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NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

PUBLIC MEETING

DISCUSSION OF SECY-79-187A/B - Upgrade Rule

Place - Washington, D. C.

Date - Tuesday, 24 July 1979 Pages 1-49

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

PUBLIC MEETING

DISCUSSION OF SECY-79-187A/B - Upgrade Rule

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Room 1130
1717 H Street, N. W.
Washington, D. C.

Tuesday, 24 July 1979

The Commission met, pursuant to notice, at 2:40 p.m.,

BEFORE:

DR. JOSEPH M. HENDRIE, Chairman

VICTOR GILINSKY, Commissioner

RICHARD T. KENNEDY, Commissioner

PETER A. BRADFORD, Commissioner

JOHN F. AHEARNE, Commissioner

PRESENT:

Messrs. Burnett, Snyder, Shapar, Gossick, Evans, Case, and Nordlinger.

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P R O C E E D I N G S

(2:40 p.m.)

CHAIRMAN HENDRIE: Now I formally rap the gavel and ask us to come to order.

The Commission meets this afternoon on a subject which, if not one of our favorite ones, at least must be ranked high among a number of those which we see frequently. At a long meeting a few weeks ago on the subject of the upgrade rule and associated matters, we agonized back and forth at considerable length over some of the language for both the upgrade rule, which applies across the board, and the related portion of the Commission's regulations, Part 7355, which applies to security measures required at reactors. And we came out of that long discussion with a Commission consensus that we would adopt the language for these safeguards matters that -- let's see if I can find the particular words back in here -- "these facilities" and so on "should establish, maintain or make arrangements for a physical protection system which will have as its objective to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security" and so forth, and the corresponding language to make it uniform across the safeguards area in 7355.

We asked the staff to please go and do the necessary, hopefully final, redrafting for the upgrade rule and for a

companion language change in 7355.

And the second item which was discussed was how the nonpower reactors then fitted under the regime which would be promulgated by the upgrade rule. There was recognition of special difficulties there, and we asked the staff to think about those and how they might reasonably be dealt with on an interim basis, so that we could go ahead with the upgrade rule and still not shut down all the research reactors.

On the other hand, we didn't want to hold up the upgrade rule until we worked out what finally should be done with the research reactors.

So we have before us today two papers, 187-A and 187-B. One of them deals with the matter of the language to be used with regard to assurance in the regulation, the upgrade rule and the conforming language of 7355; and the B paper has to do with the impact of the upgrade rule on non-power reactors, notably the research reactors.

I will call the Commissioners' attention to the fact that there is an enclosure to the B paper which contains information protected under 10 CFR 2.19(d) from public disclosure, and that if it becomes useful or necessary to discuss matters, we may want to stop and close that portion of the meeting.

(At 2:45 p.m., Commissioner Kennedy entered the room.)

CHAIRMAN HENDRIE: I think, however, there is a good chance that we will be able to go through without having to

deal with those specific .790 matters.

Lee, why don't you go ahead.

MR. GOSSICK: Mr. Chairman, I don't know that we really have much to add to what you have just given in the way of the status of this thing. We've seen the memo from Mr. Kenneky to the Commission. There were some questions. I think we're prepared to address any questions or comments the Commissioners may have about the 187-A and B papers that are before you.

Bob, do you have anything else?

MR. BURNETT: No, I was geared up to just say what the Commission had asked us for, and I think the Chairman has covered all of that.

One other thing you all had asked for was a report on the self-protecting level or the 100-rem rule. That, of course, is in 187-B. That status has been reported to you. I believe that using high as the objective, that paper was concurred in by all the Offices, including ELD. I think that does satisfy what the Commission wanted. I think that portion is essentially complete, and any questions really, even coming from OPE, were directed toward the non-power solution that we had recommended.

CHAIRMAN HENDRIE: Why don't, for purposes of starting the discussion out--the Commissioners will obviously generate questions as it suits them. But why don't we start out and

take a look at the OPE comments on the A paper. Bernie, I guess you will act as the responsible officer for that, for that publication.

What do you mean, the text of 7320, et cetera, et cetera?

MR. SNYDER: The point there is just that the A paper differs from the B paper, obviously. If you were to g with the B paper, there would be some minor changes, but important ones, necessary to be made in 7320 on the B paper. In other words, I just want to raise the point that there is a minor but very important change.

MR. BURNETT: Bernie is exactly correct on that problem there, and Mr. Evans, who will be performing the actual manipulations --

MR. EVANS: We'll make sure that that gets worked in. So that's no problem.

MR. SNYDER: We don't need to dwell on that one, really.

The second point might have been written a little differently on reflection. There's a footnote in the changes to 7355 as part of the A paper that seemed to us to be a little unusual, and it's going to be in the body of the regulation itself. Perhaps it might be better if it were in the statement of considerations. We would offer that as a suggestion. It's sort of an explanation of the regulation.

CHAIRMAN HENDRIE: Yes. I must say I do agree that it sounds more to me like a statement of consideration of material than a direct part of the regulation.

COMMISSIONER KENNEDY: This is the one that's at the bottom of page 2? Yes.

MR. SHAPAR: I think it could be deleted.

MR. BURNETT: NRR requested that it specifically be included. NMSS' position would be that it would be better in the statement of considerations. But NRR was very concerned about that footnote.

MR. CASE: It sounds to me if it's in the statement of consideration or in the rules, it doesn't matter.

CHAIRMAN HENDRIE: There was a feeling there that, where in all of the other places in the regulation one talks about reasonable assurance of this and that, in the safeguards area we have this different language, the feeling that it was useful to point out that these attempted comparable --

MR. CASE: Specifically, the concern is fission products from sabotage. These are the same fission products.

CHAIRMAN HENDRIE: Howard?

MR. SHAPAR: I'm not sure I understand it, particularly the first sentence or what support there is for that sentence. The rules say reasonable assurance.

COMMISSIONER KENNEDY: Stop me if I'm wrong, but this results from our discussion last time in which, depending

on which page you're on, reasonable assurance and high assurance were deemed to be the same thing. And since the words certainly imply to most people who look in the dictionary something different, the attempt was being made here -- and I agree with you, I think perhaps a little bit of word changing ought to be done -- the attempt was being made to explain why the two different words were being used, even though the result was supposed to be the same.

I think that's a laudable objective. But as with so many objectives, it remains an objective.

MR. SHAPAR: I think that explains the motivation and I do understand that.

COMMISSIONER KENNEDY: But the result doesn't quite --

MR. SHAPAR: The first sentence, if I may use a legalism, looks like a plain ipse dixit to me.

COMMISSIONER AHEARNE: Could you explain what that means?

CHAIRMAN HENDRIE: Thank you, John.

(Laughter.)

CHAIRMAN HENDRIE: I owe you one.

COMMISSIONER KENNEDY: Those of us who have listened to Howard long enough understand these things.

MR. SHAPAR: It's a bald assertion, without any demonstrable support.

CHAIRMAN HENDRIE: That sounds like the best kind of

rule.

(Laughter.)

CHAIRMAN HENDRIE: If you start explaining things, you get into trouble.

MR. SHAPAR: I don't know of any support for that first sentence.

CHAIRMAN HENDRIE: But it is in fact the tentative practice that's come out. The fact that you say reasonable assurance on other safety issues is the objective of high assurance on physical protection, say, for the reactor, you don't have in the back of your mind a probability of severe consequences of, I don't know, one in a million for safeguards and one in 100,000 for the other. To the extent you can, you're shooting for --

MR. CASE: The safeguards regulation is designed to protect against the consequence of exceeding Part 100. That's the definition of radiological sabotage, off-site consequences above Part 100.

What this is trying to say is [illegible] against that possibility would be the same as the assurance of an accident, assurance against the probability of an accident having a consequence that's that high.

COMMISSIONER GILINSKY: It's going to increase the chance of it happening.

MR. CASE: As you would the chance of an accident

with comparable consequences.

COMMISSIONER GILINSKY: It's pretty clear what it means.

MR. SHAPAR: I think I've made my point. I don't want to pursue it.

COMMISSIONER KENNEDY: Could we offer you the opportunity, given your perception and acceptance of the basic motivation, to perhaps do a trifle redrafting here so that the motivation and the result will be more in tune?

MR. SHAPAR: Of course. But you realize, this is an inhibiting feature.

(Laughter.)

CHAIRMAN HENDRIE: That may be a useful product.

COMMISSIONER KENNEDY: Let me just suggest we'll worry about that next time.

(Laughter.)

COMMISSIONER GILINSKY: Can I ask you, why did you think it wasn't clear what it meant?

MR. SHAPAR: Because the rule says reasonable assurance as far as safety is concerned. Here you're saying the upper end of the spectrum, what we mean by reasonable is high.

COMMISSIONER GILINSKY: No, he's saying high assurance in the safeguards context.

COMMISSIONER KENNEDY: Is the same as reasonable.

COMMISSIONER GILINSKY: In a safety context.

CHAIRMAN HENDRIE: For a comparable consequence event.

MR. BURNETT: Could you say it that way?

COMMISSIONER KENNEDY: I don't know why not.

CHAIRMAN HENDRIE: It's worth giving a try. And I think, furthermore, if we agree that this kind of explanation is more appropriate to the statement of considerations than a footnote that is not crammed to the fewest number of words you could cram down the bottom of the page --

COMMISSIONER KENNEDY: I didn't get the impression that they were suffering from that problem.

(Laughter.)

COMMISSIONER GILINSKY: The problem is that they at least claim to calculate the accident probabilities on the basis of the laws of nature.

MR. SHAPAR: I understand the motivation and I think it's noble. But I think the logic is being stretched a bit. But I think it's in a worthy cause.

CHAIRMAN HENDRIE: Would you please exercise that ingenuity and help the language.

MR. SHAPAR: Yes.

CHAIRMAN HENDRIE: I think that's fair, rather than a footnote.

Okay. We'll want a statement of considerations and some redrafting. Any other points, Bernie?

MR. SNYDER: Item 3 is pretty self-evident. It concerned us that making a statement -- you see, there is another change here involved, and that's labeling it as an objective, which wasn't there before, I believe. It just said that it will provide reasonable assurance in one version. I could go back and dig the various versions up.

CHAIRMAN HENDRIE: The regulation says high assurance.

MR. SNYDER: The regulation says high assurance.

CHAIRMAN HENDRIE: But we struggled last time at very great length with the shades of meaning here and whether and how that all balanced out. In many ways, the objective of high assurance represents an, in effect, compromise position. I would have preferred reasonable assurance right across the board and that the language be the same in all these provisions. But there were other views and we came here, and phrasing it this way has the useful, in my mind the very useful, practical effect that it allows the staff to establish in its practices and other guidance that it uses for itself and applicants a set of categories.

You go and inspect a facility or you examine the security plan and so on, and categorize it to three categories, namely: it meets the objective; B, it doesn't but isn't all that bad, and there are short-term things you can do, so while they're being done your situation is acceptable; or C, it just ain't good enough and it can't get there in a hurry, and you

shut it down.

And my concern is that without that degree of flexibility being reflected in some fashion in the words of the regulation, you come to the point where any deviation from high assurance on the report card of things you're looking at -- the fence, the lights, the guards, the pistols, the training and so on -- you fall out of high assurance in any one category and you find yourself in apparent violation of your own regulations, and you have no choice but to shut it down.

I think that's not reasonable. It's not the way we've been working on the reactor side or had intended to work on the fuel cycle side.

So I think, like all language and regulations, each of us might have a preferred version that would be a little different than this one. But I think that this was found to be an agreeable consensus of the four Commissioners. I hope that Commissioner Ahearne will be with us that afternoon, so he'll have his chance.

COMMISSIONER AHEARNE: I have no problem.

CHAIRMAN HENDRIE: Unless anybody else wants to cover the subject again or another aspect or whatever, I'd be inclined to suggest that we move on to the rather more complex subject of the non-power reactors.

COMMISSIONER KENNEDY: How shall we leave the rule,

now? Can we go ahead and vote on it, subject to the editorial change in the footnote, or what?

COMMISSIONER AHEARNE: The non-power reactors are at issue with the rule.

CHAIRMAN HENDRIE: One of the things which is proposed as part of the upgrade rule is to take the non-power reactors out of it on an interim basis. So I thought, why don't we leave the A paper discussion here, learn what we can and see what we can decide about the non-power reactors and see how we can reflect that.

I will say that I will attempt, toward the latter part of this discussion, to gather up both on the upgrade rule in one form or another --

COMMISSIONER KENNEDY: I was looking for perhaps a milestone on that chart which has been so long open.

CHAIRMAN HENDRIE: I thought we got over a lot of the final barrier last time. But I think we need to try and straighten out among ourselves.

COMMISSIONER KENNEDY: It's not that I don't like to see these fellows down here.

CHAIRMAN HENDRIE: Well, they can come for other subjects.

COMMISSIONER KENNEDY: I would hope it would be for other subjects.

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CHAIRMAN HENDRIE: Okay. With your permission, then, unless anybody wants more discussion of the A paper matters, why don't we turn to the B paper.

Here I think it would be useful to have someone walk us through the paper in a rather summary fashion, please, to bring up fresh in our minds these things that we have heard about before, and also indicate where you think we ought to go with regard to the provisions of the upgrade rule and what to do about the non-power reactors and so on.

MR. BURNETT: Okay. Well, as the commission remembers, it was always felt from the very beginning that non-power reactors would be exempt under the 100 rem self-protecting level, that they would keep irradiating to that level.

NRR in the past six months has completed a study on the non-power reactors and has said that, indeed, they are not being able to keep that radiation level, or will have a significant amount of difficulty in doing so.

That was brought to the commission's attention during the last meeting. The commission asked us to go back and assess the impacts and make some recommendations. It was impossible one month from the last meeting to this month to really assess the total impact of could more reactors reduce their holdings? Could they change the form of their material? In other words, go to a denser material.

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CHAIRMAN HENDRIE: Get it down to 20 percent material.

MR. BURNETT: Or even, as you know, there's a complicating issues.

We have before the commission another paper where credit is given for the enrichment of the material.

So that holds some hope in being able to aid the non-power reactors and giving some incentive for going to a lower enrichment material.

COMMISSIONER GILINSKY: We're studying the question with our 100 R per hour.

MR. BURNETT: Is ample. That's correct. So it was impossible to really sum all of these up and give you a clear picture of the total impact.

So the staff made a recommendation to the commission to defer this rule at the non-power reactors until the staff could formulate an opinion on those subjects.

Now I think it's fair to point out at this place and time that OPE, in their paper, kind of jumping to the bottom line of the OPE paper here --

COMMISSIONER KENNEDY: The staff's recommendation.

MR. BURNETT: -- was --

COMMISSIONER KENNEDY: Was to exempt.

MR. BURNETT: -- defer them on an interim basis. Legalistically, that does result in the exemption.

So both are right. But defer. The staff opinion

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was --

COMMISSIONER GILINSKY: You would defer them en masse, so to speak?

MR. BURNETT: Yes, sir.

MR. EVANS: It boils down to 15 reactors that turn out to be in contention here as to whether they'd be in Category 1 or in some other level of safeguard protection.

CHAIRMAN HENDRIE: Let's see, Category 1.

MR. EVANS: Is the upgrade rule.

CHAIRMAN HENDRIE: 5 kilograms of highly enriched material, or equivalent.

COMMISSIONER AHEARNE: Would all 15 of those still be in that category if we were to accept the revisions in the categorizations?

MR. BURNETT: No, sir. But it's not totally clear.

MR. EVANS: To the formula quantity, there is the paper before the commission recommending a revision of how you determine the formula. And if that were done, it appears quite likely that some of these would drop out of the category.

MR. BURNETT: But not all. You must keep that in mind.

COMMISSIONER AHEARNE: Are you talking about new 3s still in, or 12 or 13s still in?

MR. EVANS: That is uncertain. That's really why the

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staff is asking for this period of time to look at it.

CHAIRMAN HENDRIE: As a matter of curiosity, what's the direction on the formula quantity? I guess that I haven't read the paper is what I'm trying to say.

If you could give me a 30-second idea of where we're headed.

MR. BURNETT: In some ways, that's a classified paper.

CHAIRMAN HENDRIE: Never mind, then.

MR. BURNETT: I think that the commission should know that my personal opinion is that no more than maybe 2, or at most, 3, non-power reactors would be alleviated at the present time if you went to that new criterion. But it would provide an incentive for the future, and I think that's the greatest goal of that paper.

COMMISSIONER GILINSKY: Could you give us a breakdown of these 15?

MR. BURNETT: Yes, sir.

MR. EVANS: There's a paper in back.

CHAIRMAN HENDRIE: There you are.

MR. BURNETT: We have a list here.

CHAIRMAN HENDRIE: Where in the paper?

MR. BURNETT: B enclosure.

COMMISSIONER AHEARNE: If you work with Bernie's numbers, you don't get into the proprietary information.

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MR. CASE: I don't think Bernie's numbers are quite right.

MR. BURNETT: We can stay out of proprietary and just talk by facility, I believe, without numbers. Is that what's proprietary? And we have such a listing.

Bud, I see, has passed it over.

COMMISSIONER GILINSKY: There's nothing classified about this piece of paper.

MR. BURNETT: No.

COMMISSIONER GILINSKY: So we're talking about mostly university reactors.

MR. SNYDER: These are the larger university reactors

COMMISSIONER GILINSKY: And one government reactor. And a couple -- the Westinghouse reactor -- what does the II mean?

MR. BURNETT: Category 2.

MR. EVANS: It means that we think that they can go down 2.

COMMISSIONER GILINSKY: So they would not be involved here.

MR. EVANS: It means that right now they're a 1, but we think that they could slide over to 2.

MR. BURNETT: He can list with help. There's nothing classified in it.

MR. EVANS: You can't get them through maneuvering

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amounts of material or rem levels, or something. Somehow we can bring them to 2 is what that figure is.

MR. SYNDER: Could I suggest that maybe if you tell us where the errors are on our list — everybody else has that list.

MR. EVANS: I think I'm going to have to see what Commissioner Gilinsky has there.

COMMISSIONER GILINSKY: What are all these university reactors doing?

MR. BURNETT: Performing research. And I think in some cases, making isotopes.

Would you like to fill in on that a little bit?

VOICE: Most of the university reactors are providing training. Most of the power plants, I should say.

COMMISSIONER GILINSKY: Say that again.

VOICE: They're providing training. Those that aren't providing detailed training are providing isotopes. For example, the University of Missouri, Columbia, along with Union Carbide, which is a commercial activity, have picked up most of the load from the shutdown of Jeter.

The University of Michigan does provide some medical isotopes plus training.

COMMISSIONER AHEARNE: When you say training, do you mean of their students?

VOICE: Students, new power plant operators.

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COMMISSIONER AHEARNE: Not only nuclear engineering students, but also for operators as sort of an adjunct.

VOICE: That's right.

COMMISSIONER GILINSKY: You mean the universities?

VOICE: For example, Commonwealth Edison supports Northwestern in the new reactor that they're attempting to get right now for training for their future operators.

Duke Power does it with two universities in the South.

COMMISSIONER GILINSKY: Then why can't they keep the fuel above this $100 per hour?

VOICE: Those that are below 2 megawatts don't operate in cycles sufficient enough to keep the radioactive level high. Those that are above 2 megawatts have an operating cycle that they can stay above 100 R.

CHAIRMAN HENDRIE: The smaller machines will often operate for only several hours a day at power.

VOICE: That's right.

CHAIRMAN HENDRIE: They have enough reactivity to ride out xenon, if necessary. Down over the weekends, typically, and for the perimeter elements on the core, you just aren't driving them hard enough.

COMMISSIONER GILINSKY: You can't reshuffle them?

CHAIRMAN HENDRIE: Reshuffle the elements? Not frequetly enough to do any good. It's really just the

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operating time.

MR. BURNETT: It's just these questions that we couldn't answer in the period from the last meeting to this. And that was the reason.

CHAIRMAN HENDRIE: On a detailed basis.

MR. BURNETT: Yes, sir. That was the reason the recommendation was deferred.

VOICE: We have scanned a few of the facilities and the triggers here that have 70 percent enriched fuel, if they could operate a long period of time during the week, they might be able to maintain 100 R per hour. But they can't do it over the weekend.

COMMISSIONER KENNEDY: It's not clear that 100 R is enough.

VOICE: That's right.

CHAIRMAN HENDRIE: If we jack that standard, everybody just may go back and —

MR. BURNETT: If you'll notice, one of the enclosures says just that, that the 100 rem is not really adequate. They have not at this time recommended another number. But it is assured that it is something higher.

COMMISSIONER GILINSKY: If 100 R per hour is not enough, that doesn't sound like an argument for exempting.

MR. BURNETT: No, sir. But we would like to look at the power reactors to see if other safeguard credits could be

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given for the form and other types of existing.

MR. EVANS: Possible revision of the enrichment levels which could well lead to the decreased requirements in terms of safeguards. It may well be that we should go to some kind of additional grading for safeguarding non-power reactors. And in addition to the rating we've presently established, Category 1, 2, and 3, there may be a hybrid between Category 1 and 2 that makes sense from a technical safeguards point of view, given the form and type of material and the location of the material of non-power reactors.

COMMISSIONER GILINSKY: Let me understand. Were these reactors not subject to the upgrade rule when we started talking about it?

MR. BURNETT: They were subject, but they were always thought to be exempt by the self-protecting.

MR. EVANS: With the exception of 6.

COMMISSIONER GILINSKY: Why were they thought to be exempt?

MR. EVANS: Because we thought that we could get them above the 100 rem.

COMMISSIONER GILINSKY. When did we discover that we couldn't get them over the 100 R per hour?

MR. EVANS: In the last few months.

MR. BURNETT: About 4 months.

MR. EVANS: NRR came in. They have done additional

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studies since the initial paper came out which said that they felt they could get to the 100 rem, and they decided that they couldn't.

COMMISSIONER GILINSKY: We've been doing this upgrade rule for I don't know how long. And I think I pointed out at least once, here we've had several months that we've been thinking about these reactors and we don't seem to know the facts.

I find it troubling.

MR. BURNETT: It is very troublesome. All the way along we were of the opinion that there were six that would stay into the Cat 1. And there was an attempt being made to reduce their holdings.

Then when the reactor people went out to see the status of the reactors as it pertains to Categories 2 and 3, that's when my office was informed that they were having extreme difficulties maintaining the 100 rem level.

And that was very, very late into the game, approximately three or four months ago.

CHAIRMAN HENDRIE: You need a spiked fuel.

MR. EVANS: The bottom line, I think, Bob, is that we can within a reasonably short period of time make a determination as to whether or not they should or should not be protected in Category 1.

We can do that within a relatively short period.

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MR. BURNETT: That gets me to where I was going when Mr. Kennedy brought up a question. In the OPE, they had suggested --

COMMISSIONER AHEARNE: Before you get to that, could I just have the revision to this list?

MR. BURNETT: Could you give him the revision? Could you modify those?

We're worry.

COMMISSIONER GILINSKY: I guess I find it pretty hard to understand why universities ought to be treated any differently than anyone else.

MR. CASE: I think what we're trying to say, Mr. Gilinsky, we haven't possibly taken into account some of the factors that should be taken into account in a non-power reactor fuel.

It is not as easy to fabricate, to take it and make it into a weapon, as fuel that is being protected basically under the upgrade rule in the fuel fabrication facility.

It is a horse of a different color. And we would like to take some time to give them proper credit for this differenc..

That's the proposal.

COMMISSIONER GILINSKY: What are we doing with Fort St. Vrain?

MR. BURNETT: That stays in Cat I.

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COMMISSIONER GILISKY: Do you regard the research reactor fuel as more difficult to misuse than Fort St. Vrain fuel?

MR. CASE: Yes.

COMMISSIONER GILINSKY: You do?

VOICE: Given the MTR plates, yes.

COMMISSIONER GILINSKY: I'm not an expert on that.

MR. SNYDER: We're talking about lots of different forms of research with non-power reactor fuel, one of which is the trigger, which is a matrix of zirconium hydride, which is a pretty tough thing to work with.

On the other hand, you're talking about something we could probably do with a blowtorch and a hacksaw, the aluminum plates.

CHAIRMAN HENDRIE: Steady now. All you get out of that is an aluminum alloy. And let me tell you, I've worked with that a lot. You won't make much of a bomb out of that. You might drop it on your foot, but you've got to do it, at least the chemical process, which is not the most difficult thing in the world, but it's not exactly hacksaw grade.

COMMISSIONER AHEARNE: Bob, what I'm having difficulty with is understanding whether you believe that research reactors are in the category that ought to be separate because they have other features about them, that there's not much of a danger, or is it that they ought to be in another category

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because we're not really sure what their features are and we are reluctant to impose the requirement because the economics may be very severe upon the owners of those research reactors.

CHAIRMAN HENDRIE: John, if I may, I think that there may be a third category on a sort of first principles basis. If they have formula amounts of highly enriched material, you want to protect it.

What we're faced with here is just going forward with the upgrade rule will shut down, what is it, 16, 22, or 28, or whatever it is, university, commercial, government research reactors, which are doing very useful things in terms of education and training and research. Isotope production.

Those activities have been going on for, I don't know, two or three decades. And the question here is can't we find a way to provide reasonable interim measures and several years to see how many of those machines can go over to a fuel material which is in a number of cases, I would hope, at the 20 percent level, and take it out of the SSNM category, and in other cases at least pull the enrichment well down so that you can provide some sort of intermediate measure for it, together with other measures.

There's no question that the stuff ought to be protected. And I think it's pretty hard to make an argument,

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sort of a first principles argument, that there's something intrinsic about a university climate which makes it less likely to mischief than other facilities.

COMMISSIONER AHEARNE: The reverse may be true.

CHAIRMAN HENDRIE: You might argue the reverse, but just to implement the upgrade rule as we now understand its effects is to shut down what are to my mind a set of very useful facilities at very substantial cost to the program, and so on, dollar costs, program costs, to the owners and operators, after their having gone along safely and theft-free for a quarter of a century.

And it does seem to me that we have a responsibility to try to find a way out, to try to find a way to do something other than just a plant shutdown.

But I think for the long term, you know, looking down the line, allowing some reasonable time for the perfection of these higher density fuel materials which do offer, for not all but a number of these machines, the chance of running on a lower enrichment load.

I think we ought to try to find ways to provide them that time.

COMMISSIONER GILINSKY: How long do you think it would take to get them over to another fuel?

CHAIRMAN HENDRIE: I think it's going to take several years.

COMMISSIONER GILINSKY: Why would it lead to a shut-down? Why can't some of these facilities provide the protection that's required?

CHAIRMAN HENDRIE: It's possible somebody like the Bureau of Standards can do it.

COMMISSIONER GILINSKY: Westinghouse?

CHAIRMAN HENDRIE: Maybe Westinghouse can or would. University reactors, I see no way that universities can bear the cost of very extensive measures that are required of the upgrade rule.

MR. BURNETT: It might be possible, however As you know, the DOE program is looking at the possibility of reducing the enrichment going overseas. This is one aspect the staff thought could be applied, possibly.

CHAIRMAN HENDRIE: Just so.

MR. BURNETT: And that we need time to ascertain those possibilities.

COMMISSIONER AHEARNE: Are most of these treated?

MR. BURNETT: A lot of them are. I don't think most of them are. But if that was possible by raising densities and lowering percentages, if we went to the other criteria off of the five-kilogram rule, then they would not be.

COMMISSIONER GILINSKY: You would simply exempt them and not require any additional security over and above?

MR. BURNETT: No, sir.

MR. SNYDER: They already have a siginificant amount on them.

MR. BURNETT: Part 60 would still say, in effect --

MR. EVANS: Two things: Part 60 and 47.

MR. BURNETT: They would not be without protection, Mr. Commissioner.

COMMISSIONER GILINSKY: But it is the level of protection which is required now?

MR. BURNETT: It's slightly above, because Category 23 has been passed, and they would be forced to meet 60 as well 23.

(At 3:25, Commissioner Bradford enters room.)

MR. BURNETT: One thing is that they must have a contingency plan, which they don't now have. We have a list here.

COMMISSIONER GILINSKY: Contingency plan for what?

MR. BURNETT: In the event of an emergency, safeguards, emergency plan. That was required in the CAT 2 and 3, which heretofore has not been required. I think he has got it all right here.

MR. EVANS: I will go down the list. There will be requirements for material access areas, so there will be restricted access into the area. There will be barriers. There will be guards that will be on call. There --

COMMISSIONER GILINSKY: What do you mean, "on call"?

MR. EVANS: You could have a university with its security system; you know, its campus police.

COMMISSIONER GILINSKY: There is no guard, dedicated guard?

MR. EVANS: Not dedicated to the reactor site, but dedicated to the licensee, such as the campus police, which will periodically check by the site where the reactor is. That is required.

MR. BURNETT: We just don't stop it there. I think Category 2 facilities, there will also be space alarm systems, intrusion alarms that will read out at the campus police location, and then instructions will be generated where he responds there first. So, it isn't just an unprotected site.

MR. EVANS: Any material that's not in the reactor will have to be stored in a vault much like a safe. There are a number of requirements: They have to have an ID in order to get into the reactor area. There has to be someone who is authorized to be there.

COMMISSIONER GILINSKY: Let's focus on the fuel. It's fabricated by a fabricator somewhere else at some other location. When that fuel is stored at the fabricator's factory, what sort of protection is required?

MR. BURNETT: If it's over five kilograms, it falls into Category 1.

COMMISSIONER GILINSKY: And you would currently

require the upgrade rule, I mean, if this went into effect, to apply to that material?

MR. BURNETT: Yes, sir. I don't think anybody is saying, Mr. Commissioner, that these interim measures would end the discussion. It would simply be an adequate solution during the interim period for us to present to you a defensible, technical, logical argument for either a graded safeguard system -- we've used that word here -- but that is not by any means a foregone conclusion. It's a possible conclusion. It could be that the study would say that this is highly usable material; therefore, if they're going to continue to use it, they have to apply adequate safeguards.

COMMISSIONER GILINSKY: You must have come to that conclusion, because you're applying a higher level of safeguards, or at least intending to at other locations.

MR. BURNETT: Yes, sir, but what the staff is also trying to say is that all the way through the generation of this rule it was always felt that these facilities were going to be exempted, and now we find out in the latter phases of it that they are not going to be exempted. And the staff has not adequately looked at what alternatives should be presented to the Commission.

COMMISSIONER GILINSKY: Well, exempted, because you thought that they were less radioactive.

MR. BURNETT: And that was the only reason to exempt

them at that time. We are not trying to say that an exemption will automatically fall out of this additional time.

COMMISSIONER AHEARNE: What kind of additional time are you talking about?

MR. BURNETT: We did not identify that in the paper. OPE pointed out that some additional time should be put down in hard writing. There is some disagreement between the staffs.

COMMISSIONER KENNEDY: What are the ranges?

MR. BURNETT: NMSS' position is that nine months to 12 months, in our opinion, would be adequate to present a paper to the Commission on what are the problems.

COMMISSIONER GILINSKY: Why would it take nine months?

COMMISSIONER AHEARNE: Let's hear what NRR says.

MR. BURNETT: This would give you some alternatives on which way to go. It would employ the use of DOE and some of the data they're developing in the international arena, and also, hopefully, this other paper that's before the Commission will have been acted on, and we could give you, in my opinion, a hard alternative.

NRR is of the opinion that it is more like 18 to 24 months.

(Laughter.)

MR. BURNETT: And they could discuss that.

VOICE: A year to 18 months.

MR. BURNETT: So, the range is from nine to 18 months,

to answer Mr. Kennedy's question.

I personally believe that a year would be more than ample. But that's a personal opinion.

I think that the Commission should face up to this ambiguity and do it.

COMMISSIONER AHEARNE: In a year to 18 months, is that focused upon trying to redesign the reactors, put fuel in the reactors to see whether or not you're going to get that?

VOICE: The DOE program on the low-enriched uranium program is just really getting started now. I represent NRR on that. We will be doing the first demonstration model around the first of next year, and that's supposed to be for the nuclear reactor at the University of Michigan. That will be all less than 20 percent enriched fuel.

If that works and provides the operating characteristics that we expect it to, then all the two megawatts should be able to shift over to the less-than-20-percent.

COMMISSIONER AHEARNE: So, the pacing item, as far as you could see, would be the DOE program?

VOICE: That's right. That's about 18 months.

COMMISSIONER AHEARNE: But it is then a revision of the fuel?

VOICE: That's right.

COMMISSIONER AHEARNE: Bob, is your nine to 12 months focused upon other changes?

MR. BURNETT: It's more in line with our paper that we've presented to you. That solution holds out going below 20 percent, which I think would be the ideal solution.

The other paper before the Commission establishes an intermediate zone, just increasing the densities while lowering --

CHAIRMAN HENDRIE: Gives it some credit for being less than fully enriched.

MR. BURNETT: Yes, sir. And I think that that has a shorter wick on it.

VOICE: DOE's short-term program calls for all the high-enriched to go down to about 45 percent enriched, and they expect that to have basically the same characteristics as they do now with the highly enriched.

Now, the long-term goal is to have all of them below 20 percent. But that's a three-year program.

CHAIRMAN HENDRIE: I think we should recognize that that may be a time when you know how the technology goes, but it's going to take more time than that to get them to elements in with all the research reactors. So, it is a several-year proposition here.

MR. BURNETT: Oh, definitely.

CHAIRMAN HENDRIE: Before one could say, "Well, we've gone the full distance here, and everything is fine."

COMMISSIONER AHEARNE: In your interim, Bob, would you have in mind, in addition to these credits, would you also

have in mind some interim-level protection?

MR. BURNETT: That would fall out of what I hope we could look at to see how easily this material could be used to fabricate a CFE. If that falls out easily, I would feel that I would have to come to the Commission and suggest the things that we've done for spent fuel, more or less.

I just personally feel that we could give the Commission a pretty good reading in 12 months, of cognizant of the long range, and that this intermediate level -- let's face it, it's been working out there.

COMMISSIONER AHEARNE: Bernie, OPE has proposed to go ahead with including them in.

MR. SNYDER: Yes, sir. I guess we weren't taking into account the DOE program because it was our judgment that there would be a radiation testing on that fuel and it was really a very long-term thing, especially if you're talking about 20 percent for a larger reactor.

COMMISSIONER AHEARNE: But your proposal to go ahead within the rule, given that either --

MR. SNYDER: We hope in a 120-day period we might be able to get a better handle on where we stand.

COMMISSIONER AHEARNE: Where we stand would only clarify which reactors would need it.

MR. SNYDER: We could talk about individual exemptions, perhaps, if there were a reasonable number, rather than

just a blanket.

COMMISSIONER AHEARNE: It wasn't that you saw some other --

MR. SNYDER: We don't have any magic solutions. It's a tough problem.

MR. BURNETT: In all honesty, both NRR and I looked at the 120. I just don't think we'll have anything real hard to come back and tell the Commission within 120 days. I do understand that they think there should be a time limit. We totally agree with that.

MR. SNYDER: I think we all agree that it shouldn't be open-ended.

COMMISSIONER GILINSKY: How many of these are triggers? Some fair number of them

VOICE: Without looking at the list in detail, it's either five or six.

MR. SNYDER: The triggers are mostly 20 percent; right?

VOICE: These are 70 percent.

MR. SNYDER: This is the converted fuel. The triggers went a few years ago to a higher burnup of fuel, 70 percent.

VOICE: We gave them a long-life fuel.

COMMISSIONER GILINSKY: So why can't they go back to 20 percent?

VOICE: They can, if we direct them to. They won't,

probably.

COMMISSIONER GILINSKY: They won't?

VOICE: I don't know.

CHAIRMAN HENDRIE: Most university reactor budgets need a year and a half's notice if they're going to change fuel because they're going to have to fire a couple of assistant professors and buy some equipment and so on in order to make that change.

VOICE: In response to your question, all the flip fuel has ceased to be produced. General Atomics is producing no more.

COMMISSIONER GILINSKY: That's what I understand. That's why I was asking the question.

VOICE: And they expect to eventually go to 20 percent. But you're talking about roughly 10 years from now.

COMMISSIONER GILINSKY: I am not talking about 10 years from now.

VOICE: They are. The flip fuel will last for 10 years. So, the question is: DOE has purchased that fuel; we would have to go to DOE to work out some arrangements to convert it back.

COMMISSIONER GILINKSY: Have we talked to DOE about this?

VOICE: Currently, they are not planning to fund any conversions.

COMMISSIONER GILINSKY: Who is "they"?

VOICE: DOE.

COMMISSIONER GILINSKY: I mean who.

VOICE: The RER/QR program, which is the low- to mid-range program. Deutsch.

COMMISSIONER GILINSKY: That's what John Deutsch said?

CHAIRMAN HENDRIE: Ler's see. I guess we may not learn very much more of a fundamental nature from further discussion, at least at this time. For myself, I would not want to go ahead with the upgrade rule, if it's going to mean shutting down the nonpower reactor category machines. And it is my conclusion that without the exemption that's what it will amount to.

COMMISSIONER KENNEDY: I agree with that.

CHAIRMAN HENDRIE: Peter?

COMMISSIONER BRADFORD: I would go ahead with the upgrade rule, and there may be something short of a blanket exemption that could be worked out. But in any case, I would vote to go ahead with the upgrade rule.

CHAIRMAN HENDRIE: John?

COMMISSIONER AHEARNE: I guess I would have a problem with the upgrade rule, going ahead with it. I would like to pin a little bit more tightly when someone is going to come back to us and tell us something. A year just seems like an awfully long time to wait. Now, it may well take a year to do it, to come up with anything useful. But I guess I would want in

three months to have the staff back and explain by then at least we ought to have definite information as to which of these reactors can or cannot sit.

MR. BURNETT: I guess the staff, you know, supports heavily moving ahead with the upgrade rule.

COMMISSIONER AHEARNE: That's what I said.

MR. BURNETT: And we could also present to the Commission within a 90-day period a more comprehensive briefing on the subject.

COMMISSIONER AHEARNE: I would prefer, I guess, that it go ahead with the upgrade rule. You'd have to then waive for the nonpower reactors, but at the same time, then, go to each one of these owners of the nonpower reactors and get a little bit more specific from them on what is the impact.

MR. BURNETT: What's the total picture; could you drive down your holdings.

COMMISSIONER AHEARNE: That's right.

CHAIRMAN HENDRIE: And how long would it take?

MR. CASE: To get that report, Mr. Chairman, how long would it take us to get that report? I think we ought to put down 120 days, and then we'll come in with what we've got.

MR. SNYDER: There is only 22 involved; right? The controversy only exists -- isn't all --

VOICE: 22 authorized.

MR. CASE: 22 facilities.

COMMISSIONER KENNEDY: 120 days is all right with me.

CHAIRMAN HENDRIE: How do we leave what we do in 120 days?

COMMISSIONER KENNEDY: We will see what we know.

COMMISSIONER AHEARNE: I am accepting the staff's position, the publication of the upgrade route, but defer all of the nonpower reactor question. But then, I am saying at 120 days --

CHAIRMAN HENDRIE: And as per reported within 120 days?

COMMISSIONER KENNEDY: Depending on what we know, we can take further action.

COMMISSIONER AHEARNE: I just don't have a good enough sense, myself.

CHAIRMAN HENDRIE: In your version, John, would the upgrade rule then get the nonpower reactors?

COMMISSIONER AHEARNE: The word I would prefer to have in is "defer."

CHAIRMAN HENDRIE: Defer until further order.

COMMISSIONER AHEARNE: That's right.

MR. SHAPAR: A rule is either applicable or not. You can place it in a state of consideration.

COMMISSIONER AHEARNE: Yes.

COMMISSIONER GILINSKY: When would the rule go into effect?

MR. BURNETT: Strangely enough, the effect is 120 days in the nonpower reactors.

MR. EVANS: 120 days after.

MR. BURNETT: This would be dovetailing, so the Commission could make a final decision.

CHAIRMAN HENDRIE: Well, we'll get a report in 120 days; then take our customary upgrade rule sort of time for deliberation over it. Those reactors will be down in the hole for a long, long time before anything is done. The kind of basis that you have said is that we defer it until further order, but I indicate that our intent here is not a permanent exemption but a temporary conferral, that the staff is requested to work on the status of the individual reactor within 120 days, and we are committed to further action of some kind in that regard. Now, that's a proposition that I will support.

COMMISSIONER GILINSKY: When does the rule go into effect for other sorts of installations?

MR. BURNETT: Everything is 120 days. Roughly speaking, it takes generally 30 days after approval by the Commission to get it out on the street. This is what we have been running. Then, 120 days from that. So, you're talking 150, if it was to pass.

COMMISSIONER GILINSKY: Now, what is it that you plan to come back with in 120 days?

MR. BURNETT: There is additional paperwork --

CHAIRMAN HENDRIE: Why don't you let him answer?

MR. CASE: I will supplement. The only point I want to make is: We will give you the status of where they are, what their plans are in terms of trying to comply with the upgrade rule, whether they're going to close down, what are the safeguards requirements at the facilities now, and --

COMMISSIONER KENNEDY: The question is not whether they will close down, but what can be done. This imposes some obligation on us, it seems to me, to give them some help and advice in this regard, what might be done to obviate the need to close down.

MR. CASE: But I think, Mr. Kenned, that's not the 120 days. We do intend to do that.

COMMISSIONER AHEARNE: The status.

MR. CASE: Right. The status. And I would like to add to the status, what protection they have, because I don't think the Commissioners nor I have a clear appreciation of what safeguards they presently have. I think that will alleviate some of the concerns that you now have.

COMMISSIONER AHEARNE: It might exacerbate them.

end#3

MR. CASE: It might exacerbate.

COMMISSIONER GILINSKY: I realize you have a lot of things to do, but you have to talk to them.

CHAIRMAN HENDRIE: You have some serious policy questions. One of the questions is, if the upgrade rule is implemented, what will you do? Shut your machine down or give it up and fill it all in? Shut it down for two years while you try to get the budget for it and for new fuel? What would you do?

COMMISSIONER GILINSKY: It wasn't clear to me.

CHAIRMAN HENDRIE: That's one of the critical questions, it seems to me. And if we're going to ask a reactor operator that, we ought to give him a chance to think a little bit about it. You do your best and you come in with what you've got.

MR. CASE: I don't have any reluctance to give the information. That's while I'll give you whatever I can possibly get.

CHAIRMAN HENDRIE: Along with those questions--what could you do, what would you do, et cetera -- the more detailed status report on what the safeguards provisions are on each of these sites and so on. I expect all of these machines have got fuel in them that's good for some years, so that, as an irreduceible minimum outcome here, there has got to be a substantial financial loss, because I suspect even though it will take several years for fuels to be available that will

take these machines down to a better class in terms of safeguards, they will still have lots of core life left in almost all of them at that time. And they might turn those things in. I think that will be a fairly severe -- the elements have gotten very expensive.

I can remember when we use to buy MDR elements at $179 a whack, and --

VOICE: Mr. Chairman, they currently run between $16,000 and $18,000.

COMMISSIONER AHEARNE: And you didn't stockpile them.

CHAIRMAN HENDRIE: It shows what quality assurance will do for you.

COMMISSIONER GILINSKY: Of course, gas was 50 cents a gallon.

CHAIRMAN HENDRIE: But they didn't pay for the enriched uranium, anyway.

MR. SNYDER: You also have to take into account the fact that there are a very limited number of suppliers in the world today that can provide that. I think there are probably none in this country. Is that right or wrong?

VOICE: Atomics International right now is providing the research reactor fuel through a DOE contract. But that expires in a year and a half because Admiral Rickover's contract will then expire.

COMMISSIONER GILINSKY: Is the amount of fuel that's

available at these locations classified?

VOICE: Yes.

CHAIRMAN HENDRIE: That's part of the proprietary information.

COMMISSIONER AHEARNE: It's on your list.

CHAIRMAN HENDRIE: You've got the paper.

COMMISSIONER GILINSKY: And none of these -- that kind of protection, is that also proprietary? So whether or not there is a dedicated guard, questions like that?

VOICE: All the details in the physical security plant are 2.7. So it's not releasable to the public.

MR. BURNETT: But the criteria that the rule will apply certainly is not. We can discuss what each facility will have to have.

MR. EVANS: We can discuss it in generic terms.

MR. BURNETT: I think that would answer your question.

MR. EVANS: In a closed session.

COMMISSIONER GILINSKY: I guess we have other things to do.

COMMISSIONER AHEARNE: I don't think they have the details of that preciseli. That is part of what --

MR. EVANS: That part is easy to get.

CHAIRMAN HENDRIE: Let me see if I can state the proposition that has sort of edged over into the center of the forum. The proposition is to go forward with 7320, is that it,

with the objective of high assurance language, the change to 7355 with the objective of high assurance language. There is in the statement of considerations a suitable perfected version of a footnote which some present took exception to and will now be permitted to improve.

The upgrade rule as published will not apply to non-power reactors, but the statement of consideration will note that it is the intent of the Commission to bring the non-power reactors under a further safeguards regime, and that the staff is reporting in 120 days the status.

What else? Does that cover it?

Well, okay. Let me see.

MR. BURNETT: Just one point clarified on the statement of consideration. Is it sufficient to say that we can modify that without coming back to the Commission?

MR. SHAPAR: The statement of considerations?

MR. BURNETT: Yes, sir.

CHAIRMAN HENDRIE: I think the Commissioners would like the chance to scan, if they so choose, the final language.

COMMISSIONER KENNEDY: As with all editorial boards.

CHAIRMAN HENDRIE: You know, who knows. In his diligence, Howard may commit some indiscretion or typographical error or something terrible like that.

How does that strike you? Let me see if I can poll the table on the state of the proposition.

COMMISSIONER GILINSKY: Obviously there are a majority of Commissioners for it. I think I would have gone for some regime involving case by case exemptions to look at the legal circumstances, pushing hard to upgrade.

CHAIRMAN HENDRIE: We may end up at the next stage on a case by case.

COMMISSIONER BRADFORD: That's not ruled out.

CHAIRMAN HENDRIE: That's not ruled out here. It's kind of hard to do right at the moment. And again, the alternative of holding the upgrade rule is not one that seems to be met with much enthusiasm.

Peter? John? Dick?

I declare it so ordered. But I think it should be noted that all the Commissioners are glad to see the upgrade rule progressing.

COMMISSIONER AHEARNE: Before they disappear, can I ask a question for future reference?

CHAIRMAN HENDRIE: I would think so.

COMMISSIONER AHEARNE: At some point -- I guess, Lee, it's appropriate I should ask you -- I would appreciate having the appropriate people together to discuss why the threats to fuel cycle facilities and reactors are different.

MR. GOSSICK: Why the threats are different.

CHAIRMAN HENDRIE: You should have been here last time.

MR. GOSSICK: We can arrange it.

COMMISSIONER AHEARNE: Thank you.

MR. GOSSICK: I might just mention --

COMMISSIONER KENNEDY: The last eight times.

MR. GOSSICK: I might just mention it --

COMMISSIONER AHEARNE: I've read a lot of the transcripts and I'm still not clear.

(Laughter.)

CHAIRMAN HENDRIE: We discussed it until there wasn't a chin left above the table.

MR. GOSSICK: Another matter dealing with Part 73, the extension is about to expire. We'll have a paper down to you tomorrow, I think, asking for another extension. It's going to be necessary, because it expires on 1 August.

CHAIRMAN HENDRIE: All right, duly noted.

Thank you very much, and I think we ought to go forthwith and continue the discussion we had going on TMI-1.

(Whereupon, at 3:55 p.m., the meeting was adjourned.)