

1 MR. DINSMORE: Well, that was the only  
2 real change to the reg guide.

3 MEMBER APOSTOLAKIS: Good.

4 MEMBER KRESS: And when you say that EPRI  
5 is based on conditional core damage probability, as  
6 opposed to importance measure, that would be -- one of  
7 them is based on an absolute, and the other one is  
8 based on a ratio?

9 MR. ALI: Well, EPRI uses both actually.  
10 It has a matrix, and one side is the conditional core  
11 damage frequency, which is the consequence, and the  
12 other side is the failure potential. So it does  
13 combine the two to determine the category of a  
14 segment.

15 MEMBER KRESS: Yes, that is an absolute  
16 number. The importance measures tend to be ratios and  
17 they don't have the absolutes.

18 MEMBER APOSTOLAKIS: You can have a high -  
19 -

20 MEMBER KRESS: I would be interested in  
21 George's comparison, too, and see how --

22 MEMBER APOSTOLAKIS: You can have a high  
23 Fossell-Vesely value for a PRA that gives you  
24 probabilities that are negligible.

25 MR. DINSMORE: There could be a lot of

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1 things. You could have nothing important, or you  
2 could have one thing important.

3 MEMBER APOSTOLAKIS: Right.

4 MR. DINSMORE: And we were worried about  
5 that, and that's why in the SE for the Westinghouse  
6 topical there is a statement about you need to ensure  
7 that you have a substantive ongoing program to assess  
8 the performance of your piping.

9 So we knew that these odd things could  
10 happen. They don't seem to have happened yet.

11 MEMBER APOSTOLAKIS: But I think that this  
12 particular comparison will shed light on another  
13 question that has remained a question to a large  
14 extent over the years.

15 What exactly do the importance measures  
16 do? So here is a good opportunity, which is  
17 practical, and it has practical significance for us to  
18 understand how these two relate to each other.

19 I mean, there is this paper by Garth and  
20 Mike Gio (phonetic) and so on that says that the  
21 importance measures, it is not obvious how they relate  
22 to risk changes.

23 But maybe this is a good opportunity since  
24 one is based on the conditional core damage  
25 probability, and the other is a relative measure, to

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1 actually compare them. And I am sure that something  
2 useful will come out of it.

3 MR. DINSMORE: Well, I think that Syed  
4 just offered to do that, yes.

5 MR. ALI: And I said I would take it up  
6 with management, and pass along your comments to my  
7 manager.

8 MEMBER APOSTOLAKIS: At the June meeting,  
9 Syed, you can come back and tell us.

10 MEMBER WALLIS: Going back to valves, when  
11 you talk about piping, you really mean the whole  
12 circuit. So the valve body is part of the pipe, and  
13 you are talking about inspection of piping; is that  
14 right?

15 MR. DINSMORE: Well, I stretched it a  
16 little bit. The ISI program only covers the welds.  
17 So it would cover the --

18 MEMBER WALLIS: What is the body of the  
19 valve?

20 MS. KEIM: IST.

21 MEMBER WALLIS: So IST, and that is --

22 MEMBER SIEBER: Not the body. The  
23 operation of the valve.

24 MR. ALI: Well, those requirements are  
25 still covered by the --

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1 MEMBER WALLIS: There is something  
2 different about the integrity of the casing, and the  
3 actual operation of the parts.

4 MR. ALI: The testing is covered in in-  
5 service testing, and other welds that are not piping  
6 welds are covered by the existing ASME --

7 MEMBER WALLIS: So the in-service testing  
8 covers the integrity, which is really part of the leak  
9 proofing of the circuit, which is like a pipe.

10 MR. ALI: It is a function.

11 MEMBER WALLIS: So where do you catch the  
12 cracks in the valve body itself?

13 MR. ALI: ASME-11 inspections. I mean,  
14 this was a pilot application in the sense that it only  
15 applies to the piping. The ASME code is already  
16 looking at extending this methodology to other  
17 components, such as --

18 MEMBER WALLIS: So where does the piping  
19 stop and the valve start?

20 MEMBER SIEBER: At the weld.

21 MR. ALI: At the weld.

22 MEMBER WALLIS: At the weld part of the  
23 pipe?

24 MR. ALI: Yes. The same thing with the  
25 vessels also, and the welds of the piping to major

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1 vessels, like the RPV, or steam generator, or  
2 pressurizer, are part of piping. But then beyond that  
3 is covered by ASME.

4 MR. DINSMORE: Clarification changes.  
5 Again, what we have been asking everybody to include  
6 in their submittals, which is not included in either  
7 the Reg Guide or the individual topical, which just  
8 say that you should provide enough information to  
9 satisfy or to indicate that the quality of the PRA is  
10 sufficient.

11 We have eventually boiled it down to  
12 asking for the reference number and version of the PRA  
13 being used, the current CDF and LERF, the process to  
14 ensure that the PRA that was used represented the  
15 current plant at the time if they were putting  
16 together a submittal.

17 And which actually could be a year or two  
18 before they get their relief request. And the results  
19 --

20 MEMBER APOSTOLAKIS: If you require a high  
21 quality PRA, that is included there isn't it? This  
22 does not have to be a separate --

23 MR. DINSMORE: Well, the Reg Guide and the  
24 SRP both require a PRA of sufficient quality to  
25 support the requested, and in practice, this is how we

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1 have been pursuing that issue.

2 MEMBER APOSTOLAKIS: But what I am saying  
3 is that with the publication of the ASME standard in  
4 the regulatory guide of Draft Guide 11.22, this is one  
5 of the fundamental requirements there. So if they  
6 meet those, it automatically is satisfied.

7 MR. DINSMORE: Yes, that would make life  
8 easier. That's right.

9 MEMBER POWERS: But we asked for the  
10 current CDF, and I assume by that you mean whatever  
11 they calculated the last time they ran the code?

12 MR. DINSMORE: Whatever they -- well, they  
13 tend to update the PRAs, and then they kind of fix  
14 them for a while, and then they collect changes which  
15 they are going to update again.

16 So usually -- I am not sure that we have  
17 had anybody that says that we don't really -- well, we  
18 might have had one or two, but that said that we don't  
19 really have a version number for this.

20 So the CDF and the LERF that we request  
21 are the CDF and the LERF that are produced by the  
22 version which they used to support or to do the  
23 calculations to support them somehow.

24 MEMBER POWERS: Now, I was under the  
25 impression that what you wanted was the mean value of

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1 the CDF and LERF.

2 MR. DINSMORE: Well, yes, and that is what  
3 we get. We get --

4 MEMBER POWERS: I bet that you have not  
5 gotten that ever. In fact, I am quite confident that  
6 you have never gotten that.

7 MR. DINSMORE: Well, again --

8 MEMBER APOSTOLAKIS: Maybe the 75th  
9 percentile?

10 MEMBER POWERS: Maybe the 75th percentile,  
11 but more likely the 74th.

12 MR. DINSMORE: We use these numbers mostly  
13 to look back at the IPE numbers, and so if they are  
14 both apples, at least we are comparing apples.

15 MEMBER POWERS: Are they both apples?

16 MR. DINSMORE: I suspect so. I suspect  
17 that they are not doing more, or they are probably not  
18 calculating the uncertainties. We don't get numbers  
19 on uncertainties. We just get these individual  
20 numbers.

21 But again what we do is look back at the  
22 IPE number, and as I said, one of the audits that we  
23 did, we went because we saw that there was a large  
24 change.

25 MEMBER APOSTOLAKIS: But again if you look

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1 at Regulatory Guide 1.174, which is the model of all  
2 regulatory guides, it does have an extensive  
3 discussion of uncertainty. So how do you accept  
4 submittals that do not address those?

5 MR. DINSMORE: We accept submittals  
6 because the criteria, the change in risk criteria  
7 which we have approved for use in the individual  
8 topical are much more constrained than the 1.174  
9 criteria.

10 Plus, we have added other criteria, such  
11 as you can't stop inspecting one system, or you have  
12 to provide the risk criteria from every system, and  
13 there is a limit on that. So that you can't say I had  
14 a system over here that was real bad, and so I am  
15 inspecting that. So I can stop inspecting everybody  
16 else.

17 So we tried to incorporate it into the  
18 methodologies themselves and the criteria that we  
19 would be able to use the results of these PRAs without  
20 a great deal of --

21 MEMBER POWERS: So if I am a crafty devil,  
22 and I give you the 10th percentile CDF.

23 MR. DINSMORE: I suppose or I can't  
24 remember the exact wording of the RAIs that went out.  
25 I don't think we do use the mean CDF. We just ask for

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1 the CDF and LERF. They could have done that, but I  
2 hope not. I doubt it.

3 MEMBER APOSTOLAKIS: This is very  
4 interesting because I remember we had the discussion  
5 here when we were reviewing the Westinghouse  
6 methodology, and there were statements there like  
7 model uncertainties, and major issue here, and there  
8 were orders of magnitude of uncertainty and so on, and  
9 you said, Syed, a little earlier about the EPRI  
10 methodology uses a matrix for the potential for  
11 failure, which I think is a highly uncertain quantity.

12 How can we do all of this on a point  
13 estimate basis when we have all of these uncertainties  
14 looming large over the horizon? This would seem to be  
15 a prime candidate for the uncertainties to make a  
16 difference.

17 MR. ALI: Well, in the methodology there  
18 are sensitivity studies done. In the Westinghouse  
19 methodology, there are sensitivity studies. In the  
20 EPRI methodology, once you prepare this matrix, there  
21 is some overlap in where a system or a segment would  
22 be a high safety significant.

23 And so there is some -- and I don't know  
24 if we have a slide for that, and to take a look at  
25 that, but a system or a segment could be high or have

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1 high consequence and very low failure potential, and  
2 there still would be some inspections.

3 So it is not just -- you know, it depends  
4 upon both of those factors, and a combination which  
5 has high consequence or low failure, or vice versa,  
6 both end up having inspections.

7 MEMBER APOSTOLAKIS: So are you convinced  
8 then that this is a reasonably conservative, or are  
9 both methodologies conservative? Or is that a hunch?

10 MR. DINSMORE: I think again what we were  
11 doing was we were moving inspections from locations  
12 that really had no risk significance to locations that  
13 had some risk significance.

14 And we are pretty confident that this  
15 process will do that. It will identify those  
16 locations that had really no risk significance, and  
17 identify other locations that have some risk  
18 significance, or if it has a lot of risk significance,  
19 we are pretty confident that it would be identified.

20 If it is kind of medium or floating around  
21 in the middle, then maybe not all of them. But again  
22 we are relocating these inspections and one of the  
23 difficulties with actually trying to do quantitative  
24 uncertainty analysis is the uncertainty in the pipe  
25 failure frequencies, which we still don't really know

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1       how to deal with or how to generate.

2                   So it would have been maybe not that  
3       advantageous to get all of the uncertainties out of  
4       the PRA when actually most of the uncertainties are in  
5       the pipe failure frequency.

6                   MR. ALI:    And I think in the piping  
7       failure probability calculation there is some built in  
8       sensitivity studies, and also one other thing that we  
9       will bring another subject into discussion, but that  
10      is the expert panel review after the classification  
11      has been done.

12                   And there have been, regardless of the  
13      actual numerical reserves, the expert panel could --  
14      and we have a requirement that they cannot move the  
15      segment into a lower category, but they can move it  
16      into a higher category, and there have been instances  
17      where we have done that.

18                   MEMBER APOSTOLAKIS:  They had done what?

19                   MR. ALI:  Moved them into a higher safety  
20      significant category.

21                   MEMBER APOSTOLAKIS:  So is your basic  
22      argument, Steve, that yes, they are uncertainties, but  
23      they are in the frequency of pipe failure, which is  
24      not really used by us when we decide where to go and  
25      look?

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1 MR. DINSMORE: No, I was using that to  
2 indicate why we didn't pursue vigorously the  
3 uncertainties which we could get out of the PRA.

4 MEMBER APOSTOLAKIS: I mean, there are  
5 large uncertainties on the frequencies on the pipe  
6 failure.

7 MR. DINSMORE: Right.

8 MEMBER APOSTOLAKIS: But when you decide  
9 where to look, what role does that frequency play?

10 MR. DINSMORE: In general, if there is a  
11 degradation mechanism of any type, then the failure  
12 frequency for that weld is pretty clearly going to be  
13 higher than a place where there is none.

14 The exact number that is used is  
15 uncertain, but essentially what we are doing is we are  
16 moving these inspections to places with some type of  
17 degradation mechanism.

18 MEMBER APOSTOLAKIS: Some types.

19 MR. DINSMORE: Yes, there are several  
20 different types.

21 MR. ALI: For example, in the EPRI  
22 methodology, as long as a segment has any potential  
23 degradation mechanism, it would be at least in the  
24 medium category, and the medium category of failure  
25 potential.

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1 MEMBER POWERS: Doesn't any piece of  
2 piping not have the potential degradation mechanism?

3 MR. DINSMORE: Most of them. It was my  
4 understanding from what is coming in --

5 MEMBER POWERS: I can't imagine any piece  
6 of piping not having a potential degradation.

7 MEMBER WALLIS: Even a super pipe.

8 MR. ALI: Well, there are, you know, the  
9 methodologies check for specific environmental  
10 conditions that are applicable to things like stress  
11 corrosion cracking, stratification --

12 MEMBER POWERS: Every piece of piping  
13 exposed to any atmosphere or fluid of any kind is  
14 undergoing wastage. Slow in some cases, but wastage  
15 nevertheless.

16 MR. DINSMORE: Well, maybe none means  
17 relatively benign.

18 MEMBER WALLIS: We seem to be stuck on  
19 this slide here. Are we going to move on?

20 MR. DINSMORE: Okay. Other changes that  
21 we have made was the Reg Guide spent a lot of time  
22 talking about three break sizes, which is pretty much  
23 applicable to one of the methodologies, and not the  
24 other.

25 And in essence as long as the break

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1 likelihood and the consequences are consistent with  
2 each other, or conservative, we just removed that,  
3 because it was kind of a confusing issue.

4 We also removed this discussion about  
5 maintaining leak frequency. Essentially what happens  
6 is the leak frequency says that you have to have 95  
7 percent confidence that the segment will not exceed  
8 its leak, or will not exceed the general leak  
9 frequency, which is about 10 to the minus 5 per year.

10 It turns out that there is usually less  
11 than a 5 percent chance that you have a flaw in the  
12 segment. So in that situation it was always returning  
13 a zero number of inspections required, but we built  
14 into the methodology that even if it said zero that  
15 you had to do at least one.

16 So that was removed because it was again -  
17 -

18 MEMBER APOSTOLAKIS: Defense in depth?

19 MR. DINSMORE: Yes. Then there was this  
20 incorporating of augmented programs into the risk  
21 informed ISI. The SRP said you could do it, and the  
22 Reg Guide was quiet about it, and so we inserted in  
23 the Reg Guide that you can do it.

24 However, as in the SRP, we require that if  
25 you want to start applying this to an augmented

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1 program that has not yet been approved, you have to  
2 come in and tell us how you are going to do it, and  
3 get specific approval.

4 MEMBER SHACK: Has anybody done that yet?

5 MR. DINSMORE: Well, the BER is the  
6 biggest one, and EPRI included a bunch of them in  
7 there.

8 MR. ALI: And also the WOG methodology was  
9 approved before the EPRI, and at that time essentially  
10 the methodology by the staff had excluded all  
11 augmented programs, but later on, by the time that we  
12 reviewed the EPRI methodology and include that, we had  
13 included some of the augmented programs.

14 So the WOG submittal that revises their  
15 topical report to include the BER also asks for  
16 applying it to those other augmented programs that  
17 were included in the EPRI.

18 MEMBER SHACK: Which augmented programs  
19 were included in that?

20 MR. ALI: Metal fatigue, IGSCC, Category  
21 A, and then later on the BER.

22 MS. KEIM: Two additional clarifications  
23 addressed them in the EPRI Reg Guide. Sample  
24 expansions addressed the scope of the sample  
25 expansion, but did not address the timing of these

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1 additional examinations when a flaw is found.

2 So we put in some clarifying wording that  
3 they are to follow current ASME, approved ASME version  
4 of the code, or the code cases if they get approved.  
5 The second clarification is that safety significant  
6 non-code class piping should be treated as ASME code  
7 class piping for the purpose of the examination of  
8 pipe and pressure testing.

9 Initially there were some plants that did  
10 apply this to the full scope of their plant, and non-  
11 code class piping was determined to be safety  
12 significant.

13 The Reg Guide had that high safety  
14 significant, non-code class piping should receive  
15 pressure testing. The SRP was mute on it. So we  
16 added some clarifying wording to address that.

17 MR. DINSMORE: The rest of the changes  
18 were editorial, and we have slides on them if you want  
19 to see them.

20 MEMBER APOSTOLAKIS: Does the Reg Guide  
21 include the requirement to reevaluate the ranking of  
22 piping after a period of time if there have been  
23 significant changes to the piping?

24 MR. ALI: Yes, that was one of the slides  
25 that I had that was -- you know, it is a living

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1 program, and should be reevaluated when there is major  
2 PRA changes or industry findings.

3 MEMBER POWERS: You dealt with the EPRI  
4 procedure and the Westinghouse Owners Group procedure.  
5 Have you looked at processes used, say, in Japan, or  
6 France, or Germany, for the in-service inspection of  
7 their piping systems?

8 MR. ALI: Well, it is our understanding,  
9 and maybe some of the industry people can further  
10 elaborate on that, but some of the people that we see  
11 in the ASME meetings are really following us. There  
12 is people from Spain in the working group that is  
13 developing these code cases.

14 I don't know about a lot of actual  
15 countries, but I think I understand that Westinghouse  
16 is applying this in some of the other countries maybe.  
17 I think one other thing before Ken, and it looked like  
18 you were getting ready to get up, and so maybe -- and  
19 there was one other thing.

20 And that was George's question as to we  
21 are applying this categorization for various  
22 purposes; for ISI, and then for repair and  
23 replacement, and for other activities.

24 And you and some of the industry people  
25 are involved in developing all of these various

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1 classifications. So maybe you can comment on how to  
2 make sure that there is some consistency in those.

3 MR. BOHLKE: I am Ken Bohlke with  
4 Westinghouse, and I am also a member of the ASME Board  
5 on Nuclear Codes and Standards. To take the first  
6 question on the countries, countries like Spain follow  
7 very closely actually to the NRC regulations, and they  
8 use the ASME code directly.

9 So they have used actually both methods.  
10 Some plants have used the EPRI method and some have  
11 used the Westinghouse Owners Group method. The French  
12 looked at both methods and have developed their own.

13 Other countries in Europe are still  
14 evaluating either method for application. There is  
15 trial applications in Switzerland, in Sweden, where  
16 they have looked at both.

17 Some plants have used the WOG method and  
18 some have used the EPRI method. And the Japanese are  
19 still deciding, and they have not made any movement  
20 towards a risk-based inspection effort, and Korea has  
21 followed the lead of the United States and they are  
22 using and we have been working with one plant in  
23 Korea, and they are using that as their pilot for  
24 their plants.

25 So the other countries are using this

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1 technology. They are looking at both methods, and the  
2 only country that I am aware of that has developed  
3 their own has been the French.

4 MEMBER POWERS: Do we know if the French  
5 deviated from these methodologies?

6 MR. BOHLKE: Actually, the French  
7 inspection standard is different than the ASME to  
8 begin with. And they felt actually that their  
9 movement in their inspection standards in France were  
10 actually closer to where we were coming already from  
11 the risk informed.

12 And what they ended up doing was looking  
13 at both methods and using aspects out of both methods  
14 to blend and develop their own.

15 And the second question that Syed brought  
16 up in your earlier discussion, my colleagues here,  
17 particularly Pat O'Regan and I, have worked very hard  
18 over the past couple of years on developing a code case  
19 for risk informed safety classification for repair and  
20 replacement, and to be tied in with 10 CFR 50.69.

21 And because ASME worked very hard on  
22 developing code cases, and interfaced with the staff  
23 and the industry on risk informed ISI of the two  
24 methods, and Syed had presented the code case numbers,  
25 but as the movement moved towards the option to, or 10

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1 CFR 50.69; ASME said that we would move to doing  
2 repair and replacement.

3 We have worked real hard and there is now  
4 one code case, and if plants used either the  
5 Westinghouse Owners Group method, or the EPRI method,  
6 that with either of those they can now move to one  
7 method for the risk-informed repair and replacement.

8 There is a big difference between the  
9 treatment of ISI versus repair and replacement. When  
10 you do ISI, you are moving your examinations, but you  
11 are not making a physical change to the pipe.

12 ISI gives you -- if you go out and examine  
13 a pipe, and you do it with a very accurate method, and  
14 you don't have any indications, that gives you  
15 confidence that the reliability of that component is  
16 very good.

17 So the ISI really is improving our  
18 confidence in the state of our piping systems. When  
19 we go to repair and replacement, if I actually go and  
20 change a component, now I can physically change, and  
21 make a physical change to a piping system or a  
22 component.

23 And in that case, or in the code case, we  
24 determined that the failure probability would always  
25 be one, and so the ranking would always be done on a

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1 conditional consequence of failure in that particular  
2 case.

3 Now, my understanding in working with 10  
4 CFR 50.69 is that you have an NEI guideline that gives  
5 a detailed layout of how to do the risk  
6 classification. I believe it has been presented here  
7 to the ACRS.

8 But if you will look at that guideline  
9 when it comes to the pressure boundary, it refers you  
10 to this new code case that has been developed by ASME.

11 So we have been trying to make sure that there is a  
12 consistency between ISI and repair and replacement,  
13 and that that tailors well with the 50.69 effort.  
14 Thank you.

15 MR. ALI: Just to add quickly to Dr.  
16 Powers' question, I also recall that Korea had  
17 actually invited a couple of staff members to go there  
18 and present our experience with the risk found in ISI.'

19 Actually, we were supposed to go there.  
20 I was one of the members, but they canceled the trip  
21 because of the SARS issue and has been rescheduled.  
22 But they are very much interested in learning about  
23 what we have been doing.

24 MEMBER POWERS: I am very interested in  
25 understanding what the difference is in the French

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1 inspection standards, or how do I go about doing that.

2 MR. ALI: We can look into that and try to  
3 find out what they are doing.

4 MEMBER APOSTOLAKIS: I think it would be  
5 of interest to the whole committee.

6 MEMBER POWERS: I would appreciate any  
7 information you can get me on that.

8 MEMBER APOSTOLAKIS: And again you can  
9 couple that with a comparison of EPRI and Westinghouse  
10 methodologies, because you have to know what you are  
11 comparing the French approach with, right?

12 Maybe Westinghouse is closer to what the  
13 French were, and maybe EPRI, or there is a difference.  
14 It seems to me that comparing -- this comparison is an  
15 important element, and there may be others, too. I  
16 don't know.

17 I sent you a paper from India recently,  
18 and I don't know if you looked at it, but they are  
19 looking at it from a different perspective.

20 MR. ALI: So I think what I am hearing is  
21 that adds to your early comment that we need to look  
22 at some of these methodologies coherently, rather than  
23 individually.

24 MEMBER APOSTOLAKIS: Stovepiping, you  
25 know, we don't want to do that. And maybe this can be

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1 again -- you know, I thought Mary Drouin was looking  
2 for examples in her cohesiveness program.

3 There is a program on making sure that  
4 regulations are coherent or cohesiveness?

5 CHAIRMAN BONACA: Coherent.

6 MEMBER APOSTOLAKIS: Coherent. Well,  
7 that's not the word that she used.

8 CHAIRMAN BONACA: She used coherence.

9 MEMBER APOSTOLAKIS: Okay. So that maybe  
10 that would be a good case then.

11 MEMBER SHACK: Well, there is a single  
12 regulation here, and this is just two different ways  
13 of meeting the regulation.

14 MEMBER APOSTOLAKIS: Yes, but I want to  
15 understand what the differences are. You don't  
16 necessarily have to bring the French into this  
17 regulation, although I think that is a good question,  
18 too.

19 But if you are approving two  
20 methodologies, are you approving different things, or  
21 are there any flaws in one that are not in the other?  
22 I don't know.

23 MEMBER LEITCH: I have just a process  
24 question. When you approve a risk-informed ISI  
25 program do you approve it for a 10 year interval, or

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1 is it approved for the --

2 MR. ALI: For the 10 year interval.

3 MEMBER LEITCH: For the 10 year interval.  
4 Okay. So then at the end of that 10 year interval  
5 would that be a chance to confirm that the licensee  
6 had really upgraded his ISI program for changes in the  
7 PRA model, and changes in the plan experience, and so  
8 forth?

9 MR. ALI: Right.

10 MEMBER LEITCH: So that is the time that  
11 you would do that, although the licensee may make some  
12 changes sooner than 10 years, but as a minimum, you  
13 would go back and look at that at the 10 year  
14 interval?

15 MR. ALI: Right.

16 MEMBER LEITCH: Okay.

17 MR. DINSMORE: We actually have one  
18 submittal that has come in for their 10 year review.  
19 It came in a month or two ago, and so we are going to  
20 get some experience in that.

21 MEMBER LEITCH: Okay. Good.

22 MR. ALI: I think as a result of this  
23 meeting, in summary, some of the things that I  
24 commented on, that as a conclusion of the meeting, one  
25 is to look at the two methodologies, compare them, and

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1 look at the French methodology or some of the other  
2 methodologies that may have been used.

3 Look at the different types of  
4 classifications and see --

5 MEMBER SHACK: You will get a letter.

6 MEMBER APOSTOLAKIS: We are writing a  
7 letter.

8 MR. ALI: Okay. And I think that letter  
9 will summarize it.

10 CHAIRMAN BONACA: Very good.

11 MEMBER SHACK: Additional comments or  
12 questions?

13 CHAIRMAN BONACA: Thank you very much for  
14 your presentation.

15 MR. ALI: The letter we are looking for is  
16 your recommendation to go ahead and issue the revised  
17 --

18 MEMBER SHACK: That has never stopped us  
19 in the past.

20 CHAIRMAN BONACA: All right. With that we  
21 are going to take a recess until 1:15.

22 (Whereupon, at 12:14 p.m., a luncheon  
23 recess was taken.)

24

25

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## A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

(1:16 p.m.)

CHAIRMAN BONACA: Okay. The meeting will come to order. And the next item on the agenda is Operating Experience and Effectiveness, and John Sieber will walk us through this presentation.

MEMBER SIEBER: Okay. Thank you, Mr. Chairman. This morning we heard about three of the four action plans that came out of the Davis-Besse reconciliation of the lessons learned task force.

This afternoon, we are going to hear about the fourth one, which is operating experience, and there is actually a couple of things to note about operating experience.

The NRC and its predecessors have had operating experience programs for many, many years, and they have been refined and consolidated over the years, and so each of these is an improvement and an enhancement, and I think that we ought to recognize that operating experience programs have existed for a long time, and contributed to better regulation and better operation of the plants.

In addition, there may be a nexus between what we are going to talk about this afternoon and a question that arose during our 500th meeting when we

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1 discussed the Peach Bottom license renewal.

2 And part of that discussion involved the  
3 Peach Bottom turbine electrohydraulic control system,  
4 control cart. And the question that was asked by one  
5 of our members was how does operating experience, such  
6 as the failure of carts, factor into the license  
7 renewal process.

8 And of course in the case of the Peach  
9 Bottom control carts, they don't, first, because they  
10 are active components; and secondly because they are  
11 non-safety related.

12 None the less, the question is still there  
13 and to the extent that the staff can address some of  
14 that at this time, that would be helpful. With that  
15 introduction, I think I will turn it over to the staff  
16 to tell us where they staff with regard to the task  
17 action plans concerning operating experience.  
18 Charles.

19 MR. ADER: For the record, my name is  
20 Charles Ader, and I am the manager of the Operating  
21 Experience Task Force, and I am in the Office of  
22 Research, but in this role I am kind of off of the day  
23 to day, and so I am involved in this.

24 I wanted to clarify. The task force, the  
25 charter for the task force is a piece of the operating

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1 experience action plan, and I was just going to cover  
2 as an informational briefing where we are in that  
3 charter, and what our goals are, and where we are  
4 going to go.

5 CHAIRMAN BONACA: Good.

6 MR. ADER: I would just let you know that  
7 there is other staff that is more involved in the  
8 larger action plans and so if they are questions, they  
9 may be able to answer some of the additional  
10 information.

11 The purpose of the briefing again is  
12 really to provide the committee an overview of the  
13 task force, and what we are trying to accomplish, or  
14 what we have been tasked to accomplish.

15 As you mentioned in an earlier license  
16 renewal meeting, my understanding was at that meeting  
17 that Frank Gillespie, who is here, volunteered to have  
18 the task force manager, unnamed at that time, to come  
19 and make a presentation on the status of the charter  
20 and the task force.

21 MEMBER SIEBER: It is easier to task folks  
22 when they are not yet named.

23 MR. GILLESPIE: John, could I? I was also  
24 at the 500th meeting, and I kind of committed Charlie  
25 even before he knew that he was going to be a task

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1 force manager to do this, and the more general  
2 question, and I think he is going to cover this, if I  
3 can say it, but it was not license renewal, but how is  
4 operating experience factored into any kind of license  
5 and review that we might do.

6 How does the reviewer get the insights  
7 from operating experience, and we also suggested that  
8 there is a difference between events and operating  
9 experience.

10 And our focus for the most part in the  
11 past has been event oriented, versus operating  
12 experience, and that is why I had volunteered Charlie  
13 to deal with the more general discussion.

14 MR. ADER: Which he told me after I had  
15 accepted the task force.

16 MEMBER SIEBER: That is called management.

17 MR. ADER: The task force, and the  
18 background of it, is that it came together from really  
19 two actions that were going on. The operating  
20 experience section in NRR, who does the daily or the  
21 day to day reviews and the short term reviews think  
22 had taken an initiative to work with some of the other  
23 programs in the agency that had activities in the  
24 operating experience arena to get together and look at  
25 the various activities, and see if there is ways to

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1 improve the coordination, efficiencies, and  
2 effectiveness.

3 While they were working on that the Davis-  
4 Besse lessons learned task force issued their report  
5 in September of last year, which had a number of  
6 recommendations as you noted on operating experience  
7 and issues related to operating experience.

8 Those two efforts kind of came together  
9 with the decision by management to create a task force  
10 that would be focused on reviewing the agency's  
11 operating experience program, and that was addressed  
12 or mentioned in the March 7th action plan memo that  
13 Sam Collins and Ashook Tadani sent to the EDO.

14 One of the first steps was getting the  
15 charter approved and we did that at the end of March.  
16 I believe you have a copy of both the action plan and  
17 the charter, along with a very recent memo that I  
18 sent;.

19 MEMBER SIEBER: It is in Tab 4 of your  
20 books.

21 MR. ADER: And I became involved in this  
22 effort as task force manager just about a week or so  
23 before the charter was approved. So I was able to  
24 have some influence and involvement in the development  
25 of the charter, and the task force members.

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1 In short the objectives of the task force,  
2 and I will point out that it is the reactor operating  
3 experience task force, is to review the agency's  
4 reactor operating experience program, and to recommend  
5 specific program improvements that would address the  
6 Davis-Besse lessons learned recommendations.

7 MNSS is also involved in a separate  
8 activity to review the materials operating experience  
9 programs, and so we have not included it in here and  
10 that's why I say the reactor operating experience  
11 program.

12 We have points of contact and we are  
13 interfacing with them on occasion to see lessons that  
14 they have learned, or lessons that we have learned,  
15 and we can share information. But they are not a  
16 combined activity.

17 The agency's management directive 8.5,  
18 which deals with operating experience, covers both  
19 programs, but our focus is purely the reactor  
20 operating experience program.

21 The two specific recommendations, and I am  
22 not going to read these, because I believe you have  
23 seen them before, but the two specific lessons learned  
24 task force recommendations that are defined in the  
25 charter is to review the capabilities, to retain

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1 operating experience, and perform longer term  
2 evaluations, and evaluate the thresholds for  
3 initiating generic communications, and evaluate  
4 opportunities for efficiency effectiveness, and look  
5 at the generic issue program, and how that interfaces  
6 with operating experience.

7 And to evaluate how effective we are at  
8 disseminating the information to the users. It is the  
9 first recommendations, and there are a lot of pieces  
10 to it. The second recommendation is covered in the  
11 charter is to assess the scope and adequacy of  
12 requirements governing license review of operating  
13 experience.

14 There are several other recommendations in  
15 the action plan on operating experience that we will  
16 be looking at, because they have been identified in  
17 the implementation phase of the task force activities.

18 Those deal with updating the guidance on  
19 operating experience, assessing the effectiveness of  
20 our collection and use of foreign operating  
21 experience; and strengthening the inspection guidance  
22 for periodic reviews of operating experience.

23 And naturally we would have been looking  
24 at those types of activities anyway, but those  
25 recommendations are identified in the implementation

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1 phase. There is a number of other recommendations in  
2 the action plan which are being dealt with currently  
3 by line management that are not included within the  
4 charter of the task force.

5 MEMBER LEITCH: How is that clearinghouse  
6 function provided now? In here in parentheses, you  
7 said such as an NRC operational experience  
8 clearinghouse? How is that done now?

9 MR. ADER: Right now, and one of the  
10 things that we will be looking at, there are a series  
11 of what I will call databases out there. One of the  
12 branches in Research that does the ASME evaluations,  
13 some of the reliability, has a database with a lot of  
14 the LERs, and a lot of other information that feeds  
15 it.

16 I believe NRR in their reviews have some  
17 databases of actions that they will look at a little  
18 bit more and may feed in, and may have some allegation  
19 information that gets fed in and have morning report  
20 information.

21 So right now there is a collection of  
22 databases that the different organizations have  
23 developed for the specific responsibilities they have.

24 There has been a movement to try to  
25 consolidate some of these, and that is one of the

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1 things that we are going to be looking at further, is  
2 to see or is to try to address this recommendation;  
3 should there be a centralized clearinghouse, or should  
4 it just be a coordination between the existing  
5 databases.

6 MEMBER LEITCH: I see.

7 MEMBER WALLIS: But before that wasn't  
8 there an AEOD that did some of this sort of thing?

9 MR. ADER: In 1998, AEOD was abolished by  
10 the Commissioner in 1999.

11 MEMBER WALLIS: But the need for some of  
12 its activities didn't go away.

13 MR. ADER: No, and most of those  
14 activities -- I think there were a few specific  
15 functions that were sunset at the time, but most of  
16 the programs were transferred to other offices.

17 Some of the shorter term were transferred  
18 to NRR and the longer term studies were transferred to  
19 Research.

20 MEMBER WALLIS: So they sort of  
21 splintered, and now you are bringing it together  
22 again?

23 MR. ADER: And that is one of the things  
24 that we are looking at. There was supposed to have  
25 been a review I think about a year following that

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1 breakup to see the effectiveness, and to the best of  
2 the people that we have talked to, that review was  
3 never done.

4 So maybe we are the one year later follow-  
5 up review. Even AEOD though had a number of databases  
6 as I understood it, and they have gradually been  
7 consolidated.

8 MEMBER APOSTOLAKIS: This says licensee  
9 review, and so all they have to do -- all the licensee  
10 has to do is review. It does not address the issue of  
11 action. What if they say we reviewed it, but we are  
12 not doing anything about it?

13 MR. ADER: One of the things that we will  
14 be looking at, and hopefully this will be an easy  
15 briefing because I can say that we are going to be  
16 looking at it, and getting back later, is that there  
17 are a series of questions that we raised on that type  
18 of information.

19 I mean, we sent out information notices to  
20 review for applicability, and maybe there is a need.  
21 There are bulletins or generic letters that may  
22 require action, or may require information submittal.  
23 There is the question of when we go out for  
24 inspections and when we rely on licensees.

25 Depending on the information and depending

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1 on the requirement, there would be pieces that would  
2 require licensee action.

3 MEMBER APOSTOLAKIS: I realize that there  
4 are certain messages from operating experience that  
5 make this agency issue orders and so on, and so  
6 everyone has to do it.

7 But what about the other Category B so to  
8 speak lessons or messages from operating experience,  
9 where they are not necessarily worth an agency action,  
10 but the licensees could benefit from doing certain  
11 things that are relevant to their own facilities? You  
12 don't get involved in that do you?

13 MR. ADER: Under this recommendation in  
14 the charter, that is one of the things that we are  
15 going to look at to see what requirements we have out  
16 there and do they seem to be adequate, and are we  
17 going to have some recommendations.

18 CHAIRMAN BONACA: Now, I think some plants  
19 have requirements in the technical specifications, and  
20 the most recent ones, of using -- for example, they  
21 have groups called sample engineering that review  
22 operating experience for applicability to a specific  
23 plant.

24 Some of the older plants don't have the  
25 same stringent requirements. They have, however,

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1 negative consequence in case they have neglected the  
2 operating experience, and something happens that they  
3 should have known.

4 So they really have incorporated the  
5 internal commitments, but it varies from what I know  
6 from plant to plant.

7 MEMBER APOSTOLAKIS: I am trying to make  
8 a connection with another subject that is of concern  
9 to this committee now. If you look at the literature  
10 on organizational performance and safety culture, and  
11 all of that, there is unanimity on every few things.

12 But one thing on which most people agree  
13 is a good thing is the so-called organizational  
14 learning. How does the organization learn from  
15 operating experience, or its own operating experience,  
16 and other facilities' operating experience, and what  
17 does it mean to learn as an organization.

18 And I was wondering whether this could  
19 lead to even a performance experience of  
20 organizational learning. In other words, if you go  
21 and look at what they have been doing the last 2 or 3  
22 years, and there is all this operating experience and  
23 notices that arrive and so on, and they do nothing.  
24 And then your people decide that, no, that Items A, C,  
25 and F are really relevant to your organization, and

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1 should have done something about it.

2 That seems to me to be a promising  
3 performance indicator of a good safety culture,  
4 because this is the major issue. I mean, you see  
5 papers where they have the feedback loops, and they  
6 say, okay, the A organizations have this learning  
7 element there, and then they cut this and they  
8 immediately drop to some other lower category.

9 Now, what is organizational learning has  
10 not been decided yet. Do you change your procedures,  
11 or do you change the training of people, and there is  
12 all sorts of things that you can do. But this can be  
13 an indicator of some sort.

14 MEMBER LEITCH: In fact INPO does  
15 something very similar to that. They send out  
16 information notices regarding operating experience,  
17 and then when they come in to do plant assessments  
18 every two years or so, they review how the plant has  
19 responded to that information.

20 CHAIRMAN BONACA: Well, that's good.

21 MEMBER LEITCH: But most of the NRC thinks  
22 the information notices and so forth is not a formal  
23 closure loop like that. There is a group at most  
24 plants as Mario has indicated that reviews that for  
25 applicability to that particular plant, and then

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1 distributes it to the appropriate person to address  
2 that issue.

3 MEMBER APOSTOLAKIS: Yes, but do they  
4 follow up? Distributing is one thing. It is a  
5 necessary thing, but --

6 CHAIRMAN BONACA: Depending on the  
7 efficiency of the program.

8 MEMBER LEITCH: It is a kind of open loop.

9 MEMBER APOSTOLAKIS: This may be a good  
10 place to look more carefully.

11 MEMBER SIEBER: There used to be an  
12 inspection module that the NRC had where they would  
13 review how you dispositioned information, and all of  
14 that had to be documented. Otherwise, there is  
15 nothing to inspect.

16 But if you ever had a failure in your  
17 plant that had been the subject of information, you  
18 had big problems, and so everybody that I know in  
19 licensee organizations does a pretty thorough and  
20 pretty formal review.

21 And the information notices aren't the  
22 only source. There is INCO. There is the  
23 manufacturer of components in Part 21 notices, plus  
24 other technical bulletins or what have you.

25 So there is a lot of information coming in

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1 all the time, and that needs to be dealt with and  
2 dispositioned by licensees, and for the most part they  
3 do it.

4 MEMBER APOSTOLAKIS: But that is not part  
5 of the current OSI process is it?

6 MEMBER SIEBER: I haven't thoroughly  
7 reviewed the new inspection manual chapters. It is so  
8 voluminous.

9 MR. ADER: I think that part of this  
10 recommendation will be in the lessons learned task  
11 force.

12 MEMBER APOSTOLAKIS: And there is a second  
13 question, too. One of the -- I don't know if it is a  
14 complaint, but let's call it complaint, is that PRA  
15 analysts, when they do their PRAs, in general don't  
16 take an advantage over the various reports that come  
17 out of this agency that analyze operating experience.

18 Would part of your task force, the charter  
19 of your task force, be to recommend something that  
20 will encourage this?

21 MR. ADER: The charter as I have read it  
22 and looked at it is been more inward looking at the  
23 NRC's processes to deal with operating experience.  
24 But we are looking -- but I was going to say that as  
25 a task force we are looking at it in a broader sense.

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Whether we would go to the level of our utilities PRA analysts using it are not, I am not sure. We are just entering the assessment phase, and we have some questions on the table about how we want to deal with some of the external stakeholders. I will get to it a little bit later, but we do see information that is provided from the agency to licensees. A question that we have raised is the way that we are providing it, effective communications to them. There are some areas that could be improved.

MEMBER APOSTOLAKIS: But all you have to do is ask your reviewers of risk informed submittals to check an item there that says was the relevant operating experience taken into account, and then automatically I think that the PRA analysts of the industry will do that.

And even if it is internal, I think that you have a lot of power.

MR. ADER: It is a good thought and a good question, and that external piece of it, as I said, we are just entering the assessment phase, and we are looking at where and when, and how we want to --

MEMBER APOSTOLAKIS: So there are lots of opportunities to review this?

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1 MR. ADER: Yes. I just committed myself  
2 to yes.

3 MEMBER APOSTOLAKIS: Don't be so  
4 enthusiastic. We are help to help.

5 MR. ADER: No, and that's why I welcomed  
6 this opportunity. I know that we are early in the  
7 process, and I am going to be telling you more of what  
8 we have accomplished in the first month, and where we  
9 are going. So there is not a lot of bottom line  
10 conclusions.

11 But I know that the committee has got a  
12 lot of views, and experience, and I would rather hear  
13 them now than hear them at the end of the process,  
14 because I think you can help us.

15 MEMBER APOSTOLAKIS: Well, you are dealing  
16 with one of the major contributors to good  
17 organizational performance.

18 MR. ADER: The task force members are on  
19 this slide, and we have a very good representation  
20 from --

21 MEMBER APOSTOLAKIS: Not very good any  
22 more.

23 MR. ADER: What did I lose?

24 MEMBER SIEBER: We should all have a mouse  
25 and compete and see who can fix it first.

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1 MR. GILLESPIE: George, while they are  
2 trying to get that to work, let me amplify, because we  
3 are in total agreement with what you just said. But  
4 before your internal reviewer can challenge someone on  
5 how they are using operating experience, you need to  
6 feed him the insights from operating experience in a  
7 form that is an easily useable form, to make that  
8 challenge.

9 And one of the flaws that we saw that  
10 caused this task force to get together is are we  
11 distributing the information that we are getting in  
12 from all of these different data bases to our own  
13 people in such a way that they can use it in RAIs in  
14 asking those questions.

15 MEMBER APOSTOLAKIS: Yes, I agree. Is  
16 there a PRA analyst with this group or task force?

17 MEMBER POWERS: That's a strong team,  
18 George.

19 MR. ADER: No, Ian Jung was in the PRA  
20 group before, and so he has PRA background. He is  
21 bringing his expertise to a different area.

22 MEMBER APOSTOLAKIS: A bona fide PRA  
23 person there from the PRA branch.

24 MR. BECKNER: We have hired into this  
25 group and donated to the task force a number of people

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1 from the PRA branch.

2 MEMBER APOSTOLAKIS: What does it mean to  
3 hire people?

4 MR. BECKNER: I had a vacancy, and I  
5 posted it and I selected them.

6 MEMBER APOSTOLAKIS: Okay. So he or she  
7 would  
8 be --

9 MR. BECKNER: Yes, and Ian Jung is there  
10 and we are also into -- not into the task force, but  
11 into the operating experience section, we have also  
12 recently hired a second individual with PRA background  
13 in the PRA branch.

14 MEMBER WALLIS: This is the task force,  
15 but who is going to do the work? Are these people  
16 going to do the work?

17 MR. BECKNER: Yes.

18 MEMBER WALLIS: That is a lot of people.

19 MR. ADER: They are not all full-time.  
20 There is a number of them that are full-time, and then  
21 there is a number that are part-time to bring  
22 perspectives from their organization.

23 MEMBER WALLIS: But that is still a major  
24 effort.

25 MEMBER APOSTOLAKIS: Yes.

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1 MR. ADER: In setting up the task force,  
2 I had a lot of help on it.

3 MEMBER POWERS: And we are here to give  
4 you some more, Charles.

5 MEMBER APOSTOLAKIS: Tell us what DRIP,  
6 DSAREs, are? Yo don't even know?

7 MR. ADER: Well, I don't always remember  
8 the acronyms. Division of Regulatory Improvement  
9 Programs is DRIP, and within that is Bill Beckner's  
10 branch, and the Operating Experience Section.

11 There is two members, Bob Caldwell, and  
12 Ian Jung, out of that section. DSARE, I need to know  
13 because that is my division, and that is the Division  
14 of System Analysis and Regulatory Effectiveness.

15 And John Flack's branch and a team within  
16 John's branch, which is the Regulatory Effectiveness  
17 and Human Factors Branch, is involved in some of the  
18 long term operating experience reviews. George Lanik,  
19 and Jose Ibarra are out of that branch. So we have  
20 two members there.

21 Don Marksberry is out of Pat Baranowski's  
22 branch, DRAA, Division of Risk Analysis. I never  
23 remember the two A's, but Scott Newberry's division.  
24 Don has got extensive experience. Both Don, and  
25 George, and Jose, were in AOD when it came to

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1 Research.

2 And Jitendra Vora is from the Division of  
3 Engineering Technology and Research, and provides a  
4 user perspective into the process. And Allan Barker  
5 is in the Inspection Branch in NRR.

6 MEMBER APOSTOLAKIS: You don't have  
7 anybody from Human Factors or Performance?

8 MR. ADER: No, we don't.

9 MEMBER APOSTOLAKIS: Shouldn't you? I  
10 mean, a lot of the operating experiences are in stupid  
11 things that people do.

12 MR. ADER: We have entrees into -- well,  
13 no, your point is good. Jose has within his branch  
14 the human factors team in research.

15 MEMBER APOSTOLAKIS: Well, there should be  
16 a guy on the task force. It is a very important  
17 element of not only the evaluation of the experience,  
18 but also what we discussed earlier, and how can one  
19 set up a mechanism of dissemination and evaluation of  
20 what the licensees are doing and so forth.

21 MR. ADER: Well, your point is taken. Jay  
22 Brzynski I had talked to early on to try to get some  
23 input on part --

24 MEMBER APOSTOLAKIS: Well, Jay would be  
25 good, especially now that he knows what the safety

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1 culture is.

2 MR. ADER: Well, fortunately or  
3 unfortunately, Jay was then pulled off on the safety  
4 culture, but I was tapping him early on in some of my  
5 thinking on some of this.

6 So he is not on the task force, and I  
7 would agree that Human Factors is a beast that is  
8 important.

9 There are several mental notes as I go  
10 through that I keep trying to make, and to say --

11 MEMBER APOSTOLAKIS: And they are also  
12 written.

13 MR. ADER: And written, and there are  
14 other areas --

15 MR. IBARRA: Just one thing --

16 CHAIRMAN BONACA: If you would identify  
17 yourself.

18 MR. IBARRA: Jose Ibarra, and I am the --

19 MEMBER APOSTOLAKIS: Oh, you are this one.

20 MR. IBARRA: Okay. Like Charlie said, Jay  
21 Brzynski is in our group, and we were envisioning at  
22 least having him look at it, okay? But me and George  
23 have been involved with performance, human performance  
24 assessments before.

25 So we are not thoroughly new to that area

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1 either at AOD.

2 MEMBER SIEBER: It seems to me if my  
3 memory serves me correctly that most of the  
4 information notices, almost all of them, all of the  
5 manufacturers notices, or equipment producers'  
6 notices, and that more than half of the INPO notices  
7 which comprise a pretty good percentage of operating  
8 experience had to do with component failures, as  
9 opposed to human errors.

10 And so you ended up with a process that  
11 looked at the component to see if you had it, and if  
12 you had that model number, and where it is installed  
13 could create the same kind of situation that occurred  
14 in some other plants.

15 So the way the processes work, everybody  
16 tends to report equipment problems more frequently  
17 than human errors, because human errors are more  
18 difficult to say that this is going to be a generic  
19 sweeping kind of error throughout the industry.

20 Everybody has got different procedures and  
21 everybody has got a different culture, and so forth,  
22 and those usually come out in story form after some  
23 event.

24 And so just as a picture of what is out  
25 there as far as operating experience documents, in my

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1 mind, and Graham, you can either support or deny this,  
2 but it seemed to me to be more equipment oriented than  
3 --

4 MEMBER APOSTOLAKIS: But that was the case  
5 with LERs, too. And people who tend to report that  
6 the pump failed without really saying why.

7 MEMBER SIEBER: It depends on the  
8 licensee.

9 MEMBER APOSTOLAKIS: And things are  
10 improving now.

11 MEMBER SIEBER: It depends on the  
12 licensee. Some get it and some don't.

13 MR. ADER: But I do want to make the point  
14 that people on the task force are a very good  
15 representation I think of both the operating  
16 experience groups and the users.

17 But we are not going to limit ourselves to  
18 go off in a room and do all of this independently. So  
19 even in developing the objectives and attributes, we  
20 did a pretty wide range of the technical staff to get  
21 comments on that, and we will be doing that as we go  
22 through it.

23 I do recognize that human factors is a  
24 piece of it, but as someone else pointed out, it is a  
25 pretty large task force.

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1                   MEMBER WALLIS: You have got objectives  
2 and attributes and so I think you would have to  
3 somewhere consider mechanisms for making it happen.  
4 Are you going to be involved with mechanisms of making  
5 things happen, and not just what you would like to  
6 have happen?

7                   MEMBER APOSTOLAKIS: That's why you need  
8 a human factors.

9                   MR. ADER: Let me hold that, the answer to  
10 that question until I get further back into the  
11 presentation.

12                   CHAIRMAN BONACA: Yes. Go ahead.

13                   MR. ADER: And even though it doesn't look  
14 like it on here, we do have what I would call a  
15 regional representative. David Beaulieu was about two  
16 months ago the senior resident who happens to be at  
17 headquarters now, and so I also felt that the regional  
18 perspective on the task force was important, and that  
19 we were able to do that with somebody that has a  
20 headquarters designation, but that has only recently  
21 come to headquarters.

22                   The task force reports for guidance and  
23 management support, and management endorsement to a  
24 steering committee, which is made up of the three  
25 individuals, Jack Strosnider, Bill Borchardt, and Jim

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1 Caldwell from Region III.

2 The approach that we are taking in  
3 tackling this issue, and as I mentioned earlier, we  
4 are looking at operating experience much more broader  
5 than just looking at the groups to process. I mean,  
6 we are going to the end-users, be it the tech staff,  
7 and the headquarters, the regions, or in Research in  
8 NRR.

9 And how do they get involved, and what  
10 type of information do they need, and the inspectors  
11 are a piece of a broad operating experience program.  
12 So we are not focusing just on here are the groups  
13 processing stuff, and how can we coordinate better.

14 The effort has been divided into two  
15 phases; an objective phase, where we are trying to  
16 define the objectives and the attributes of an agency  
17 operating experience program, and we will get in on  
18 those, and then we will proceed into an assessment  
19 phase to look at what sort of functions, lower level  
20 functions, do you need to achieve those objectives.

21 And what are we doing now, and where are  
22 the gaps, and where are the overlaps, and then we will  
23 make recommendations to the steering committees out of  
24 the task force.

25 MEMBER WALLIS: At the same time, you have

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1 got to be looking at where operating experience was  
2 not handled properly, and whether gaps or faults in  
3 the present system, and this looks like you are  
4 looking at some ideal system, and what it might be.

5 It is not clear that there is a problem  
6 unless you look at where there was a history of  
7 operating experience not being successfully shared and  
8 used.

9 MR. ADER: In some of our discussions  
10 already, there have been events out there that have  
11 been recent that we have kind of walked through in  
12 discussions; and here is where this one went, or how  
13 it was handled.

14 MEMBER WALLIS: So you have done this with  
15 a problem definition phrase?

16 MR. ADER: We have done it to help us  
17 identify what we think or what we thought should have  
18 happened or what happened and what didn't happen. We  
19 are looking at -- and I doubt that we will do a real  
20 extensive review of going back and looking at hundreds  
21 of events, but we need to look at a number of them to  
22 understand how ones that were maybe successful got  
23 handled, and however ones that people have been  
24 complaining, well, that took too long for somebody to  
25 deal with.

1                   Or there was no follow-up to help us jell  
2                   our thoughts, and then as we go out in the assessment  
3                   phase and start developing a little more details and  
4                   discussions, I would anticipate that we would be  
5                   asking some of the broader technical staff where they  
6                   see things were working well, and where they see  
7                   things not working well, and what they would be  
8                   looking for.

9                   We finished our initial objective phase,  
10                  and I believe you have in the package the memo that I  
11                  sent to the steering committee with the objectives and  
12                  attributes.

13                  We are in the process of -- we have  
14                  already moved into the assessment phase, although we  
15                  are also awaiting for comments, and hopefully an  
16                  endorsement from the steering committee.

17                  We briefed them last Friday and there were  
18                  no major issues that they raised, and so we are  
19                  comfortable enough to just keep moving along until e  
20                  hear something different. And any comments I think  
21                  would be minor.

22                  MEMBER LEITCH: Charlie, as I understand  
23                  it then, this is primarily directed, this slide, is  
24                  primarily directed towards the Agency's response to  
25                  operating experience, as contrasted to the licensee's.

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In other words, when you say end user, the end user might be their resident inspector out in the plant, and does he know what is going on, and other plants so that he can ask the right questions at that particular plant; is that a correct understanding of that?

8

9

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11

MR. ADER: yes, most of this focus, although when I put end-users in here as you will see in the objectives, it is on the slide and in the text that goes with it, an end-user is a licensee, too.

12

13

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15

But we have been focusing more on -- you know, let's get our internal processes aligned. You know, are we getting the right information to the right people.

16

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Is there a clear follow-up. If there is a decision that something needs to be done, is there - - is it going to get done, or is it going to get tracked, or is somebody going to make a decision that nothing more needs to be done, and that is transparent, as opposed to something being sent out there and then move on to the next.

23

24

25

MEMBER WALLIS: So the customer for this is really there in the outside world, and the end-user is in the outside world; and so your evaluation of

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1 whether or not you have got program improvements  
2 really should be made by them.

3 You can't really just look at yourselves  
4 and say we are going to have this world that we  
5 construct, and it is going to be a better world. You  
6 have got to have someone out there in the real world  
7 saying are these improvements really going to help me.

8 MR. ADER: Let me answer that. There are  
9 two pieces there. You have touched on two words, and  
10 --

11 MEMBER WALLIS: Well, you see what I am  
12 getting at.

13 MR. ADER: We recognize that the licensees  
14 are the ones that ultimately will make the changes  
15 that will improve safety.

16 MEMBER WALLIS: Right.

17 MR. ADER: Our processes can help  
18 facilitate that, and identify information that we  
19 should have access to, or in the licensing inspection  
20 process identify areas that we ought to be looking  
21 further.

22 So there is that piece of it. They are  
23 clearly a key end-user. As I said, a lot of what we  
24 are looking at initially is trying to look at the  
25 internal processes, and are we getting the right stuff

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1 to our staff.

2 MEMBER WALLIS: So who is going to make  
3 the decision about whether these are improvements are  
4 not?

5 MR. ADER: The recommendations -- I hate  
6 to do this, but can I hold the answer --

7 MEMBER WALLIS: You see what I mean? And  
8 I think the agency can go around and say, oh, we have  
9 wonderful things to do, and they don't really make any  
10 difference to the licensee.

11 Therefore, they are not really  
12 improvements, even though they appear to be. So there  
13 has got to be that check from the person who is  
14 actually going to benefit from the improvements.

15 MR. ADER: There is a number of the  
16 improvements that I think internally we can judge, and  
17 are we coordinating being more efficient, and are we  
18 communicating, and are we following up on things  
19 internally to deal with some of these issues, and that  
20 I do think we can judge -- you know, management inside  
21 and part of the process, one of the last attributes  
22 that we were recommending is that you have a periodic  
23 assessment of the program. Can you look at that, and  
24 are the recommendations that got implemented  
25 effective.

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1           And is the information getting to the  
2 staff that feels that they need it, and in a form that  
3 they feel is useful to them. The larger question on  
4 are you making improvements of safety is an issue that  
5 others are dealing with, and how do you trend, and how  
6 do you make those decisions.

7           As I mentioned earlier, one of the  
8 stakeholders, his licensees, if we are providing  
9 information out to them, are we providing it in a form  
10 that they find useful.

11           I think that is the question that we would  
12 be asking. I have had some very preliminary contacts,  
13 because we draw some of our operating experience from  
14 INPO, and we want to interact with them as we get a  
15 little bit further on.

16           MEMBER WALLIS: Well, it is not just  
17 providing the information when my colleague here was  
18 saying INPO. It doesn't just provide information.  
19 You actually go to the plant and find out whether they  
20 used it or not.

21           MR. ADER: Yes.

22           MEMBER WALLIS: And that is part of your  
23 charter as well?

24           MR. ADER: The one recommendation is, or  
25 the lessons learned task force recommendation is to

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1 look at our requirements on the user review of  
2 information. It is too early for me to say where we  
3 are going to go in a recommendation, and where the  
4 agency would go with that recommendation.

5 Enhancing or deciding when to follow up  
6 with inspections on certain operating experience issue  
7 is a question on the table, and when should that be  
8 done. A decision needs to be made when you do it and  
9 when you just rely on maybe routine inspections or  
10 their submittals.

11 MEMBER LEITCH: Your best way into that  
12 area would probably be through the licensee's  
13 corrective action program, because as these operating  
14 experience issues come in, they wind up in the  
15 licensee's corrective action program.

16 So putting them in the corrective action  
17 program is one thing, and that is relatively easy.  
18 But getting the corrective action program items closed  
19 is the area that you are addressing now.

20 And there are a number of performance  
21 indicators that most licensees have on their  
22 corrective action program; the age of the backlog, and  
23 open items, and those types of things that would be of  
24 interest in that regard.

25 MR. ADER: Well, we are within the

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1 charter, and we are trying to look at -- I mean, we  
2 want to look at things broadly, and so we don't want  
3 to exclude things. But we also to meet our objectives  
4 and goals, and what we have been tasked with, we can't  
5 expand well outside.

6 We are trying to make sure that we look at  
7 the operating experience program, and I would say in  
8 that broader sense, and not the inspection program, or  
9 not some of the other areas.

10 We will touch on some of those as the  
11 usefulness of information, and how decisions and  
12 feedback are made.

13 MEMBER SIEBER: Is one of the attributes  
14 that you are going to assess the timeliness with which  
15 you process operating experience information and  
16 distribute it?

17 MR. ADER: Yes. Let me move through or  
18 into the objectives, and the attributes real quickly.

19 MEMBER SIEBER: I see you looking at your  
20 watch.

21 MEMBER WALLIS: Well, this seems to have  
22 grown out of the Davis-Besse experience, but the  
23 Davis-Besse experience had nothing to do with this  
24 sort of operating experience.

25 It was the failure of the licensee to

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1 learn from their own experience, which was the  
2 problem. It may well have been a problem. And the  
3 failure to recognize their own experience and do  
4 something appropriate with it wasn't really a  
5 disseminated experience.

6 MEMBER APOSTOLAKIS: Wasn't it also a  
7 failure to recognize the relevance of the French  
8 findings to their reactors?

9 MEMBER SIEBER: No.

10 MR. ADER: There were different pieces of  
11 it, and their failure to recognize and follow up and  
12 put the pieces together was one. But I think the  
13 lessons learned task force looked at our own program  
14 and saw that it was out of date.

15 I mean, one of the obvious moving forward  
16 to the assessment phase and the completion of the  
17 assessment phase -- you know, one of the obvious  
18 recommendations is that you look at Management  
19 Directive 8.5, which is still in existence, and which  
20 governs the operating experience program, and it still  
21 tasks AEOD with most of these functions.

22 And the last time I checked, AEOD is not  
23 around and nobody is -- there was nobody tasked with  
24 that management directive for responsibility for  
25 updating it.

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1           And as I mentioned, we have completed our  
2 initial efforts, and in the middle of April, we had  
3 some draft objectives and attributes. We sent them  
4 out for comment to the internal stakeholders, and all  
5 of the technical divisions within NRR Research, and  
6 the regions, and then a number of other points of  
7 contact that we have developed with SER and NMSS got  
8 a copy, and some others.

9           WE got comments back from most of the  
10 people that we sent it to. We reviewed those  
11 comments, and incorporated a number of them, and a few  
12 of them are what we considered a lower tier type of  
13 comment, and we are holding those and looking at them  
14 in the assessment phase.

15           One comment that I will come back to at  
16 the end, and which was raised by a couple of  
17 commenters, that deserves a little bit more attention.

18           MEMBER APOSTOLAKIS: When was this sent to  
19 us? Was this sent to all the members?

20           MEMBER SIEBER: I don't know about all the  
21 members, but I asked of it.

22           MR. CARUSO: No, it was not provided to  
23 you. It was just provided to the staff about 2 or 3  
24 weeks ago, I believe.

25           MR. ADER: Which piece? The objectives

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1 and attributes?

2 MR. CARUSO: The objectives and  
3 attributes.

4 MEMBER SIEBER: Yes, all of this is dated  
5 late April.

6 MR. ADER: Yes, the objectives and  
7 attributes were provided to the committee about the  
8 same time, just shortly after I provided them to the  
9 steering committee.

10 MEMBER APOSTOLAKIS: Which was?

11 MR. ADER: April 30th is what the memo was  
12 dated.

13 MEMBER APOSTOLAKIS: So we haven't really  
14 read them.

15 MEMBER SIEBER: Well, I don't think you  
16 have it. You know, what is in Tab 4 here is not all  
17 of the document.

18 MR. CARUSO: No, you have got everything  
19 in Tab 4.

20 MEMBER SIEBER: Oh, you do?

21 MR. CARUSO: Yes.

22 MEMBER APOSTOLAKIS: And when will we have  
23 a chance to comment on this?

24 MR. CARUSO: The intent is that this  
25 meeting is a chance to comment, and later on there

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1 will be additional follow-up meetings to report on the  
2 progress of the task force.

3 MR. ADER: The schedule that was in the  
4 action plan was to -- we initiated started the 1st of  
5 April, and we needed to have the draft to the steering  
6 committee at the end of April. So I was under those  
7 time lines.

8 This meeting was scheduled at this time,  
9 which did seem like a good opportunity to brief the  
10 committee, anticipating that informally through  
11 transcript that I would get members' comments.

12 MEMBER APOSTOLAKIS: Are we going to write  
13 a letter at some point?

14 MEMBER SIEBER: We are not planning on one  
15 at this time because we have not had the document.  
16 But sooner or later, I think we need to write a  
17 letter, because I think that this is a very important  
18 subject.

19 MEMBER APOSTOLAKIS: It is very important.  
20 By the way, it is not your --

21 CHAIRMAN BONACA: Well, it says that you  
22 are the cognizant member.

23 MR. ADER: That is the fault of the rookie  
24 secretary.

25 MEMBER APOSTOLAKIS: So this is now

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1 operating experience for us?

2 MR. GILLESPIE: George, we will be happy  
3 to come back and talk to anybody who wants to talk to  
4 us.

5 MEMBER APOSTOLAKIS: But will you be happy  
6 to request a letter at some point?

7 MR. GILLESPIE: Yes, remember that we are  
8 committed to this. One of the things that I said was  
9 that the best Charlie is going to be in a position to  
10 do is discuss it right now. He is accumulating  
11 questions and not answers.

12 MEMBER SIEBER: Right.

13 MR. GILLESPIE: And I think you are going  
14 to find that the task force -- and, Charlie, you are  
15 in the question collection world right now.

16 MEMBER SIEBER: Yes.

17 MR. GILLESPIE: And I know that you are  
18 personally interested in this, and if you would see  
19 fit to write a letter to highlight the points that the  
20 committee specifically is interested in, I think that  
21 this is a good time to probably do that.

22 MEMBER APOSTOLAKIS: Well, we have not had  
23 a chance to review it, but at some point you will send  
24 something to the Commission won't you?

25 MR. ADER: I am anticipating that we will.

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1 When this was initiated, it was at a level for the  
2 office directors, but the new Chairman has expressed  
3 I think in his words high expectations for this task  
4 force.

5 So I do anticipate providing, and that in  
6 the process a report would go up to the Commission.

7 MEMBER APOSTOLAKIS: What si the time  
8 frame?

9 MR. ADER: Well, we owe a draft to the  
10 steering committee at the end of September. The file  
11 would be in the November time frame.

12 MEMBER APOSTOLAKIS: Would that be a good  
13 time for us to write a letter?

14 MEMBER SIEBER: I would think so. It is  
15 probably going to go up in the form of a SECY paper,  
16 right?

17 MR. ADER: At the November time frame, it  
18 would be to the steering committee, and the steering  
19 committee would act. And I would anticipate a SECY  
20 paper. I am not sure whether it would be prior to the  
21 steering committee giving its final go ahead.

22 They may want to give us the go ahead, and  
23 they may want to be the author, which would put it in  
24 the December time frame.

25 MEMBER SIEBER: But on the other hand, you

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1 are going to have a draft in advance of that, and that  
2 is what we ought to be reviewing and commenting on.

3 MR. ADER: I think for the committee, our  
4 recommendation to the steering committee was here are  
5 some proposed objectives and attributes. As we go  
6 through the assessment phase, we may revisit some of  
7 these, and there may be issues that would say that we  
8 would have to refine them.

9 As we get closer to the draft report or  
10 have the draft report, I think that would be the time  
11 that would probably be most valuable. to me and to the  
12 task force to have the committee's comments.

13 I mean, any comments that have been  
14 offered here are going to help us as we go forward.

15 MEMBER APOSTOLAKIS: And when will that be  
16 with the draft report?

17 MR. ADER: The draft is due to the  
18 steering committee at the end of September.

19 MEMBER APOSTOLAKIS: So you are talking  
20 about a September meeting?

21 MEMBER SIEBER: Yes. I think right now  
22 what has been done is the formulation and tabulation  
23 of what it is that you are going to do more than  
24 anything else, and it is hard -- that is a good thing  
25 to comment on in case there is overlap or missing

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1 pieces.

2 On the other hand, I would feel more  
3 comfortable if it were better defined and we have a  
4 little bit of time to think about what our response  
5 is.

6 MR. ADER: I recognize the timing was such  
7 that there wasn't time to have the subcommittee, and  
8 then the full committee, in the time frame, at least  
9 the initial month there was -- it probably would have  
10 been difficult to do, and we didn't get the -- you  
11 know, we just started on the 1st of April, and we  
12 spent a week or so just trying to walk through some of  
13 the issues and get different perspectives before we  
14 really got into developing objectives.

15 So we didn't complete those until the  
16 middle of April, and we are getting the broader  
17 comments.

18 MEMBER SIEBER: Well, I appreciate the  
19 opportunity to hear about it now, because it gives us  
20 time to think. And so it is helpful and not wasted  
21 time in my opinion, and we should perhaps move on.

22 MR. ADER: The three objectives we defined  
23 for operating experience, and you will find in the  
24 memo that is in the package, there is some text that  
25 goes with it and that expands a little bit on the

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1 objectives.

2 But the first one, and really the primary  
3 reason for an operating experience program is to make  
4 sure that information is collected, evaluated, and  
5 applied to enhance safety.

6 I say enhanced, because the agency's  
7 strategic plan that is now maintained, there is a  
8 draft that has enhanced, and I understand --

9 MEMBER WALLIS: This gets to my earlier  
10 point here. I looked at this slide ahead of time, and  
11 you have to ensure, but you can't just do ensure  
12 without creating a mechanism for it to happen. You  
13 have to figure out how to make it happen.

14 MEMBER SIEBER: Yes.

15 MR. ADER: In areas --

16 MEMBER APOSTOLAKIS: That's a plan right  
17 now.

18 CHAIRMAN BONACA: And that is what I am  
19 very much interested in.

20 MR. GILLESPIE: Let me give you an  
21 example, and let me get to the core of it.  
22 Unfortunately, I have a background in the inspection  
23 program for 10 years, and I am going to jump to  
24 implementation, which is pass what Charlie is talking  
25 about.

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1                   So let me out of fairness say this, and  
2                   that is that right now the inspection program allows  
3                   a certain selection of samples if you would on the  
4                   part of the inspector when he is planning his routine  
5                   inspections.

6                   Those right now tend to be inspection  
7                   samples that are informed only by the experience of  
8                   that facility, and not necessarily informed by  
9                   operating experience on breaker and valve failures at  
10                  peer facilities, or with these big companies that we  
11                  have now, where procedures are unified across  
12                  facilities.

13                  This would get to procedure problems that  
14                  you can identify once you get a docket number. Is it  
15                  a peer problem, or is it a company problem? The  
16                  computer allows you to trend that kind of data any  
17                  number of ways.

18                  So now the inspector has an informed  
19                  sample, which is something that we do now by inspector  
20                  obvious. An inspector at one plant finds something  
21                  wrong, and he calls his inspector buddy at another  
22                  similar plant, and he looks.

23                  And all of a sudden things start to jell.  
24                  How do we capture that kind of process formally?  
25                  Well, somehow you have to get operating experience,

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1 and not just necessarily events, but experience to the  
2 right people so they can inform that decision that  
3 way.

4 So we talked earlier as George brought up  
5 the reviewer, but this is kind of how if we let  
6 Charlie do what he is going to do, you might be able  
7 to inform that end-user, who right now has a void  
8 relative to the kind of sample selection on what he is  
9 going to look at, just in the routine program.

10 And by the way, if we do it in the routine  
11 program, the licensee will do it routinely also,  
12 because all of a sudden, he will now look at that same  
13 data, because we are getting a smarter sample, which  
14 goes to some of the other bullets of effectiveness and  
15 efficiency of current programs.

16 Now, I jumped ahead of where Charlie was,  
17 because I am a implementation person, and I had a  
18 particular interest in this kind of implementation,  
19 but that is where I see this kind of reevaluation of  
20 the usefulness.

21 This is different than reacting to an  
22 event which was important has to be a generic letter.  
23 This is acting to the trending of operating  
24 experience.

25 MEMBER APOSTOLAKIS: It is a second tier.

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1 MR. GILLESPIE: It is a second tier,  
2 exactly, George. This is the next logical evolution  
3 of what the agency has been doing over the last 2  
4 years.

5 MEMBER APOSTOLAKIS: The great interest  
6 here is that this is truly now getting into  
7 organizational performance.

8 MEMBER WALLIS: Well, you see what I am  
9 getting at. Most of what I see in these slides is  
10 wouldn't it be nice if we had these things. But until  
11 you can actually figure out how to make it happen to  
12 finish the job.

13 MR. GILLESPIE: And so some of us have  
14 actually said that if you can get us what we need to  
15 the user, we think the user is smart enough that we  
16 can really -- the system is set up to use it if you  
17 can inform the system already relative to picking  
18 inspection samples, and asking RAIs, and this really  
19 is the next evolution of what we have been doing.

20 CHAIRMAN BONACA: Well, I would say that  
21 most utilities have in place the process for accepting  
22 this information and using it, and whether the  
23 utilities differ very much from plant to plant is how  
24 effective it is being used.

25 And if they all go through the same

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1 motions, some of them close it in a miserable way at  
2 times, okay? And saying, oh, this is a message about  
3 this certain material for this kind of valve, and that  
4 is a PWR, and so therefore this is a PWR, and which  
5 has nothing to do with the closure.

6 We have seen this happen and it really  
7 means there is a bad culture there that says that I  
8 want to close this issue, and then finding some reason  
9 for doing so.

10 But others are thinking in general that  
11 from what I have seen when there has been success has  
12 been when there was very specific requirements that  
13 tie in.

14 For example, I always thought the Part 21  
15 was a very effective system, because it got back to  
16 the licensee, and the licensee had legal obligations  
17 to consider, and therefore the evaluation was done  
18 more thoroughly.

19 So you may want to consider what you need  
20 to do to have that linkage and to make it effective.

21 MEMBER APOSTOLAKIS: And one of the issues  
22 that exists I think, at least from my discussions with  
23 the industry people, is that this Tier 2 information,  
24 there is too many of them, and sometimes we don't know  
25 which one to pay more attention to than the others.

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1                   And the particular issue that comes to my  
2 mind is that in a particular utility there were  
3 concerns how to prioritize so they could do a root  
4 cause analysis on the most important ones, where you  
5 really learn whether things are relevant.

6                   So the volume of information that reaches  
7 the licensees is an issue here and what to do with  
8 them, you know.

9                   MR. GILLESPIE: Additionally, George, the  
10 volume of information we are getting is an issue.

11                   MEMBER APOSTOLAKIS: That is easy for you  
12 to say.

13                   MR. GILLESPIE: In fact, we have probably  
14 not caught up with the sophistication that some  
15 licensees have, the good licensees that are looking at  
16 other databases and doing this kind of trending. And  
17 so we need to catch up a little bit here on this  
18 second tier.

19                   MEMBER APOSTOLAKIS: These objectives,  
20 however, I would say that they are self-evident.

21                   MR. BECKNER: This is Bill Beckner, and  
22 let me sort of defend what Charlie is doing here. We  
23 have got a lot of --

24                   MEMBER APOSTOLAKIS: We are not attacking  
25 what Charlie is doing. We are just excited.

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1 MR. BECKNER: No, I understand. We would  
2 like to jump to the how, and I think Graham is right,  
3 but the problem is that we have got a lot of processes  
4 in place.

5 And I think when I started this before the  
6 task force, we got a lot of anecdotal problems that  
7 got me started, and we started jumping on how to fix  
8 these anecdotal issues about silos not communicating,  
9 and so I think what Charlie is trying to do here, and  
10 when we started writing the task force, is let's step  
11 back to first principles and get objectives, and  
12 Charlie quickly went to attributes.

13 And I guess the need for that is to  
14 ultimately when we do figure out how, we can go back  
15 and say, well, does that how really meet our  
16 fundamental principles.

17 So, yes, I am a little bit frustrated,  
18 too, that we would like to move faster, but Charlie  
19 has only been working for about a month, and we gave  
20 him a lot of help just on these simple words here, and  
21 then we got to the attributes.

22 MEMBER APOSTOLAKIS: I think there is a  
23 misunderstanding. We are not really criticizing.

24 MR. BECKNER: And I don't mean to be on  
25 the defensive either.

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1 MEMBER APOSTOLAKIS: I just realized  
2 myself how important this is, and I am trying to  
3 figure out when we are going to write a letter, and --

4 CHAIRMAN BONACA: I guess the point that  
5 I was trying to make, however, is that isn't it true  
6 that the only words that are new here are ensure, and  
7 ensure, and ensure?

8 MEMBER APOSTOLAKIS: Well, in one month,  
9 you only came up with ensure?

10 CHAIRMAN BONACA: Well, what I want to say  
11 is --

12 MEMBER APOSTOLAKIS: Then you address that  
13 2 or 3 times.

14 CHAIRMAN BONACA: Anyway, it was always  
15 collected, and it was always necessary, and to the  
16 degree or extent that it has been done, that is an  
17 issue, and to ensure the process takes place, that is  
18 really the key.

19 MEMBER APOSTOLAKIS: That's why we need a  
20 letter.

21 MR. BECKNER: I think you are right. Some  
22 of this stuff is all motherhood, but a lot of it is  
23 not getting done.

24 MEMBER APOSTOLAKIS: I agree with that.

25 MR. BECKNER: I think we collected pretty

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1 good, and we evaluated it somewhat and we tell people  
2 about it, but do we communicate.

3 MR. ADER: Even as we went through in this  
4 first month and looked or kind of walked ourselves  
5 through the processes, there were some things that  
6 kind of just fell right out on the table that didn't  
7 take a lot of effort to realize that there were some  
8 shortcomings.

9 Let me try to go through these, and let me  
10 get to the attributes, because this is what I looked  
11 at, and the time management was terrible, because this  
12 is really where I would like to spend some time  
13 talking to the committee.

14 MEMBER APOSTOLAKIS: Which slide?

15 CHAIRMAN BONACA: And we are at the end.

16 MR. ADER: I am on the proposal  
17 objectives. Safety is the key one that we are doing  
18 the program for. So if you are going to make a  
19 balance on where you are going to spend resources or  
20 anything else, that is the key.

21 But it also contributes to internally, and  
22 in our PRAs in making realistic decisions. It may  
23 provide feedback on our inspection processes,  
24 licensing processes, and are we being effective and  
25 efficient.

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1                   And then communicating to the external  
2 stakeholders that it is an attribute or an objective  
3 that is important. Moving on to the attributes. I  
4 mean, an obvious one when you look at it is roles and  
5 responsibilities have to or should be clearly defined.

6                   MEMBER APOSTOLAKIS: This is now for the  
7 NRC?

8                   MR. ADER: These are attributes -- yes, it  
9 is for the NRC reactor --

10                   MEMBER APOSTOLAKIS: It is like the  
11 example that you gave us earlier, that there is a  
12 document referring to the AEOD, and the AEOD does not  
13 exist.

14                   MR. ADER: yes. And there was nobody that  
15 said that you are the coordinator of all of this when  
16 it was broken up, or if it was, we have all forgotten  
17 who that individual is.

18                   So clearly defining roles and  
19 responsibilities, and if one group does an evaluation  
20 and sends it to another group, what is the  
21 responsibility with that piece of information, whether  
22 it is a short term evaluation or a long term study.

23                   And if they don't know what they are  
24 supposed to do with it, and they get it for  
25 information, then it is an ad hoc process. So clearly

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1 defining those is key.

2 This issue on central clearing house or  
3 that we have an efficient process for collecting, and  
4 storing, and retrieving information, retrieval may be  
5 somebody on a tech staff that doesn't need information  
6 on a daily basis, but if he is looking at an issue,  
7 and says that I want to go back and look at the long  
8 term experience on a particular pump, or a type of  
9 system, can he pull that information down easily so he  
10 can think through the process and maybe get some  
11 insights that the reviewers overlooked.

12 MEMBER APOSTOLAKIS: Now, you are talking  
13 about screening and you are talking about  
14 communication. Where is the evaluation?

15 MR. ADER: The next page, the next slide.

16 MEMBER APOSTOLAKIS: Okay.

17 MR. ADER: Screening -- I mean, the  
18 current process, there is the daily reviews of  
19 operating experience that comes in, and they do a  
20 screening, and is there something that needs follow-  
21 up, and we may need more information to follow up.

22 Mario, are we real tight on time? I can  
23 walk through it real quick, or --

24 CHAIRMAN BONACA: We have 10 more minutes,  
25 and then we will have to close it down.

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1 MEMBER SIEBER: I would be happier if you  
2 had the word timely stuck into the last three bullets.  
3 You have it in the last one, but one of the problems  
4 with operating experience that comes from the NRC is  
5 that it is slow.

6 Now, the ASP program might take a year  
7 before something comes out of there and that is not  
8 timely enough.

9 MR. ADER: It is timely on the next slide,  
10 too.

11 MEMBER SIEBER: Well, stick it in every  
12 place that you can, and that would sound better.

13 MR. ADER: So there is some screening that  
14 has to be done at several different steps. Some of  
15 these are cross-cutting, and it is not necessarily a  
16 sequential process. You screen for short term follow-  
17 up, and there is a screening for what you can do in  
18 the ASP program.

19 The group in my division that does long  
20 term studies, they screen on what they want they want  
21 to go after. Communications is clearly that you need  
22 timely communications, whether that is internal, and  
23 you are getting it to a technical branch; or if it is  
24 external and to the public, and to the world.  
25 Communication cross-cuts all through the process, you

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1 know.

2 Evaluations is on the next slide. Timely  
3 evaluations.

4 MEMBER SIEBER: Good.

5 MR. ADER: And I have it a third time.

6 MEMBER SIEBER: Okay.

7 MEMBER APOSTOLAKIS: Is the root cause  
8 analysis part of the evaluation?

9 MR. ADER: That would be -- you know,  
10 during a thorough understanding of the event.

11 MEMBER APOSTOLAKIS: I think you should  
12 put the words there. This is really geared towards  
13 operating experience that comes in the form of data,  
14 lots of data, and so I wanted to do a planned  
15 analysis, and this and that.

16 But there may be one event which is very  
17 important, and you really want to --

18 MR. ADER: In the text, root cause is in  
19 there, though everybody can't see it. This is the  
20 longest one that has some text in it, and it expands  
21 on what we mean here.

22 And one of the issues is again that you do  
23 the evaluations thoroughly and timely. The next one  
24 down is decisions. It is that issue that I raised  
25 before, that if there is a decision on an event, maybe

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1 after further evaluation someone can make a knowledge  
2 decision that I don't need to do anymore.

3 But those decisions need to be made, and  
4 they need to be made in a timely manner, or maybe you  
5 need to follow up with the licensee. And when I get  
6 into the decisions on implementation and appropriate  
7 action would come the questions of is this something  
8 that we need to communicate in a stronger regulatory  
9 document than an information notice to the industry.

10 And do we need to follow up to see that  
11 they did indeed implement it. Those types of  
12 decisions need to be part of the process. It may not  
13 be on all events, but there may be selected ones that  
14 needs to be in that process that people are thinking  
15 through. And that it is clear and transparent, and  
16 that it is their responsibility.

17 MEMBER WALLIS: Will you be duplicating to  
18 some extent what INPO does, or will you have some kind  
19 of indication of --

20 MR. ADER: We draw on some information  
21 from them now, but there is duplication of efforts,  
22 too, on some things.

23 MEMBER WALLIS: I was just wondering if  
24 you could not draw more on their stuff and save  
25 yourself from having to do it all over again.

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1 MEMBER SIEBER: No, they have access to  
2 different things. They have access to Part 21  
3 reports, and --

4 MEMBER WALLIS: That were there is overlap  
5 if you could save --

6 MEMBER APOSTOLAKIS: Well, you can receive  
7 information from INPO and then subject it to this, and  
8 if that accelerates your process, that's fine.

9 MR. ADER: The last attribute on any  
10 program is you need -- the task force felt that you  
11 needed a periodic assessment. Somebody needs to go  
12 back and look occasionally to see is the program doing  
13 what we thought it did, or are there other areas for  
14 improvement, or efficiencies, or effectiveness.

15 And that has got to be part of it and  
16 would have to be defined somewhere. There were a lot  
17 of -- and as Bill said, we had a lot of help with  
18 words, and we took some of the help, and we considered  
19 some of the other help, but didn't incorporate it.

20 One of the comments that we got from  
21 several stakeholders is that the objectives and  
22 attributes should have independence in them. One  
23 commenter was actually specific and said that the last  
24 attribute on periodic assessment would have  
25 independence.

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1 Other commenters said it is not in the  
2 objectives and attributes. The task force has  
3 discussed this, and it is an issue, and when AEOD was  
4 broken up, the Commission put certain pieces of the  
5 program in Research, and to have an independence role.

6 As we walked through it, we said that as  
7 a task force that we would like to look at this issue  
8 a little more to understand where in this process  
9 independence will help make the program more  
10 effective.

11 We look at independence as a -- I looked  
12 at independence as a means to an end.

13 MEMBER POWERS: Clearly, is it  
14 independence that you are looking for when you are  
15 doing this, or is it diversity of view that you are  
16 looking for?

17 MR. ADER: Those types of discussions,  
18 what do you mean by independence, and what are you  
19 looking for. Are you looking for an audit function,  
20 or are you looking for a different point of view? Are  
21 you looking for the local tiered attribute of you are  
22 not under the day to day pressures of licensing  
23 inspections, and resources, and you don't get drawn  
24 off.

25 There are different aspects that people

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1 raise, and that was one of the problems that we were  
2 running into. When you would say independence,  
3 somebody would say, well, it is diversity of reviews,  
4 and somebody else would say, no, it is an audit  
5 function, and the third person would say you just need  
6 to be someplace where the resources don't get pulled  
7 into the daily fire.

8 So the task force said that we need to  
9 think about this a little bit more, and there is pros  
10 and cons to being -- and the further on you are  
11 removed, the more independent you are, but than you  
12 are less a part of the process.

13 CHAIRMAN BONACA: One question I had. Is  
14 this an intent to strengthen a process that already  
15 exists for communications to licensees' operating  
16 experience, or is it something new that will have a  
17 review, but you don't know yet?

18 I mean, are you going to use some existing  
19 vehicles to communicate this, or --

20 MR. ADER: If I had to guess, or actually  
21 I probably shouldn't, but we are looking, or we are  
22 going to look at that, and where our recommendations  
23 would be on whether the existing vehicles are  
24 appropriate, or there should be some other mechanism.  
25 I would be getting ahead of our assessment phase.

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1 CHAIRMAN BONACA: Because this is a  
2 significant issue for licensees. Already now from  
3 what I know, every licensee struggles with how many  
4 groups to keep on site, and who do they report to.  
5 And that operating experience, and depending on how it  
6 is being used, or whatever.

7 I know that there is a struggle there all  
8 the time organizationally. And how INPO is providing  
9 already some degree of organizational experience, and  
10 this may add to it, or it simply may use -- I am just  
11 curious to know if it can be used in some existing  
12 vehicles to bring this information to the plants.

13 MEMBER APOSTOLAKIS: Let's make sure that  
14 he staff is using it first and that would be the next  
15 question.

16 CHAIRMAN BONACA: Yes.

17 MEMBER APOSTOLAKIS: Incidentally, I  
18 understand that there is another group within the  
19 agency that is responding to a recent SRM, and they  
20 are looking at -- I am not sure if the words they are  
21 using is safety culture, but something related. And  
22 the possibility of performance indicators. I mean,  
23 the SRM is there.

24 MR. ADER: Some of the current efforts are  
25 -- you know, a lot of the current efforts in the

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1 operating experience arena, the programs that are out  
2 there are continuing on with a number of the  
3 activities.

4 MEMBER APOSTOLAKIS: No, but what I am  
5 saying is that these guys -- that somehow you should  
6 have a channel of communication with them. They  
7 should know what you are doing.

8 MR. ADER: Yes, and we have provided and  
9 have had discussions. When we ask for comments, a lot  
10 of the members went through their management chain,  
11 either people in their groups, or their direct  
12 managers, and sat down with them and walked through  
13 these objectives and attributes.

14 So I believe that all of the people that  
15 are actively involved, and even beyond that, are aware  
16 of what we are doing. We are trying to have a pretty  
17 broad base of people who are at least communicating  
18 with for an awareness, because I am not going to find  
19 stakeholders even internally, or pretty far out, but  
20 I am trying to keep what I call primary stakeholders  
21 at a manageable level.

22 And then having some others that I keep  
23 informed, and if they want to interact later in the  
24 assessment phase, we may be interacting.  
25 International programs deals with foreign operating

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1 experiences, and it is kind of conduit it through. I  
2 have had a discussion and there is contact there that  
3 I am keeping it for them, but we have not brought them  
4 actively into the process yet because we are not into  
5 that piece of it.

6 Every other day I think of somebody else,  
7 and that I should have had a discussion with them.  
8 The last slide, and I apologize for running over, is  
9 the schedule we are on. As I said, we have completed  
10 the initial objective phase, and we have given the  
11 objectives and attributes that you have the more  
12 details on in your notebook.

13 We are waiting for comments back, and  
14 hopefully we will get an endorsement in the middle of  
15 the month, but we have also just gone ahead and moved  
16 right into the assessment phase, and starting to do a  
17 more detailed mapping of what does this mean now and  
18 in a level that is a little bit more concrete, and  
19 that gets into an issue of timeliness. Is there some  
20 document that has defined it. We may not define that  
21 it has got to be 30 days. We may have some  
22 recommendations, but we may just be saying that people  
23 have to establish those guidelines.

24 MEMBER SIEBER: I think that some goals  
25 need to be set. Maybe not restrictions, but goals.

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1                   MEMBER WALLIS: Well, will this final  
2 report solve the problem, or is it just going to set  
3 out what needs to be done to solve the problem? It  
4 seems to me that you are not going to get on 11-30 to  
5 the point where you have the mechanism for  
6 implementation of all of these things.

7                   You are going to say this is what needs to  
8 be done, and then there is going to be a follow-up  
9 task, which is how do we make it happen.

10                  MR. ADER: We will be making  
11 recommendations for implementation, and to the extent  
12 that those are very detailed, or may require someone  
13 else to actually think through an implementation, a  
14 screening would have criterion thresholds.

15                  And whether we define them or we tell  
16 somebody else that they need to define, because that  
17 is an effort in itself, to get the right players  
18 together and say what should be our thresholds.

19                  To the extent that things are -- that we  
20 see something and we have those ideas, are clearly  
21 going to be provided. But that is a little ahead of  
22 where I feel comfortable to say what this final report  
23 is going to look like.

24                  I think I know the task that I am supposed  
25 to be looking at, and what the final answers are, are

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1 to be determined.

2 MR. BECKNER: This is Bill Beckner. We  
3 limited Charlie's scope a little bit just so when we  
4 get finished and not get into too much details, and  
5 not so much how, but who, and that is where it really  
6 gets interesting.

7 And so we figured that Charlie hopefully  
8 would tell us what needs to be done, and a little bit  
9 about how, but then we return back to line management  
10 to get the who and the implementation.

11 MEMBER SIEBER: Does anyone have any  
12 questions that they would like to ask?

13 MEMBER POWERS: Let me ask a question.  
14 One of the functions that the ACRS intemperately took  
15 upon itself about four years ago, or maybe three years  
16 ago, was volunteering to examine how the function  
17 provided by the former AEOD continued as it became  
18 part of RES.

19 And I am wondering if I were to say that  
20 the mere existence of this task force is testimony to  
21 the fact that that function is no longer as robust and  
22 as healthy under the aegis of RES as it was when it  
23 was an independent office, would I be terribly wrong.

24 And I think I understand that the  
25 objectives of this task force are a little bit

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1 different than the objectives of the former AEOD, but  
2 what I see is the roles and the responsibilities of  
3 that office have been lost or maybe not as clearly  
4 evident now that its function has been dispersed  
5 between some parts of NRR and some parts of RES.

6 And that there is no longer a champion for  
7 the role of analysis and evaluation of operational  
8 data within the agency that there was when there was  
9 a separate office. Would I be terribly wrong in  
10 making that conclusion?

11 MR. ADER: The broader question -- and I  
12 think the question that I would be asking is the  
13 operating experience parts of AEOD were spread between  
14 two offices. One of the studies done prior to AEOD  
15 being abolished looked at the resource level.

16 There were large numbers of resources, and  
17 some of it is apples and oranges, because people, when  
18 asked the question what are you spending on operating  
19 experience, had different views.

20 I don't know that there is a common  
21 definition then and now. But there were 150 or 170 if  
22 I remember the numbers right, devoted to operational  
23 experience.

24 What is a team in my division was a branch  
25 in AEOD, and I believe that the same is true in NRR,

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1 and what had been a branch is now a section. So that  
2 the broader question is the agency's operating  
3 experience program, with the efficiencies gained in  
4 AEOD, and were the expectations at that time achieved.

5 Is the program as effective as it was, or  
6 balancing efficiency and effectiveness, is it about  
7 where it should be. That is kind of the look that I  
8 would say that we may be doing as I remember the old  
9 paper in '98, and it said to look at this issue a year  
10 later.

11 And I don't think that look was ever done.  
12 So I would not limit it to just one office. I would  
13 look at the program broader.

14 MR. GILLESPIE: Dana, let me put it in a  
15 different context. I think what was split up in '88  
16 and it was in 18 different parts in that paper that I  
17 think got distributed to different offices, those  
18 parts were distributed and are still be carried on  
19 today, is the environment that we are regulating has  
20 then changed in the last 15 years.

21 If the environment has changed, and we are  
22 still doing the same thing we were doing, and the  
23 exact same products are being generated, are those the  
24 right kind of products for today's environment.

25 And if you go back in the late '80s, we

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1 had LERs coming out of our ears, and SCRAMs were  
2 always occurring at plants. Our thresholds have  
3 changed, and so part of what Charlie is looking at is  
4 what we transferred from AEOD, which has not changed  
5 a whole lot in 15 years, in today's environment and  
6 saying are we most effectively and efficiently using  
7 it.

8 And that's why I don't want to take on  
9 your question of robustness. I think our reports in  
10 the long term studies today are just as robust as they  
11 were then, but are we doing the right things for  
12 today's environment is a different question,  
13 particularly at the thresholds that we are at right  
14 now.

15 MEMBER POWERS: Yes, and I think that you  
16 are echoing something that what I said, is that there  
17 is no longer a champion. There is nobody evolving  
18 this function in response to the environment.

19 MR. GILLESPIE: I think it is fair to say  
20 that there is no one involved in the functions in  
21 response to the environment, and I think that is what  
22 we recognized ourselves, and that is why Charlie's  
23 group was put together.

24 MEMBER APOSTOLAKIS: But I think one of  
25 the issues that existed even when AEOD existed was the

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1 communication issue, and the dissemination of  
2 information.

3           There were a lot of reports being issued,  
4 but this committee in fact discussed it with AEOD  
5 representatives several times, and we did not  
6 emphasize at that time the internal stakeholders, but  
7 certainly the industry -- I don't think they were  
8 using much of the information that was generated, and  
9 we were discussing how can we improve that process.

10           So even if AEOD existed today, I think  
11 that this task force would be needed.

12           MR. GILLESPIE: Yes, it still would be,  
13 depending on -- that question still might not have  
14 been addressed properly in the last 15 years.

15           MEMBER POWERS: But that is not the  
16 question that I am posing. I am not questioning the  
17 need for this task force. I am asking the question  
18 about the functionality, and I think you have given  
19 the answer.

20           MR. GILLESPIE: We have not evolved.

21           MEMBER POWERS: Yes, it doesn't evolve  
22 because there is nobody that has the clear  
23 responsibility to see to it that it evolves, because  
24 it is dispersed now.

25           MR. GILLESPIE: There is a great deal of

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1 truth to that statement, yes.

2 MEMBER SIEBER: Any other questions? I am  
3 impressed by the diplomacy of that last answer, and so  
4 with that, Mr. Chairman, I turn it over to you.

5 CHAIRMAN BONACA: Thank you for the  
6 presentation, and it was informative, and we will see  
7 you again, and we will have to schedule a meeting  
8 probably of --

9 MR. ADER: Yes, and I will work with the  
10 ACRS staff on the timing.

11 CHAIRMAN BONACA: Okay. At this point, we  
12 can stop recording, and we are going to get into the  
13 draft Commission paper, ACRS self-assessment.

14 (Whereupon, at 2:37 p.m., the meeting was  
15 concluded.)

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## C E R T I F I C A T E

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: 502nd Meeting of ACRS

Docket Number: n/a

Place of Proceeding: Rockville, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

*Matthew Needham*

---

Matthew Needham  
Official Reporter  
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# Operating Experience Task Force

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Briefing for  
Advisory Committee on Reactor Safeguards

May 8, 2003

# Operating Experience Task Force

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## Purpose

- Provide ACRS an overview of the Operating Experience Task Force effort to review NRC's reactor operating experience program

# Operating Experience Task Force

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## Background

- Davis-Besse Lessons-Learned Task Force (LLTF) Recommendations
- NRR/RES Operating Experience Working Group
- March 7, 2003, Davis-Besse Action Plan to address LLTF Recommendations
- March 28, 2003, Charter for Operating Experience Task Force

# Operating Experience Task Force Charter

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## Objective

The objective of Reactor Operating Experience Task Force is:

“ . . . to evaluate the agency’s reactor operating experience program and to recommend specific program improvements . . . which addresses the recommendations of the Davis-Besse Lessons Learned Task Force . . . ”

# Operating Experience Task Force

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## LLTF Recommendations

- 3.1.6(1) The NRC should take the following steps to address the effectiveness of its programs involving the review of operating experience: (1) evaluate the agency's capability to retain operating experience information and to perform longer-term operating experience reviews; (2) evaluate thresholds, criteria, and guidance for initiating generic communications; (3) evaluate opportunities for additional effectiveness and efficiency gains stemming from changes in organizational alignments (e.g., a centralized NRC operational experience "clearing house"); (4) evaluate the effectiveness of the Generic Issues Program; and (5) evaluate the effectiveness of the internal dissemination of operating experience to end users.

# Operating Experience Task Force

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## LLTF Recommendations (Cont)

- 3.2.4(1) The NRC should assess the scope and adequacy of its requirements governing licensee review of operating experience.

# Operating Experience Task Force

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## Task Force Members

Charles Ader, DSARE/RES - Task Force Manager

Ian Jung, DRIP/NRR

Don Marksberry, DRAA/RES

Jose Ibarra, DSARE/RES

George Lanik, DSARE/RES

David Fischer, DE/NRR

Jitendra Vora, DET/RES

James Tatum, DSSA/NRR

Allan Barker, DIPM/NRR

Serita Sanders, DIPM/NRR

David Beaulieu, DLPM/NRR

Robert Caldwell, DRIP/NRR

Marcia Karabelnikoff, DSARE/RES  
- Administrative Support

# Operating Experience Task Force

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## Steering Committee Members

William Borchardt - NRR

Jack Strosnider - RES

James Caldwell - R III

# Operating Experience Task Force

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## Approach

- OE Program viewed broadly to include end-users
- Objective Phase
  - ▶ Identify desirable agency operating experience program objectives and attributes
- Assessment Phase
  - ▶ Define functional needs to meet program objectives and attributes
  - ▶ Perform gap and overlap analysis
  - ▶ Recommend specific program improvements and their bases

# Operating Experience Task Force

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## Objective Phase

- Task Force has completed initial efforts to identify objectives and attributes
- Comments received from internal stakeholders
- Proposed objectives and attributes provided to steering committee

# Operating Experience Task Force

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## Proposed Objectives

- Ensure that operating experience is collected, evaluated, communicated and applied to enhance safety
- Ensure that operating experience is used to improve the effectiveness, efficiency, and realism of NRC decisions
- Ensure that the public, Congress, and other external stakeholders are provided with timely information regarding operational experience, including actual or potential hazards to health and safety

# Operating Experience Task Force

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## Proposed Attributes

- Clearly defined and communicated roles and responsibilities
- Efficient collection, storage, and retrieval of operating experience
- Effective screening of operating experience for followup evaluation
- Timely communication of operating experience to stakeholders for information or evaluation

# Operating Experience Task Force

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## Proposed Attributes (Cont)

- Timely and thorough evaluations of operating experience to identify trends, recurring events, or significant safety issues for appropriate followup actions
- Timely decisions on implementation and appropriate followup resulting from the review of operating experience
- Periodic assessments of the operating experience program to determine its effectiveness and to identify needed improvements

# Operating Experience Task Force

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## Objectives and Attributes

- Issue of independence raised by several internal stakeholders
- Task Force did not incorporate in objectives and attributes but will consider during assessment phase

# Operating Experience Task Force

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## Schedule

- Recommend Objective and Attributes to Steering Committee -04/30/03 (Complete)
- Draft Report to Steering Committee recommending program improvements -9/30/03
- Final Report - 11/30/03

your name? RALPH CARUSO ACRS staff

INPO?

Jay Brzyski?

Bill Beckner ~~?~~                      NRC

~~Beckner~~

Frank Gillespie - ~~NRC~~ NRC



**PROPOSED CHANGES TO RISK INFORMED  
INSERVICE INSPECTION REGULATORY  
GUIDE 1.178 AND SRP SECTION 3.9.8**

**May 8, 2003**

**SYED ALI RES/DET/ERAB**  
**STEPHEN DINSMORE NRR/DSSA/SPSB**  
**ANDREA KEIM NRR/DE/EMCB**

## **RI-ISI RG AND SRP ISSUED SEPTEMBER 1998**

- **RG and SRP were issued for “Trial-use”**
  - **Review of three pilot applications was not complete**
  - **Review of two industry methodologies was not completed**
- **Proposed changes are minor**
  - **Public workshop held March 13, 2003**
  - **Incorporate lessons learned from review of submittals (clarification changes)**
  - **Up-date and simplify text (editorial changes)**
- **One proposed content change adds guidance not yet applied to RI-ISI submittals**

## **Content Change**

- The PRA quality documentation requirement expanded to include the observations from industry peer reviews and the resolution of significant comments applicable to RI-ISI evaluation

## **CLARIFICATION CHANGES**

- **The submittal requirements were expanded to include PRA related information routinely submitted and evaluated in current staff RI-ISI reviews**
  - **Reference number/version of the PRA**
  - **Current CDF and LERF**
  - **Process to ensure that PRA used represented current plant**
  - **Results of staff individual plant examination review and the resolution of significant comments applicable to RI-ISI evaluation**
  
- **Template submittals recognized**
  - **Documentation requirements in approved topical reports may supercede the detailed RG/SRP requirements.**

## **CLARIFICATION CHANGES**

- **Three break size (leak, disabling leak, and break) discussion removed**
  - **All applicable effects must be included**
- **Maintaining leak frequency discussion removed**
  - **Experience with statistical sampling methodology is that leak frequency criteria satisfied by one inspection**
- **Incorporating augmented programs into RI-ISI**
  - **Is acceptable**
  - **Requires staff review and approval of how the augmented programs are incorporated in the analyses**

## **CLARIFICATION CHANGES**

- **Sample expansion (after finding a flaw) and timing guidelines specified**
- **Clarification that safety-significant non-Code Class piping is treated as ASME Code Class piping for the purpose of examination and pressure testing.**

## **Major Editorial Changes**

- **All the discussion about pilot applications and issuing the RG and SRP for trial use have been removed.**
- **All figures and tables in the RG were removed, and the SRP had none.**
- **All text in Section 2.1.7, “Probabilistic Fracture Mechanics Evaluation,” was moved to Section 2.1.5, “ Assess[ing] Piping Failure Potential.”**
- **All the discussions regarding the multiple ASME Section XI risk-informed code cases were removed. When the ASME guidance is complete and endorsed by the NRC, these references can be inserted into future revisions of the guidance as needed.**

## **Major Editorial Changes**

- **A number of references to specific sections of the updated RG 1.174 and SRP Chapter 19 were added.**
- **All reference to high-, medium-, and low- safety-significance in the RG and SRP have been removed. The current text replaces high-safety-significant with “safety-significant” and keeps “low-safety-significant” consistent with the revised RG 1.174**
- **References to generally PRA quality and peer reviews were taken from RG 1.174 and SRP Chapter 19, and a reference to DG-1122 was added.**



**BACKGROUND/HISTORY OF**  
**RISK-INFORMED INSERVICE**  
**INSPECTION ACTIVITIES**

**May 8, 2003**

**SYED ALI RES/DET/ERAB**  
**STEPHEN DINSMORE NRR/DSSA/SPSB**  
**ANDREA KEIM NRR/DE/EMCB**

## **BACKGROUND**

- **In 1996, the PRA Implementation Plan established plans for the development of a General RG and SRP and four application specific RGs and SRPs:**

### **Technical Specifications**

**ISI**

**IST**

**Graded QA**

- **U.S. plants are designed and constructed to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code.**
- **The Code inservice inspection requirements did not consider risk insights. Inspection resources should be focused in those areas which are most safety and risk significant.**

## **OBJECTIVE**

- **Objectives of ISI Program is to identify degraded conditions that are precursors to pipe failures.**
- **Regulatory requirements for ISI are specified in 10 CFR 50.55a(g).**
- **10 CFR 50.55a(g) references ASME Code Section XI for ISI requirements.**
- **10 CFR 50.55a(a)(3)(i) provides for authorization of alternative ISI programs by Director of NRR.**
- **Relief request required for staff review and approval.**

## CURRENT STATUS

- Risk-Informed Inservice Inspection (RI-ISI) has been one of the most successful risk-informed initiatives.

- Number of plants expected to implement RI-ISI programs: 99

Submittals received to date:	71
Anticipated Submittals:	29

- Number of Plants That Have Approved RI-ISI Programs

Based on EPRI Methodology:	39
Based on WOG Methodology:	13

Number of Plants Approved by NRC (includes 3 pilots):	52
Number of Plants Currently under Review:	19

- One site (2 Units) has submitted its 10-year Inservice Inspection Update

## **RI-ISI GUIDANCE**

- **Issued Regulatory Guidance (for Trial Use):**
  - **RI-ISI Regulatory Guide 1.178, Sep. 1998**  
***“An Approach For Plant-Specific Risk-Informed Decisionmaking Inservice Inspection of Piping”.***
  - **Standard Review Plan Section 3.9.8, Sep. 1998**  
***“Standard Review Plan for the Trial Use For the Review of Risk-Informed Inservice Inspection of Piping”.***
- **Approved well defined generic methodologies via Topical Reports (WOG and EPRI):**
  - **SER for WOG Topical Report issued in December 1998.**
  - **SER for EPRI Topical Report issued in October 1999.**
- **Staff issued information notice IN 98-44 which stated that the staff would consider granting relief of up to 2 years from current inspection requirements for licensees that intend to implement RI-ISI Programs if licensees make such a request.**

# TEMPLATE SUBMITTALS

- **Adopted “template” submittal specifying the contents of the relief request :**
  - **brief description of evaluations performed**
  - **overview of results from each major evaluation**
  - **any deviations from methodologies must be identified and justified**
- **“Template” initially evolved but has stabilized**
- **Staff stated that a three-month review cycle would be possible if a submittal followed an approved methodology without any deviations.**

## **UPDATES TO RI-ISI PROGRAMS**

- **RI-ISI programs should be living programs and should be changed if needed to reflect new relevant information such as:**
  - **major updates to plant PRA models**
  - **new trends in service experience with piping systems at the plant and across the industry**
  - **new information on element accessibility**
  
- **At a minimum, risk ranking should be reviewed and adjusted on an ASME-period basis.**
  
- **RI-ISI programs should be updated and submitted to NRC:**
  - **at the end of the 10-year ISI interval**
  - **prior to the end of the 10-year interval if there is a deviation from the RI-ISI methodology described in the initial submittal, or if industry experience determines that there is a need for significant revision to the program**

## **APPLICATION TO BER PIPING**

- **Modification of inspections within the break exclusion region (BER) not permitted in the original EPRI and WOG RI-ISI methodologies.**
- **Both EPRI and WOG have developed methodologies to apply RI-ISI methodology to piping within the BER.**

**SER on EPRI submittal completed in June 27, 2002**

**WOG Submittal currently under review**

- **When BER program is in FSAR, the extension of RI-ISI methodology to BER piping may be done via the 10 CFR 50.59 process**

## LONG-TERM ACTIVITIES

- **Update RG 1.178 and SRP 3.9.8 to incorporate lessons learned.**
- **Staff is working with ASME to develop acceptable Code Cases and an Appendix for RI-ISI applications.**
  - **Code Case N-560 (Class 1, EPRI Method).**
  - **Code Case N-577 (Class 1, 2, 3, WOG Method).**
  - **Code Case N-578 (Class 1, 2, 3, EPRI Method).**
  - **Appendix X (Class 1, 2, 3, WOG and EPRI Methods).**
- **Endorsement of Code Cases in RG 1.147, with limitations and conditions where appropriate.**
- **Anticipate that Code Cases will be incorporated into the ASME Code.**
- **Eventual rulemaking to incorporate by reference the ASME Code with limitations, if necessary.**



## **United States Nuclear Regulatory Commission**

### **RES/DET/MEB Programs and Activities to Address:**

- 1. Nickel-Base Alloy Cracking**
- 2. Boric Acid Corrosion of Pressure Boundary Materials**
- 3. Safety Assessment of Exposed Cladding in Davis-Besse Cavity**

### **502<sup>nd</sup> ACRS Full Committee Meeting on Vessel Head Penetration Cracking and RPV Head Degradation May 8, 2003**

**William H. Cullen, Jr.  
301-415-6754  
whc@nrc.gov**



## United States Nuclear Regulatory Commission

### **RES/DET/MEB Programs and Activities to Address: CRDM Cracking Issues**

- A. NRC-Funded SCC Program & Products**
  - 1. On-going EAC and Boric Acid Corrosion Programs
  - 2. LLTF Rec. to Review Worldwide Experience with Alloy 600 CRDMs, Boric Acid Corrosion
- B. Additional Programs with Expected, Relevant Products**
  - 1. Japanese Coordinated Program
  - 2. ICG-EAC Round Robin
  - 3. Other Programs
- C. Heat-by-Heat Analysis of Domestic Plant CRDMs**
- D. Stress Analysis of CRDM Penetrations**
- E. Davis-Besse Cavity Exam Update – What it Means To NRC/RES**
  - 1. Structural Integrity Assessment of Exposed Clad for ASP



## United States Nuclear Regulatory Commission

### NRC's SCC Programs & Products

#### A. On-going EAC Program at Argonne Nat. Lab.

1. SCC Testing of Alloys 600, 182, 690 and 152 in BWR and PWR water
  - a. Also evaluating strength, metallography for insight into mechanisms
2. Been testing since 1997, NUREG/CR-6717
  - a. Letter report on SCC in 182 due 10/04, NUREG due 12/05

#### B. Testing of Davis-Besse Materials (part of BAC program at ANL)

1. Alloy 600 from Nozzle #3 (M3935), and Alloy 182 from #11 J-weld

#### C. LLTF Rec. to Review Int'l Experience with Alloy 600 CRDMs

1. Critique of susceptibility model [ $EDY = EFPY * (\text{temp. factor})$ ] – Done 2/28/03
2. Report on worldwide Alloy 600 cracking experience (Dec. '03)
3. Report on worldwide boric acid corrosion experience (Oct. '04)



# United States Nuclear Regulatory Commission

## Additional Programs

**Products (CGR Data, Mechanistics) Will Contribute to Existing Databases**

### 1. Japanese Coordinated Program

#### a. Electric Joint Research Project

- SCC and SSRT on Alloys MA600, Alloy 132, 82, TT690, Alloys 152 & 52

#### b. National Nickel-Based Alloy Material Project

- SCC on Alloys MA600, Alloy 132, 82, TT690, Alloys 152 & 52

### 2. ICG-EAC Round Robin

a. **Purpose:** resolve factors that cause differences in stress corrosion crack growth rate response, esp. in Alloy 182 weld

b. **Status:** Specimens distributed, some tests completed, reports next month

c. **Expectations:**

- Phase 1 – Collect info – Completed
- Phase 2 – Test 30% CW A600 in '03, Compare results, Improve methods
- Phase 3 – Test Alloy 182

### 3. Other Programs

a. Tests underway in France, Spain and Sweden

4. **Dialogue to Obtain Mockups from Replacement Head Fabrication, and pieces from discarded heads (North Anna 2, Oconee 3)**



## United States Nuclear Regulatory Commission

### Plant-specific (heat-specific) cross-correlations starting from Davis-Besse

Heat Identification	Other Plants With Heads Containing Same Heat of Material
M3935 (3 of 5 cracked)	Oconee 3 (replace in '03), Ark. Nuclear One 1 (replace in '05)
C2649-1	Oconee 1 (replace in '03), Oconee 2 (replace in '04) Oconee 3, ANO 1
M4437	Not found in any other plant's CRDMs

*So, specifics about nozzle heats from D-B are not applicable in the long-term for other licensees. However . . . .*



## United States Nuclear Regulatory Commission

### Plant-specific (heat-specific) cross-correlations starting from North Anna 2

Heat Identification	Other Plants With Heads Containing Same Heat of Material
755534, 755535, 755536, 755537, 755538, 570892, 568011, 710209	North Anna 1, Sequoyah 1
710147	North Anna 1, Sequoyah 2
71207, 71208, 710210	North Anna 1, Sequoyah 1, Sequoyah 2
71206	North Anna 1, Surry 2, Sequoyah 1, Sequoyah 2
772024	Watts Bar-1, Watts Bar-2, Catawba-1, McGuire-2



## United States Nuclear Regulatory Commission

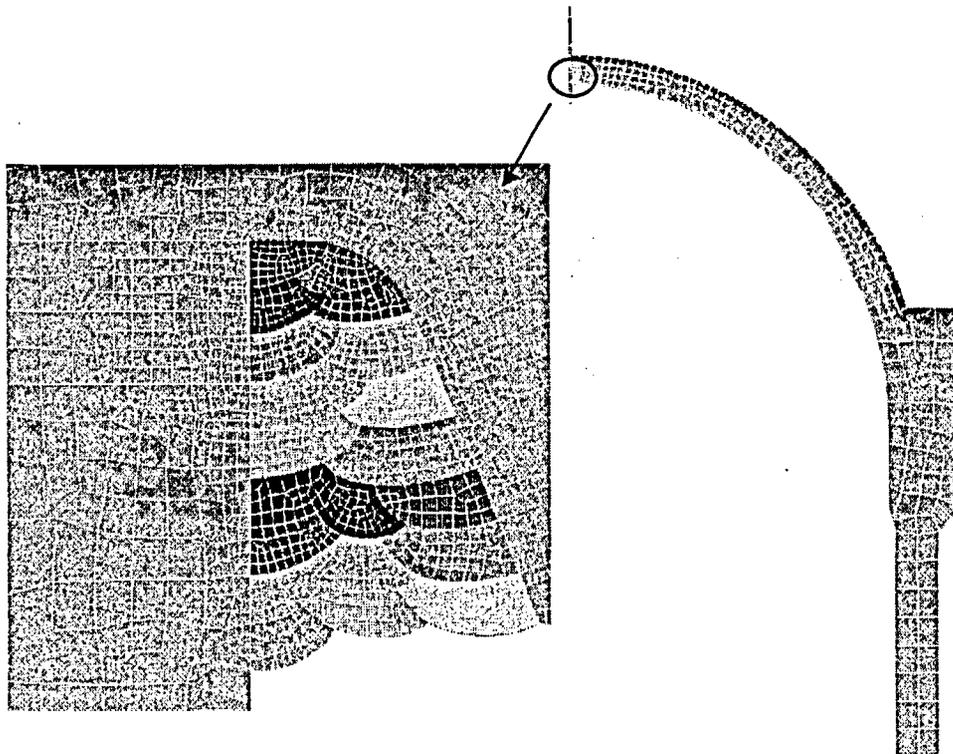
### March '03 Conference on CRDM and related Issues (Including safe ends, ICI penetrations, coolant loop repairs, etc.)

- **Five main session topics**
  - Structural Analysis and Fracture Mechanics Issues (4 papers)
  - Inspection technologies, disposition & sizing of flaws, new developments (9 papers)
  - Crack growth rates for relevant nickel-base alloys & welds (8 papers)
  - Mitigation & Foreign Experience (9 papers)
  - Continued Plant Operation (8 papers)
- **March 27-28 At Gaithersburg-Marriott**
- **Expected 140 or more attendees (11 countries) & participants**
- **Proceedings issued as CD and NUREG/CP**
- **To Be Rescheduled For Early Fall '03 When Travel Restrictions Are Lifted**



## United States Nuclear Regulatory Commission

### Stress Analysis of CRDM Penetrations



*Pass-by-pass simulation of the weld, followed by calculation of the stress, proceed to the next pass, etc.*

*Calculate axial, radial & tangential, resolve to principal stress.*



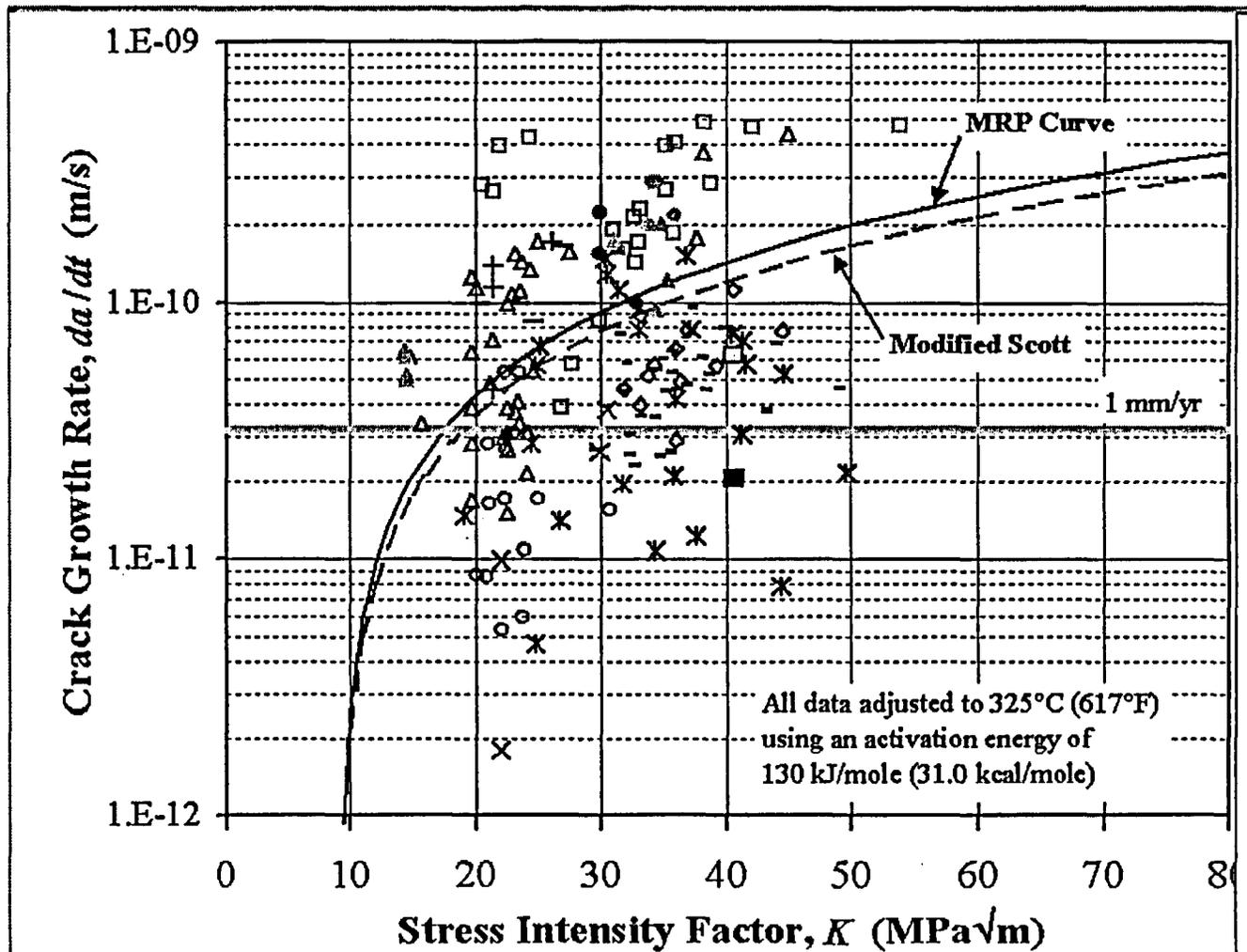


# United States Nuclear Regulatory Commission

Stress-corrosion crack growth rate data from MRP-55; validated by ITG on CGRs in Alloy 600.

Much more data to be added in next couple of years, mostly through international programs.

ITG now working on Alloy 182 compilation – meeting next week.





## United States Nuclear Regulatory Commission

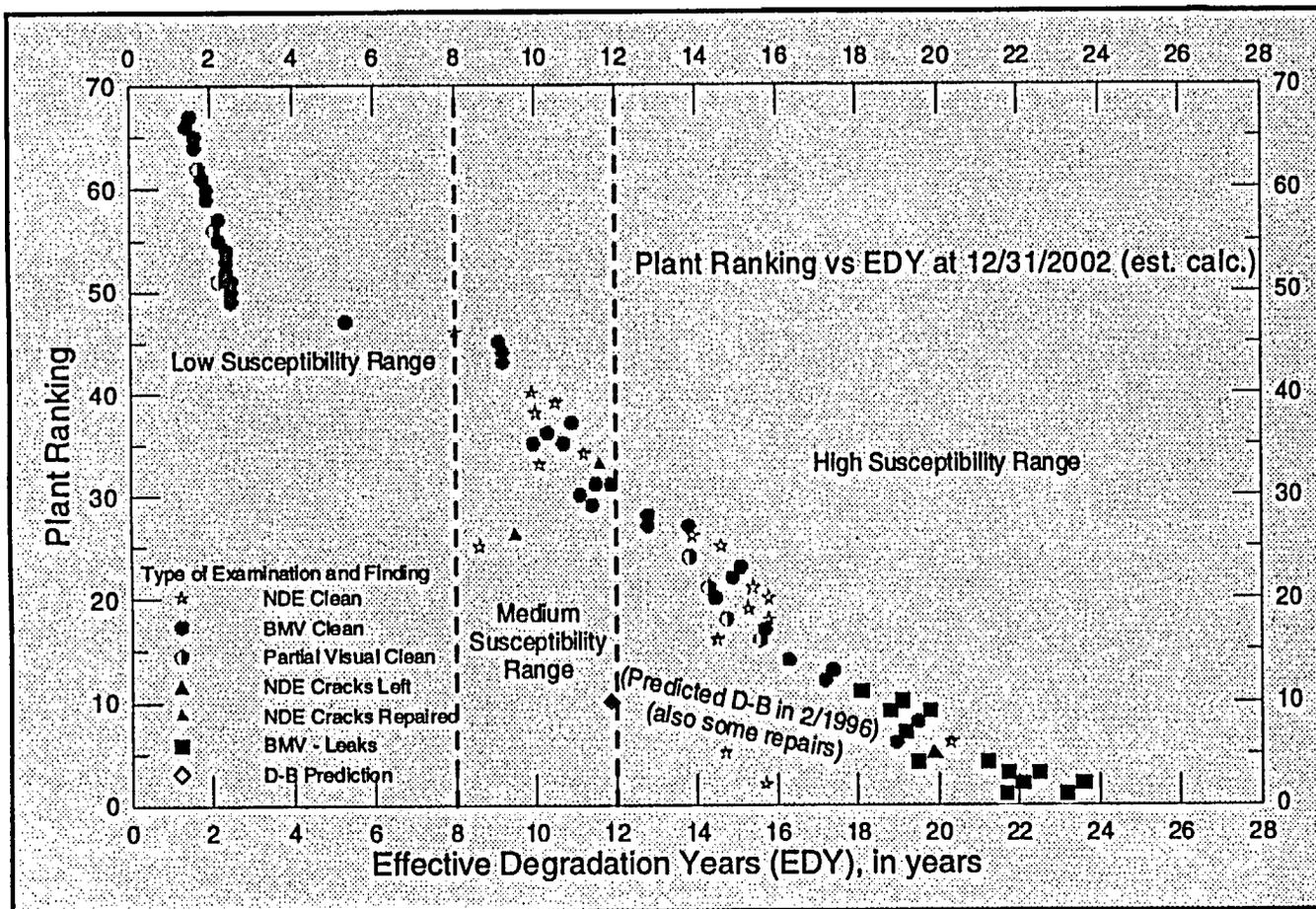
### **NRC Research Programs Related to CRDM & Alloy 600** **The longer term response**

- Continued development of CRDM & closure weld inspection techniques
  - Modeling of Residual Stresses (tube fabrication & closure weld induced)
  - Improved Probabilistic Model for  $t_f$  of Circ. Cracks
  - Continue Testing SCC Rates of A600, A690 & Welds
    - Supplemented D-B materials (A600, A182) into on-going program
  - Development of an International Cooperative Group on PWSCC of Nickel-base Alloys, Including Inspection and Repair Techniques
  - Workshop on March 24-26 to Discuss Issues of PWSCC in Nickel-Base Alloys  
(To be rescheduled for early Fall '03)
- All feed into improved risk analysis models**



# United States Nuclear Regulatory Commission

## Plant Ranking vs. EDY



Current model depends only on time at temperature.

Accuracy of temp.?

Model parameters based on Alloy 600 activation energy for crack nucleation:

1. not crack growth
2. Alloy 182/82

Other factors might be quantified well enough to warrant consideration:

- Yield strength/stress
- GB carbides
- Measured da/dt



## United States Nuclear Regulatory Commission

### Completion of Cavity and Exposed Clad Exams

- **Completion due early May, 2003 – docketed shortly after**
  - **Axial & circumferential cracks in J-weld sectioned, opened**
    - Long axial cracks, very short circumferential cracks – both IGSCC
  - **Cracks in clad were measured, opened, characterized, deposits analyzed**
    - Depth is ~1 – 1.5 mm; all terminate with ~5.0 mm clad remaining
    - Possibly due to stress effect, less possibly a temperature effect
      - Temp gradient in clad was 315°C (RCS side) - ~100°C – cavity side
      - All growth by IGSCC in conc. boric acid solution, no ductile tearing
      - Elicitation of the growth rate would shed light on cavity evolution
  - **Walls of the cavity examined for corrosion morphology effects**



## United States Nuclear Regulatory Commission

### Exam of exposed clad & J-weld – sectioning scheme

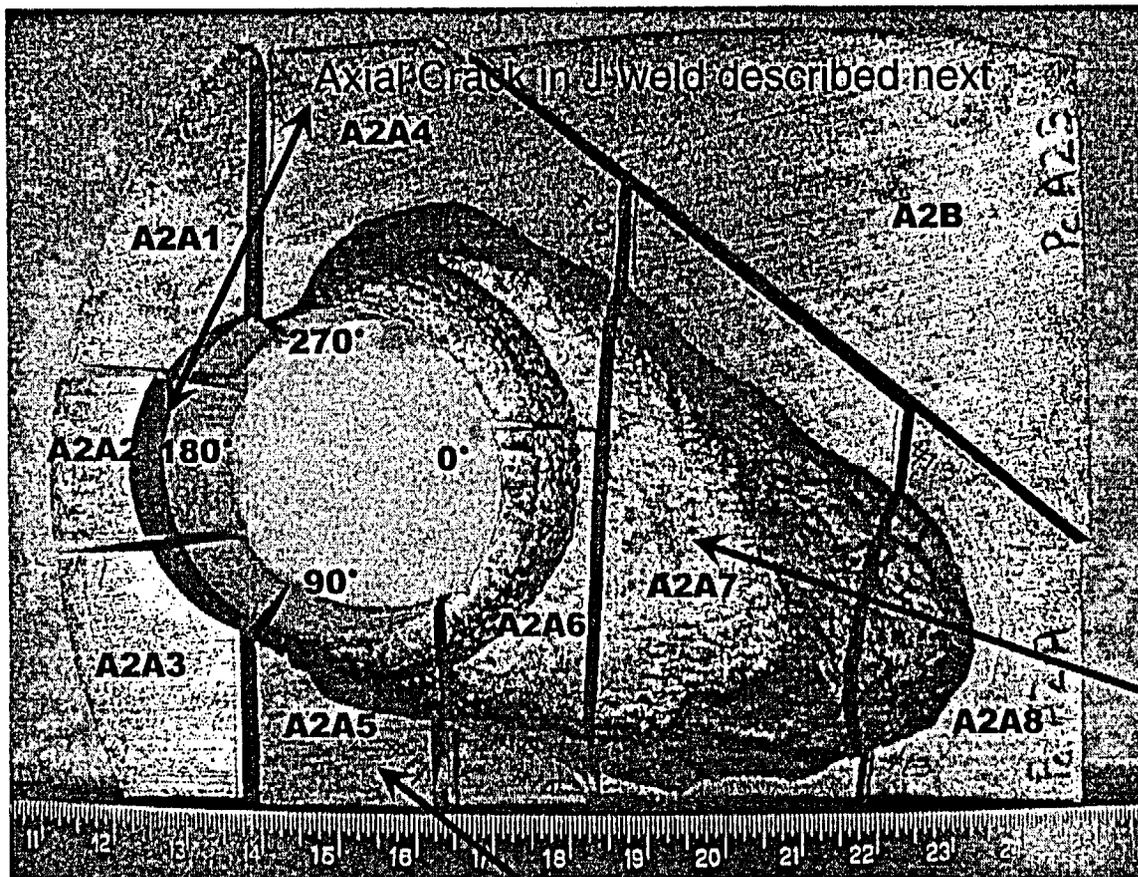


Photo shows major cuts made in preparation for cavity exam. Most sections were further reduced for metallographic and fractographic exams. Largest cracks were near  $\sim 10^\circ$  (major leak) and  $180^\circ$  (non-leaking).

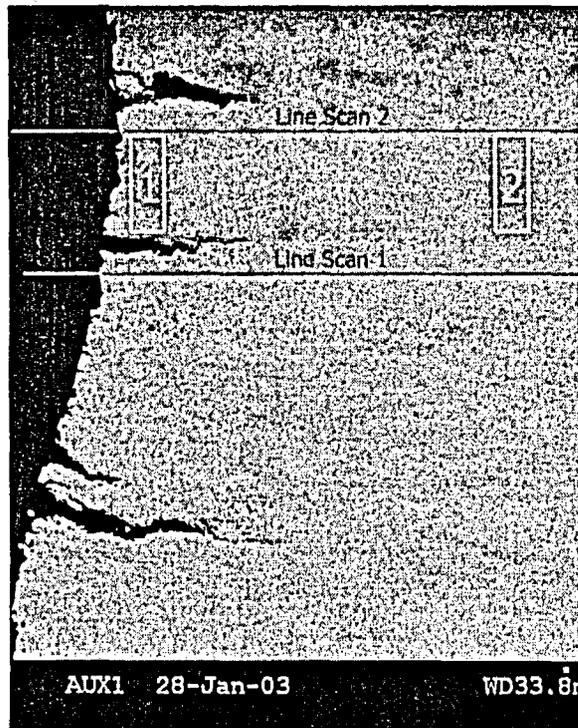
Cracks in clad described later

Piece A2A5 shown on subsequent slide

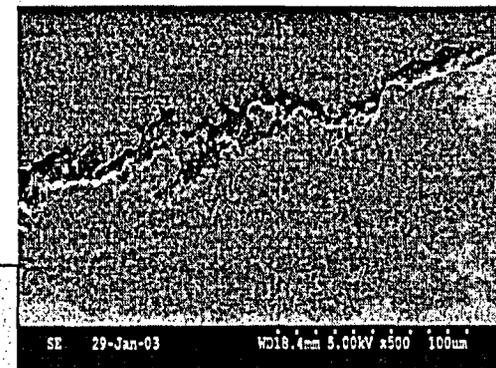
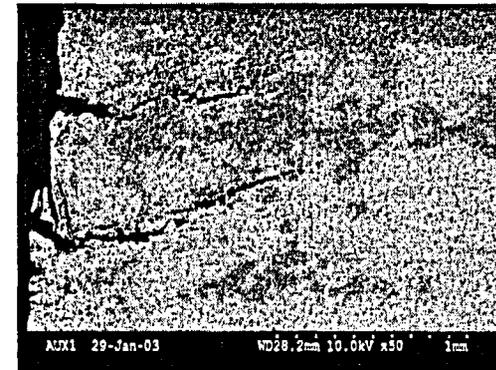


## United States Nuclear Regulatory Commission

**Opened crack in cladding shows interdendritic growth morphology – all IGSCC, no tearing, even near the bulge.**



SEM (top) shows interdendritic crack path



SEM (right) shows preferential dissolution of ferrite creates crack path



# United States Nuclear Regulatory Commission

## Davis-Besse Root Cause and Safety Assessment

1. Features of Boric Acid Corrosion Program at Argonne Nat. Lab
  - A. Crack Growth Rates of Alloys 600 & 182 from Davis-Besse Head
  - B. Computational Model, Based on Probabilistic Assessment of:
    - i. Statistics of Crack Initiation
    - ii. Probability of Detection & Accuracy of Sizing
    - iii. Crack Growth Rate Variations
    - iv. Stress Intensity Factor Gradients (Residual Stress, Interferences)
    - v. Critical Crack Sizes, Including Factor of Safety
  - C. Electrochemical Potential and Polarization Measurements of Low-Alloy Steel, Alloys 600 & 182 in Concentrated Boric Acid Solutions
    - i. Measure  $E_{cp}$  for range of solution compositions, temperatures
    - ii. Include molten boric acid species at temp. & pressure
2. Next two slides describe MEB Program on Structural Integrity at ORNL



# United States Nuclear Regulatory Commission

## Structural Integrity Assessment

### ■ Approach

- Created detailed finite element model of the DB head, wastage cavity, and remaining unbacked cladding.
- Developed two failure models to bound expected behavior:
  1. Plastic instability model calibrated by PVRC-sponsored unflawed rupture disk results.
  2. Ductile tearing initiation model using 3-wire, 308SS quasistatic fracture toughness properties.
- Predicted best-estimate failure probability vs pressure as a function of crack depth.
- Conducted Monte Carlo analysis to determine failure probabilities with respect to the best estimate.

### ■ Variable Modeling Categories

- **Probabilistic:** Crack depth, material toughness, rupture disk failure pressure.
- **Conservative Deterministic:** J-groove weld reinforcement; cladding thickness.
- **Best-Estimate Deterministic:** Cladding cavity area; low alloy steel, Alloy 600, and 308 SS constitutive behavior; vessel head geometry; operating temperature and pressure.

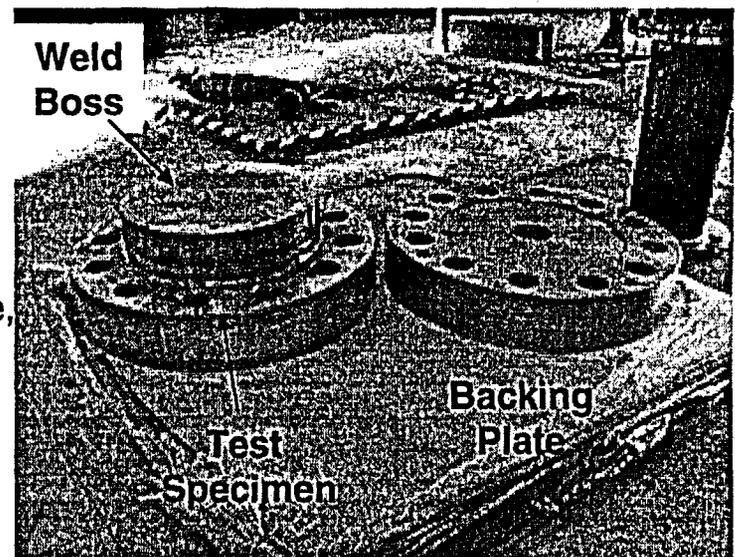


## United States Nuclear Regulatory Commission

### Ongoing Work for ASP Analysis (by 10/03)

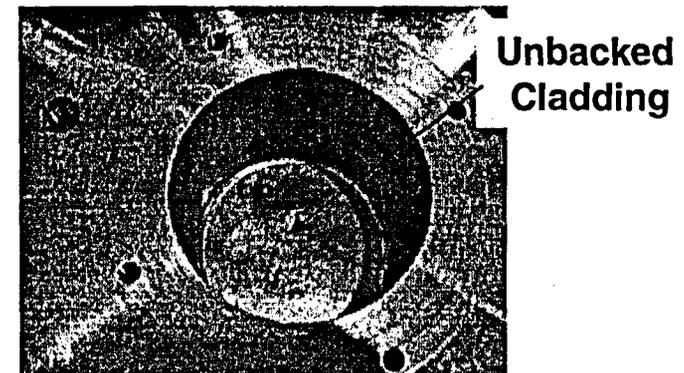
#### ■ Analytical Program

- Develop tearing instability model to analyze intermediate-depth flaws.
- Extend model to predict failure probabilities for the year preceding cavity discovery.
  - Monte Carlo Analysis
  - Probabilistic Variables: Pressure, cavity size, flaw size, wastage rate, material toughness, and burst pressure.
- More rigorous quantification of geometric, material, and failure model uncertainties.



#### ■ Experimental Program

- Conduct material property testing of surrogate cladding material (PVRUF).
- Perform burst tests on simple, circular or elliptical cavity geometries.
  - Unflawed specimens
  - Flawed specimens
- Assess accuracy of analytical failure models.





# **PLANS FOR ADDRESSING THE DAVIS-BESSE LESSONS LEARNED TASK FORCE RECOMMENDATIONS**

**Brendan Moroney, NRR  
Douglas Kalinouski, RES  
May 8, 2003**

# **INTRODUCTION**

- **NRR and RES jointly developed an overall implementing plan**
- **Delivered to EDO on 2/28/03**
- **Forwarded to Commission on 3/10/03**

# **HIGH PRIORITY ITEMS**

- **Overall Plan includes 4  
Action Plans for High Priority  
items (21 items) in Davis-  
Besse LLTF Review Team  
memo**

# **ACTION PLANS**

- **Stress Corrosion Cracking**

**Lead: NRR/DLPM**

- **Operating Experience**

**Lead: NRR/DRIP**

- **Inspection, Assessment, and  
Project Management**

**Lead: NRR/DIPM**

- **Barrier Integrity**

**Lead: RES/DET**

# **STRESS CORROSION CRACKING ACTION PLAN**

**Part I    RPV Head Inspection  
Requirements**

**Part II    Boric Acid Corrosion Control  
Requirements**

**Part III    Inspection Program  
Improvements**

# **STRESS CORROSION CRACKING ACTION PLAN**

## **Part I - Inspection Requirements**

- 1. Collect world-wide information - 03/04**
- 2. Evaluate existing SCC models for use in susceptibility index - 05/03**
- 3. Evaluate results of inspections per Bulletins and Orders - 05/04**
- 4. Review and evaluate MRP and ASME efforts -TBD**
- 5. Endorse ASME Code changes or develop alternative inspection requirements - 12/04**

# **STRESS CORROSION CRACKING ACTION PLAN**

## **Part II - Boric Acid Corrosion Control**

- 1. Collect world-wide information - 10/04**
- 2. Evaluate Bulletin 2002-01 responses - 04/03**
- 3. Evaluate the need for additional regulatory actions - 05/03**
- 4. Review and evaluate ASME Code revised requirements - 01/05**

# **STRESS CORROSION CRACKING ACTION PLAN**

## **Part III - Inspection Programs**

- 1. Guidance for periodic review of licensee ISI activities by NRC - 03/04**
- 2. Guidance for timely, periodic inspections of plant BACC programs - 03/04**
- 3. Guidance for assessing adequacy of plant BACC programs - 03/04**

# **BARRIER INTEGRITY ACTION PLAN**

- Part I      Leakage Detection and  
Monitoring Requirements**
- Part II     Improved Performance  
Indicators**

# **BARRIER INTEGRITY ACTION PLAN**

## **Part I - Leakage**

### **1. Develop basis for new RCS leakage requirements**

- **Review bases for current leakage limit**
- **Review experience/capabilities of currently used leak detection systems**
- **Evaluate capabilities of state-of-the-art leak detection systems**
  - \* **Scope of Action Plan increased to include methods which may be capable of detecting degradation before leakage**
- **Evaluate leak rates that lead to degradation**

# **BARRIER INTEGRITY ACTION PLAN**

## **Part I - Leakage (Continued)**

### **2. Develop recommendations for improved leakage requirements**

- **TS**
- **Inspection Guidance**
- **RG 1.45**

### **3. Incorporate recommendations, as appropriate, into requirements**

### **4. Examine improvements to barrier integrity requirements in addition to those which rely on leakage monitoring**

# **BARRIER INTEGRITY ACTION PLAN**

## **Part 2 - Performance Indicators**

- **Implement improved PI based on current requirements and capabilities**
- **Develop and implement an advanced PI**
- **Re-evaluate PI based on changes to RCS leakage requirements**

# **REACTOR VESSEL HEAD INSPECTIONS**

Presented by

Dr. Allen L. Hiser, Jr.

Materials and Chemical Engineering Branch  
Office of Nuclear Reactor Regulation

502<sup>nd</sup> Meeting of Advisory Committee on Reactor Safeguards

May 8, 2003

# OUTLINE

- Background
- Order EA-03-009 (issued February 11, 2003)
  - ▶ Inspection requirements
  - ▶ Flaw evaluation criteria
  - ▶ Relaxation requests
- Recent plant experience
  - ▶ High susceptibility plants
  - ▶ South Texas Project Unit 1
- Outlook & Industry's Role

# BACKGROUND

- Fall 2000
  - ▶ Oconee Unit 1 identifies deposits - axial leak
  
- Spring 2001
  - ▶ Oconee Unit 2 and 3 identify circumferential cracks
  - ▶ ANO Unit 1 identifies a leaking nozzle
  
- **NRC issues Bulletin 2001-01 - August 2001**
  - ▶ Focus is safety issue (circumferential cracks) for high susceptibility plants
  - ▶ Visual examinations considered acceptable
  
- Fall 2001
  - ▶ Circumferential cracks identified - Crystal River 3 and Oconee 3
  - ▶ Leaks and repairs at Surry 1, North Anna 2 and TMI

## BACKGROUND (cont.)

- Spring 2002
  - ▶ Davis-Besse identifies RPV head wastage & circumferential cracking
- **NRC issues Bulletin 2002-01 - March 2002**
  - ▶ Focus is safety issue is RPV wastage for all plants
- Spring 2002
  - ▶ Millstone identifies part through-wall cracks
- **NRC issues Bulletin 2002-02 - August 2002**
  - ▶ Focus is adequacy of inspection programs - methods (non-visual NDE for high susceptibility) and frequency
  - ▶ Licensee responses generally vague on future program, many cite MRP-75 program

## BACKGROUND (cont.)

- Fall 2002
  - ▶ North Anna 2 identifies
    - ✓ Prevalent weld cracking
    - ✓ Leak from a repaired nozzle
    - ✓ Circumferential cracking at weld root without boron deposits
  - ▶ ANO Unit 1 identifies leak from a repaired nozzle
  - ▶ Oconee Unit 2 identifies possible through-wall cracking without boron deposits on the RPV head
  - ▶ Head corrosion at Sequoyah Unit 2 - above head boron source
- **NRC issues Order EA-03-009 - February 2002**
  - ▶ Mandates inspections for all PWRs
- Spring 2003
  - ▶ South Texas Project Unit 1 - boron deposits on the lower head

# OVERVIEW OF ORDERS

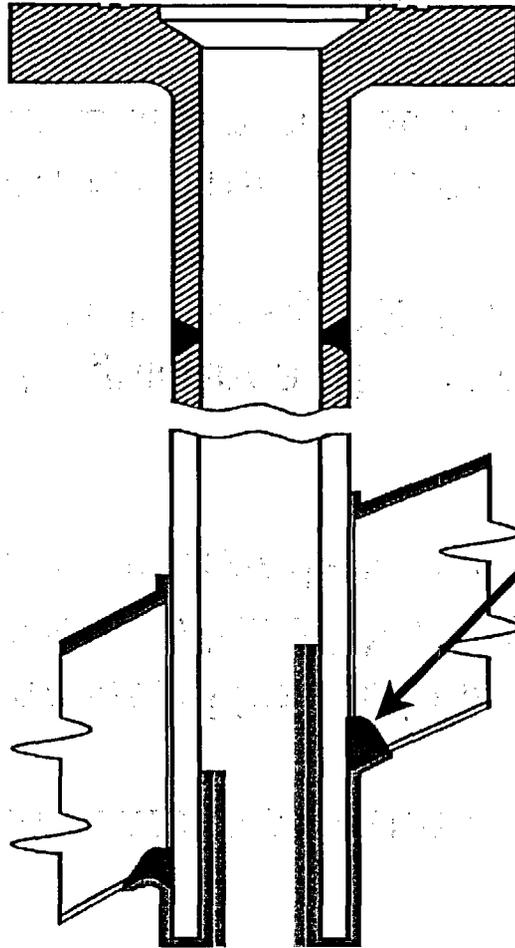
- Issued February 11, 2003
- Issued to all PWRs
- Adequate protection basis
  - ▶ ASME Code inspections are inadequate
  - ▶ Revisions to inspection requirements are not imminent
  - ▶ RPV head degradation and nozzle cracking pose safety risks if not promptly identified and corrected
- Provides a clear regulatory framework pending the incorporation of revised inspection requirements into 10 CFR 50.55a

# ORDER REQUIREMENTS

- Evaluate susceptibility - effective degradation years (EDY), based on operating temperature and time
- High plants - bare metal visual AND non-visual NDE at EVERY RFO
- Moderate plants - BMV and non-visual NDE at alternating RFOs
- Low plants - BMV by next 2 RFOs (repeat every 3<sup>rd</sup> RFO or 5 years), non-visual by 2008 (repeat every 4<sup>th</sup> RFO or 7 years)
- Non-visual NDE is EITHER:
  - ▶ Ultrasonic with evaluation of interference fit leakage, OR
  - ▶ Wetted-surface examination

# Order EA-03-009

## Required Inspection Surfaces



Bare Metal Visual  
Inspection Area

J-groove Weld

Ultrasonic  
Inspection Area

Wetted Surface  
Inspection Area

# ORDER REQUIREMENTS

- Explicit requirements and criteria to inspect repaired nozzles/welds
- Each RFO, must perform visual inspections to identify boric acid leaks from components above the RPV head - follow-up actions include inspections of potentially-affected RPV head areas and nozzles
- Flaw evaluation per NRC guidance (Strosnider letter fall 2001, revised guidance in Barrett letter April 2003)
- Orders also apply to new RPV heads, either Alloy 600 (Davis-Besse) or Alloy 690 (North Anna 2 and many others)
- Post-outage report 60 days after restart

## LICENSEE OPTIONS

- Must respond within 20 days
  - ▶ May request a hearing
  - ▶ May request a time extension to respond
- Request Director of NRR to relax or rescind requirements of the order
- Requests for relaxation for specific VHP nozzles will be evaluated using procedures for proposed alternatives to the ASME Code in accordance with 10 CFR 50.55a(a)(3)
  - ▶ The proposed alternative will provide an acceptable level of quality and safety
  - ▶ Compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety

# NEED FOR ORDERS

- Past process of issuing Bulletins unwieldy, inconsistent, not stable, and has no regulatory weight (licensee commitments only)
- Rulemaking would take at least 1 or 2 years
- Orders can be revised or rescinded as necessary
- Although inspection plans for the next RFOs were generally acceptable, NRC wanted to provide licensees with planning time to meet order requirements
- Concerns that above RPV head leakage could result in undetected RPV head degradation

# FLAW EVALUATION CRITERIA

November 21, 2001 Letter (ML013250451)	April 11, 2003 Letter (ML030980333)
Same flaw acceptance criteria	
Allows Section XI standards	PWSCC must be evaluated or repaired
Crack growth rate is 95/50 (95th percentile, 50% confidence)	MRP crack growth rate (75/50)
Flaw growth due to SCC	Flaw growth due to SCC & fatigue

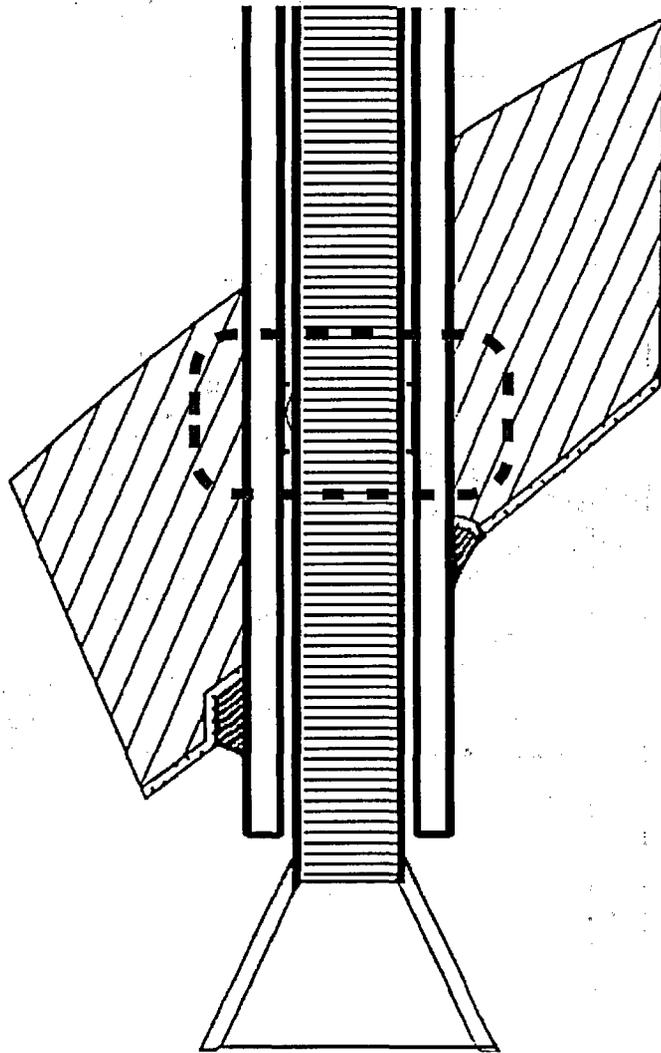
NRC guidance requires repair of circumferential cracks at and above the J-groove weld and outside diameter axial cracks above the weld

- ▶ ASME code action indicates “case-by-case evaluation and approval” by the regulatory authority

# RELAXATION REQUESTS

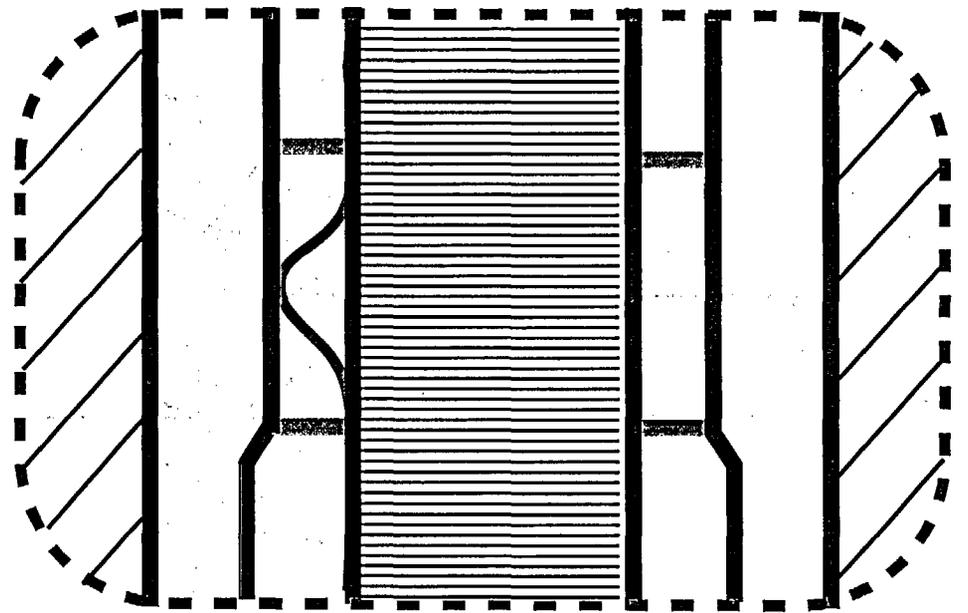
- Limitations above the J-groove weld
  - ▶ Centering tabs & step on nozzle ID
  - ▶ Stress in non-inspected area below 28 ksi
  - ▶ Hardship - would have required guide sleeve removal and re-welding of a guide funnel onto nozzle
- Limitations below the J-groove weld
  - ▶ Guide funnel threads (ID & OD) and tapers on end of nozzles
  - ▶ Transducer coupling for time-of-flight-diffraction
- Bare metal visual examinations
  - ▶ Localized insulation and support shroud interferences
  - ▶ Insulation prevents total access to RPV head surface
  - ✓ UT RPV head thickness measurements

# Calvert Cliffs Order Inspection Limitations

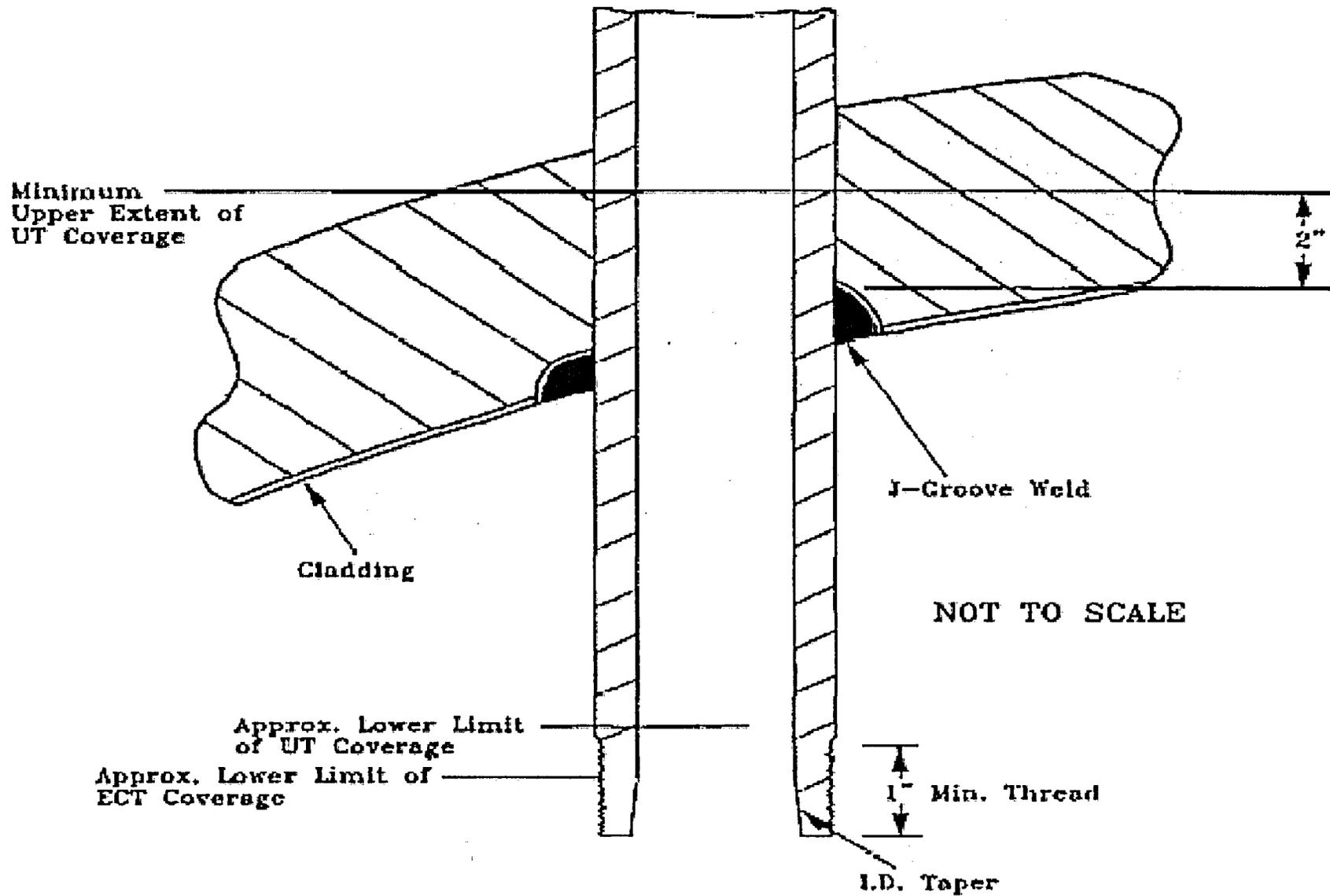


Thermal/Guide Sleeve

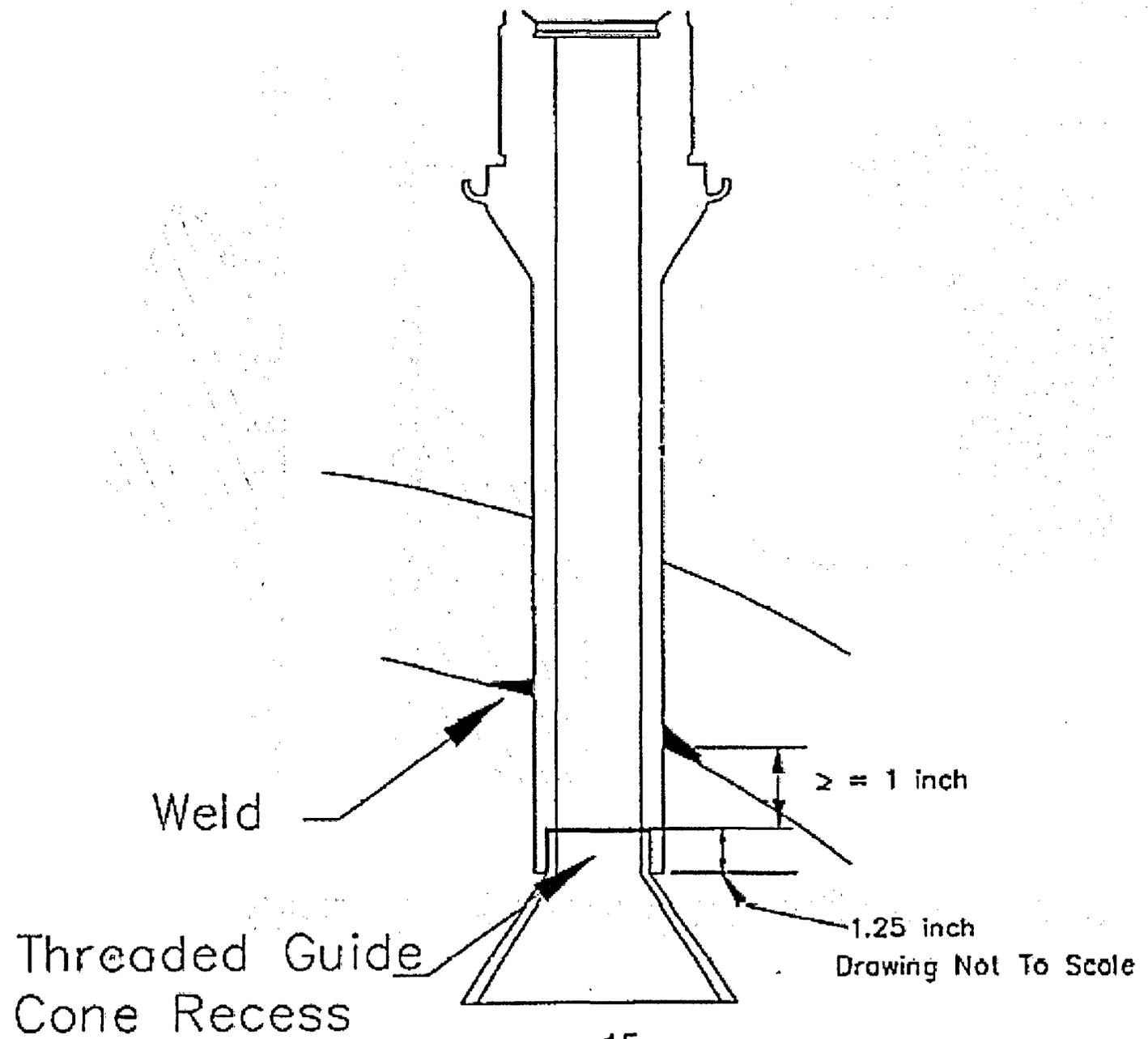
## Sleeve Expansion Points



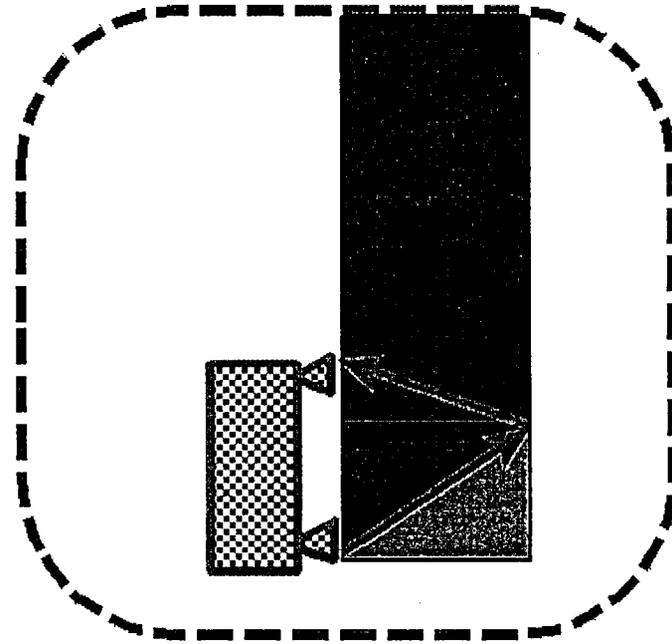
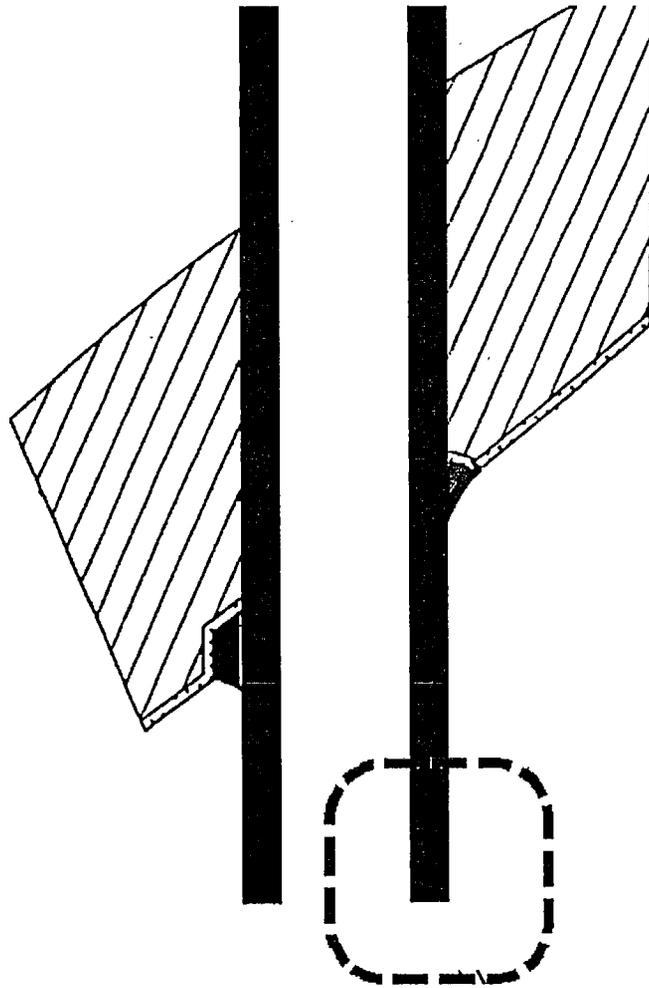
# Farley Nuclear Power Plant Cross-section of Typical 4" RPV Nozzle Penetration



# St. Lucie Unit 2 Typical RPV Nozzle With Threaded Guide Funnel



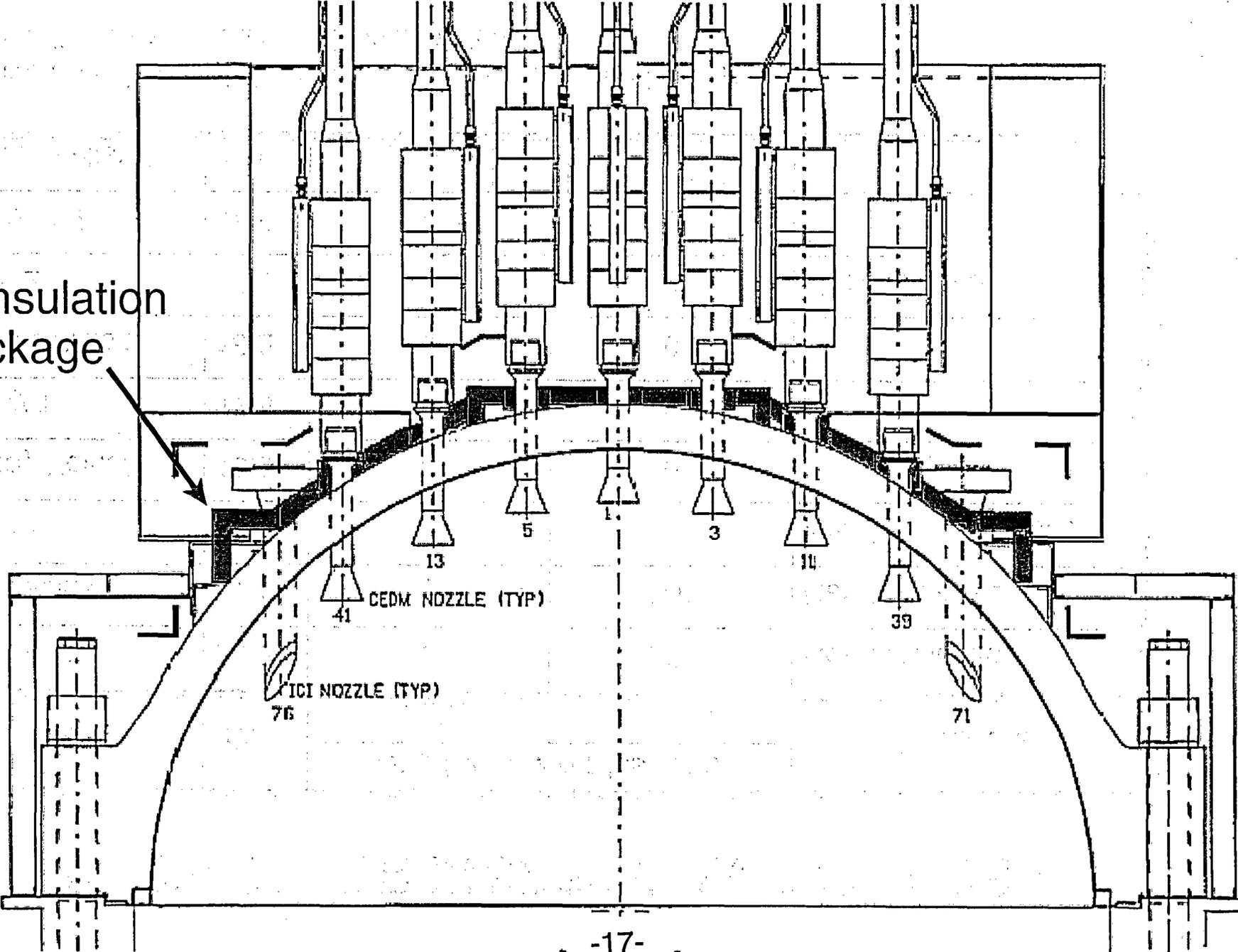
# TOFD Transducer Coupling Limitations



Area of Nozzle  
Inspection Limitation

# Millstone Power Station Bare Metal Visual Inspection Restraints

Head Insulation  
Package



# POST-ORDER INSPECTION FINDINGS

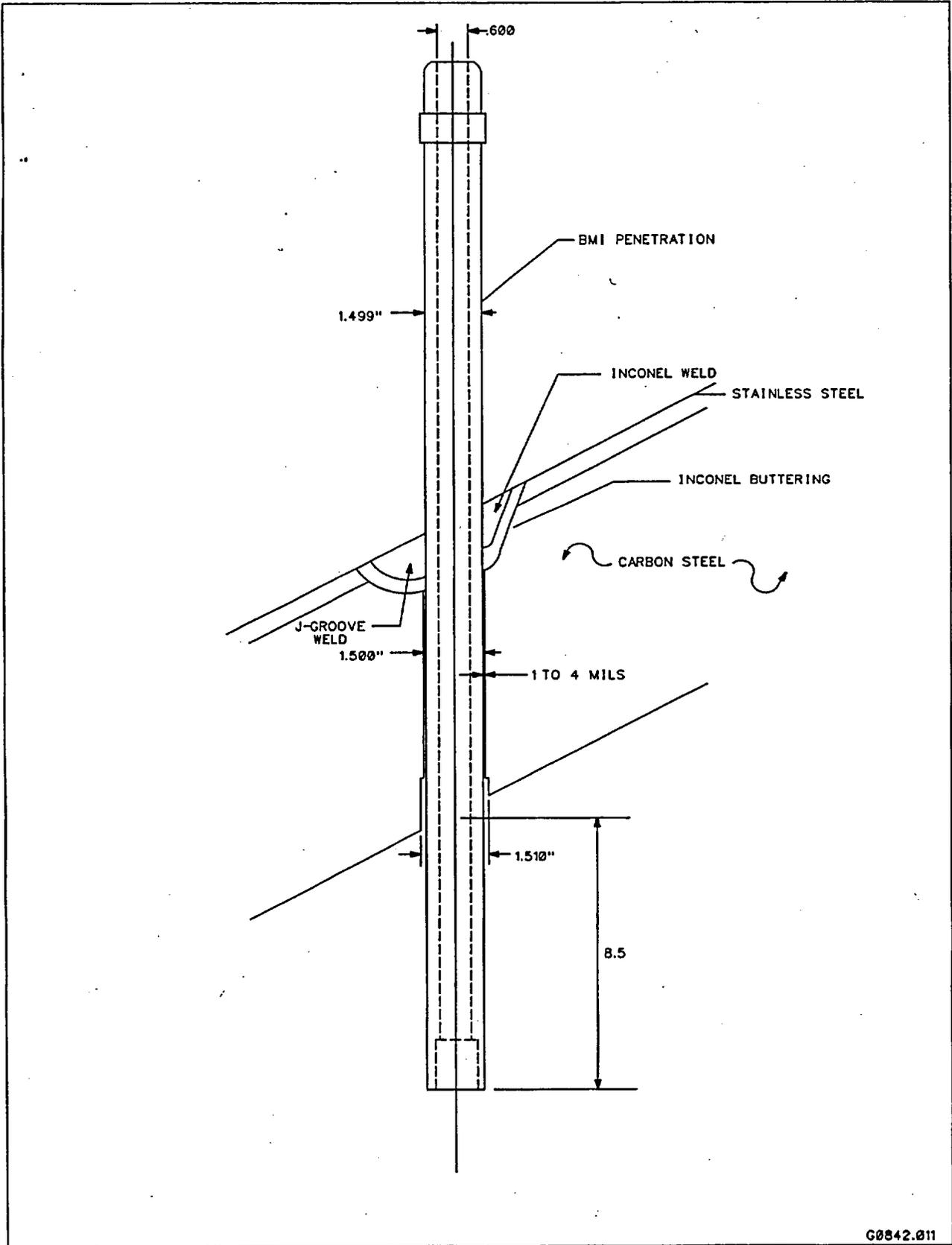
Plant	EDY	Number of Nozzles With		Comments
		Leaks	Cracks	
Oconee 3	22.5	2	(2)*	Head replaced
North Anna 1	21.4	(1)**	(1)*	Head replaced
Surry 1	20.5			Head to be replaced
Turkey Point 3	18.3	0	0	
Farley 1	17.5	0	0	
Calvert Cliffs 2	15.2	0	0	
Cook 2	14.6			Not complete
St. Lucie 2	14.0	0	2	
Beaver Valley 1	14.0	0	4	

\* No non-visual NDE - bare metal visual examination only.

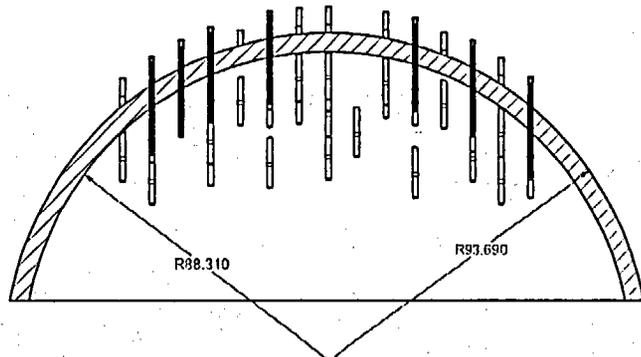
\*\* Limited bare metal visual examination.

# **SOUTH TEXAS PROJECT UNIT 1 - SPRING 2003**

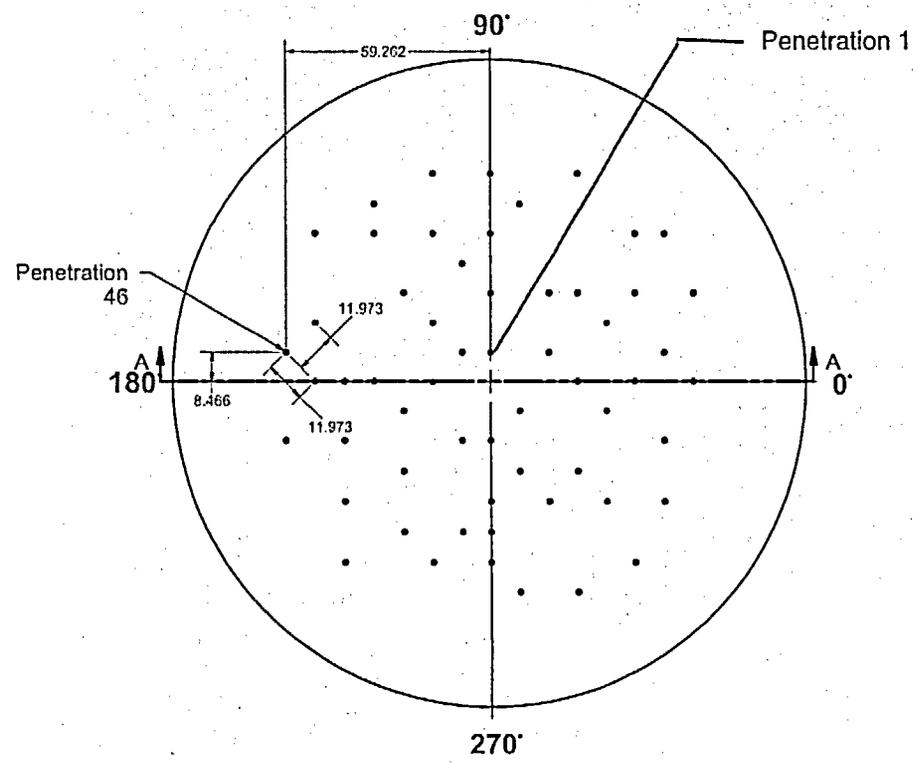
- Lower head examination identifies 2 nozzles with deposits - #1 (“gummy”) and #46 (“hard”) - upper head is clean
- No deposit fall 2002 - half-aspirin and smaller spring 2003
- EDY of upper head is 4.5-6.3 (recent bypass flow conversion)
- EDY of lower head ~2.1 (operating temperature 561 °F)
- Licensee planning characterization activities, including flaw identification (nozzle base material or J-groove weld?), root cause (fabrication-related, fatigue or PWSCC?) and repair



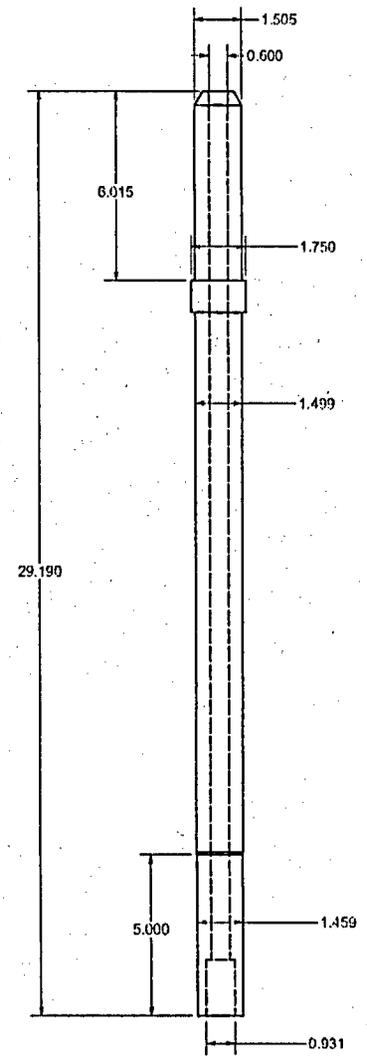
-20-



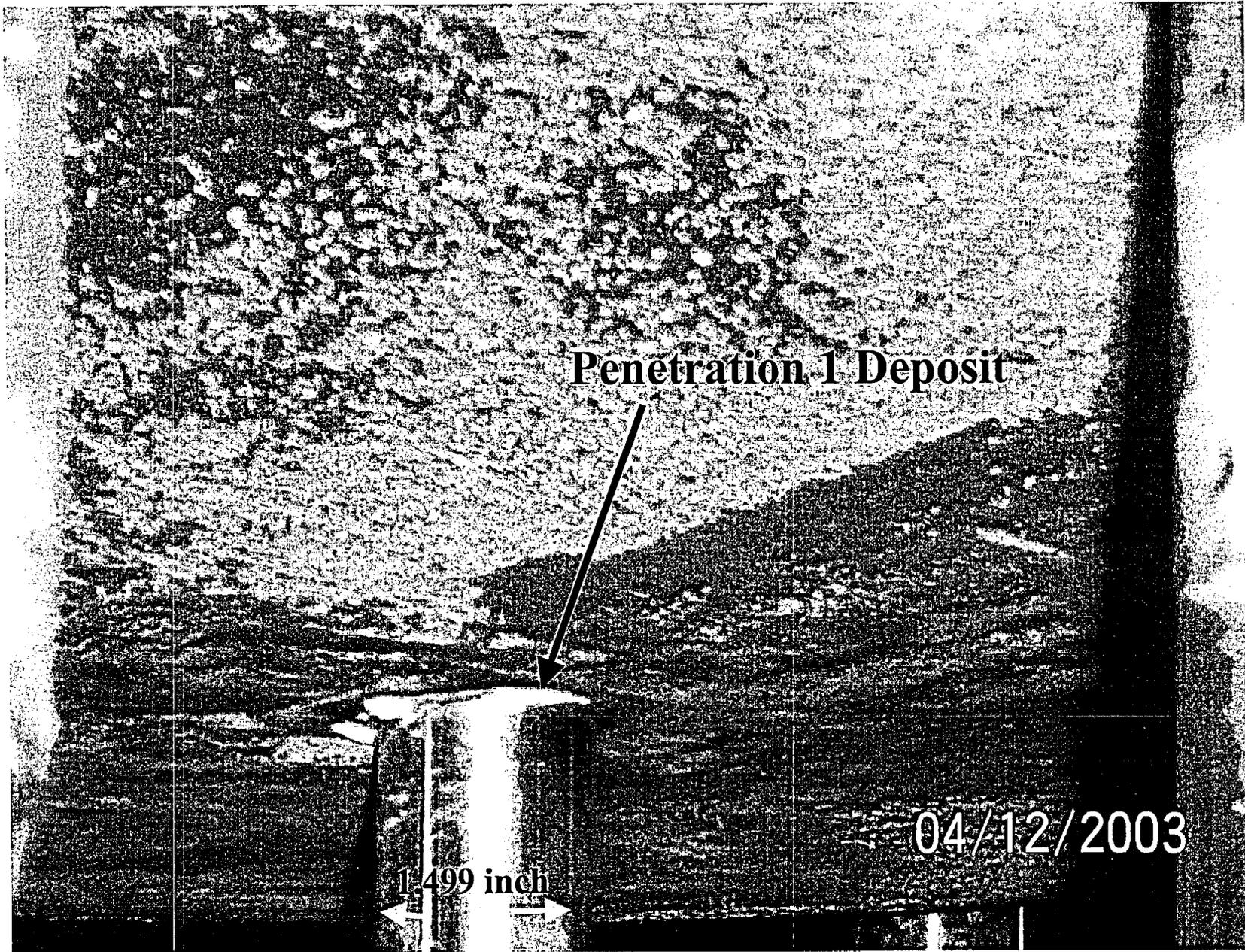
SECTION A-A  
SCALE 1 / 25



Viewed From  
Outside Head



Penetration 46  
BMI Tube  
Mtl. = SB-166



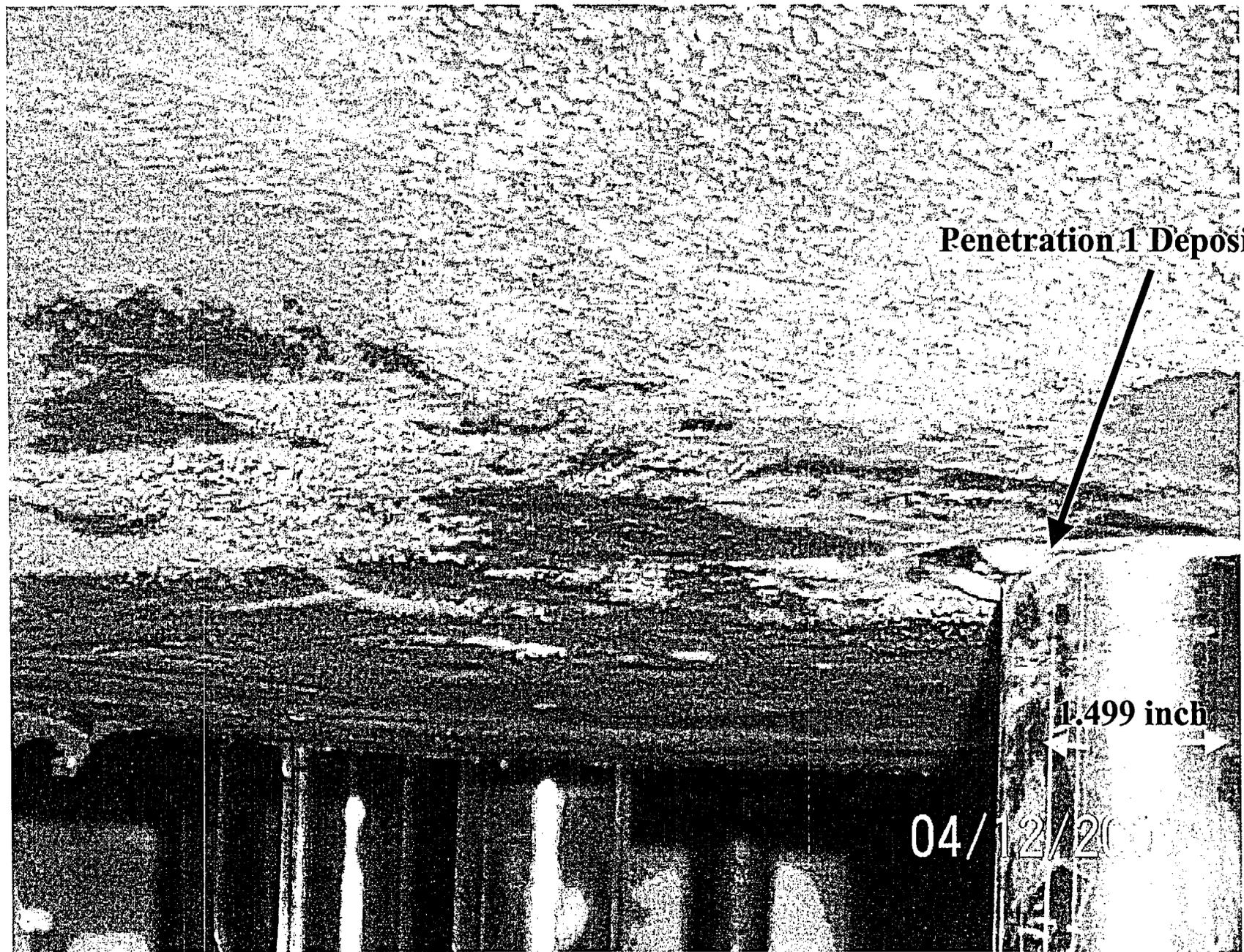
Penetration 1 Deposit

1.499 inch

04/12/2003

Penetration 1

2



Penetration 1 Deposit

1.499 inch

04/12/20

Penetration 1

4



Penetration 1 Deposit

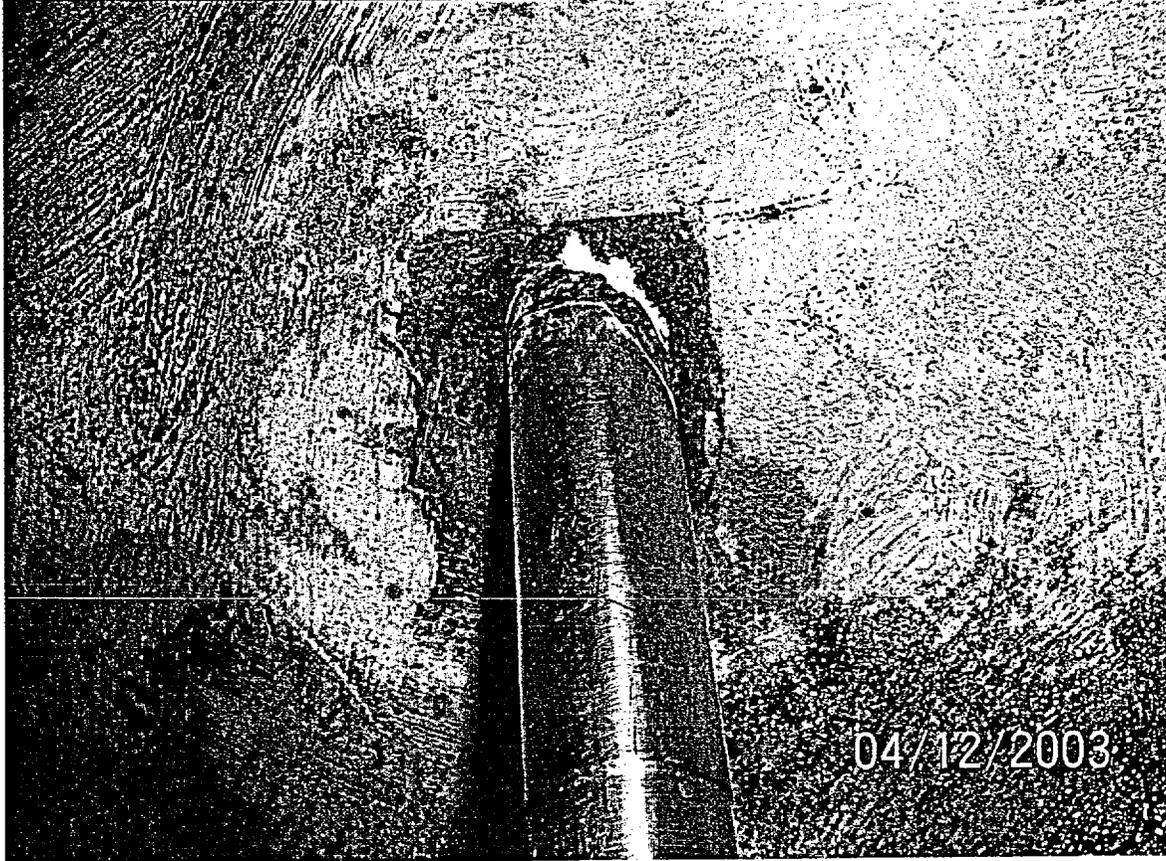
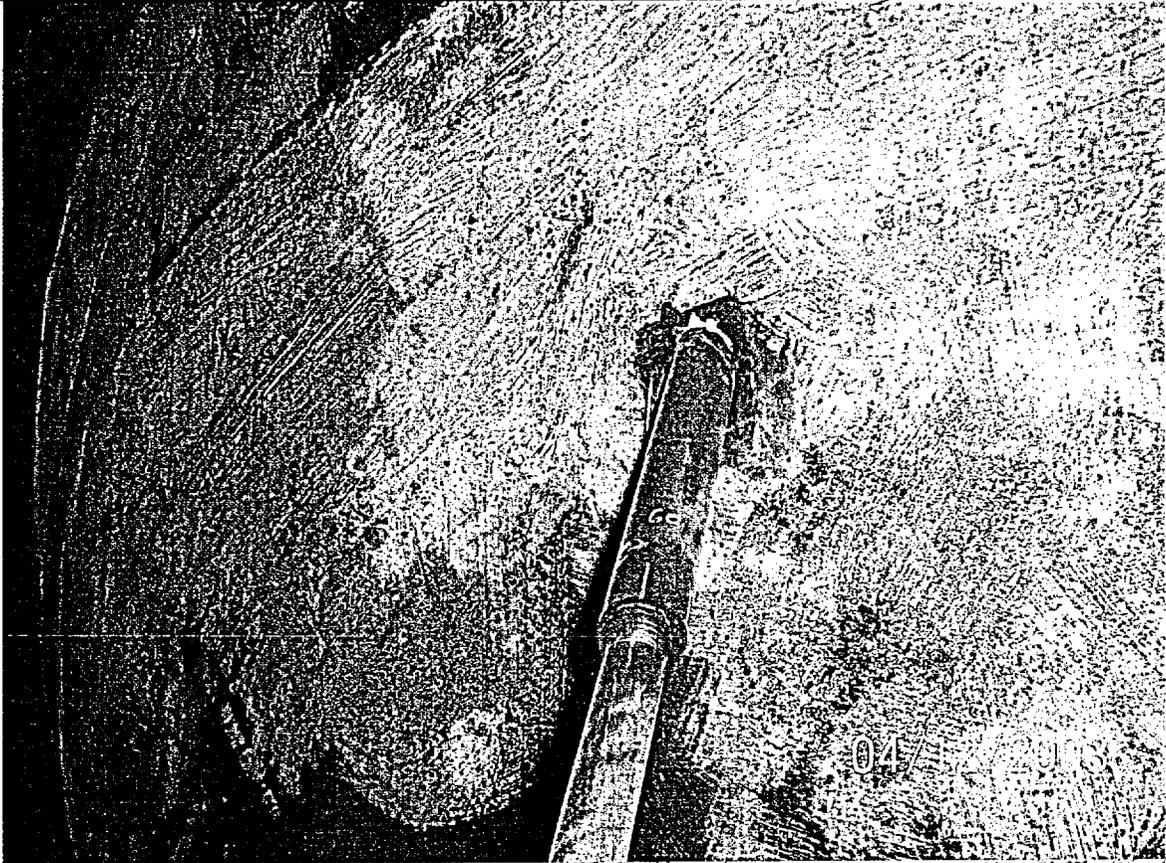
1.49 inch

04/12/2003

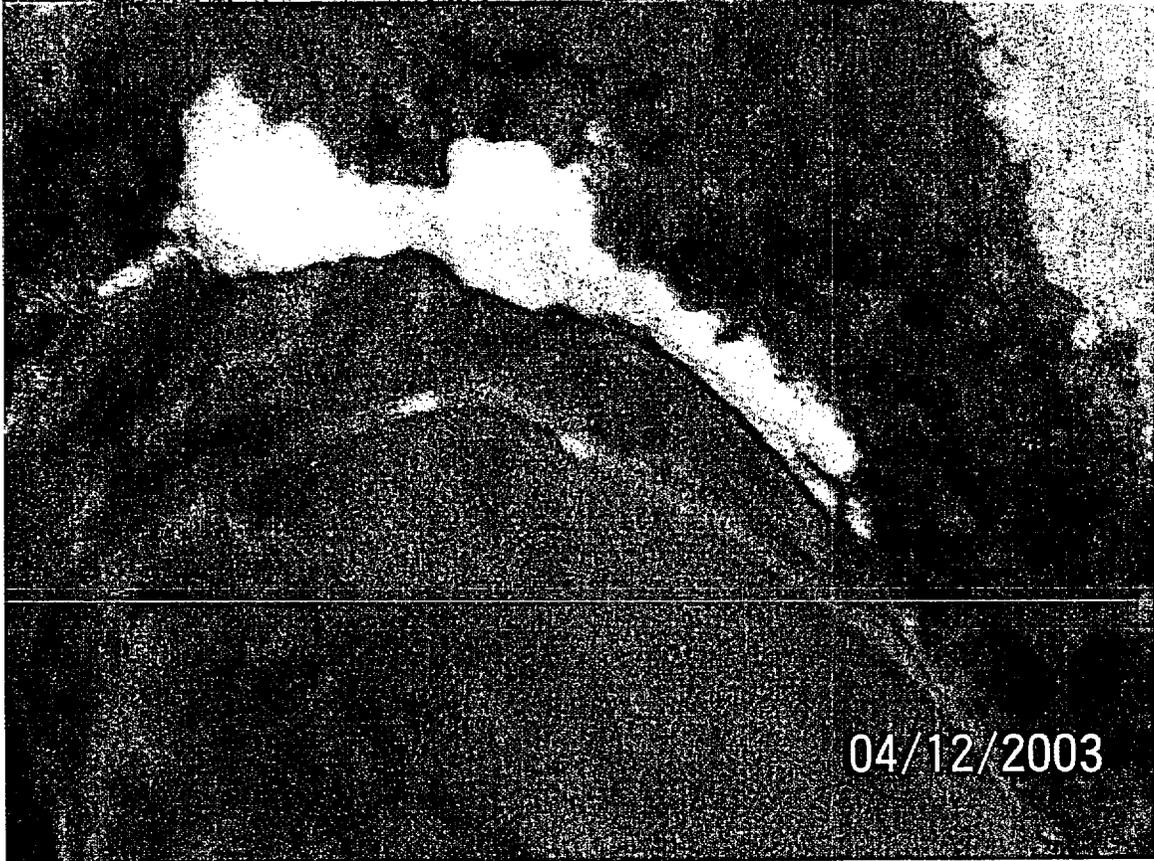
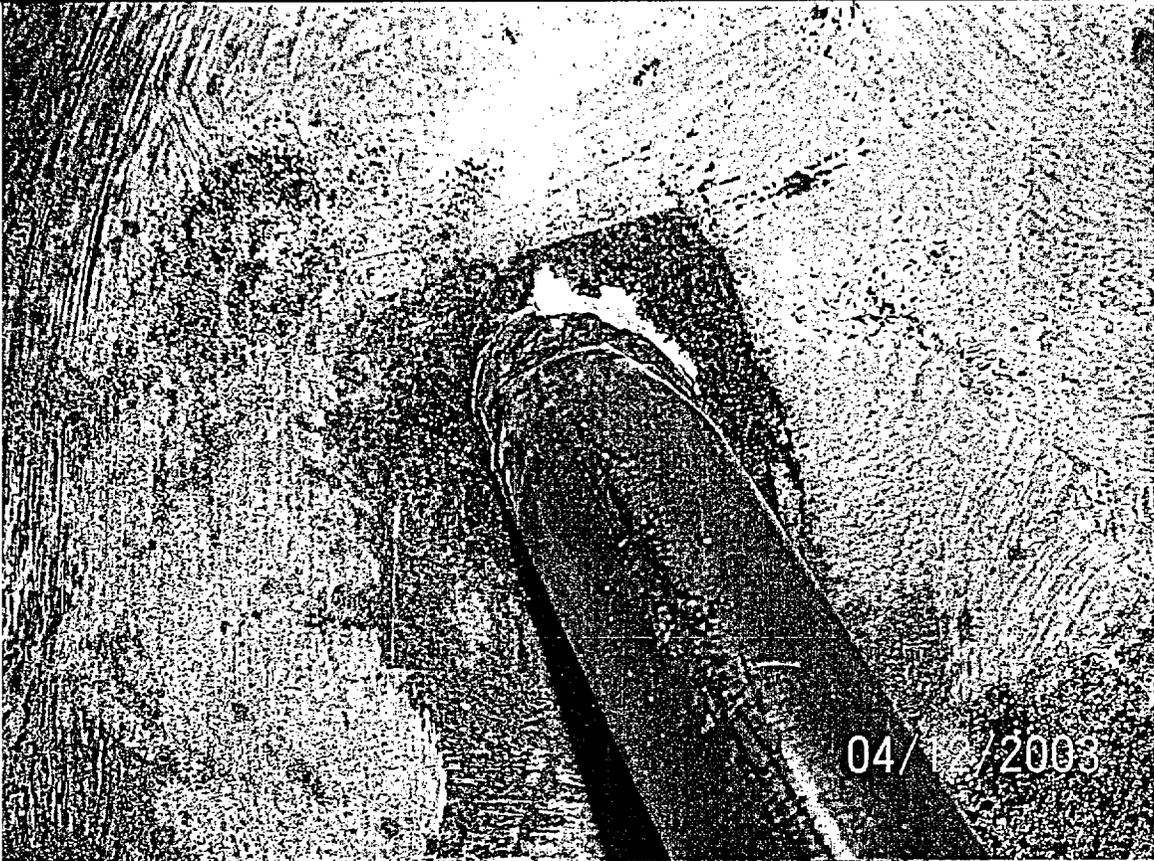
Penetration 1

6

Unit 1 BMI Penetration 46  
Initial Inspection – Attachment to 03-6248



Unit 1 BMI Penetration 46  
Initial Inspection – Closeups



# OUTLOOK

- Goal is “permanent” requirements for inspections to ensure structural integrity of the RPV head and VHP nozzles
- ASME Code is working to develop inspection requirements
  - ▶ Has been based upon industry report (MRP-75)
  - ▶ NRC staff has provided comments - report is not acceptable as submitted, acceptability is not certain
  - ▶ NRC has suspended review pending revisions by the industry based on fall 2002 findings
  - ▶ ASME Code adoption of requirements may not be complete until 2004 or later
- Inspection requirements will be implemented in 10 CFR 50.55a
  - ▶ Endorse the new ASME Code requirements (if acceptable) under expedited implementation, OR
  - ▶ Codify alternative inspection requirements
  - ▶ Will take 1-2 years once acceptable requirements are identified

## INDUSTRY'S ROLE

- Complete development of and submit revised MRP-75 in a timely manner
- Continue/renew staff level interactions with NRC on the underlying analyses to support MRP-75
- Continue development of improved inspection tools to provide more effective examinations
- Continue activities to characterize RPV heads removed from service (e.g., North Anna Unit 2, Oconee Unit 2, etc.)
- Continue boric acid corrosion research to determine the conditions that can lead to accelerated corrosion rates
- Begin consideration of other RCS areas susceptible to cracking (e.g., hot leg piping, etc.)