrary, and like most things that are perfectly arbitrary, there is a 99 percent probability that it's wrong, but the regulatory process again does not permit them to consider anything else in the certification of the package, the way they certify a package.

So they have done two things. First, they have said we will give some criterion to design these

attachments. They know from experience that most of the time if something fails, it is not the device; it is the cable or whatever it is. Then they put in the requirement in B(3) that says even if you tear these things out, the package has got to be just as good as it was before.

MR. ZUDANS: I guess I --

MR. SIESS: Within the system I do not see that they can do much more. The only argument for the 2, 5, 10 that we have heard is that what they have been using, they have not had any packages pulled out, and the industry seemed to like it. But they are not very good arguments. They are never good arguments for arbitrary provisions.

MR. ZUDANS: Well, it is fairly high levels of acceleration, and you may be all right with any design.

MR. SIESS: But not for accident conditions.

MR. ZUDANS: Well, sure. If you run into a wall, I can get 100g easy, but that would be more in a crushing mode.

MR. SIESS: So it is arbitrary -- let us face it -- and that means it is probably wrong.

It hasn't given anybody any trouble and when they took it out to make it easier for somebody, somebody said put it back. So they figured if it wasn't going to make it easier they were going to have to calculate something.

MR. ZUDANS: Well, somebody should do the analysis.

MR. SIESS: This analysis is simple.

MR. BENDER: I suspect it is more likely to be that there are packages that are around already designed with this particular requirement, and once you take it out, you leave a little bit of uncertainty about what the numbers are that are the design basis. It seems to me for new packages you might want to have a more rational basis.

MR. SIESS: I don't know what is more rational.

MR. LANGHAAR: I don't know if we want to beat this around anymore, but I would make one further remark, that in the proposed regulations a number of figures on the allowable stress levels are being omitted. But here, we are putting some numbers back in.

MR. SIESS: Allowable stresses must be somewhere. Aren't they in a code or something?

MR. CHAPPELL: We have allowable stresses in Reg Guide 7.6 for spent fuel casks, but the people are

not required to meet them. The regulations are performance oriented. You drop your package 30 feet, put in a fire and if you release less than 82 in a week, it is okay regardless of the stress.

MR. ZUDANS: I wouldn't be concerned about stress under those conditions.

MR. SIESS: It still specifies 30 feet. That is arbitrary, too.

MR. MARK: Well, it is performance oriented, just like I said. It makes sense.

MR. SIESS: I doubt if the 2, 5, 10g is a heck of a lot more arbitrary than the 30 feet.

MR. LANGHAAR: Good point.

MR. ZUDANS: More arbitrary? More prescriptive?

MR. BENDER: The same.

MR. SIESS: They are equally prescriptive. Both of them tell you what you calculate or what you subject the package to. But I think they are both arbitrary. I think the numbers we came up with for the PAT package were pretty arbitrary.

MR. ZUDANS: Maybe I begin to see the point why the analysts would want to have these numbers, because otherwise, you would really be at a loss how to design the tie-downs. He uses that to design the

tie-downs.

MR. SIESS: He would have to design a package for the worst possible tie-down situation which would end up being the rigid, or it might not be the rigid.

MR. MARK: John points out that these numbers don't appear in IAEA anyway. Arbitrary as they may be, they just don't appear there. So what then?

MR. SIESS: What have they said? Anything? They just said the (b)(3) but left out the (d)(1)?

MR. MACDONALD: At one time, the numbers did appear in the IAEA, but they were in the advisory material. They had numbers for tie-down and numbers for lifting, but they were only advisory and not part of the regulations. In the U.S. regulations, since we went into Part 71, we did not include them as advisory material but put them right into the regulatory requirements.

MR. SIESS: As far as I am concerned, the (b) item is the one that protects the public. The other one just sort of acts to reduce the probability that you will need the other one. (b)(3) says that no matter what happens to these things, the package stays intact; pull them out. If you get 20 gs and they fail, it is still all right.

MR. MACDONALD: We would hope that at some

point in time, there will be industry standards that will be in place for tie-downs and transport. When these are in place, I think we can certainly consider dropping down the 10, 5, 2 requirement that we have now. Or incorporating the industry standards and not being as specific as we are now. This is just to continue past practice into the future until we do get those in.

MR. ZUDANS: I think the (b)(3) actually limits the strengths of tie-down devices such that you will not damage the package, and you could not have it rigid.

MR. MACDONALD: That is true.

MR. SIESS: Okay, let's go on. We didn't solve that problem, but it has been around for a while.

MR. HOPKINS: Comment on 71.51(a)(1), that this leak test standard which specifies 10^{-6} A2 is not really an additional requirement that said no loss or dispersal earlier. It is all a matter of how you look at it, as to whether it is an additional requirement or not. Certainly, there is additional specificity.

And 71.51(b), that is a requirement that you cannot use filters to limit your activity release in case of the accident. Mr. Langhaar is suggesting that perhaps filters are dependable enough these days that

you can use them for limited releases. The NRC staff thinks there is no need to be able to do that, and that it is not the best engineering practice available, and wants the use of filters restricted, very restricted, as 71.51(b) does.

So I think it is just a difference in perception between two engineering organizations. The Langhaar organization and the NRC.

MR. BENDER: For filtered containments they work so well.

MR. SIESS: It is not quite the same, Mike, because a vented filtered containment is at a different level.

MR. BENDER: I was just being facetious, Chet.

MR. SIESS: That was the first thing I thought of for venting this stuff. You don't want a mechanical cooling system; you prefer to have a passive type approach, and then the filters again get back into how good they are and how well they are maintained. Is that your thinking?

MR. CHAPPELL: Yes.

MR. MACDONALD: There is no need to shift everything on the filter, which is where you could end up.

MR. MARK: Langhaar also points out that here

is a departure from IAEA, also. Part of the whole pitch here is for getting with IAEA, aren't we, and here is a place where we are not.

MR. BENDER: For a change, I am in sympathy with the staff's viewpoint. I think that what we know about these filters on transporting equipment is not enough to be able to put much faith in them, even though I think they are right for certain kinds of circumstances where they would work. But for certain kinds of postulated accidents we are dealing with, it doesn't look like it is the sort of thing you would want to put a high degree of confidence on.

MR. MARK: Well, how are we, -- if an IAEA package comes in which depends upon a filter, do we say we won't allow it past the Statue of Liberty because it has a filter on it?

MR. HOPKINS: It can go to its destination, but no further.

MR. SIESS: It can go to its destination but it couldn't be used for domestic shipments. It hasn't got anything in it.

MR. MARK: Well, reprocess the fuel and bring it home again.

MR. SIESS: Not that one.

MR. BENDER: You can also analyze the cask --

MR. SIESS: The thing that bothered me about filters is you can rely on the filter to get it down to 10^{-6} from way up there, but you would have one heck of a dose, if you had on a belt or suspenders or something, but I don't know how you do that. You test it at 10^{-6} and then put a filter on it.

MR. BENDER: I think it is really a problem of how to take credit for it. That was the only point I was making.

MR. CHAPPELL: Someone did come up with an application of a filter that was reasonable. It could still be approved, but we would have to get an exemption. I think that application is unusual enough that exemptions won't, indeed, occur every day and there is no real -- or not a lot of additional staff work that will be needed to give an exemption. It won't happen every day.

MR. BENDER: Is there an example of a cask with a filter that you have identified?

MR. CHAPPELL: There is an overpack that has a filter, supertight. There is a filter on that.

MR. MACDONALD: There was a proposed package for a 100-liter plutonium nitrate where you have a gaseous evolution during normal conditions of transport. It was proposed there that you would have a

filter so that you would not increase the pressure in that package. The filter would vent the hydrogen gas but not the nitrate. That package also had a mechanical cooling system which was a damper in the middle. It had a chimney effect in which normally, -- to let the air go up through the package for the cooling. And in the event of a fire test, the damper was to close that suction of the air to go through the center of that package.

For every event, it had some active system that was going to take place, but it has essentially not gotten beyond pretty much of a thought process. It never got into the construction phase.

MR. SIESS: Now, the item about filters applies only for the normal condition leak rate. It doesn't say you can't use it for the accident condition. It says, "Compliance with permitted activity release...", in paragraph (a)(1), "...must not depend upon filters or mechanical cooling systems," and (a)(1) is normal conditions of transport. Am I right?

MR. HOPKINS: I believe that is what it says, yes, sir.

MR. SIESS: That is for the 10^{-6}. It says you can't rely on filters to get down to the 10^{-6}, but you could rely on filters to get down to the 1 A2.

MR. CHAPPELL: You have got a good point there. We wouldn't like to see it for the accident condition, either.

MR. BENDER: I would accept it for the normal condition, but think very hard about having it under accident conditions.

MR. SIESS: I was thinking about it the other way around. 10^{-6} A2 is pretty small.

MR. CHAPPELL: But you would accept it for normal conditions?

MR. BENDER: Well, I don't want to be too general, but what I am saying is if under the accident conditions I wasn't going to impose a public risk being able to use it for certain kind of functional purposes that didn't jeopardize the public if it didn't work right wouldn't bother me so much. It is a matter of how the device is being applied that determines its acceptability.

MR. SIESS: Of course, I think you would like to think that these things are --

MR. BENDER: I wouldn't want to use it for plutonium nitrate.

MR. SIESS: Mike, you still like to think these packages are sturdy enough to survive an accident without exceeding A2 quantities, which need filters to

clean it up.

MR. BENDER: Yes, but if I had some kind of gas you wanted to vent periodically through a filter and drive it into the yard where it stops and open a valve for a few minutes and vent it for a filter, it wouldn't bother me very much.

MR. SIESS: You would have to get a permit for each venting, Mike.

MR. BENDER: That would be the regulatory problem, but I could see that kind of thing being done.

MR. MARK: But you wouldn't want to count on it if you went into a bridge abutment.

MR. BENDER: That is a good example of when I wouldn't want to count on it.

MR. HOPKINS: If I could offer a comment, in reading the international rules I find that the limitation on filters applies both to normal and accident conditions. So I suspect that is an oversight in part 71 that we have uncovered here. I think it should apply both to the normal test and the accident test.

MR. BENDER: I think in some way or another, John ought to get credit for something.

MR. SIESS: It would be in paragraph (b)(2) or Section (a), whatever you call it. Let's go on, John.

MR. HOPKINS: The next point had to do with 71.51(c), which is the provision that says for LSA materials, packages do not have to be shown to resist accident -- the accident test conditions. The point is that the package for LSA then should not be considered to be a Type B package and should be located somewhere else. I think, again, this is just a perception difference. I would consider that to be a Type B package for LSA materials because it contains Type B quantities of LSA. And in fact, I would think it would belong right where it is. Other people who consider Type B packages as being accident-resistant packages take the other view. That is apparently the view that Mr. Langhaar took.

MR. SIESS: Is it likely they looked in the wrong place?

MR. HOPKINS: It has been in this since 1966.

MR. SIESS: Maybe that is the best argument against moving it.

MR. HOPKINS: There is no definition of a Type B package that would settle the argument one way or the other.

MR. SIESS: You have a whole section on defining Type B packages.

MR. HOPKINS: It is not precise in this

respect, however.

MR. SIESS: Oh. Is Type B a package or a quantity?

MR. HOPKINS: Both.

MR. LANGHAAR: A Type B package.

MR. HOPKINS: It means just about anything.

MR. CHAPPELL: We assign "A" identificaton numbers to LSA packages even if they have a Type B quantity in them.

MR. LANGHAAR: Type B package is defined in 71.4.

MR. SIESS: Yes, that is what I am reading. But is Type B quantity defined anywhere?

MR. LANGHAAR: Yes. That is defined on page 38.

MR. SIESS: Okay. But the Type B package is not defined as Type B package for Type B quantities. Type B package means a Type B packaging together with the radioactive contents. Is that a correct definition? Is there something that tells me that Type B package is package for Type B quantities?

MR. CHAPPELL: Is the question whether an LSA package is a Type B package?

MR. SIESS: The question in my mind is what is a Type B package.

MR. CHAPPELL: It is a package that meets the accident test, the 30-foot drop.

MR. SIESS: Well, why don't I see that under the definition as a package that meets the requirements of section so and so? I guess if I read on it says now you have got two, you have got BUs and BMs.

MR. LANGHAAR: And LSAs.

MR. SIESS: And it says -- okay, I guess I can't find it. It doesn't say that. Which section has the accident requirements, 71.73?

MR. ZUDANS: I guess Type B is defined on 71.4 and 71.51. That defines it. The only distinction is it has to withstand accident conditions.

MR. SIESS: I am being very square here, now. I am looking for a definition under definition.

MR. ZUDANS: No, it is not defined.

MR. SIESS: That is a strange place. It says Type B package is designated BU unless it has certain conditions which would allow the release or radioactive material to the environment under the test in 71.73, in which case it will be BM. And nowhere does it state very clearly that if it meets 71.73, it is a BU unless it has this, and then it is a BM. So it sort of backs into it for some reason, but I assume everybody knows what that is and I am not going to beat it to death.

MR. CHAPPELL: The only difference in a Type BU and a BM package, the only distinction for maximum normal operating pressure is whether they have a relief device or not. They still meet the same test and have the same acceptance standards following the test.

MR. SIESS: Yes, but the way this is written, the only reference to 71.73 is in the exception part of it. It backs into it. There is nothing that says that it should meet all the requirements to be a BM and all but this to be a BU.

MR. HOPKINS: That is back in the requirements where those provisions are. You don't put requirements like that in the definitions.

MR. SIESS: The thing is he defined it as a package that meets the requirements, and I can't find that except by inference.

MR. HOPKINS: You can't find it in the definition, but you can find it back in the requirements.

MR. SIESS: When I asked for a definition of Type B package, it was what it wasn't. I thought the simple definition I got is the kind of thing I would expect to find in the definitions, but that is all right. It is not important that I know.

MR. HOPKINS: What is missing that perhaps should be in there is the requirement that Type B

quantities of radioactive material -- they are the ones you have to get permission to use -- have to be shipped in the Type B package. They can only be shipped in the Type B package.

MR. SIESS: That must be somewhere in the regulations.

MR. HOPKINS: It is in the system.

MR. SIESS: I would define the Type B package as one that meets the requirements of 71.73.

MR. ZUDANS: In addition to other requirements.

MR. SIESS: Then I would say that there are two categories of that, BM and BU, and they have different requirements. But that is beside the point. Go ahead.

MR. HOPKINS: The next question in Mr. Langhaar's letter has to do with 71.71(c)(1), which has to do with solar radiation. There is apparently some controversy over that, too. But the Staff opinion is that the solar radiation is a minor effect in the whole system of things. There is no need to complicate this minor effect by having alternate provisions as the IAEA does. We only picked up one of the IAEA provisions. There is a need for a regulatory guide to describe how to use the table that will be in Part 71, and perhaps that is all that is necessary.

MR. SIESS: Would it explain how to use it? In other words, the reg guide would define what a surface is?

MR. HOPKINS: There is at present --

MR. SIESS: That was John's question. If you have a lot of surface there due to fins, this is per square centimeter, so how do you count up the square centimeters?

MR. ZUDANS: Projected area.

MR. SIESS: Does it say that?

MR. ZUDANS: Somewhere, yes. But I had a question on this particular piece, too. Why not make reference to a methodological table used for other industries?

MR. SIESS: That ain't easy to do in a regulation.

MR. HOPKINS: Guidance to the regulation is appropriate, but not guidance to satisfy the regulation.

MR. ZUDANS: This is prescriptive. Eight hundred gram calories per square centimeter may not be enough in some locations.

MR. LANGHAAR: These are designed to be equivalent to 1 degree north latitude, I think. I think that is our basis.

MR. SIESS: That doesn't bother me since it is

a small effect. But the question you raised about fin --

MR. LANGHAAR: I wouldn't know how to apply the table.

MR. CHAPPELL: Well, the problem we have had is the additional temperature due to solar heating is relatively small in comparison to the temperature due to the heat load and the ambient temperature. One could pick his latitude, the amount of cloud cover, how long the day is, and integrate that thing and work it out exactly. But in view of the relatively small effect this has on the actual temperature, the thing that is important, it just doesn't seem to be warranted to have a detailed prescription of how to do it.

MR. SIESS: I don't think I was questioning the insulation figure. I was questioning the surface. How do you calculate the surface? Maybe that doesn't make much difference either.

MR. CHAPPELL: I would personally agree with that. I would prefer so many Btu per square foot per hour and let it go at that.

MR. SIESS: Square foot of what?

MR. CHAPPELL: Projected area.

MR. SIESS: I didn't find the words "projected area" anywhere. I see flat surfaces, horizontal base and other surfaces, flat surfaces not horizontal, and

curve.

MR. ZUDANS: But those who do the solar calculations know exactly what to do with complex surfaces.

MR. SIESS: Okay.

MR. ZUDANS: It is a complicated method.

MR. SIESS: I could also argue, if I go from horizontal to not horizontal, I get a factor of 4, and I don't know what is horizontal, either. If I tilt it one degree and lower it by a factor of 4 --

MR. MARK: Put fins on it.

MR. ZUDANS: It is my feeling that this table shouldn't be there. You should simply make reference to that area that you want to calculate.

MR. SIESS: Can you do that in a rule?

MR. HOPKINS: You can do almost anything but to leave it wide open.

MR. SIESS: You make it harder on the Staff to check it.

MR. HOPKINS: Harder on the Staff and harder on the applicants to know what to do.

MR. LANGHAAR: It would be very much clearer and simpler, for example, to say the solar radiation shall be figured as so many gram calories per square centimeter based on per 24-hour period, based on maximum

projected area.

MR. SIESS: Somebody said they thought it said projected area, but it does! ..

MR. ZUDANS: I think it did someplace.

MR. BENDER: Why don't we leave it that they ought to go back and look at it a little bit more and go on to the next item. We might be here for quite a while.

MR. ZUDANS: I have to agree with Ross; it is not important.

MR. SIESS: Okay, let's go on. The importance has nothing to do with how long we spend on it.

[Laughter.]

MR. BENDER: That is the most astute observation that has been made today.

MR. HOPKINS: The next comment has to do with the graduated normal drop test on packages, and in particular on a very large 100 ton cask. The regulation would require that that be dropped from a distance of one foot in the most damaging orientation, which would mean in most cases upside down. I don't think anybody argues that that is by no means a normal condition, and if you were to have something like that happen in transportation, it would be considered an accident and the cask would be returned to its location for overall evaluation.

So we recognize that it is not a good normal test for large packages such as this and, in fact, have provided exceptions in a couple of cases for very large packages where it was not relatively easy for the package to be shown to satisfy this test.

MR. SIESS: I don't see how you could get something upside down and drop it only a foot.

MR. HOPKINS: I think it is a case of an evaluation.

MR. SIESS: Somebody picks it up the wrong way?

MR. BENDER: I didn't think you could locate reactors 180 degrees out of position, but they did it.

MR. HOPKINS: In any event, in the few cases where exceptions seemed to be needed, the Staff did evaluate against other unspecified occurrences which we are concerned with, such as rifle shots and large, heavy objects being dropped on the package. So that in the few cases where it was necessary, an exception has been provided.

MR. HOPKINS: 71.73(c) has to do with the conversion. It is not an exact conversion, but to take care of this and similar problems, we have introduced a sentence at the beginning of the definition section, 71.4, which says, "Throughout this part the standards are expressed in metric units. The approximate English

equivalents presented in equivalencies are presented for information only." So we feel that even though they are not exact equivalents, we have taken care of the problem, at least from a legalistic standpoint.

MR. ZUDANS: Could I go back to my very early comment on this matter? You are not consistent. After I voiced my dissatisfaction with metric versus SI, I find that you use kilopascals on page 75, so you really used the metric and the SI system already.

MR. HOPKINS: You know, we had a consultant in to do a lot of these conversions for us. I guess he did not get them all.

MR. ZUDANS: He left kilopascals on page 75.

MR. SIESS: What language is the IAEA written in?

MR. HOPKINS: Now it has strictly gone to the SI units.

MR. SIESS: And they would use kilopascal units?

MR. HOPKINS: Yes.

MR. ZUDANS: I think there are so few places -- I have come to maybe half a dozen -- where it is very easy to convert to "kilopascals" that metric should be eliminated.

MR. SIESS: I doubt that anybody outside the

IAEA and Europe is using pascals.

MR. ZUDANS: Everybody. Sandia, Lawrence Livermore.

MR. SIESS: I said in Europe.

MR. ZUDANS: Yes.

MR. SIESS: And nobody in South America is.

MR. MARK: There isn't anybody there.

MR. HOPKINS: Argentina is buying it all the way.

MR. SIESS: I shouldn't say nobody. The people I deal with don't.

MR. ZUDANS: Go to Canada, for example.

MR. SIESS: The Canadians call it the British.

MR. ZUDANS: Go to England, go to France, go to Germany. Anywhere.

MR. SIESS: In Germany the technical stuff isn't.

MR. BENDER: This isn't a substantive argument.

MR. ZUDANS: It has meaning. I would only like you to be consistent; okay?

MR. SIESS: The French are using bars.

MR. ZUDANS: Bar equivalents.

MR. SIESS: Kilograms per square centimeter is equivalent.

MR. ZUDANS: No, to Newtons, to Pascals.

MR. SIESS: A bar is an approximation.

MR. ZUDANS: Keep on arguing and I will show you.

MR. SIESS: I will bring you half a dozen papers and show you they are not.

MR. HOPKINS: 71.85(b) has to do with the preliminary determination test before the first use of any package, and it is related to the maximum normal operating pressure. The test has to be performed to show that the package will withstand a pressure of 50 percent higher than the maximum normal operating pressure. So the Langhaar comment here goes back to all the earlier discussion about whether you should have to consider a year to get to the maximum normal operating pressure and whether filters could perhaps be used to satisfy the requirement. So it is really a rehash of all the things we have already talked about in the context of the pressure test that is required before the first use of the package.

MR. SIESS: Was the reference to Subpart (c) correct?

MR. HOPKINS: No, he is correct, the reference should be to Subpart (e). We made that correction.

MR. MARK: Now, when you say you will have a pressure test before the use of the package, does that

mean they have to wait a year?

MR. HOPKINS: No. The calculation of what the maximum normal operating pressure would be is done by calculation, and the test, of course, is done to whatever the calculated pressure would be.

MR. SIESS: An awful lot of this is done by calculation.

MR. MARK: I hope so.

MR. HOPKINS: The next comment has to do with 71.87(k). It is really an editorial comment which changes the meaning a little bit, and to the better. So we agree with John that what he suggests is right and what we have was wrong, so we are making the change. We made a similar change --

MR. MOELLER: That is two.

MR. MARK: You actually got more than one.

MR. HOPKINS: We could call it three for John because we saw the same problem in Paragraph (j), just the one he saw, and made the same changes there.

The last comment has to do with 71.97(a) and the requirements for advance notification. Mr. Langhaar raises an interesting point as to why we are requiring notification only for nuclear waste instead of all similar packages. The clear and simple reason is because that is what Congress told us to do.

MR. LANGHAAR: Good reason.

MR. SIESS: You could have gone farther.

Let's just read one more sentence out of John's report, though. "In summary, I regard the proposed Part 71 as a substantial improvement over the present Part 71." We should have put that in the front and said, "However, ...", which is the way it usually goes.

[Laughter.]

MR. SIESS: I think it is an improvement. I think it is still one of the most ungodly things I have ever come across, and I am going to quit complaining about it because somebody might ask me to fix it up, and I know I couldn't do that.

MR. MARK: I want a minute still sometime.

MR. SIESS: You can have it right now, sir.

MR. MARK: I just wanted to call attention, and I am sure it does it itself without me, to the real strangeness in tables in Appendix A.

MR. SIESS: Find the page.

MR. MARK: It starts on page 95. It gets strange there. There are instructions on 95, 96, 97 and 98 as to how to work out numbers for (a)(1) and (a)(2) as given in Table A.1. They are for my taste almost incomprehensible.

MR. SIESS: You have to diagram it.

MR. MARK: Indeed you have got to diagram it. When the identity of nothing is known, the value will be 2 curies, when it is known, it will be .002, and on and on it goes. And then you will take 1000 times the value in (a)(3). But that isn't what you do because it is never done. In (a)(3) you say it is going to be 3 curies. A thousand times that will be 3000, but that number doesn't appear anywhere.

MR. HOPKINS: There is another arbitrary rule that says it can never exceed 1000.

MR. MARK: Yes, yes. All of that really is just a marsh. It is peculiar. Why do you say it when you don't mean it? Why not write something else instead?

MR. BENDER: Aren't you eliminating appendices?

MR. HOPKINS: Why they allowed us to keep this appendix I will never know. They chose other appendices which were very similar to this and forced us to put them in the rule.

MR. MARK: This came from IAEA.

MR. HOPKINS: So did all the other appendices.

MR. MARK: And why does it have the characteristics it does? I suppose no one understands because they must have broken up into subcommittees and each one of them wrote one line or two.

MR. HOPKINS: In defense on all this stuff on all these pages about how you figure the (a)(1), (a)(2) quantities, we did have a comment from the Department of Energy which questioned two of the values that were in here and argued they were wrong, and we did follow through the description of how you derive the quantities, and we did find one place where the explanation was a little weak so we clarified it, but we were able to follow it through and arrive at the quantities.

MR. MARK: The factors between (a)(1) and (a)(2), I understand they are a little complicated because (a)(1) is a maximum of 1000 and maybe the external radiation helps you decide what the number ought to be. Most of the (a)(2)'s are equal to the (a)(1)'s, but then many of them are not. And the factors of difference range from 1000 -- well, the same factor of difference is 1, then you get 1.5, 4, 2.5, 14, and then the very first entry is 300,000, and there can't be any possible explanation of that.

MR. HOPKINS: What was the last one again?

MR. MARK: The activity on 227, a factor of 3000 between (a)(1) and (a)(2). It is really miraculous. The first one in the table, 1000 for (a)(1) and .003 for (a)(2). That is really wonderful.

It does not have a terribly strange style of activity, but I do want to call your attention to something on page 115. U-235 has 0.2 curies for the A2 value. But enriched uranium, has a 0.1. Now, that is really wonderful.

MR. HOPKINS: Where are you again?

MR. MARK: On page 115 in the uranium set.

MR. SIESS: The second line is the U-235, two-tenths and 100. Then you come down to enriched uranium 20 percent or greater, that is 238 enriched.

MR. MARK: But if I enrich 238 enough I get 235.

MR. SIESS: It says 20 percent or greater, and it really should say 20 percent to 99.9 percent, because at 100 percent it goes back to U-235.

MR. MARK: There is something peculiar there.

(Laughter.)

MR. SIESS: Don --

MR. BENDER: Unfortunately, only the federal government ships these materials.

MR. SIESS: When I looked at these instructions, my first thought is, I assume somebody has worked through as you say and know that they work, but you could make a decision table up on this. You could find out whether it is exhaustive and unique or whether

there are some peculiarities on it. That is the ideal place to use a decision table or a decision chart, either one, to see whether something fell between the cracks or whether something will give you two answers, or send you to two different places. Because to do it verbally is almost impossible.

I think there are four conditions under 1 there; a single radionuclide of known identity, so it is either known or unknown. If it is unknown, you do something else. You go to Table A1 if they are there. If they are not there, you do something else. So I already have two branches.

Then, they also apply it to alpha, whatever they are, and alpha neutron and gamma neutron sources, so that is four more decision points. So already on that one, I am branching that one out like this (indicating). It is possible one of them goes two places.

(Laughter.)

MR. HOPKINS: One comment in that regard is that the IAEA is making a concerted effort to include any radionuclide in the table itself that can be thought of as being halfway useful, so that the instructions don't have to be used.

MR. MARK: John, you were explaining to me

some of the complications of this. They had to do with biological halflife as well as type of radiation, and I understand -- I don't pretend to understand those things; it is only Dade who understands that -- but I understand that there are complications of that sort. After all, plutonium lives a certain length of time in the bone, like 200 years or something like that, and it is at least 87,000 days, I believe, is plutonium's biological halflife. It is much longer than a human halflife.

MR. ZUDANS: Or a full life.

MR. MARK: Or a full life. But why is there a difference between uranium 234 and uranium 235? I understand they have a different halflife, but they don't have a different biological life.

MR. LANGHAAR: I can't explain these detailed differences, Carson, because I was really not involved in making these calculations. I am not a health physicist, so I don't know the answer on that.

MR. MARK: Well look, there is something a little bit strange about the uranium numbers. 234 has a .1 tolerance for A2; 235 has .2 curies. 235 is a longlived thing compared to 234, but they are both long compared to human life. And it is in curies, which isn't a matter of life, it is a matter of rate. Why are

the rates different? I can't understand it.

And then, of course, what I was really pleased with was discovering that enriched uranium was different from U-235.

MR. HOPKINS: I think maybe I could explain what the difference is. Enriched uranium has not only U-235 in it, but U-234 as well. So the fully enriched uranium is a combination of a little U-238, a lot of U-235 and some U-234.

MR. MARK: That is very good, because enriched uranium has more U-234 per atom of 235 than does natural uranium.

MR. HOPKINS: So that would explain. The difference is in the right direction.

MR. MARK: I am still skeptical.

MR. SIESS: Gee, I didn't know anybody knew this much about all these things.

(Laughter.)

MR. HOPKINS: This is the health physics part of the regulation.

MR. SIESS: I don't know that many health physicists, but I didn't know they were that smart.

(Laughter.)

MR. SIESS: Do they really know that much about the biological effects of all these different

radioisotopes?

MR. MARK: No.

MR. HOPKINS: The transportation people don't do the main part of the derivation of these numbers. Most of these are ICRP's; we just take the ICRP results and translate them into the transportation scenarios.

MR. SIESS: Well, after seeing what the disputes were on the BEIR Committee and then I see all this kind of detail, I will admit it is only one significant figure which I thought was at least of some comfort.

MR. BENDER: I happen to believe that even if this table is wrong, it won't have any effect on the transportation business.

MR. MARK: No. The number of times you find yourself transporting actinium-227 is few and far between.

MR. BENDER: I don't remember the last time.

MR. MOELLER: A question while we are talking about --

MR. SIESS: Zenons, do you have any more comments on this? I never got around to you formally.

MR. ZUDANS: The only comment I had was metric versus SI, and that was rejected.

MR. HOPKINS: And you brought it up twice.

MR. SIESS: Well, I think they should take a look at it.

MR. MOELLER: Could I ask a question?

MR. SIESS: Where was the metric part? I didn't see it.

MR. ZUDANS: At the beginning they say they defined metric, and metric is a non-real thing.

MR. SIESS: Where were the metric units?

MR. ZUDANS: In the very beginning, I forget the page. Page 7 or something like that.

MR. SIESS: They are not using the SI radiation units, are they?

MR. ZUDANS: I guess on page 32 it is defined.

MR. CHAPPELL: they are not changing over the radiation units.

MR. SIESS: Curies are all right, aren't they?

MR. HOPKINS: On page 36 we use 7 kilograms per square centimeter.

MR. ZUDANS: And 76 is a kilopascal. I would simply like to see you stick to SI because it is just as easy. It is not that complicated.

MR. SIESS: Well, IAEA uses SI?

MR. HOPKINS: Yes.

MR. SIESS: I couldn't care less what you use, but it seems to me that since nobody in this country is

going to care too much, why don't you use what they use, and certainly, don't mix them. You have kilopascals in one place and kilograms per square centimeter in another, that does look strange in a single document.

MR. HOPKINS: I think that was an oversight by the licensing staff.

(Laughter.)

MR. ZUDANS: Also, when you refer to a gram you really mean the SI system. You don't mean the force, you mean the mass. Therefore, there is an inconsistency between that kilogram and this gram. So you are better off sticking to one system.

MR. SIESS: Don, turn to page 74. You have an interesting combination there. You have 800 F equal 1475 F.

MR. HOPKINS: I think John told us about that.

MR. SIESS: Did John catch that one?

MR. LANGHAAR: Yes.

MR. SIESS: You have F instead of C?

MR. HOPKINS: Yes.

MR. SIESS: Incidentally, I believe in SI you do not put a degree sign in front of C, do you?

MR. ZUDANS: Yes, you would.

MR. SIESS: You do in front of K, but not in front of C, because K has some other symbol. You just

write 800 C and not 800 degrees C.

MR. CHAPPELL: They don't call it Centigrade anymore, either.

MR. SIESS: Celsius. That is close enough for engineering purposes. .00002. It is in the third decimal column somewhere.

Well, gentlemen, what are we going to tell the full committee about reviewing this rule? Can we tell them it is about as good as it is going to get to be in the next 5 or 10 years?

MR. MARK: Let's just hope it doesn't get much fatter in the next 10 years.

MR. SIESS: Well, you have got public comments and everything else. Does anybody object to essentially telling the full committee we have looked at this and made some suggestions which were followed and others which were explained?

MR. MARK: No objection.

MR. BENDER: I think we should rely on your experience in applying codes. It has been used for a few years and it better not be changed very much.

MR. MARK: We could use that sentence that John gave at the end of his letter.

MR. SIESS: Well, John, I am relying a lot on what John said. He thinks it is quite a bit improved.

There are things that need to be looked at, continued to be looked at, and I am sure that will be done. Although Don may not want to look at it in 10 years.

MR. ZUDANS: Another comment. When you refer to temperature in terms of Kelvin you do not use the degree.

MR. SIESS: You don't use it on the K.

MR. ZUDANS: Not on the K.

MR. SIESS: But you do --

MR. ZUDANS: On the Kelvin. It is called Kelvin just like Newton was called Newton.

MR. SIESS: But you do use it on the C?

MR. ZUDANS: That is right.

MR. SIESS: Okay. I was wrong. I knew there one you used it and one you didn't.

MR. ZUDANS: Yes, I looked it up.

MR. MOELLER: A quick question. In 71.47 on page 59, item (d), you are saying that 2 millirem an hour in any normally occupied position of the vehicle -- I assume that could be the driver?

MR. HOPKINS: That is correct.

MR. MOELLER: That is okay. And if you are higher than that, you need personnel rad monitoring devices and so forth. What is the basis of the 2 millirem an hour? I mean, I have heard that used before

and I don't know the origin. What I see -- and I don't know if you assume a driver -- maybe there are two drivers and one sleeps while the other drives? I mean, in the two days, he or she would have 100 millirem which would be the weekly dose.

MR. HOPKINS: Of course, drivers are to be treated now as occupationally exposed people.

MR. MOELLER: But this doesn't say that, does it? If he or she was really occupational, wouldn't they be monitored? You know what I mean, badged?

MR. HOPKINS: Not necessarily. The regulations, the new regulations, make provision for all carrier personnel being occupationally exposed, and everyone has to be evaluated. And if they are below a certain level you don't worry about them anymore because they are essentially like the general public. And if their projected exposures exceed 50* millirem a year, you have to do detailed evaluations on them and keep track of them.

MR. MOELLER: Well, I was wondering here -- in other words, the only way I can read this and say that is fine is to assume that drivers only work X days a year, or X hours per day. Because if you worked in that cab 48 hours, or make it 50 hours, a week, you have 100 millirem; at the end of the year you have 5 rem. So I

guess I need to know a little more.

Now, the ICRP, you are correct on that 1500 millirem a year, which is roughly what, 30 percent of the 5. Well, this 2 millirem an hour is going to be again, depending on how long you are there, you are going to receive well over 30 percent of the weekly or annual -- well, it is more than an annual dose.

MR. HOPKINS: Yes. And, of course, under the new regulations the mere satisfaction of this provision with the radiation monitoring devices wouldn't be sufficient. There would have to be an evaluation at a much lower level to see whether this would be required.

MR. MOELLER: Correct.

MR. HOPKINS: The origin of the 2 mr per hour comes -- we take it right out of the DOT regulations. It has been in the DOT regulations as 2 millirem an hour for a number of years, and we have made no attempt to evaluate it when we took it from them and put it in our regulations.

I would suspect that they would say the origin of it is from our Part 20 where we have had 2 millirem per hour in unrestricted area limitations for long periods of time.

MR. MOELLER: I would ask the question, then, is this compatible? In fact, is this whole section

compatible with what you anticipate the new 10 CFR 20 to say? In other words, looking for internal consistency within the NRC among its several regulations.

MR. SIESS: Another new criterion.

MR. HOPKINS: I guess I haven't evaluated the new Part 20 enough to answer that question. We are just in the process of looking at it now.

MR. MOELLER: Well, I would like to see you show this to someone, Bill Mills or someone, and say to them is everything fine, or have they already looked at it and said it is fine.

MR. HOPKINS: No.

MR. MOELLER: Because internationally, for example, I do not know that it is compatible with ICRP recommendations. I don't know that it is not, but I don't know that it is.

MR. SIESS: Is it consistent with the IAEA?

MR. HOPKINS: Yes. This is a provision of the IAEA regulations.

MR. MOELLER: The IAEA states on an international level that they look to the ICRP for basic radiation protection guidance.

MR. SIESS: Is rem an SI unit?

MR. MOELLER: No.

MR. HOPKINS: Ceverts.

MR. SIESS: Did you say somewhere you are using SI? Where did you say you mentioned that in here?

MR. HOPKINS: We said we are using metric.

MR. SIESS: Where is it?

MR. HOPKINS: Right at the beginning of 71.4.

MR. ZUDANS: Page 32 I think. Am I right?

MR. HOPKINS: Right, page 32.

MR. SIESS: And metric means something different than SI.

MR. ZUDANS: A little different.

MR. SIESS: Well, I don't think that radiation units were considered part of the metric system. It is a weights and measures system.

MR. ZUDANS: It is the kilogram mass meter second and ampere.

MR. SIESS: Metric was always used in terms of weights, measures and so forth.

MR. ZUDANS: Yes. The kilograms is force in metric. The CGS system was a gram mass.

MR. SIESS: Electrical and light didn't really come under metric, but it is under SI.

MR. ZUDANS: The CGS system is inadequate for heat transfer and electricity. That is why you have fractional powers, to measure units, four basic units.

MR. HOPKINS: I understand there is a serious question as to whether the United States is going to pick up SI units for radiation measurement. At least the last I heard there was a serious question about that.

MR. SIESS: There is a question about whether they are going to pick them up for anything else the way things are going. I think they just proposed a --

MR. MARK: They just disbanded the metric board.

MR. SIESS: That is no loss. They were not doing anything. Unless Congress does something, there is nothing that is going to be done.

MR. ZUDANS: The simple facts of life will force us to use the SI system in many areas; not in all.

MR. SIESS: Well, I think this country would have adopted a metric system if it had not been SI.

MR. ZUDANS: Well, we don't even have a complete decimal system.

MR. SIESS: Anything else, gentlemen? The meeting is adjourned.

(Whereupon, at 5:02 p.m, the meeting was adjourned.)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

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in the matter of: ACRS/Subcommittee on Transportation of Radioactive Materials

Date of Proceeding: August 24, 1982

Docket Number: _____

Place of Proceeding: Washington, D. C.

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Jane N. Beach

Official Reporter (Typed)

Jane N. Beach

Official Reporter (Signature)

MAJOR CHANGES FOR IAEA COMPATIBILITY

(1973 REVISED EDITION)

1. INDIVIDUALIZED TYPE A QUANTITIES

2. CLASSIFICATION AS TYPE B (M)/B(U)

Layin
T8, 9, 10

MAJOR CHANGES FROM PROPOSED RULE

(AUGUST 1979)

1. EXCLUDE SOME DIFFERENCES BETWEEN TYPE B(M) AND TYPE B(U)

2. WITHDRAW CHANGES TO LSA STANDARDS

3. WITHDRAW PROVISIONS TO TRANSFER REGULATION OF ALL LSA MATERIAL TO DOT

4. EXCEPTION TO RETAIN 20 C_i LIMIT FOR CERTAIN SEALED SOURCES

RESOLUTION OF INTERNAL COMMENTS - GENERAL COMMENTS
(NMSS MEMO DATED JUNE 11, 1982)

1(A) LSA PROBLEMS - ADD BRIEF STATEMENT ON IMPENDING RULE-MAKING ACTION.

1(B) TYPE A QUANTITY LIMITS - COMMENT WITHDRAWN.

2. LSA TRANSFER TO DOT - DELETION OF DISCUSSION ON TRANSFER; POSTPONE ACTION ON PETITIONS.

3. EXISTING PACKAGES - ADDED SUGGESTED TEXT.

4. IAEA TRANSPORT REGULATIONS - COMMENT WITHDRAWN.

5. Pu AIR TRANSPORT - ORDER CANCELLED IN REGULATION.

6. AUTOMATIC RENEWAL - TEXT CLARIFIED.

7. ECONOMIC IMPACTS - COMMENT WITHDRAWN

RESOLUTION OF INTERNAL COMMENTS - PART 71 TEXT
(NMSS MEMO DATED JUNE 11, 1982)

1. Nuclear Waste Definition - Definition combined with text of requirement.
2. Radioactive Material Definition - Definition deleted.
3. List of DOT Regulations - Administrative requirement.
4. Physician Exemption - No change.
5. General Licenses - Moved Pu. air restriction to Subpart G.
6. Existing Package Provision - Clarifying change.
7. Dates for Fabrication and Export - Made the same.
8. General Licenses - Moved Pu. air restriction to Subpart G.
9. LSA Exemption - Clarification.
10. Multiple Drops - Will delete when justified.
11. Report Package Defects - Reference to Part 21.

ACRS COMMENTS

(LANGHAAR LETTER DATED 2 AUGUST 1982)

1. Para. 1, performance requirements - Part 71 and IAEA (in 1984) moving to performance requirements.

2. Para. 3, IAEA incompatibility - Packages for international use can be evaluated against both regulations.

3. Para. 3, future IAEA Regulations - Mechanisms exist for information on IAEA rules.

4. 71.4, MNOP Definition - One year period agreed on internationally. Exceptions available through regulations when justified. Part 71 limited to transport.

5. 71.4, Part 73 Requirements - Spent fuel requirement in Part 73 for information safeguarding provisions.

6. 71.4, Bolt Stretch - Not considered a pressure relief device under Part 71. Not an engineered fixture.

7. 71.4, Shipment Notification Quantity - Confusion reduced because "nuclear waste" definition eliminated.

8. 71.10, Inconsistency - Definition of radioactive material deleted.

9. 71.13(B), EDITORIAL - NO CLEAR ADVANTAGE.

10. 71.13(C), LICENSEE CHOICE - INTENT APPEARS CLEAR.

11. 71.13(C), ALL OR PARTIAL REQUIREMENTS - INTENT APPEARS CLEAR THAT ALL REQUIREMENTS MUST BE MET.

12. 71.31, INCONSISTENCY - EXCEPTION ADDED TO 71.31(B).

13. 71.43, NO LOSS OR DISPERSAL - NOT CLEAR THE WORDING PRESENTS A PROBLEM.

14. 71.45, TIE-DOWN STANDARDS - PROPOSED DELETING, PUBLIC COMMENTS, REVERSED. 71.45(B)(3) NOT ADEQUATE BY ITSELF, PROBABILITY OF PACKAGE FALL WOULD RISE.

15. 71.51(A), NOT ADDITIONAL - ADDED SPECIFICITY.

16. 71.51(B), RECOGNIZE FILTERS - NO NEED TO ALLOW CREDIT FOR FILTERS. NOT BEST ENGINEERING PRACTICE.

17. 71.51(C), NOT TYPE B PACKAGE - IT IS PACKAGE FOR TYPE B QUANTITY OF LSA.

18. 71.71(C)(1), SOLAR TABLE - SOLAR RADIATION HAS MINOR EFFECT. CHOSE NOT TO COMPLICATE.

19. 71.71(C)(7), INVERTED DROP - RECOGNIZE NOT A GOOD NORMAL TEST FOR LARGE PACKAGES. EXCEPTIONS PROVIDED.

20. 71.75, Temperature Conversion - Parenthetical numbers only approximate. See 71.4 introduction.

21. 71.85, MNOP Test - Protection required against lost package together with inoperative pressure relief. Exceptions can be provided when justified.

22. 71.87, Editorial - Improvement accepted.

23. 71.97, Limited Scope - Applicability limited to what Congress specified.