NUCLEAR REGULATORY COMMISSION

In the Matter of:

BRIEFING ON ANALYSIS OF ALTERNATIVES FOR
CONDUCTING INDEPENDENT VERTIFICATION TESTING
ON ENVIROMENTALLY QUALIFIED EQUIPMENT

PUBLIC MEETING

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BRIEFING ON ANALYSIS OF ALTERNATIVES FOR CONDUCTING INDEPENDENT VERIFICATION TESTING ON ENVIRONMENTALLY QUALIFIED EQUIPMENT

PUBLIC MEETING

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

Tuesday, July 15, 1980

The Commission met, pursuant to notice, at 10:05 a.m.

BEFORE:

JOHN F. AHEARNE, Chairman of the Commission
VICTOR GILINSKY, Commissioner
JOSEPH M. HENDRIE, Commissioner
PETER A. BRADFORD, Commissioner

ALSO PRESENT:

W. SHIELDS
E. HANRAHAM
V. STELLO
H. THORNBURG
W. RUTHERFORD
B. DIRCKS

(Pages 1 through 71)

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P R O C E E D I N G S

CHAIRMAN AHEARNE: The Commission meets this morning to hear from a variety of individuals on the staff in response to a review that was triggered several years ago and it addresses the question of independent verification testing. By independent, that is independent of the vendors or the utilities themselves. It is an issue that has been of particular concern to Commissioner Bradford, at least I have noticed over the last several years, and one that I think is well worth the Commission's attention.

I point out that in our guidance in the development of next year's budget we had put in the qualification of safety-related equipment and no less than a certain amount of dollars and no less than a certain number of people, and at so stage this morning I will be asking a variety of individuals how this proposed solution fits into that.

Vic.

MR. STELLO: What we are here to do is to address the problem that, as you say, is long-standing. A variety of alternatives have been looked at for conducting independing testing to establish that equipment if properly qualified. As you would expect, there is a full range of alternatives.

If we attempt to do a great deal of independent

environmental testing ourselves, while we had our own laboratory to do it, it is obviously very expensive. If we did more of what we do now it is obviously less expensive both in terms of people and dollars.

We have asked Sandia, and I notice you have a copy of the report, look into the various alternatives and try to assess and help make judgments as to which way to go in terms of what seems to be best for our particular responsibilities.

What we will do is to very quickly go through briefly the history and the background of where we are today, what we think is the most meaningful alternative that we ought to pursue and why and then deal with the last question which you did bring up, the resource impacts, what are they and how do we accommodate them within the current resources that we have within the office and the impacts of other offices. Then I am sure others might want to comment on what that means in terms of resources relative to the guidance of the Commission.

With that, Harry, why don't you begin.

(First slide.)

MR. THORNBURG: By way of introduction, as Vic indicated, we have studied the alternatives for verification of environmental testing of electrical equipment as requested by the Commission in April of 1978 and a

significant amount of time has gone past since that time. As we indicated in our response to the Commission order, we asked Sandia to study the three main alternatives for us. They also studied a combination of alternatives.

The Sandia study required about a year to get some initial results for us. This report came out in March, I believe it was, of 1980, but we had preliminary results about a year after we had asked for the study. It took my staff about three months to perform an analysis. We circulated a draft, an initial draft to the other offices for review because of their involvement.

A significant period of time was expended in obtaining inputs and comments from the other staff components. The delineation of staff reponsibilities in the area of equipment testing by the EDO and the dedicated organization in NRR for equipment testing assisted materially in the final development of the staff's position.

Sandia, as I indicated, looked at sort of the three pure alternatives, the alternative that we build the facility and the alternative that we contract the work done and they looked at sort of doing more of the same but only doing more of it, you know, observing what the industry does.

Then they looked at three other alternatives. I think the last two brought more of a common sense approach to the problem, you know, do something in the near term and

then aim toward a longer term solution, or do a combination of things.

Really the staff has come down on an alternative that is a combination of doing some contract verification and witnesses tests and also upgrading the testing capability of laboratories.

CHAIRMAN AHEARNE: Do you intend to get to why the staff has chosen an alternative different than the one that Sandia recommended?

MR. THORNBURG: Yes, sir. I have tried to summarize our position at the outset.

The first alternative, as I indicated, was an NRC-owned environmental test facility manned by NRC personnel. They looked at this, you know, as just a long-term alternative, you know, that you set dead in the water say for two or three years until you have built the facility and then start to do anything. They looked at contracting environmental testing and all this by a selected or capitive contractor. They looked at looked at review and witnessing of tests by the industry, do what we do now on a larger scale. They looked at a combination of one and two, the NRC-owned facility and contracting the work done. They looked at a combination of one and three, NRC-owned facility and witnessing the testing. They also looked at an alternative six, the combination of alternatives two and

three, contracting and witnessing.

May I have slide two, please.

(Next slide.)

The scope of their study they considered environmentally sensitive safety-related equipment located in areas potentially exposed to harsh environments that are required to function during design basis event or otherwise designed to mitigate the consequences of an incident. They considered the significant electrical instrumentation and control and electromechanical equipment for the purpose of the study. The list of things that they considered wasn't all-inclusive, but it was the more important of these types of equipment.

There were 28 generic equipment categories, the most vital and sensitive types of equipment. For example, in the categories they considered transmitters, electric actuators, pneumatic actuators, thermocouples, limit switches, pressure switches, selenoid valves, terminal blocks, radiation monitoring equipment, neutron monitoring equipment, cable penetrations, connector switchboard wires, rotometers and on and on, but there were 28 categories, generic categories of equipment.

There were one to six manufacturers in each category, you know, people ITT, Cannon, Westinghouse and General Electric. There were approximately 140 items

considered. The testing was to be consistent with the requirements of IEEE 323-1974 and they assumed sort of a standard test profile.

(Commissioner Gilinsky at this point entered the meeting.)

MR. THORNBURG: Can I have slide three.

(Next slide.)

They used eleven evaluation criteria and performed sort of a quasi-quantitative evaluation of each of the options in terms of these criteria.

CHAIRMAN AHEARNE: Are these criteria that you and they had agreed on?

MR. THORNBERG: Yes. There wasn't any weighting of criteria with the problem and it was difficult to take these numbers and sum them all and intercompare them. As a matter of fact, I get a little bit lost in the intercomparison. We really made our selection based on immediacy of impact, reasonable cost and reasonable independence of the agency in spite of a lot of the talk about the numbers and the values.

CHAIRMAN AHEARNE: The numbers are more a subjective judgment, aren't they?

MR. THORNBERG: Yes. Yes.

Now, if I could have slide 4.

COMMISSIONER BRADFORD: Before you go on let me ask you where the ninth criterion came from? If that a criterion you have used on other projects?

MR. THORNBERG: The historical charter function?

MR. COMMISSIONER BRADFORD: Yes.

MR. THORNBERG: I wouldn't say, you know, we didn't hinged on that. When I get down to criteria we selected, we did go to some aspects of it that are outside of our historical function.

COMMISSIONER BRADFORD: I understand that. What concerns me is the reason the Commission was interested in looking at this, I think, was that the historic function had produced a lot of connectors and other equipment that simply wasn't meeting the standards that we had. I would have said that the historic function was almost a minus in this context.

COMMISSIONER HENDRIE: I don't think so. I wouldn't read historic function in this connotation as saying, you know, the historic path was to have unqualified connectors.

COMMISSIONER BRADFORD: That was the historic result.

COMMISSIONER HENDRIE: That was the result, but I wouldn't regard that as the appropriate historic function to judge against. The question here is, you know, how far

should NRC become, oh, in one area a designer of equipment that would be in plants we license, or in another area sort of part of the producing and measurement and quality checking chain for equipment.

Now, I think it is clearly appropriate that we, along the lines suggested here, do some checking to make sure that the people who are supposed to be living up to commitments on equipment live up to them and that indeed there is enough testing so that you have a fair assurance that something hasn't gone into the field in spite of people's best intentions, you know, that doesn't live up to the mark.

On the other hand, the staff has always been senstive to finding itself moving over to being the regulatory staff, nuclear equipment supply company in a sense. That is the way I would think about historic function and whether it has any influence on this or not.

MR. THORNBERG: Could I read the definition?

COMMISSIONER BRADFORD: Yes.

COMMISSIONER HENDRIE: Yes.

MR. THORNBERG: I think we have probably pared that title down too much for the purpose of the slide, but it was the historic chartered function, the historical/chartered function of the NRC. Direct involvement in equipment tests per se has not been an

historic NRC function, nor is the NRC clearly chartered to conduct qualification tests.

CHAIRMAN AHEARNE: I didn't think that Sandia was the best organization to interpret what our function was or what our charter was. I didn't think that was an appropriate criterion either, but I gather you didn't really use much weight for it either.

COMMISSIONER BRADFORD: But it did become one of the, what was it, core functions as you called it?

MR. THORNBURG: In their study they did use it.

CHAIRMAN AHEARNE: I agree with you, it didn't ring correctly.

MR. THORNBURG: It didn't weight as heavily in our judgment as cost. I wouldn't want to list cost at the top, but in the immediacy of producing results we thought it was a high value thing.

COMMISSIONER GILINSKY: Would Sandia be one of the organizations that might contract for this work?

MR. THORNBURG: Yes, we might ask them to do some of the testing.

CHAIRMAN AHEARNE: Well, in fact they have in the past.

MR. THORNBURG: Yes, they have in the past and we are beginning to ask them to do some of the initial work for us.

COMMISSIONER BRADFORD: In fact, it was the Sandia test I think that gave rise to it.

MR. STELLO: It was a research contract.

COMMISSIONER BRADFORD: Yes.

COMMISSIONER GILINSKY: Does anyone think that we do not have the charter to test if we wanted to, leaving aside whether it makes sense to do it?

MR. THORNBURG: We are proposing to do it.

COMMISSIONER GILINSKY: No, no, I mean to do it ourselves.

MR. STELLO: There is no question that we can. In fact, the recent emphasis is that we ought to do more independent testing. The bottom line of where we come out when we are finished is that we will do it. Whether we should have included it as one of the evaluation criteria, I think it is important at least to say that there was a benchmark, a way in which you were doing it and you are departing from it. Your argument is that departing from it is good. We ought to do it differently than we have in the past. We have concluded the same thing.

COMMISSIONER BRADFORD: My point really would have been twofold. One was the one I already made, that given the results it wasn't necessarily something you wanted to track too closely. The other though would be that at least the level of NRC involvement, the cost criterion, perhaps

the conflict of interest criterion and maybe one or two of the others pick up the same idea, that is, the historic NRC function was presumably established on the basis of what would be the most cost effective way to do things, what would be the appropriate level of NRC involvement, and so on.

I think the other problem with the ninth criterion is that it just picks up and reiterates some of the other ten.

CHAIRMAN AHEARNE: I think you have got the picture and we can move on.

MR. THORNBURG: May I have slide four, please.

(Next slide.)

Well, I have tried to encapsulate at least in words and no so much numbers some of the evaluation of the alternatives that Sandia came up with.

Alternative one, pure alternative one, the NRC facility. The pros are that you give maximum potential direct involvement by the agency; control of prior tests verification; flexibility, that is flexibility within your ability to make tests different, the qualification tests different, but I don't think flexibility in the larger sense that I will come to later. Degree of control of the testing and conflict of interest is minimal, particularly that for a contractor. The costs are high.

COMMISSIONER GILINSKY: Let's see, why would the

costs be any different between alternative one and alternative two?

MR. THORNBURG: Well, for alternative one you have got to build facilities and buy equipment and staff it with a direct NRC staff.

COMMISSIONER GILINSKY: If this is a long-term program presumably it is not going to make any difference. You have got to pay for those facilities if you are contracting.

MR. THORNBURG: Well, the proposal we get to is to do some testing, you know, on a reduced scale, contracted.

COMMISSIONER GILINSKY: Is the amount of testing different between alternative one and alternative two?

MR. THORNBURG: No. The amount of testing for the three alternatives is pretty much doing that 140 items, the scope, or whatever turns out to be at the time you are doing them. That scope will change with time and designs and that sort of thing.

COMMISSIONER GILINSKY: Well, I could see that there might be some initial cost difference, but I wouldn't imagine that there would be any long-term cost differences.

MR. STELLO Well, let me make at least an argument that there would be. If the NRC had to build its own facility for this special purpose and it were only running a few tests relatively speaking, then the cost of the facility

is prorated against the tests we are doing. Whereas if we contract with another facility for which there might be a lot of other contracts using that equipment and that laboratory for a lot of other purposes then the way in which the cost is being written off is entirely different. You are only paying for a small fraction of it per test.

COMMISSIONER GILINSKY: It is conceivable. On the other hand, we may have the costs under our control. It is just not immediately obvious to me.

MR. DIRCKS: Alternative one is an NRC laboratory staffed I suppose with direct NRC employees.

COMMISSIONER GILINSKY: Yes.

MR. DIRCKS: When you figure the long-term costs of hiring a government employee they far outweigh any contracting that we do. I mean, bringing on an employee into the federal role is a very expensive thing; very expensive.

COMMISSIONER GILINSKY: I understand what you are saying, but if this is a program that is going to continue -- well, I think the points of view are clear and I don't plan to belabor it.

MR. RUTHERFORD: The costs within the study were done on a fixed time basis to complete the 140 high priority items. That is why it comes out the way it is stated here. If you were going to continue forever on this thing it

probably would equal out, but it is because of the fixed time periods and the fixed amount of work that you have to do that it comes out higher.

MR. THORNBURG: Alternative two, the contract environmental testing, it is highly positive in the area of direct NRC involvement. There are some problems with the immediacy and conflict of interest on the part of the participant.

COMMISSIONER GILINSKY: What does immediacy mean?

MR. THORNBURG: Getting results, starting to get results and feedback and insights.

CHAIRMAN AHEARNE: Actually wouldn't it be probably faster than alternative one?

MR. THORNBURG: Well, let's see.

MR. STELLO: Yes.

MR THORNBURG: Yes. Three years maybe or per advice five years, something like that. It is still the order of years.

Alternative three as shown in slide No. 5 -- could I have the next slide, please.

(Next slide.)

This alternative, the business of upgrading our witnessing approach, the witnessing of industry tests, the pro, the conflict of interest is reduced, particularly on the part of the licensee or the people doing the testing.

The immediacy, we start to get results as soon as we start to inspect these people. The staffing is a con. We would really have to gear up to do, you know, the whole spectrum. Our control and flexibility would be down quite a bit.

COMMISSIONER BRADFORD: When you are measuring the cons, are you measuring them against the other alternatives or against the present? That is, I would have said the staffing for alternative three, for example, would be much less of a concern obviously than alternative one and probably no worse than most of the ones below it on the list.

MR THORNBURG: We are looking at, say, 20 to 75 additional inspector people, immediate staff people. You know, of the other two alternatives, the immediate staff and I guess the immediate headquarter's level staff would be, say, the order of nine or ten.

CHAIRMAN AHEARNE: Alternative one?

MR. THORNBURG: For direct employees at the test facility, you know, it would around 124 to 240. So the comparison is a little mixed as you indicate. In terms of, you know, immediate headquarter's staff compared to the others it is higher.

COMMISSIONER GILINSKY: Would we charge the licensees for these inspections?

MR. THORNBURG: They might charge us for the specimens. When we get further into what we propose here we

are going to ask for spares or things that have been installed or that sort of thing to get the real production type equipment to test.

CHAIRMAN AHEARNE: But wouldn't we allocate the cost of our inspection efforts to licensees.

MR. STELLO: It would be an indirect payment, but there is no plan to charge them directly.

MR. THORNBURG: An indirect payment, yes.

COMMISSIONER GILINSKY: Is this an activity for which the law allows us to charge licensees?

MR. STELLO: We are allowed to charge them for inspections. I assume that we would include these in the overall inspections. That was the reason I answered it that way. That is part of the overall inspection activity.

CHAIRMAN AHEARNE: Then you allocate it.

MR. STELLO: Then allocate it on that basis. We have no plan to charge on the individual test, although I guess if you wanted to do that I suspect you could. Maybe the general counsel would know, but I don't know of any reason why you couldn't.

MR. SHIELDS: I don't know either. I assume you could put it into the general cost of the inspection program.

CHAIRMAN AHEARNE: Which would seem to be the more logical place.

COMMISSIONER HENDRIE: Bill, do you see any

difficulty with that benefit to the payer proposition?

MR. SHIELDS: Benefit to the licensee? I don't offhand. I have not thought about this.

COMMISSIONER HENDRIE: You can certainly make the general argument that without this verification the confidence of the regulators that specifications have been met is less and perhaps enough so to affect operation.

COMMISSIONER GILINSKY: That is what I was really asking.

COMMISSIONER HENDRIE: On the other hand, where the licensee is presumably authorized and had carried out a set of tests of his own to verify that his equipment meets appropriate the appropriate standards and we come along and say, okay, give us two more of those transmitters, we are going to take them over to our ovens and test them to verify that yours came out right, I don't know whether there is room for an argument there that he doesn't get any real benefit out of that or not.

COMMISSIONER GILINSKY: Can we get an answer to that?

MR. DIRCKS. I think that was a thing we talked about at one point whether or not another alternative might have been used, and maybe you have already mentioned it. It could be firms go through an independing testing laboratory and provide us with something like an Underwriters

Laboratory certification. In that case the cost would be fully on the licensee.

COMMISSIONER HENDRIE: That is sort of alternative three. What we do is to witness and keep a close eye on a relatively small fraction of that kind of test to verify in writing what the laboratories are doing. It is built in there.

MR. DIRCKS: In a way it is, but in a way we are picking up the cost. In the other way if you say to the licensees get yourselves certified by an independent testing laboratory would we accept those certifications from the independent testing laboratory.

MR. RUTHERFORD: That is why this is in the issues we are going to recommend.

COMMISSIONER HENDRIE: I assume down the line that once we get ourselves straightened away, and it will take some years I recognize to do that, that as new equipment comes up to meet our IEEE 323 and other environmental qualifications standards that the people that want to use it will say, Hi there, NRC, I am going to take this new transmitter over to the Updike Testing Company and get it environmentally tested. Is this one you would like to see? We will have a regular program of observation but they will pay for the test in order to use the equipment. In that way why we will keep up as it were with the environmental

qualification.

MR. STELLO: We are getting ahead of the story a little bit. One of the things you wanted to include as part of the recommended program is to find a way to certify the laboratories and get the laboratories to do a better job with the hope that as we look way down into the future there will be rollover of the program with the need for us to do less and less and less of any independent vertification test by having accredited laboratories to do the testing. That is part of what we are getting to. I guess maybe I stole a little bit of your thunder.

MR. THORNBURG: That is all right. To continue, alternative four was evaluated. It is combined contract testing with having your own facility. I don't see really, you know, that there is much sense to that and it didn't score very high.

Alternative five, a combination of an NRC facility and witnessing, scored high.

CHAIRMAN AHEARNE: That is what Sandia has recommended?

MR. THORNBURG: They didn't recommend a single alternative.

CHAIRMAN AHEARNE: Their description certainly sounded like it, an optimal combination. It seemed to be they were combining those two.

MR. THORNBURG: They were scoring the last two higher.

MR. RUTHERFORD: Well, if you look at the numbers they did come out in favor of alternative five, that is the total criteria scoring. The core criteria comes out in favor of six.

CHAIRMAN AHEARNE: They have a discussion section in which they recommend a suggested course of action, and I thought that was the one they recommended.

MR. RUTHERFORD: Basically that is what they recommended. We didn't agree exactly with their final recommendation.

MR. THORNBURG: On alternative five they scored it high on the basis of immediacy and eventually more direct involvement when you had your own laboratory. The cost was up a bit.

Alternative six, contracting and witnessing, the pros were immediacy and cost control. There is less direct involvement.

Slide six, please.

(Next slide.)

At least my summary of the study results as stated by Sandia the way I saw it, they didn't recommend complete adoption of a single alternative based on costs and time, particularly the first three.

They did recommend immediately adopting an alternative three type approach to start something and get something going.

CHAIRMAN AHEARNE: Now correct me if this is wrong. I did not read the report in detail. My impression was in going to alternative three they recommended forming a branch.

MR. THORNBURG: A dedicated staff; yes, they did.

CHAIRMAN AHEARNE: That is what I thought.

MR. THORNBURG: Yes, as indicated there they did emphasize a dedicated staff. Now, NRR has the dedicated staff and the testing area. As I indicated, I think we saw that things got focused and the movement was going particularly in this area.

Alternative three costs are related to workload. Alternative one and two costs are not as related to workload, and, as indicated, they emphasized the formation of a dedicated staff.

(Next slide.)

MR. THORNBURG: Staff views are then ---

CHAIRMAN AHEARNE: Harry, when you talk about staff views, is this now I&E or I&E/NRR standards and research across the board?

MR. THORNBURG: We have discussed with paper with the other offices and met with them and we believe we have

their concurrence.

We have considered that we should test 10 to 20 percent of that highest priority environmentally sensitive equipment, you know, the 140 items that I mentioned earlier that were identified as being those most sensitive.

COMMISSIONER GILINSKY: When you say 140 types of equipment that need to be tested, could you give me an example of one of those so I have an idea of just how far that is narrowed down to the specifications?

MR. STELLO: 232. It goes down 28 categories and then gives the various equipment types in the categories.

COMMISSIONER GILINSKY: You would do what? You would take an extra of one of those types of equipment or an identical one?

MR. STELLO: We would like to be able to get something like a spare or something that has been installed in a plant.

COMMISSIONER BRADFORD: Well, I would hope occasionally you might even take one out of a plant. Just tell the licensee you would like one that had been in service.

MR. STELLO: Yes, except we want to go softly on that. Then again in requiring them to cut out a piece of equipment or something we want to proceed a little bit with caution.

COMMISSIONER BRADFORD: What are the difficulties there?

MR. STELLO: If they had two components and they installed one and they are manufactured identically, we would feel more comfortable doing that.

COMMISSIONER BRADFORD: Why is that more desirable than saying put your spare in and we will take the one that has been in service?

MR. STELLO: Well, I said we want to go very cautiously. I don't think you want to say shut your plant down and cut that out, but at a time convenient I think that can be done.

COMMISSIONER BRADFORD: No, no, but it can be done during a shutdown anyway.

MR. STELLO: I think that is possible. They can do it.

COMMISSIONER BRADFORD: Assuming it were done during times when the plant was shut down anyway, then are there substantial difficulties in testing actual equipment in place?

MR. STELLO: Not that I am aware of, no.

MR. RUTHERFORD: We might have some radiation considerations. We may go to a contaminated test facility versus one that is clean.

MR. STELLO: I think we need to look at it,

depending on the particular piece of equipment and whether you have to make additional splices. In general principle the answer is yes. We have thought about it and it is something that we would like to at least do a sample of.

MR. THORNBURG: We are saying here that one of our first priorities would be to attempt to get some that have been in service. I wouldn't want to be the person that requested this specimen out of a plant and they left the block valves closed when they put it back into service or they would be forced to splice at the wrong point in the cable or something like that. I want to make sure that the NRC's desires didn't put the licensee some way in jeopardy.

CHAIRMAN AHEARNE: I assume that whatever the procedures are for taking a piece of equipment out there is an accurate check of the replacement piece of equipment.

MR. STELLO: I think we should just have answered your question very simply. The answer is yes, it is our intent to do that, to get them hopefully at a period of time when they have aged, when they have been in operation in the plant, you know, over the years, five years or ten years, or something, and go in and ask for them. We intend to do that.

MR. THORNBURG: It is indicated further along. We place a fairly high priority on that because then you won't have to do artificial aging. You will eliminate some of that concern in the test validity.

As I said, we were going to do about a 10 to 20 percent testing of that higher priority equipment.

COMMISSIONER GILINSKY: When you say 10 or 20 percent, is that 10 to 20 percent of the 140 items?

MR. THORNBURG: Yes, something in that order. The other thought I wanted to get in, too, was that 140 items may be about one-fifth of the total spectrum of items that, you know, might be involved.

COMMISSIONER GILINSKY: But they are the most important ones?

MR. THORNBURG: They are the most important ones in our judgment of the study. This is one of the benefits of the study. We have a listing of the most sensitive equipment and we have started to point our vendor inspection program t wards some of these things. That is one of the early spinoffs and benefits from it. There is a list of total vendors, too, involved in the thing. It helped us to get some grasp of what the universe was.

The staff has recommended a modified alternative six. We believe we get almost immediate feedback in months versus up to five years. It is the least costly factor of from 20 to 30 less. Fortunately some of the benefits will be the improved standards and upgraded testing. We believe there will be an augmented NRC independence over the way we did it before. We think there is flexibility to other kinds

of testing, too. We are talking here very narrowly about environmental testing of electrical equipment. There are probably other types of equipment testing that should be considered. You know, if you dedicate yourself to a facility and you spend a lot of money in a venture that may lock you into a given type of testing you wouldn't have the flexibility to go to different types of equipment and different types of testing.

COMMISSIONER GILINSKY: Is the main focus on testing equipment before it goes into a plant or is it on aged equipment?

MR. THORNBURG: Well, hopefully the testing does take into consideration aging, but there are some, you know, there are specified processes you go through to ---

COMMISSIONER GILINSKY: You mean artificial aging prior to the testing?

MR. THORNBURG: Artificial aging. Yes, right. You don't always know that is going to be effective with the exception maybe of radiation exposure. That can be fairly straightforward. You worry about the effects of temperature and heat on some of the less permanent materials like rubber and plastics and this sort of thing.

COMMISSIONER GILINSKY: Now apart from our testing are all of these types of equipment required to be tested by the manufacturers before they are put into service or sold

for these purposes?

MR. THORNBURG: Yes.

MR. STELLO: Absolutely.

COMMISSIONER GILINSKY: So there are specific tests for all of these types of equipment?

MR. THORNBURG: Well, yes.

MR. STELLO: Well, with Comanche Peak that is the commitment.

CHAIRMAN AHEARNE: I thought that for a number of types that the 74 standard had been translating into testing requirements.

MR. RUTHERFORD: The model numbers that you see there should reflect the later plants, Comanche Peak and ---

CHAIRMAN AHEARNE: I am drawing a distinction between what we have said you are required to do and between what actually has been developed as far as testing procedures. It was my thought that the 74 standard had not yet been translated into testing procedures for all the types of equipment. Maybe that is wrong.

MR. STELLO: My understanding is that with Comanche Peak they have committed.

COMMISSIONER HENDRIE: Well, they have committed, but the last time I looked it wasn't clear in fact that there was an available testing procedure which would meet IEEE 323-1974 as written. So there was a clear question as

to how the obvious good intentions of the standard were in fact going to be implemented in actual environmental tests in the field. Now, that is a status that I recall as of, what, a year ago or two years ago or something like that. He is inquiring, and I join him.

Does anybody know what that status is today?

MR. VOLLMER: Mr. Bittman, I believe, is still there.

COMMISSIONER HENDRIE: I understand that, but does anybody know what the tests are and can they be done.

MR. VOLLMER: To my knowledge, the answer to that is no.

CHAIRMAN AHEARNE: That is what I thought.

MR. VOLLMER: At this point in time.

CHAIRMAN AHEARNE: That was my impression, too.

COMMISSIONER HENDRIE: So one of the things that this program does, I assume, will put the recommended one or something close to it in place. It seems the obvious thing to do. One of the aspects of the program in fact is to be working with the code people and with the testers to try to settle down on a specific environmental testing program which meets the intent, and everybody agrees meets the intent of 323, and then by God the code writers may have to go back and adjust a few words in that code to make it conform to a practical testing program.

COMMISSIONER GILINSKY: What stage is Comanche Peak at from completion?

MR. STELLO: A year or so away.

MR. RUTHERFORD: It has been stretched.

COMMISSIONER HENDRIE: It is like what, Unit one is maybe 75 or 80 percent complete. You know you pour a lot of concrete and get up the curve and then you got a lot of wires to string and that last 20 percent is pretty hard. Nevertheless, they are well along for a plant with a commitment like that.

COMMISSIONER BRADFORD: That is what I was going to ask.

COMMISSIONER GILINSKY: That is what I am asking.

COMMISSIONER HENDRIE: They are still struggling with the equipment qualifications. You know, they have clearly had to go ahead and purchase equipment on less than absolutely complete and full assurances that it does meet 323-74 unless they have made more progress up there in Texas than we know about right here today at the table.

COMMISSONER BRADFORD: Then sometime in the next year they will have to actually run the tests.

MR. STELLO: Well, hopefully they didn't run. That was the point I was trying to make. They have purchased equipment allegedly qualified by at least someone's interpretation of the standard.

COMMISSIONER HENDRIE: Right.

MR. STELLO: That is what they are supposed to do. Now whether when licensing looks at it there is going to be agreement and a debate to do more, based on my experience with the NRC there is no question that it is going to come out that way. There is going to be more that is going to be needed.

COMMISSIONER HENDRIE: Let's not unnecessarily prejudice the case.

CHAIRMAN AHEARNE: Just necessarily prejudice it.

(Laughter.)

COMMISSIONER HENDRIE: Just necessarily prejudice it. Yes, exactly so.

Well, as I say, I think one of the things you have got in this program that will be important is in fact coming to an early agreement on the set of tests for given classes of equipment that everybody will agree satisfies the requirement.

COMMISSIONER BRADFORD: What is it about the development of the tests that is proving so difficult? It is just one of the tests or is it a bunch of them?

CHAIRMAN AHEARNE: One of the reasons why it is so difficult is that when the IEEE wrote that standard they didn't write it as a standard for immediate tests, they wrote it as a future goal for people to work in the long

term as a future objective. At least the people who wrote that standard were quite surprised when it was immediately turned into something that people thought was immediately in existence. That wasn't the goal they had in mind.

COMMISSIONER BRADFORD: But it has been six years.

MR. STELLO: Yes. If my understanding is right, the most difficult part of that standard was aging, how to assure you got the aging. They have the new double bump in the standard that we didn't have in the others, but that shouldn't create any real testing problem.

Does anyone know what the difficult aspects are?

MR. CHIRAMAL: They have a lot of IEEE standards out of documents which are for various equipment like motors, motor-operated valves, cables (inaudible) but I think maybe only two of them have been accepted by NRC as reg. guides. There are a lot of documents being brought out which are supposed to tell the industry how to test equipment.

MR. MORRISON: I am William Morrison from Standards. Actually we have seven regulatory guides out including 189 which endorses 323 that endorses specific IEEE standards on specific equipment on qualification.

CHAIRMAN AHEARNE: I guess now I am not sure.

COMMISSIONER HENDRIE: Out for comment, Bill?

MR. MORRISON: No, effective.

CHAIRMAN AHEARNE: So are you saying that we have endorsed all the IEEE proposals?

MR. MORRISON: There are a number of them. There are like 16 more that are in various stages of development. Some of them are just an issue which we haven't even initiated a regulatory guide on because of manpower problems. I can run the list down of what we have issued.

COMMISSIONER HENDRIE: Let's see, 17 and 7 is 23. Is 23 likely to be the total or a higher number?

MR. MORRISON: Twenty-three is the total as we see it now, but as we get into the problem I am sure we will find areas where we will want to develop detailed standards that cover specific equipment.

MR. PFEIFFER: I am Ronald Pfeiffer from Research. I wanted to point out one thing about the IEEE standard. The standard is not intended to be the document that tells you exactly how to test. It is an overall document. It is a very general guidance. The problem that the industry has had in the old version of 71 and the new version is to try to come up with the specifics, the specific details. How do you interpret the general guidance for a specific test program. I don't believe that when industry revised this standard in 74 they didn't intend it to be used. I don't think that is correct.

CHAIRMAN AHEARNE: I didn't say they didn't intend

to use it. I said that they intended it as a goal to work towards, at least that is what I am told by the people that worked on the standard.

MR. PFEIFFER: Right, but I think what they mean is to come up with specific documents on specific pieces of equipment, how to test the valve operator and how to test an instrument and so on, and that is the problem. But even the 71 version implied that aging should have been used. The standard clearly states that the equipment should be subjected to the environment of its operation. It did not specifically call out aging and everybody chose to ignore it. So they revised the standard in 74 and said specifically aging shall be included, but it was not excluded in the 71 version. A lot of people missed that point.

COMMISSIONER GILINSKY: Does all this just apply to Comanche Peak and later plants?

MR. STELLO: The discussion that you have heard?

COMMISSIONER GILINSKY: Yes.

MR. STELLO: Yes. It is related to the 74 standard.

COMMISSIONER GILINSKY: And the proposal area.

MR. STELLO: The first plant that committed to the 74 standard is Comanche Peak, if my memory serves me right. What we have done for the purposes of this study is laid out

the program with that as an assumption in it, that we would look to start with those plants coming using the IEEE 1974 version with Comanche Peak as being the lead and moving on that basis. The fundamental assumption is making the study and it is fundamental to what we are presenting.

COMMISSIONER BRADFORD: First of all, don't we now require that replacement parts in the existing plants be qualified to IEEE, the 74 standard?

MR. STELLO: I don't think so. They had to meet the original qualification, what the requirement was. I am not aware of anything that would retrofit the replacement parts. Can anyone from NRR help me?

MR. VOLLMER: I think what you stated was correct. We required that they meet the original qualification. At this point in time I don't think that is tied to IEEE 71 or 74. Is that correct?

VOICE: Yes.

COMMISSIONER GILINSKY: Will there be any program of NRC audit or qualification for the plants that are not required to meet the 74 standard?

MR. STELLO: Yes, but not with the same intensity as you have for these from looking from 1974 forward. This is hopefully to get us on a set of tracks that will straighten out the problem for the future. We have other program which is the subject of your order which we will be

implementing.

COMMISSIONER BRADFORD: But it will only straighten it out as to post-Comanche Peak plants.

MR. STELLO: But we also have your order which directs us to do a variety of other things of which there are meetings today out in the regions to kick that off which is a retrofit.

COMMISSIONER BRADFORD: That is right, but what you are saying is that we would never apply the testing program to pre-Comanche Peak plants.

MR. RUTHERFORD: No, that is not right.

COMMISSIONER BRADFORD: On what basis would it be applied then?

MR. RUTHERFORD: The what we conceived this thing, the first test that would be run would be on equipment that is already installed in operating plants. So in that sense it does cover the operating plants, pre-Comanche Peak.

COMMISSIONER GILINSKY: You would test them to what standards?

MR. RUTHERFORD: We would test them to the current standard.

COMMISSIONER BRADFORD: The 71 standard?

MR. RUTHERFORD: No, no, today's standard.

COMMISSIONER GILINSKY: Because that is equipment that is also going into the later plants? Is that the idea?

MR. RUTHERFORD: There is a likelihood of that, yes. There is duplication of equipment.

MR. STELLO: If it were to use the newer standard and if it were a piece of equipment that was only used in the older plant why would we subject it to the later standard?

COMMISSIONER HENDRIE: You probably wouldn't test that piece of equipment. You would look for something that which had a broader use.

MR. STELLO: If it were in both, which I assume in the future that is going to be the case as they use replacement parts, they eventually will be qualified to the newer standard because that is what will be used. To the extent that they are in both the newer and the older plants then that would apply, but I would wonder why would we want to go and do a qualification test using the other standard, the newer standard, for a piece of equipment that is installed in a plant only to be used in those plants.

MR. RUTHERFORD: Well, one reason that I have identified in the preliminary work that we are doing on this program is the degree of confidence that we have in the existing qualification report for a particular piece of equipment. You can list pages of reasons why you might want to go back and redo that test.

MR. STELLO I understand that, but the issue is do

you want to redo the tests so that you can confirm that it met the original standards or apply the standard that is being imposed today. I think that is the issue.

MR. RUTHERFORD: I would suggest doing it on today's standard.

MR. STELLO: Well, what do you do if it didn't pass that?

MR. RUTHERFORD: Take that out of the plan.

MR. STELLO: Well, then that says that you want to retrofit today's standard to every plant which is the question Commissioner Bradford asked and I didn't think we were prepared to make that decision yet.

COPMMISSIONER GILINSKY: Well, we certainly want to test it to a new standard if it is a piece of equipment that is going to get used in the new plants.

MR. STELLO: Agreed. Do you want to say that you are going to have to retrofit then the new standard to all of the equipment that is in the older plants? I am not prepared to do that.

COMMISSIONER GILINSKY: It is something to take a look at.

COMMISSIONER BRADFORD: It is a serious question because if you find, for example, as a result of aging it won't function in an accident environment then old standard or not it is not a piece of equipment that you would want in

the older plants.

MR. STELLO: It depends. If it works fine if you age it for 20 years but it doesn't work fine if you age it for 30 years, then you might want to replace it every 20 years. It is perfectly satisfactory to take that kind of approach. Or if you were to replace it, which you will have to do from time to time, to replace it with a better piece of equipment that meets today's standards which is even a more desirable thing to do if you can.

Given all of the possible alternatives that are there, I don't think I am prepared to recommend a particular approach that would apply to everything. If they meet today's standard and they were to put that piece of equipment in I would be satisfied, but I don't know that I am prepared to say that is a requirement. At least I did not understand that we did, and maybe I could turn around and make sure that NRR ---

MR. VOLLMER: I think the sum up the basic thrust of the program is to assure that the equipment will function in the environment. That is our current thrust to assure ourselves of that without regard to the standard. The longer range would be to assure that all plants on a replacement basis meet the highest available standards.

CHAIRMAN AHEARNE: As you point out, Dick, the purpose is to ensure that the equipment functions when

needed and the standard is a convenient benchmark to use to get that assurance.

COMMISSIONER GILINSKY: Let me just ask my original question and see if I can get a brief answer. Will we be looking at equipment that just applies to the older plants and at least testing it to the older standards and maybe testing it to the newer standards in any way that is comparable to the approach that we will be applying to the newer plants?

MR. STELLO: A short answer, yes.

(Laughter.)

COMMISSIONER BRADFORD: Let me ask for the middle-length answer ---

(Laughter.)

COMMISSIONER BRADFORD: --- which is also a question that Victor asked a few minutes ago. If the answer is "yes," then what standard to you test the older equipment to?

MR. STELLO: Well, in Victor's question he gave me both. He gave me either the current standard or the newer one, either/or, which is what we would be doing. If they did have the results of applying the later standard for the identical piece of equipment we would certainly accept it. I can't believe we wouldn't. True?

VOICE: Right.

MR. STELLO: Good. If they didn't have that particular test and they had a test applying it to the old standard and we could be satisfied that the test was an adequate test and we were convinced that it was going to be okay in that environment then I think we could accept that, too.

COMMISSIONER GILINSKY: I was asking is it going to be anything like a comparable fraction of -- in other words, will we get as good a look at those plants?

CHAIRMAN AHEARNE: I would guess that at this stage it is far too early for that. This program is just barely in outline form.

MR. THORNBURG: I don't know how big the universe is.

CHAIRMAN AHEARNE: We are trying to struggle to get something finally in place to begin doing this independent verification. I think to then try to describe all of the details of it is a little premature.

MR. THORNBURG: We will have a lot of decision to make once we get into the thing. You know, we may be able to conclude that there are a lot of problems or we may find that things, you know, don't need as much.

COMMISSIONER HENDRIE: Well, we have now got underway and have had underway for several years some environmental qualification verification exercises at the

operating plants. For the older plants why, you know, there are these complicated arrays of what various classes of equipment and various classes of plant have to meet to be acceptable under that relook at the general environmental qualification situation. I expect some of that verification program out there is involving some test work by testing laboratories so that to the extent that you make audits of that work you are carrying out the kind of program you propose here for the newer plants to the older ones.

Similarly some of that work and some of the staff's review of things that the licensees supply under this program are likely to suggest to you that there are particular pieces of equipment, you know, where it is not so clear that there is an experimental verification of operability in a certain environmental regime and it will occur to you that that would be a good thing to test. So I think there will be some inputs to your program from that side.

MR. STELLO: The difficulty in trying to get into a lot of detail in answering the question is we are just getting the information. All of those tests, the qualification tests that have been completed, to the extent that you want to witness the test as is indicated in what we have suggested in the paper, well, they are over. We can't go back and witness such tests. But I suspect some of them

will have to be retested where they didn't have adequate documentation. I think we can go and witness those kinds of tests, at least some of them, but not all, for sure.

To the extent that we do have a problem and we see a particular piece of equipment for which we feel independent verification if necessary, just as we do with the Browns Ferry connectors, we can go and have those tested. So we can, you know, something along the lines that we are doing here. The details of it we aren't really going to know until the results are back in.

When are they do in, all of the pieces of paper? What is the drop-dead date?

MR. VOLLMER: I think September. Well, the information should be into the licensees in the region by September.

MR. GIBBON: Yesterday at the regional meeting they were saying November was the drop-dead date.

MR. VOLLMER: Of course, that review has to be done in the regions by parceling out the things that are obviously qualified and the things that aren't obviously qualified, what additional documentation is needed and then NRR has to provide the integrated review of that. Then per your memorandum and order get our the integrated SER by February 1st. So this will give us that first level to talk about somewhat independent of standards, in my view, but

dependent on whether or not the systems will function in the environment.

CHAIRMAN AHEARNE: Okay, Harry, why don't you summarize where you are.

COMMISSIONER BRADFORD: Let me pick up one thing. With regard to the replacement parts in the operating plan and the question of whether or not the 74 standard applies, the Commission did say in the decision on the UCS petition that unless there are sound reasons to the contrary the 74 standard and NUREG 0588 will apply. So unless someone is going to make a protest on the bases that there are sound reasons to the contrary, the Commission decision did say that the 74 standard applies to replacement parts.

COMMISSIONER HENDRIE: Doesn't the NUREG have that, dear me, what did we call them, the Division of Operating Reactors Guidelines To Environmental Qualification as a sort of intermediate standard in there?

COMMISSIONER BRADFORD: I am not sure where that takes you, Joe. All that the order said is that it does apply to replacement parts.

COMMISSIONER HENDRIE: No, I was saying that I thought I recalled that the Operating Reactors Division guidelines for environmental qualification were cut to better fit some of the equipment which predated these 373-74 initiatives. It had some specific tests in mind.

COMMISSIONER BRADFORD: That is right. We did not say that the 323-74 standard applied absolutely to replacement parts.

COMMISSIONER HENDRIE: That was all I had in mind to comment.

CHAIRMAN AHEARNE: Harry, would you see if you can summarize where you are because we have got I think to make some sort of progress.

COMMISSIONER HENDRIE: Harry, you have got a good proposition here. Why don't you bang you hand on the table and say, gentlemen, this is what we ought to do and all in favor say aye. No, no, you say that.

(Laughter.)

CHAIRMAN AHEARNE: He can go ahead and say it.

(Laughter.)

MR THORNBURG: We have recommended a program which, as I said, is a lot like alternative six. The first aspect of it is to conduct independent verification tests and we would select equipment to be tested on the basis of safety significance, the volume used in plants, the complexity of the equipment, the sensitivity of the equipment, the age, the installed life versus qualified life, insulation concerns, if any, and the degree of competence in the previous testing work.

CHAIRMAN AHEARNE: Where would you do those

independent tests?

MR. THORNBURG: Right now we have started some arrangements with Sandia.

MR. STELLO: I would not preclude any of the minor laboratories.

MR. THORNBURG: Yes.

MR. STELLO: Franklin Institute and Sandia. I would not want to presume that there are any of these laboratories which have the testing facilities for which there is some reason, some fundamental reason we couldn't go in and contract to have them do tests for us.

MR. THORNBURG: We already have Franklin Institute under contract to do some other independent testing for us. They may well do some in this program also. We have started to make some contractual arrangements to get some work started at Sandia fairly soon testing cable. Excuse me.

COMMISSIONER BRADFORD: What volume of tests, and I am not even sure what the way to express the volume, but in the course of a year how many tests, assuming the Commission approved the program as proposed, would you expect to run?

MR. THORNBURG: On the order of five to six, something like that.

COMMISSIONER BRADFORD: That would be five or six pieces of equipment?

MR. THORNBURG: Five or six items.

COMMISSIONER GILINSKY: Out of 140.

MR. STELLO: Yes, out of the 140, right. You would pick five or six out of the 140.

MR. THORNBURG: Then we do inspections, or in-depth inspections and witness tests of, say, another -- we try to do two a month -- so say another 24 or so.

COMMISSIONER BRADFORD: When you are witnessing a test that would of course be for equipment not yet installed?

MR. THORNBURG: Yes, it would have to be installed.

MR. STELLO: It could be both.

COMMISSIONER BRADFORD: Do the vendors test equipment that is already installed?

MR. RUTHERFORD: There could be a second test on one model to a different profile.

MR. STELLO: They have a part in a transmitter installed in a plant today qualified to the old standard. They are going to use the same transmitter in Comanche Peak qualified to the new standard. So there clearly can be in this set combinations where some of this equipment could be in the plants, and if you want to use it in the new plant you would qualify it to the new standard. That is a very real possibility.

COMMISSIONER GILINKSY: Now, is there some assumption built in here about how these tests will turn out?

MR. STELLO: Assumption?

COMMISSIONER GILINSKY: Well, what I asking is this. It is one thing to say that you will test five a year and if they turn out okay let's go on at that level. What if all five failed to pass the test?

MR. STELLO: Well, if all five failed to pass the test and the venior's five failed to pass the test, no problem because they are going to have to get a different piece of equipment to serve that purpose. The problem we have is supposing our test failed and theirs passed, and now we have got ---

CHAIRMAN AHEARNE: I think Vic is asking a different question. You are doing a very random sample in some sense.

MR. STELLO: Yes.

CHAIRMAN AHEARNE: A very small sample, right?

MR. THORNBURG: Yes.

CHAIRMAN AHEARNE: Roughly five percent.

MR. THORNBURG: Yes.

CHAIRMAN AHEARNE: What is all five percent fail, what does that mean about the necessity for expanding the sample to be a much larger sample?

COMMISSIONER GILINSKY: That is the question.

MR. THORNBURG: We know we have got a problem.

(Laughter.)

CHAIRMAN AHEARNE: I think the answer is yes.

MR. STELLO: In that case I guess the assumption has been made that we aren't going to face that kind of a problem. We do not believe that we are going to wind up with a situation where most of the equipment being tested is failing. If it is there is obviously something wrong.

COMMISSIONER HENDRIE: Well, but your original point is the correct one. What you are trying to verify is that the testing done by the licensee's contractors in support of his commitment to have qualified equipment is in fact an adequate test to the standards that we have accepted. Now, what counts then is that our tests verify that those fellows got the right answers when they did the tests.

Now, I suspect that if they did a test on a piece of equipment and it flunked, you know, people would rebuild the component rather than continuing to promote other tests of it. So I doubt that we will be called upon to verify a negative test but it is not inconceivable.

COMMISSIONER GILINSKY: The really worrisome case would be if it passed there and it failed ...

MR. STELLO: That is precisely ... think most of tests, to the extent that we could sche... them, and I hope that is true in all cases, that we would never run the first test. We don't want to run a test except to verify

that what they did is okay. So that going into it someone has already has already said, look, we have run the test and this is qualified. So I hope our success rate is then very high bec se theoretically at least there have been tests performed that said the equipment we are testing is okay. I would not want us to be in a position to have run the test before they do.

CHAIRMAN AHEARNE: It is not independent testing.

MR. STELLO: Yes, right.

COMMISSIONER HENDRIE: Clearly if you find major differences in the NRC testing from the results that had been found on the same equipments on tests by the licensee why then we will all meet here again.

MR. STELLO: We will regroup.

COMMISSIONER HENDRIE: We will regroup. It is clearly a result which goes beyond the sort of thing we ought to prebuild into this particular testing program. If it comes up then we will have to look at it in considerably detail to understand it.

CHAIRMAN AHEARNE: Do you have a specific set of recommendations, Harry?

MR. THORNBURG: Well, my recommendations are that we go to this business of conducting independent verification tests in combination with our in-depth inspections and witnessing of tests and then attempt to

improve testing laboratory performance. We are looking at the possibility of certifying laboratories with the ASME. That is basically our suggestion.

CHAIRMAN AHEARNE: Since many of the pieces of equipment that you are going to be testing are electrical and since the standard that you are using is IEEE standard I was kind of puzzled by why you weren't working with the IEEE.

MR. THORNBURG: We have talked to the IEEE about some independent work, or some inspection work. Their historic function is not inspection. ASME has done more of this. If we did this we would get I believe IEEE working with ASME on the technical side. As I indicated in the staff paper a few years ago, we have tried to talk to IEEE about doing some independent E stamp sort of activity and they really haven't made a decision.

CHAIRMAN AHEARNE: What your paper says is that ASME has agreed to develop a suitable standard and implement a laboratory accreditation program where the laboratory is performing environmental qualification testing. My question is, was the same issue addressed to IEEE? In other words, was the IEEE asked would they develop a suitable standard and implement a laboratory accreditation program since the basic environmental qualification testing is against the IEEE standard?

MR. RUTHERFORD: Well, several years ago we talked

to the IEEE about an end certificate system equivalent to the ASME system.

CHAIRMAN AHEARNE: I understand that.

MR. RUTHERFORD: They would not discuss equipment qualification.

CHAIRMAN AHEARNE: A lot of things have changed in the past several years. The question is during the past year have you asked the IEEE that same question, would they do that?

MR. RUTHERFORD: I had one discussion with a member of their staff on this subject.

CHAIRMAN AHEARNE: But we didn't ask the IEEE?

MR. RUTHERFORD: Not officially, no.

CHAIRMAN AHEARNE: Not officially.

MR. STELLO: I think we should.

CHAIRMAN AHERNE: It certainly seems to be a logical thing to do.

MR. THORNBURG: It is a good point.

COMMISSIONER HENDRIE: I will comment as a long-standing member of both professional societies that if you want a speedy and effective implementation for the purposes of the program at hand you better stick with the ASME.

(Laughter.)

VOICE: Amen.

COMMISSIONER HENDRIE: They know how to do it and they have done similar kinds of things for many years and they are tooled up to do it, to design an accreditation standard for laboratories to do this testing, and then to go out and inspect laboratories against that standard.

CHAIRMAN AHEARNE: Not their own standard though, against the IEEE standard.

COMMISSIONER HENDRIE: No, no. The proposition is that a standard which let us distinguish from 323, and we wil call it -- what will we call it -- we will call it the lab standard, okay ---

CHAIRMAN AHEARNE: Yes.

COMMISSIONER HENDRIE: --- to establish an accreditation standard which we will call the lab standard. If you are the Underwriters Laboratory and you would like to do work for people and be recognized under this program the ASME will now come and inspect your laboratories and procedures against this agreed upon lab standard agreed upon between them and us. And if you pass muster and show you can do things right and so on then you will get, I don't know, a T stamp from ASME for testing or whatever. You will get periodically re-examined to see that your testing procedures in fact maintain the appropriate quality levels. As I say, this is the kind of program that ASME has done for many years in other areas.

CHAIRMAN AHEARNE: I guess I still would be happier if we formulate the standard.

MR. STELLO: We definitely will, but we have the advantage of the ASME agreeing.

CHAIRMAN AHEARNE: Yes.

MR. STELLO: We will.

MR. THORNBURG: I believe we have covered all the points I intended to cover in summarizing our proposal. I would like to briefly show slide No. 9.

(Next slide.)

That is where we tried to focus on the what we thought would be the staff cost, the program costs.

CHAIRMAN AHEARNE: Now, can you tell me how this program fits into, and I guess mentioned in your last comment your answer is 10 PA, that it is part of the total program for qualification safety-related equipment, but you point out it is perfect to fit into it. So it is a part of it.

Now, as I understand, the budget resource allocation has substantially more people primarily in NRR, about the same number of people as IEE has in standards, so could you describe this fits into that larger block? Someone? Bill?

MR. DIRCKS: In the general area of equipment qualification testing NRR has the lead, and we have had

numerous discussions on that point. Each office has a piece of the action. I can give you something along the FY-80 resources.

CHAIRMAN AHEARNE: I have that, the list of resources. I am wondering how this fits into it.

MR. DIRCKS: This particular segment?

CHAIRMAN AHEARNE: Yes. Here the I&E is recommending about six man-years of effort. How is that blended in? Is it under working with independent of this very major NRR effort?

MR. DIRCKS: It is certainly not independent of and it is working with. We have established that principle and there have been numerous meetings on the thing. We have a general agreement that NRR would have the lead.

CHAIRMAN AHEARNE: Dick, are you the NRR representative? Could you address how this program which would be a combination of some contractor testing and independent watching would fit into NRR's program?

MR. VOLLMER: The overall program which we hope to develop and have to you like in a month or so has a number of ingredients. One, of course, is the one that is being currently focused on, the environmental qualifications of electrical components issue. There is also the seismic qualifications. The qualifications of pumps and valves, independent verification testing and whatever standards,

rule-making, regulatory guides are required. That sort of envelopes the whole as we see it, the whole equipment qualification picture.

We have been working with I&E. I think the paper itself shows a number of interfaces. I think there are 10 or 12 interfaces with us as well as standards and research to come with a program which we will be able to define in conjunction with standards and so on the type of criteria that are necessary to assure the equipment qualification.

In the longer run, as I would see it, the I&E program would be able to assure that the laboratories testing meet those qualification standards. In the short term I think their inspections would be to assure that the qualification testing meets with whatever qualification envelope was designed for the piece of equipment in the historical past or the current.

CHAIRMAN AHEARNE: For whom would this contractor or these contractors work, NRR or I&E?

MR. VOLLMER: I&E and I see it.

CHAIRMAN AHEARNE: So this independent verification testing would not be then a direct part of NRR's program. It would be I&E's program.

MR. VOLLMER: Yes, sir.

CHAIRMAN AHEARNE: I am really getting down to who is on the hook and who is the responsible person and what is

the responsible management organization, branch or whatever it is.

MR. STELLO: But the testing program is followed up.

CHAIRMAN AHEARNE: Well, no, you are at the top of that, Jim. I am trying to get down farther. Someone has to be in charge of making sure this testing program is done right, and who is that?

MR. STELLO: Within I&C?

CHAIRMAN AHEARNE: Yes.

MR. STELLO: If it starts today you are looking at him. He is the guy I am going to go look for if it is fouled up.

(Laughter.)

MR. DIRCKS: You don't have to look any further than myself or Vic Stello if it gets fouled up.

CHAIRMAN AHEARNE: I am just trying to understand in the organization. One of the recommendations out of here seems to be that you are picking up the combined recommendation, and they made a big point that you have a dedicated staff and I am trying to find that dedicated staff.

MR. STELLO: That is it.

CHAIRMAN AHEARNE: Ah, but see that is it, but Dick isn't going to be in charge of these contracts.

MR. STELLO: That was precisely my point. The

whole problem of qualification, and this is just one part of it for which they have a very real responsibility directly in this area as well as others. This has to fit into that program which it does. The whole question of whether or not the equipment is qualified and the licensee proposes something that is reasonable, and they get the documents as part of the licensing process, and then how do we fit in. The licensee looked at it and says you have got a good program. We go out in the field and said we watched it, it went well and it is okay. They did the tests properly just like they said they were going to do. We took a sample of their equipment and we independently verified that they were qualified.

CHAIRMAN AHEARNE: This coordination is between Dick and who?

MR. VOLLMER: Well, I guess between myself and Harry but really at the branch level.

CHAIRMAN AHEARNE: It would be at the branch level.

MR. VOLLMER: We have Zolltan and Astozie who is the branch chief who have been working with the IEF fellows on this paper.

CHAIRMAN AHEARNE: All right. Now, on standards, is there a standards guy?

MR. MORRISON: Right here.

CHAIRMAN AHEARNE: Now, how do you fit in. and

let's assume it is ASME that goes ahead?

MR. MORRISON: Well, we have a program and have had for a number of years on the development of qualification standards. That would continue and it would be fully supportive of this program. The extra effort would be involved with a development of the standard on the laboratory certification as Commissioner Hendrie indicated. I think the paper also talks about a regulation that would require the nuclear industry to use the certified laboratories and we are estimating one man-year for the next couple of years for that extra effort. That is in our budget.

CHAIRMAN AHEARNE: That is in your budget?

MR. MORRISON: Yes, sir.

CHAIRMAN AHEARNE: Now, you have in general though about seven people across the board for this qualification of safety-related equipment and standards?

MR. MORRISON: I don't have the figures with me. That sounds a little high.

VOICE: That is for 81?

CHAIRMAN AHEARNE: I am talking about the 82 budget. Similar to the NRR this is a piece embedded in the larger qualification?

MR. MORRISON: The one man-year represents the additional effort involved with this program, primarily on

the laboratory certification effort.

CHAIRMAN AHEARNE: The fellow from research, do you have any other comments you would like to make on this approach to go out to the contractors to have them do the testing as opposed to developing an NRC or any other aspect of it?

MR. PFEIFFER: We we have working closely with Bill on this. As a matter of fact, the study was done using some of the people involved in our research programs. So it has been well coordinated from the start. We felt a long time ago and we made recommendations that the qualification laboratories should be certified. We felt that in trying to evaluate the validity of some of these tests that one of the problems we had with the industry tests was the lack of certification for the qualification testing laboratories. So we feel very strongly that is a step in the right direction.

Now as to who would actually perform the tests if you have a qualified laboratory or you have a laboratory that was more or less locked into you like the Sandia laboratory I wouldn't see much difference. I would think that you could perform this program between the tests at Sandia or the qualified test laboratories. I think that program should be put in place first.

CHAIRMAN AHEARNE: The certification laboratory.

MR. PHEIFFER: The certification laboratory. Now where we fit into this overall program, I think we have mentioned in the past to the Commission that we are not involved in the production testing and the routine verification of equipment in the field. We feel if we have a role, it is in evaluating the ability of the test procedure itself to guarantee that the equipment is tested right and that you would get repeatable results. We have seen a number of problems in the equipment and the tests and we have brought these to your attention. We have plenty of work in that area to support both the I&E program and the industrial effort. I think there is a clear interface there. Of course, we are doing these after tests that you have requested from us, but I think the that reason we are doing that is that this program is not in effect. I think that if you made this request today the staff would probably agree that this would come under the I&E program, this verification program.

COMMISSIONER BRADFORD: While we have got you on your feet let me just ask about the relationship between this program and the program that you described that is in effect testing the tests at Sandia. Are their facilities in fact adequate to provide full service to both programs?

MR. PHEIFFER: When we constructed a new facility we kept in mind that the function might grow, and the

facility is constructed in such a way that you could use ---

COMMISSIONER BRADFORD: Did we construct the facility at Sandia?

MR. PHEIFFER: Yes, we paid for the research. When I say "we constructed" I mean our dollars. We constructed the facility in such a way that you can use many different chambers with the base equipment, the steam facility and the chemical sprays and the radiation facilities. So we have a lot of room for expansion.

Now, if this program develops rapidly and you start to test more than five units per year, you will probably have to put additional funds into the Sandia program or go offsite, Franklin or Wylie or some of the other testing laboratories. It could be a potential impact, but we have some provisions for taking care of that.

COMMISSIONER BRADFORD? How many tests do you run per year at the Sandia facility now?

MR. PHEIFFER: Well, the new facility was just completed and it is very hard to say how many tests. I would say that we should be able to run test a month without any trouble. Now, we can increase that if we install in a chamber and then test in a different chamber and just move the chambers in and out. We can interchange test chambers within a few hours. So we have the potential and the flexibility to do this program, our program as well as the

I&E program. When you consider the fact that you certify the laboratories you have an offsite capability. I think there are adequate test facilities around the country to do the job.

COMMISSIONER BRADFORD: Thanks.

CHAIRMAN AHEARNE: Vic, have you completed your summary?

MR. STELLO: I think we are at the point we would like the Commission to give us some advice.

CHAIRMAN AHEARNE: How much reprogramming in 80 and 81 is required by this?

MR. STELLO I think we are pretty well there with the reprogramming. It is going to hurt our vendor program and we probably will be recalling some out of the vendor program if we start with this. That to me is very illogical anyway because we want to put it into the vendor program in the long term so it will roll over, part of it. It will hurt us.

CHAIRMAN AHERNE: Well, if we approve this ---

MR. STELLO: I am not sure the $150,000 ---

MR. RUTHERFORD: That is available from current funds.

CHAIRMAN AHEARNE: About $500,000 in 81.

MR. STELLO: We have that there.

MR. RUTHERFORD: We don't have $500,000. We have

something approaching in the neighborhood of $400,000 I guess.

MR. STELLO: I think the 80 and 81 are pretty well squared away.

CHAIRMAN AHEARNE: Vic?

COMMISSIONER GILINSKY: I think the program look okay for post-Comanche Peak reactors. I did want to ask a technical question. Does the 74 IEEE standard take into account the environment of a hydrogen burn?

MR. RUTHERFORD: No.

COMMISSIONER GILINSKY: So that is not included in any of these tests, testing for the ability to withstand a burn within the containment?

COMMISSIONER BRADFORD: I guess what you would have to know is the temperature that you had experienced during the hydrogen burn as against the temperature in these tests.

MR. STELLO: I know one facility where we did do a lot of testing of a lot of the equipment for hydrogen burn.

COMMISSIONER HENDRIE: The Chairman examined the equipment.

(Laughter.)

COMMISSIONER GILINSKY: That is one good reason for getting inside.

CHAIRMAN AHEARNE: Vic.

MR. STELLO: If it became a design basis to accommodate a hydrogen burn in the containment then you would calculate the duration of the temperature profile and could include it. Technically I don't imagine it would be a big problem.

COMMISSIONER GILINSKY: Is it clear that these tests in fact don't cover such a possibility or is it just something that needs to be examined?

COMMISSIONER HENDRIE: No, I think they clearly do not cover something like a flame front coming across a piece of equipment. They would be qualified for the stuff that is supposed to work, for instance, in the containment in an accident environment or be qualified for a radiation level appropriate to that reg. guide 1314 release. You know, 50 percent of the iodides with half of it plated out and the nobel gases are all in the atmosphere and, I don't know, maybe one percent of the solids spread around, and you would calculate some generalized radiation field. I would think that is the sort of radiation proposition. Humidity and temperature would be typically 40 or 50 pounds saturated steam. 275 or 280 degree F, that is characteristic of the containment pressure and temperature peak in a large loss of coolant accident. What else?

MR. STELLO: Well the steamline break requirement, you know, is temperatures that are in the neighborhood of

350---

COMMISSIONER HENDRIE: They are a little higher than that.

MR. STELLO: --- to 400 degrees, and that is the steam. I will make a judgment that I suspect that if you did this hydrogen burn the surface temperature that you would get might be higher than that, but I doubt very much whether you would get very much penetration at that temperature into the component. By definition, and I worked at Three Mile Island, we did not get any failure as a result of the hydrogen loss.

COMMISSIONER HENDRIE: Years ago when we were working on reg. guide 170 dealing with hydrogen why there was a proposition offering to licensees that if they didn't like inerting, for instance, instead of staying below four percent hydrogen and if they wanted to work up into the flammable region, why that was fine as long as they did some testing to show that the essential equipment would survive a burn. I guess we would have been willing even to go on into the detonation range but obviously the testing gets, you know, enormously more difficult and uncertain there. I don't recall anybody doing much.

MR. STELLO: Analyses.

COMMISSINER HENDRIE: Well, analysis, but nobody wanted to do tests.

MR. STELLO: I think the argument that General Electric Company advanced at that point was basically an analysis argument to show what the effects were as I recall.

CHAIRMAN AHEARNE: Any questions?

Vic?

COMMISSIONER GILINSKY: No.

CHAIRMAN AHEARNE: Joe?

COMMISSIONER HENDRIE: No. I think we ought to do it. Do you want to vote now or would people prefer to turn in vote sheets.

CHAIRMAN AHEARNE: Wait. Let me ask Peter. Wait a minute.

COMMISSIONER BRADFORD: I guess I would prefer to turn in a vote sheet just because I want to mull a little more on the last bit of business of the existing plants. If we do approve it in roughly this form very soon, what is the first point in time at which you would expect to have results back from a test?

MR. RUTHERFORD: We had indicated that we could have results within three months of the program that we are talking about.

MR. STELLO: No, he means specifically when we would get the first results of an independent verification test.

COMMISSIONER HENDRIE: Or a witnessing I guess

would come under the program, too, wouldn't it, Peter?

COMMISSIONER BRADFORD: I was really interested in the independent verification test.

MR. RUTHERFORD: The first full test could not come before three months. We have some specimens on the way right now.

COMMISSIONER BRADFORD: But it would be within three months to six months?

MR. RUTHERFORD: We will have not a full qualification test but we will have within this year, this FY year, a thermal shock test on a piece of equipment that is in a plant, a safety-related piece of equipment. That will be done this year.

COMMISSIONER GILINSKY: I would like to be informed of the differences between NRC results and those of others, these environmental testings.

MR. RUTHERFORD: Okay. No problem.

MR. STELLO: I am not sure, Bill, I understood your commitment. I want to make sure I do understand it because someone here is going to hold me to it. Are we committing to having an independent verification test, qualification test done prior to New Year's Day?

MR. RUTHERFORD: Yes.

CHAIRMAN AHEARNE: One of the things that I will require, and I would prefer if you could by next Tuesday or

Wednesday so we could still look at it in the budget review, you have a schedule back here that gives a list of a number of things starting from a zero time that is undefined, I wonder if you could make it into sort of just a tabular chart and chose an assumed start date, a real start date, and then say what you will commit to accomplishing by when.

MR. STELLO: You want that by Tuesday?

CHAIRMAN AHEARNE: Next Tuesday, yes, I would like that. Rather than force you to commit right here I think that we all would in order to better address perhaps the final budget.

MR. RUTHERFORD: Could we just begin at the fiscal year, the beginning of the coming fiscal year, and pick that up as zero?

MR. STELLO: We will just start off and try to pick a date.

CHAIRMAN AHEARNE: Yes, and if you are starting at the beginning of August then you start at the beginning of August. My sense is that the Commission will approve your program, but additional things might be placed on it.

The other thing I would like, and I guess it will have to be relayed to Mr. Dircks, I would like to have in some way a list of the people that are involved in this, at least the branches, so I can this connection. I am still a little concerned about how we have standards off doing this

and NRR off over here and I&E off here. I would like to get a sense that it is coordinated and at some level other than Bill Dircks.

MR. STELLO: Okay.

COMMISSIONER BRADFORD: In that context Sandia actually recommended a dedicated staff. I gather this approach isn't quite that.

CHAIRMAN AHEARNE: Yes, I gather that.

MR. STELLO: I think the Sandia approach would probably have had with it a combination which would have wound up with the standards people, the NRR people and the inspectors in one place. That is what I think their recommendation meant to me when I read it and that is not what we have.

COMMISSIONER BRADFORD: What about the training for that part of the program that entails witnessing? Do you envisage any sort of a special training program for the people who will be witnessing the tests?

MR. STELLO: People from our vendor inspection program will be doing this routinely. They will be brought into the program so that they will be trained and be prepared to go out and witness the tests as soon we start rolling it over.

COMMISSIONER BRADFORD: Let's see, when you say they will be trained, you do have a training program in mind

or are you saying that they are already trained by having been in the vendor program?

MR. THORNBURG: We will develop a manual chapter and give them some special training.

MR. STELLO: They will need additional training that is specifically related to the interpretation of the requirements principally by working together with the NRR people for which we envision at least the initial witnessing would include perhaps even people from the laboratory in NRR as well as us as we start the program because it is the interpretation that is going to be very important of the standard itself. We do plan to have kind of a team approach at least initially and then roll it over as part of our routine vendor program in the longer term.

COMMISSIONER BRADFORD: Okay, that will be done. I certainly expect to be approving it shortly. I just want to mull a little longer on a couple of aspects of it. I think it will be a real addition to our regulatory arsenal. It may be a little long in coming but I am glad to have gotten there.

CHAIRMAN AHEARNE: Okay. Thank you all.

(Whereupon, at 11:50 a.m., the meeting concluded.)

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

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in the matter of: BRIEFING ON ANALYSIS OF ALTERNATIVES FOR CONDUCTING INDEPENDENT VERTIFICATION TESTING ON ENVIROMENTALLY QUALIFIED EQUIPMENT

Date of Proceeding: July 15, 1980

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.

Mary C. Simons

Official Reporter (Typed)

Mary C. Simons

Official Reporter (Signature)