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MR. MARSH: My name is Tad Marsh. I'm in the Mechanical Engineering Branch. And this is Ted Sullivan, also in the Mechanical Engineering Branch. We gave a presentation to the Subcommittee on Reactor Operations two days ago concerning in-service testing of pumps and valves on safety-related pumps and equipment--pumps and valves.

And the purpose of that presentation was to give a status of the IST programs and to give an assessment of the problems that we see. I'll be summarizing the presentation that we gave two days ago.

The basic purpose of the in-service testing of pumps and valves is to assess the operational readiness of the safety-related pumps and valves.

You may or may not know that IST programs are required by the regulations, 10 CFR 50.55A and they are also required in technical specifications and they have as the root the ASME Code Section XI.

MR. EBERSOLE: Tad, can you mention when they were invoked as a requirement as contrast to the ISI program?

MR. MARSH: Sure. The ASME code, Section XI, was modified in approximately 1974/75 time frame to include in-service testing. And if you are familiar with the Section XI of the code, the vast majority of Section XI deals with in-service inspection to the order of hundreds of pages. Whereas in-service testing of pumps and valves is on the

order of tens of pages. There's quite a comparison in terms of volume and also in terms of substance.

After the reorganization in April of last year, new management came to NRR and there was an increased emphasis on in-service testing. We conducted a number of surveys of operating plants and of the current state of in-service testing.

We tried to put into five discrete categories the problems that we face. And it's not totally possible. You'll see a lot of overlap, but it does give you some idea the types of problems that exist in these programs.

There are a number of technical problems associated with in-service testing. There are inadequate and deficient testing requirements in the code itself.

For example, the code requires that MOVs and other power-operated valves be stroke time tested. And we know that for motor-operated valves, -- torques, stroke time testing is not a good diagnostic tool for assessing the health of an MOV. It only tells you whether the valve went from one state to another state within a time. It doesn't say what's going on within the valves. It doesn't say whether it's capable of doing its job.

DR. SHEWMON: Now, if you know the valve is closing, that tells you something about what's going on, doesn't it?

MR. MARSH: Certainly, certainly. It certainly does. I'm not saying that stroke time testing is zero. But in terms of what you'd like to know about the valves, stroke time testing is a small parameter. The parameter is that it does in fact move. And that's not meaningless, it's something to know. But there's many more things that you need to know about a valve other than it moves.

Another problem in the ASME code is pump testing. Pump testing is basically done by vibration amplitude and by testing some hydraulic parameters. Not by any means a full spectrum of pump curve, but only at a discrete point.

We know that vibration--the state-of-the-art vibration testing of rotated machinery is to take velocity profiles on the shaft itself and do spectral analysis and trend the spectral analysis, first and second harmonics.

The ASME code only requires at this point, however, displacement and that's on the bearing housing. It's not even on the shaft itself.

What I'm trying to give you is a flavor for some of the inadequacies of the code. And there are many and although the code very recently has been starting to improve--and I say starting to by working on the lastest standards OM-6 and 10. There are still many inadequacies in that document itself.

DR. KERR: How do you decide what it is that you

need to know about pumps and valves if the ASME code is inadequate?

MR. MARSH: We rely on the code and the code requirements to tell us the health of the valves and this is a basic reliance that started ten or twelve years ago, and as our knowledge and as the deficiencies became evident in testing requirements by the code--for example, it only requires stroke time testing for, example, pump testing.

There's an increased state of knowledge that it's deficient. We try to work with the code to get it to improve, but--

DR. KERR: I guess I didn't word my question very well. Given that the code is inadequate, how do you decide what is adequate?

MR. MARSH: Okay. There are many things that we know we want now compared to what the code currently tells you. It comes about by looking at data. It comes about by looking at the very problems that have occurred. I don't mean to say that we know exactly what it ought to have in it. But we know that there are many inadequacies in the code itself.

I'm not sure I've answered your question.

DR. KERR: I'm not sure you've answered in a way that is understandable to me. It may make complete sense to people who know a lot about pumps.

MR. MARSH: Ask me another way. The flavor that we are trying to give you--

DR. KERR: I'm willing to concede that the code is inadequate, but you are looking for something to replace it I assume.

MR. MARSH: Yes.

DR. KERR: How do you know what should be used to replace it?

MR. MARSH: Well, we know there are deficiencies in certain areas of the code, and we know that we need to improve certain areas of the code. And those areas we can work on. Beyond that, we have to wait for experience to show us how else the code is inadequate. I can only tell you the known areas of inadequacy as opposed to the unknown areas.

MR. EBERSOLE: Bill, I can relate this to one of your favorite topics which is ATWS. Remember we uncovered the absence of margins of force in ATWS. It's a bistable function. There's no measurement of margins of function to operate under duress or wear or whatever. And this is not known when it goes from red to green. Whether you barely made it or not or whether you had an excess of function to overcome bad grease, bad settings or packings or whatever. The movats system has gone a long way.

MR. MARSH: Movats is much better.

MR. EBERSOLE: But there are other matters.

MR. MARSH: There are other things that are still deficient other than movats itself.

I think the best way to answer your question is given the code requirements, the code is promulgated, the utilities are members of the code. The NRC endorses the code. The utilities then take the code and say, "I'm going to make a program out of it." Then programs are developed and submitted to the NRC for review and approval.

We look at those programs and we see that there are things that are not right. Inspectors that inspect the plant see that there are things that are not right. So there are a host of problem areas and the implementation of the code requirements. And we try to work on those to make them healthy, to make them better.

DR. KERR: From what you've told me up to now, one can, as an individual inspector, decide that we wanted to not get some information out of the code requirements and maybe another individual inspector will decide he wanted something different. What I'm trying to determine is whether the NRC staff as an organized body could write a set of requirements which if it were in the code would satisfy the testing that would provide the information that you think you need.

MR. MARSH: We are headed down that path. We are

not there yet. We are getting various organizations to assist us in doing that, in getting the code or getting the code plus our own requirements to tell us what we want. For example, we don't have confidence in the frequencies that equipment is tested. For example, pumps are tested on a quarterly basis unless they cannot be, in which case they may have to be tested on refueling guidance basis.

We don't know whether that's the right frequency for pumps. There may be some pumps that need to be tested more frequently and some less frequently. We don't know.

DR. KERR: Do you have in mind a way of finding out what the right frequency should be?

MR. MARSH: We've started down the path. And one thing to start at is at least with the data. Let's find out what these pumps are actually doing. Let's target a certain type of pump. Let's look at what its operational experience has been in the industry. Find out what it's failure rate is. Based on its failure rate, look at the appropriate frequency to test it.

Right now the code says test all pumps on a quarterly frequency unless you cannot because of operational problems. In which case you are allowed to do it on either a fueling outage or some other frequency. The code made a blanket assumption that it was right to test pumps on this frequency. We know that that is not an approriate assumption.

Some pumps are operated continually. Some pumps need to be tested more frequently because of their failure modes. For example, the--

DR. KERR: That's enough. Thank you. I'm holding you up.

MR. MARSH: Part of the problem is jumping into a presentation in the middle. If we went through a long presentation and described the background here--and I'm skirting through the background. I'm jumping right to the problem areas as we see them. And it's going to be a little disjointed for you.

DR. KERR: I'll listen for awhile.

MR. MARSH: Okay.

Given that the code has inadequate and deficient testing requirements, one thing that could have been done is for the staff to issue supplemental guidance on what it wants so that in addition to the code, the code plus the staff guidance would then result in an acceptable testing frequencies, acceptable testing parameters, what you want.

Also the staff--the staff didn't do that. The staff could have said, "This is what we want in IST programs programmatically. This is what we want the format to be. This is how we want to handle the relief requests. This is what we want in terms of program revisions." The staff didn't do that.

The code--if you are familiar with the code, Section XII is divided down into a group of subsections. One of the subsections is IWA. And IWA says "You will have certified inspectors." Now, the IST is in Section IWV and IWP. And so because it's all under Section XI, IWA, IWV and IWP, it implies that there are certified inspectors for the IST area. There are no certified inspectors. There's no training program. There's no level of certification. There's no uniform way of ensuring that the people that are doing the testing and are signing it are in fact up to the same level. It's all done based on experience. Operational experience and training is done at the plant without their being a uniform industrywide way of testing pumps and valves.

Those are some of the technical problems. And there are more.

DR. SHEWMON: When you say certified inspection procedures, you have implicit in that knowing what it is you want to test for also.

MR. MARSH: Wait. I didn't say procedures. Certified inspectors. These are inspectors.

DR. SHEWMON: Well, part of my problem though is you don't know what a certified inspector is until you know what you want him to be able to look for.

MR. MARSH: Well, we know that we want the inspectors to look at pumps. We know the code way of looking

at pumps. The code may or may not be deficient, but there at least isn't that. The code doesn't even say what these things may not be the right parameters to look at, but we are going to require a uniform way of looking at these parameters. It doesn't do that.

We know that there are a whole spectrum of ways of looking at MOVs. You can look at them in movats. You can look at them in stroke time testing. The code doesn't recognize the various ways and say, from an inspector's standpoint,an ANI, an authorized nuclear inspector, "This is the way we want you to look at valves." It doesn't do that.

The code spends a lot of effort and a lot of training of manpower, time frame, on giving levels of certification for an ISI inspector. He wears a patch. It's a matter of pride. There is no equivalent level.

Another perspective here is this is the active mitigation equipment we are talking about. This is accident mitigation equipment. This is the stuff that you need given if the passive equipment fails on you. The pipes fail on you.

The code spends a vast majority--but let me-- I'm sure everybody else got that same point. Section XI has this much stuff on it, on the passive equipment. And levels of certification of the inspectors on the passive equipment and it spends that much time and energy on the active equipment.

DR. SHEWMON: Part of what they could do is sort of take that from the ASNT, whereas I suspect you haven't got a professional group whose stuff you can have them write in.

MR. MARSH: That's true.

In addition to the technical inadequacies of the code and the lack of staff guidance in implementing the code, there are other problems in IST program. For example, there are legal problems. 10 CFR 50.55A is inconsistent with the technical specifications. The technical specifications say "You should not implement any relief requests at the plant until they have gotten explicit written approval from the NRC staff." It's a tech spec requirement in about 90 percent of the plants. There is no wording like that in the regulation. That's not to say that--you can go beyond the regulation in writing the technical specification. But there is that first level of inconsistency.

The regulation doesn't imply written relief prior to. In fact, it implies the opposite. The regulation implies that you are supposed to have your relief request submitted within twelve months of entering the program without saying anything about explicit written relief.

MR. EBERSOLE: Tad, I just got today a copy of the interim policy statement on maintenance of nuclear power plants.

MR. MARSH: Right.

MR. EBERSOLE: Are you moving--isn't this under the cloud or whatever, that covered that general topic?

MR. MARSH: Very definitely. We've had input into the maintenance policy statement and we've got some things in there that will improve it. This is all the area of maintenance. And there are industry incentives to try and improve IST from the standpoint of maintenance, from the standpoint of plant life extension and other ongoing generic industrywide activities. But the industry is not there yet.

If you read what INPO said in the attachment to that letter. INPO sent a big document that was attached to the Commission paper. It talked about what they are doing. And there is precious little stuff there on IST. I don't think IST is even mentioned in what INPO is trying to do.

So there really isn't--there's a discontinuity in a level of consciousness difference in what we want.

The regulation itself is not a clear document. It is self contradictory. If you try to read it you'll see that it was not written for IST. It was written for ISI. IST was an afterthought. It was added in parenthetically almost.

And the technical specification--we've already talked about that problem. It requires staff approval prior to implementing relief requests and the reality of this situation is that because of the vast backlog in IST programs,

and that means about 70 or 80 percent of the plants do not have approved programs, plants have to implement relief requests without their being approved by the NRC staff.

MR. EBERSOLE: Well, those programs are,even in their deficient condition as represented by the present codes, it's difficult to even get that much done.

MR. MARSH: That's right.

DR. SHEWMON: Mr. Ebersole, I'm sorry. I can't hear you.

MR. EBERSOLE: I say he's talking about it being difficult to get the little that is required already, which is insufficient. He's already having trouble meeting an inadequate code compliance in Section XI.

MR. MARSH: There are administrative difficulties in the way we do in-service testing and the way the industry does in-service testing as well. Because of this legal difficulty, we have had to on many occasions issue interim relief, and that means that if a plant happens to have an inspector, a resident inspector, that's particularly conscious of this technical specification, he may say, "You get written approval from the NRC that this tech spec has been met or that your relief requests are all right." And in fact because of the backlog and you are not being done looking at the entire program, you issue interim relief until you are done looking at the program. And this is the mode we fell

into about four or five years ago and it's a pill. It's a bad way of doing business because it perpetuates the problem. It means that I'm going to get over this little hump and in fact many cases the interim relief is either expired or it was not issued at all. There is a spectrum of that type of problem in the utilities right now. There are many plants that have no interim relief from the NRC. For those that don't have safety evaluations, I'd say about half don't have interim relief and a half do have some sort of interim relief which may or may not be valid. Because again, the current state of affairs, the utility can spend its time and its effort writing an IST program. It can submit the IST program because of the past lack of a management emphasis here. The Agency can take years to review that program. Then the utility is left with having to make changes in plants. Having to make testing modifications and they will have to change the program, so implement a new program without that even being submitted in some cases.

DR. KERR: But somewhere in the organization there must be a feeling that this is a fairly low priority activity if what you are saying is true.

MR. MARSH: It was and it has changed now. It has a significantly increased consciousness. And it's because of the management in the regions who are much more conscious of the problem that have come to NRR and said, "This has got

to be fixed. This has got to be changed. This whole situation."

MR. MICHELSON: I thought it was the valve situation that really turned this on.

MR. MARSH: The PIV problem, pressure isolation valve problem. The MOV problem. The check valve problem.

MR. MICHELSON: The valve problem in general is what I meant of course. But I think that's what finally turned it around. When they suddenly had a rash of--they developed a very good understanding all of a sudden of how bad off their testing was to valves.

MR. MARSH: I am going to go quickly through here.

You can get a feeling for the administrative problems being aware there are 107 plants and there are many programs and many revisions, all of which have come and have many relief requests in them that have to be tracked, reviewed and approved.

There are resource problems associated with that. The problems are not easy problems. There are things that you have to think carefully about. Review the systems. Review the safety analyses. So there's that part of the problem.

We have a large contract with EG&G, a group of very expert people who review the programs for us and with us.

DR. KERR: Is this contract to help you eliminate that backlog of requests for interim relief or something or other?

MR. MARSH: Yes, it's two parts. The major part of the contract is reviewing programs, getting rid of the backlog and also keeping up. Once you review one, there's going to be another one coming in the door for this plant. So it's to review that, and it's also to write guidance. It's also to take the technical positions that have been developed, to articulate them, to give a bases for them so that we can go on.

One source of the problem has been--you ask the ASME code, what is the basis for this requirement? Why do you apply testing on this frequency? Why do you require testing in this way? There is no basis. There is nothing there. You can't find out why, technically why it was done in this way.

So when you have to entertain relief requests, you don't know where to turn. You have to use recent judgements and you do not know the bases for the original.

DR. KERR: Does EG&G know where to turn?

MR. MARSH: EG&G knows the basic--the technical logic that they use, that has been developed informally ad hoc to assess programs and relief requests. But that's a starting point. They can write that down and articulate.

That's never been done. But that's a starting point. We may not know the bases originally for the ASME code requirements. But at least we know where we are now as a starting point.

And you can understand there's the enforcement problem associated with technical specifications and the lack of SERs. The SER is relied upon explicitly in the technical instruction for the inspector. That's what they use for their inspections. And if there's not a safety evaluation done, they have nowheres to turn to use as the basis for inspection.

MR. WYLIE: Let me ask a question. Under "Administration" in the first bullet up there, interim relief expired. That's "or nonexistent" is it not?

MR. MARSH: Yes.

MR. WYLIE: From your knowledge of what exists in the industry, how would you say that the percentage of relief requests compare to those that don't exist? They just simply go ahead and do it.

MR. MARSH: I would say--Ted, can you help with that? In terms of a fraction?

MR. SULLIVAN: I would say at one time or another about 40 percent of the plants have received these interim approvals. But many of them have not been made current and by that I mean that once a utility sends in another revised

program, the interim approval that was given before is really out of date with respect to those items that were changed.

MR. WYLIE: Does that imply then that 60 percent of the plants are illegal?

MR. SULLIVAN: I would put the number lower than that, because remember we have a certain percentage somewhere in the neighborhood of 25 to 30 percent that do have SERs. Now, about half of those SERs are out of date. In that some additional relief requests have been submitted. So it's really quite a mixed bag. You could say that at some plants, some of the relief requests are legal and others are not.

MR. WYLIE: I sort of get the feeling in listening to all of this that we've got a large number of plants out there that are just ignoring the tech specs.

MR. MARSH: I do want to say that the situation has been developed jointly by the industry and by the NRC. The NRC is deficient in not having gotten the programs and the relief requests done.

MR. WYLIE: Oh, I understand.

MR. SULLIVAN: Oh, I understand there is fault on both sides. Because the situation is what it is and it's so voluminous that you haven't been able to handle them and we got into this situation.

MR. MARSH: And, you know, legally speaking, the resident inspector and the regional staff are allowed to use

discretionary enforcement. So although the technical specification may say X, we are allowed to deviate from X if the regional administrator says that's acceptable. If it is evaluated in that way. So although there is clearly a problem that way, I don't want to say that--in some plant levels it may have been explicitly evaluated and thought to be all right.

MR. EBERSOLE: Tad, I would like to make a comment about the safety implications of what you are talking about which I think is a major issue for us. I think it's this. The plants run on everyday and they make megawatts and they look like they are running pretty good.

And the PRA boys happily work with the statistics of valve and pump operation that they see unfolding from normal operations. Yet we have no real knowledge of how the pumps and valves will perform if they are met with a duress situation of emergency flows and pump requirements and so forth. In short, we don't know whether they will rise up and meet the safety challenge.

MR. MARSH: We have some assurance. We don't have the assurance that the IST program ought to be giving them.

MR. EBERSOLE: Yes.

MR. MARSH: In my opinion the IST programs are not giving what they were intended to give.

Let me go on. After trying to first understand

all of the problems that there are, and I don't want to imply that we do understand all of them. Everytime we sit down and collectively go through IST programs with experts and with the industry with the ASME code, more problems come to our knowledge.

There are a number of policy procedure changes that we are considering. And in another session, in a closed session with the subcommittee we did talk more explicitly about where we are on these proposals. There are some of these that are further along in terms of internal concurrence and internal management decision making than just the formative stages, so this is just a list of potential policy procedure changes, some of which are further along than others.

Because of the deficiencies in the O&M and in the section--O&M is Operations and Maintenance subgroup of the Section XI. Because of the deficiencies on Section XI IWV and IWP, and the lethargy of development of codes and standards in IST and there is that, there are administrative problems within the code itself in trying to get things to move along, and the fact of the matter is the code hasn't changed in the IWV/IWP area since s development. There have been minor changes, but nothing substantive at all. Because of that lethargy, one question that we are considering is should the NRC continue to rely on that code-making

MR. MARSH: Process? Or should we develop our own code for pumps and valves, ISP standards which may be based on IMB, IWP supplemented by our own technical guidance documents.

DR. KERR: Do you think the NRC is capable of doing this?

MR. MARSH: I do, I certainly do. I do because I'm very vamiliar with the requirements in the code itself. I am familiar with OM-6 and OM-10 and I am familiar with the deficiencies there and I think I am familiar with the expertise that that is available both here and at the contractors and I certainly do. I think we have--I think we're capable of that and I think we are very capable of doing that.

What do you mean?

DR. KERR: Well, the ASME code development, actually I believe code development and other kinds of developments are rather complicated processes and they involve edpertise on the part of the corporations and individuals, I assume. I didn't realize that sort of expertise was available within NRC, but it may be. I was just curious if you were capable of developing standards superior to the ASME code.

I don't doubt that, but I didn't realize it.

MR. MARSH: Please understand, it's not very difficult to go beyond the code requirements right now. It does not take a great deal of expertise to build upon what--upon what's there.

DR. KERR: I thought you had told me earlier that

you really were't quite sure of what the requirements should be, you were on the road to getting there, but you didn't know what they should be.

MR. MARSH: We don't--how can I answer that? We know what is wrong with the code, we know what we want today. Other things may be developed further down stream.

DR. KERR: Okay.

DR. SHEWMON: If you did this, would these go out for public comments or would we staff the branch technical position, which is now unreviewed and becomes law by default or--

MR. MARSH: One thing that is being considered is to change the regulations, MTFR - 50-55-A, to explicitly endorse the latest code version, which is not IWB and IWP, but OM-6 and OM-10, which is better than IWB, it is better. It still has deficiencies in it. We would supplement OM-6 and OM-10 by our own technical guidance and requirements along with some explicit guidance on how to implement the code requirements. That would be in the form of regulatory guide or some other regulatory document and yes, that would have to go out for rule making, it would have to go out for public comment.

DR. KERR: But not the regulatory guide?

MR. MICHELSON: But not the regulatory guide?

MR. MARSH: The reg guide would go out for comment too.

MR. MICHELSON: But not for rule making. There's no approval process. It can be issued immediately for that matter.

MR. MARSH: True. If you reference it directly in the rule, and one thought is to do just that and then we would send that out for public comment too because we really do want comment on that type of process. It would not be done in the dark.

MR. EBERSOLE: I wish the full committee in hearing this would be listening to what should the full committee do to endorse this, whichever way we go because I think this is a collaborative situation.

MR. MARSH: It's clearly that and we do need your comments and your thoughts and your feed back on this approach.

MR. EBERSOLE: At this time, you're not looking for any letter but you're going to be looking for one in due time?

MR. MARSH: We'll be talking with your as things go on. We will need your feed back then as we need it now.

What I tried to leave you with today more than anything else is a feeling of the problem rather than of a feeling of the way we're going to go.

DR. KERR: Is that list up there intended to give us a feeling for the problem?

MR. MARSH: I'm sorry.

DR. KERR: Is the list up there intended to give us a feeling for the problem?

MR. MARSH: The previous slide is intended to give you a feeling for the problem, the five problem areas as we saw them, the technical, legal, administrative, resources and the enforcement, those are the areas of concern.

DR. KERR: It would appear to me that you would want and could expect to get, meaningful advice from the ACRS only on the technical part. The others are important, but I don't think the ACRS has any particular expertise in this though.

MR. MARSH: I agree.

DR. KERR: Okay.

MR. MARSH: I agree, but if there is rule making involved.

DR. KERR: So technical, there's inadequate testing requirements. Is there general agreement among the ACRS that this is a valid statement?

MR. WYLIE: I think so.

MR. MICHELSON: I think so.

MR. EBERSOLE: Want to take a vote? We can take a vote. I'll vote yes.

MR. EBERSOLE: I'll vote yes.

MR. MICHELSON: Very valid.

MR. WYLIE: I think the code is out of date.

MR. MICHELSON: Totally out of date.

MR. EBERSOLE: It's antique

MR. MICHELSON: It's ridiculous.

DR. KERR: It sounds to me as if you're getting almost a 100 percent endorsement for those 3 positions.

MR. MICHELSON: The Code Committee's are well aware of how poor this is. They haven't gotten the where with all to make the changes and there are a few obstructionists out there.

MR. MARSH: There is also the administrative problem in the code itself. There was Section 11, Section 11 was charged with the responsibility of pumps and valves. Section 11 gave that responsibility to another group, O&M, Operations and Maintenance, so O&M thought they had the responsibility for the pumps and valves testing department. They developed their own standards. That Section 11 says well, let's take a look at it. So now we end up with this problem, back and forth between Section 11 and O&M. Who has the responsibility for pumps and valves?

And if you know, code committees meet plurally and if you're locked in, going from one group to another group to another group, there really is--

MR. WYLIE: Again I would think this is a problem in which the ACRS can't provide much help. I don't see how we can.

MR. MICHELSON: I think we can.

MR. WYLIE: I think we can tell you that we agree that new requirements are needed and--

MR. MARSH: There's more--there's more here than just the technical too.

DR. KERR: I agree.

MR. WYLIE: I am trying to separate that part of the problem with which ACRS can provide assistance and that part with which it can't. Maybe I'm wrong.

I think the complexity of the situation and the fact they are unable to cope with all these interim requests has got the situation to where the plants weren't even built in some cases to be able to conduct the tests.

MR. MARSH: That's true.

MR. WYLIE: They've got into the situation and they need a procedure and I think that's what he's leading up to.

MR. MARSH: A new method.

MR. WYLIE: A new method of handling these things that will be more efficient for both the utility and the NRC.

DR. KERR: As I said, maybe I'm wrong, I see all of these as serious problems. I'm trying to pick out those to which the ACRS can address itself and provide some assistance.

MR. WYLIE: I sort of see it on the basis that you've got a bunch of plants out there that are in violation of their tech specs because they got into this situation. It's an unsafe situation--

DR. KERR: The mere fact that they are in violation

of the tech specs doesn't mean to me that they're unsafe.

MR. MICHELSON: It does in this case.

DR. KERR: You can't conduct the tests.

MR. MARSH: There is a problem--

DR. KERR: Mr. Steindler is trying to get a word in.

MR. EBERSOLE: Just because he's polite.

DR. STEINDLER: Are there enough data available to put a rational code together?

MR. MARSH: My opinion is yes.

DR. STEINDLER: Are there statistically valid testing procedures based on information that exists either in the literature or in experience?

MR. MARSH: I believe there is. The reason I believe there is, we know several things. We know strobe testing of MOVs doesn't afford you the kind of assurance that you need. There are other diagnostic tools available to look at MOVs and that's state of the art.

MR. MICHELSON: And that's where the argument starts. There are ways to do it, but they're not easy and they're not cheap.

DR. STEINDLER: I'm familiar with--valves and pumps are not my forte'. I am familiar with the testing standards for other kinds of equipment and the generation of rationalized data that leads you to reliable standards so that you can

determine the relationship between the testing procedure and the subsequent, presumed improved performances. That's a very long and time consuming proposition, especially in diverse services and diverse designs that you might have here.

So my question--that's the basis of my question. I think that's available

MR. MARSH: I think that's available.

DR. STEINDLER: But I think we have how many hundreds--thousands of reactor years of experience including valve performance, pump performance do we have?

I'm looking, not for the performance, but the relationship between testing and the diagnostics that you get out of that and the subsequent performance.

DR. KERR: Mr. Moeller wants to get in at least two words.

DR. MOELLER: I need some help because I have just finished reading, this morning, the Commission's interim policy statement on maintenance and it says that it is the objective of this Commission that all nuclear power plants shall be maintained in perfect working order, particularly any safety related components and so forth.

Now is testing part of maintenance? If testing is part of maintenance or if you test in order to tell if this pump or valve needs some maintenance, then we're in a heap of trouble because the first sentence up there said that inade-

quate and deficient testing requirements exist in ASME code and then you're going to correct that, but you're confident then you can correct all of this in time to implement this interim policy statement on maintenance?

MR. MARSH: The interim policy statement, it's the statement that says you should go out and you should be assured that you have got programs and procedures in place to make sure--

DR. MOELLER: Yes and you want every utility to have written procedures for the maintenance of every safety related component or piece of equipment. How are you going to do that if they don't know how to test them in order to tell whether they are performing adequately, either before or after the maintenance?

MR. MICHELSON: They do know how to test through many of the tests, particularly on valves, but they are not simple, they are not--they're expensive, they're complex, they don't want to set up the--they don't want to close certain valves and pump sections of pipes so they can do reasonable tests.

MR. MARSH: I'm not going to take those valve problems, I'm not going to take them.

MR. MOELLER: This then is intertwined with the policy statement on maintenance?

MR. MICHELSON: Absolutely.

MR. MARSH: We had input into it and--please look

at the attachment to it, the Commission paper, where they talk about--where they test the INPO letter.

MR. MICHELSON: One of the big problems, Dade, is after you do the maintenance how do you know the equipment is now going to do what it is supposed to originally--

DR. MOELLER: Right.

MR. MICHELSON: It is supposed to originally--

DR. MOELLER: Correct. That's what I'm saying.

DR. KERR: Does that answer your question, Mr. Moeller?

DR. MOELLER: I think so.

MR. MARSH: I want to give you a specific example. In the Davis Vessey event, they had difficulty re-opening the containment isolation valve in the off speed water system. Three weeks before that--a month before that, the inspector witnessed an in service test on that valve, strobe time tested it. He wrote it up in his inspection report.

Strobe time testing is not going to make sure that valve opens against the differential pressure, however, because it meets the code requirements, it's basically a closed item.

Have you seen the statement that he made? And that was the very valve that did not open during the event. It's a deficiency in IST, it is truth.

MR. MICHELSON: Just like we believe that on after

water clean up, if we ever bust one of those non safety grade pipes out there, that those two valves would close, but there is no test to prove it, no periodic test to prove it, nothing to prove it. It's our faith that if you do a nominal load test, it's also a full load test.

DR. KERR: Please continue, Mr. Marsh.

MR. MARSH: A possible menu of things that can be done and as I said some are further along in process.

You can read, should we continue to rely on the codes to develope its own status for in service testing? Should you require prior written approval on these requests? To what extent should up dates to the latest code wording be required? Given that the code, in its position stated, has not even progressed, should we continue to require ten year updates to a code that hasn't progressed. To what extent should the interim release be utilized?

I'm going through these quickly. The important ones here are this one, the first bullet, should we continue to rely on the codes. Should the updates be required? Should the NRC in service testing methods be more inspection oriented thus the program relief would be oriented.

One thing we're thinking seriously about doing is re-formatting--revamping the IST process after better technical guidance is developed on how to do testing, how to evaluate when you can't meet the requirements. Whether they're reviewing

a lot of programs to make sure what's in the plant level is being done properly. In other words, turning it from an office review to a plant review. Should licensees be allowed--this is another important one too.

We find there is a very big spectrum of quality and knowledge of IST across the industry. There are big utilities some of which have devoted a lot of resources and a lot of money developing good technology for testing equipment. It goes beyond the code requirements, it clearly does, but they do it.

Those other small utilities that don't have that capital investment, can't put that dollar knvestment into it, that symposium and a regional counterpart could give information across the industry, something that could mutually be beneficial for all. It would also help us in developing new requirements.

There are some short terms changes that we are thinking about doing and that is generic letters and other processees to try and get control of the more immediate problems, that is the technical specification problems and the licensees being able to change the programs without any knowledge of the NRC at all, without any concurrence.

MR. MICHELSON: Well, one of the bullets that is not there that is fundamental to this business and that is, should we allow nominal load testing where full load testing is

called for.

MR. MARSH: Right.

MR. MICHELSON: The code does not require full load testing. You can take whatever point you want to do your test, nominal load, intermediate load, full load, whatever, but it is basically impractical to put full differential pressure on or to put full flow the devise and why don't we test them under the worst condition that we could practically apply.

MR. MARSH: That's the question of the adequacy of the of the testing procedures.

MR. MICHELSON: It's inadequacy of the code really. The code simply doesn't require it--

MR. MARSH: Right.

MR. MICHELSON: --so they don't do it.

MR. MARSH: Nor do we.

MR. EBERSOLE: Let me give an example here. Carl just used the reactor clean up valve as a case in point where there is some jeopardy. I'm going to use an ancient model some 20 years old which is the HPSI 10 inch main steam supply line and the ancient old problem where this interfaces with the machinery room of 3 units at Browns Ferry.

Here again, we don't know whether these valves are shut or not and we know if we have a pipe breach and they don't close, very likely we will lose all 3 units.

Now I get back down to who is responsible for this state of affairs. We push it on the industry. The industry says, oh, I've complied with the regulations and it comes up and it floats around and everybody points at everybody. Whose baby is it?

MR. MARSH: I'm not sure it's important to say who is responsible but--

MR. EBERSOLE: I know, but somebody has got to say who referred it to me, I'm going to fix it.

MR. MARSH: The in service testing is inadequate.

MR. EBERSOLE: I'm saying ability to fix is based primarily on the party who is the who.

DR. KERR: if thosepeople who have been responsible for nuclear design at TVA, when the plants were built, had been in on the fall, this situation would not exist.

MR. EBERSOLE: It's universal. That was one of the reasons I ain't there.

DR. MARK: There was a rather spectacular situation, which I think bears on this at San Onofre about a year ago.

MR. MICHELSON: Yep.

DR. MARK Has anything happened since then that removes the rather frightening thing that was discovered there?

MR. MARSH: You're talking about the check valve incident?

DR. MARK: The check valve--

MR. MARSH: I don't want to saythat things have gotten much better but after the check valve phase at San Onofre, there was an INPO SOER, I'm sure you're aware of that. INPO developed some guidelines for testing and inspecting check valves and systems, all types of systems, in that SOER.

In fact, there is a commission paper that is being developed now to address what we have found out since that SOER was developed and is supposedly implemented at plants. We have done some inspections.

DR. MARK: So there is an example where there probably has been or is in the course of becoming some improvement.

MR. MARSH: Some improvement, but there is much more to be done.

MR. MICHELSON: Was there any improvement?

MR. MARK: In some plants, yes, in some plants, no. Plants that were inspected were Millstone, St. Lucie, Trojan, Zion. Of those 5, there was some that had done pretty well in implementing the SOER requirements.

MR. MICHELSON: Many of the valves involved in that event aren't even required to be under this program.

MR. MARSH: That's true.

MR. MICHELSON: They simply aren't even in it and were not deemed safety related.

MR. MARSH: And in that--

DR. MARK: It always struck me that it was something about which something should happen.

MR. MICHELSON: But so far, they're still outside the program unless Philly decides to stick them in their program as a--

DR. SHEWMON: When you say, "outside the program," you don't mean outside Tad's program but outside--

MR. MICHELSON: It's outside Tad's program.

MR. MARSH: Some of these valves may be outside our program.

DR. KERR: I'm convinced that things are in lousy shape at the present time. What I am interested in is what do we do to correct them.

MR. MARSH: Okay. We're working on that. I don't have all the answers, but we have some things under way.

DR. KERR: What can ACRS do to be helpful to you?

MR. MARSH: I think I need your feedback. Probably now, at this point in the process, it's too early in the process. When we talk commission paper and rule change and things of those sort, making sure you're abreast of it and that I keep you informed of what's going on.

We are talking to the code extensively. We are involved at the O&M in its Section 11. We carry this message that we're very concerned about in service testing and they're carrying that message up to their management team. We're also

working through research making sure they carry the message to the highest levels of the industry, and the code as well.

DR. SHEWMON: If I kept quiet, would you add INPO to that or not?

MR. MARSH: Yes, sir. INPO was at the O&M meeting, NEWMARK was there, EPRI was there and we through basically the same presentation that I have gone through here today, but in more detail, and I said, this is an overlapping concern. In that meeting we had service testing people, we had plant life extension people, we had INPO with check valve problems. We had NEWMARK on industry oversight issues.

There is a tremendous opportunity for the industry to form a group, in some collective way, to address these problems and to address the policy statement the commission is concerned with on maintenance. This is a window of opportunity, if you will.

MR. EBERSOLE: Even now, couldn't you stick a little life in the glacial response of the code writing groups by saying if you don't move before x date, we will have moved.

MR. MARSH: That's exactly what we're going to do.

MR. EBERSOLE: When are you going to tell them that.

MR. MARSH: We're not giving them dates at this point because that is not right yet internally. When we have considered this to the extent that we're going to make that statement. What I mean by that is that when we get the

management concurrence that says, yes, this is the way we want to go, in other words when it becomes public, then we can say that.

Al Orlotto who is on the Board of Nuclear Codes and Standards can say and is saying now that the NRC is very concerned about Section 11, IST testing. There are things that are being considered like taking it away from you, like not endorsing it, like doing our own and if you want a standing endorsement for developing business, get hot.

MR. MICHELSON: There isn't any disagreement, is there, on the technical issues? The disagreement, I think, is coming on how to accomplish it.

MR. MARSH: The best way to go forward.

MR. MICHELSON: I think everybody that I have talked to on this issue seems to have no problem with the needing correction. But how to go about, there is quite a difference in opinion there.

MR. MARSH: Even the Code Committee, even the people that are responsible for writing OM-6 and 10, the working group, they completely agree.

MR. EBERSOLE: That's why I was asking, who bears the brunt, the point responsibility for this state of affairs.

DR. KERR: I detect so much harmony in this group, that I am not sure we're getting anywhere.

DR. SHEWMON: Will there be a letter at this meeting?

DR. KERR: No.

MR. MICHELSON: No.

DR. KERR: What I heard was that he didn't want a letter until he got to some point where he could say this is what we plan to do, what do you think. Did I misunderstand you?

MR. MARSH: No. A letter of endorsement would be fine. A letter of endorsement saying--

DR. KERR: What are we endorsing, that the ASME code is in lousy shape?

MR. MICHELSON: I don't think we should endorse anything because you haven't proposed anything yet.

MR. MARSH: I think a letter is probably premature at th is point. We want to keep you aware of the problem and where things are and as we get to the proposal stage, the generic letter, the commission papers, the plans and the endorsement of those specific approaches, we could present it at that time, would be better.

DR. KERR: Okay.

MR. MARSH: There are things the industry can do and obviously improve the code, over which a group could be formed, they were never formed, but it's not too late to do that. NEWMARK, a high profile group could be involved.

One thing we noticed, when we go to these utilities that have spectrical plants, we say let's talk to your IST

coordinator, let's find out where you are in separation. The first thing they do, they say, you mean ISI. We say no, we mean IST. IST, you mean maintenance. All right, let's talk to your maintenance coordinator.

They get together with us and we have several times, IST people from the plant, and this is the first time they have gotten together. There is no corporate coordination for the utilities to have more than one plant and that's not a good state of affairs. There is much to be gained from a plan, from a corporation standpoint. Making their programs uniform in developing one position. It hasn't got to that point. And then can, of course, improve their programs and submittals in timeliness.

We find a lot of leveraging in trying to respond to what we are trying to do.

Conclusions, I think are obvious. We have already talked about them. It's going to take some time, that's the main thing, to improve this situation.

MR. EBERSOLE: Are your own resources satisfactory to you with respect to this, the rapidity with which you will get into this thing?

MR. MARSH: Right now I have adequate people at the NRC. I have a Section, Ted Sullivan is the Section Leader. He had a complete section which is more than the NRC has ever had for IST. But, I have a special assistance probelem.

The contract, that I referred to earlier has just been cut because of Gramm - Rudman and succeeding things, so I am not sure how that is going to do at this point.

One of the keys in this thing is developing technical guidance, that is what do we want and if my contract assistance is cut to the quick where I can't do that, that hurts, that hurts. How quickly I can get it done as well as the quality of what I get done. Thank you.

MR. MICHELSON: One other comment. One of the things I thought the committee might want to do is when we talk to NEWMARK we ought to solicit their views on this particular problem. I think we're going to talk to them tomorrow.

DR. KERR: Will you take it upon yourself to make sure that we do?

MR. MICHELSON: Yes, I will. We obviously don't have any position ourselves, but I think we ought to find out what they are doing and how they are proceeding and if they have any ideas. I am sure they are well aware of the problem and so that would be about the only thing that might help a little bit at the moment is to bug them a little on it.

DR. KERR: Next item.

(Whereupon, at 4:00 p.m., the committee concluded this portion of the presentation.)

REPORTER'S CERTIFICATE

DOCKET NUMBER:

CASE TITLE: 333rd ACRS Meeting

HEARING DATE: January 7, 1988 (3:00 to 4:00 p.m.)

LOCATION: Washington, D. C.

I hereby certify that the proceedings and evidence herein are contained and accurately on the tapes and notes reported by me at the hearing in the above case before Nuclear Pegulatory Commission, ACRS and that this is a true and correct transcript of the case.

Date:

Dawn I. Coffenberry

Official Reporter
ACME REPORTING COMPANY, INC.
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Washington, D. C. 20005

INSERVICE TESTING

OBJECTIVE - TO ASSESS OPERATIONAL READINESS OF SAFETY RELATED PUMPS AND VALVES.

PROBLEM AREAS

TECHNICAL

- INADEQUATE/DEFICIENT TESTING REQUIREMENTS IN ASME CODE
- NO STAFF OR ASME GUIDANCE EXISTS ON CODE IMPLEMENTATION
- NO CERTIFIED INSPECTORS

LEGAL

- 10 CFR 50.55A INCONSISTENT WITH TECH SPECS
- POORLY WORDED 10 CFR 50.55A (SELF-CONTRADICTORY)
- TS 4.0.5 REQUIRES STAFF APPROVAL PRIOR TO IMPLEMENTING RELIEF REQUESTS

ADMINISTRATIVE

- INTERIM RELIEF EXPIRED ON NONEXISTENT
- LARGE VOLUME OR PROGRAMS/REVISIONS/RELIEF REQUESTS
- LICENSEES IMPLEMENT NEW PROGRAM REVISIONS W/O NRC APPROVAL OR PRIOR NOTIFICATION

RESOURCES

- COMPLEX PROBLEMS/RESOURCE INTENSIVE
- LARGE CONTRACT - EG&G, 7 PEOPLE, $800K

ENFORCEMENT

- TECHNICAL SPECIFICATION PROBLEM
- LACK OF SERs HAMPERS INSPECTION EFFECTIVENESS

NRC POLICY/PROCEDURE CHANGES BEING CONSIDERED

- SHOULD NRC RELY ON SECTION XI/O&M TO DEVELOP PUMP AND VALVE IST STANDARDS?
- SHOULD NRC REQUIRE PRIOR WRITTEN APPROVAL OF RELIEF REQUESTS?
- TO WHAT EXTENT SHOULD UPDATES TO A LATER CODE VERSION BE REQUIRED?
- TO WHAT EXTENT SHOULD "INTERIM RELIEF" BE UTILIZED?
- SHOULD THE "EXIGENCY" POLICY BE UTILIZED IN HANDLING EMERGENCY RELIEF REQUESTS?
- SHOULD NRC IST EFFORTS BE MORE INSPECTION ORIENTED AND LESS PROGRAM AND RELIEF REQUEST REVIEW ORIENTED?
- SHOULD IST PROGRAMS BE REVIEWED BY NRR IN DETAIL?
- SHOULD LICENSEES BE ALLOWED TO MODIFY/IMPLEMENT IST PROGRAM REVISIONS WITHOUT NRC REVIEW?
- SHOULD NRC HOLD REGIONAL AND INDUSTRY IST SYMPOSIUMS? STRUCTURE?
- HOW SHOULD NRC PROCEED WITH IST CHANGES? RULE CHANGES? GENERIC LETTER? REGULATORY GUIDE? NUREG? SCHEDULES?

POSSIBLE INDUSTRY ACTIONS

- IMPROVE ASME CODE ON IST TO INCLUDE MORE MEANINGFUL TESTING WITH TECHNICALLY DEFENSIBLE FREQUENCIES.
- FORM OWNERS GROUP TO ADDRESS GENERIC PROBLEMS WITH IST.
- WORKING WITH NUMARC OR OTHER HIGH PROFILE INDUSTRY GROUPS TO INCREASE AWARENESS OF IST PROBLEMS AND COMMITMENTS TO IMPROVE.
- BETTER CORPORATE COORDINATION OF IST PROGRAMS WITHIN THE UTILITY.
- IMPROVED IST PROGRAMS, SUBMITTALS, AND TIMELINESS.

CONCLUSIONS

- CURRENT PROBLEMS WITH IST ARE DIVERSE, RESOURCE INTENSIVE AND ARE A RESULT OF PAST LACK OF INDUSTRY AND NRC COMMITMENT.
- MANY OF THE NEEDED IST IMPROVEMENTS ARE SIGNIFICANT AND WILL REQUIRE TIME, CONTINUED NRC MANAGEMENT SUPPORT AND INDUSTRY COOPERATION.