

ORIGINAL

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

COMMISSION MEETING
DISCUSSION / POSSIBLE VOTE
ON RESTART OF SALEM UNITS 1 & 2

Docket No. 50-272
50-311

Location: Washington, D.C.

Pages: 1 - 107

Date: Tuesday, April 26, 1983

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PDR 10CFR
PT9.7

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TAYLOE ASSOCIATES

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1625 I Street, N.W. Suite 1004
Washington, D.C. 20006
(202) 293-3950

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UNITED STATES OF AMERICA

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NUCLEAR REGULATORY COMMISSION

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DISCUSSION/POSSIBLE VOTE ON
RESTART OF SALEM UNITS 1 AND 2

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PUBLIC MEETING

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Nuclear Regulatory Commission
11th Floor
1717 H Street, N.W.
Washington, D.C.

Tuesday, April 26, 1983

The Commission met in open session, pursuant to notice, at 2:03 p.m., NUNZIO J. PALLADINO, Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:

NUNZIO J. PALLADINO,	Chairman of the Commission
VICTOR GILINSKY,	Member of the Commission
JOHN F. AHEARNE,	Member of the Commission
THOMAS ROBERTS,	Member of the Commission
JAMES K. ASSELSTINE,	Member of the Commission

STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

H. PLAINE	H. DENTON	Z. ZUDANS
J. ZERBE	D. EISENHUT	G. TOMAN
W. DIRCKS	R. STAROSTECKI	V. NOONAN

AUDIENCE SPEAKERS:

H. THOMPSON	R. MATTSON	D. RAWLINGS
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DISCLAIMER

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P R O C E E D I N G S

1
2 CHAIRMAN PALLADINO: Good afternoon, ladies and
3 gentlemen. This meeting this afternoon concerns the Salem
4 facility and the issues surrounding the failures to scram at
5 Unit 1 in February.

6 Our meeting with the staff on April 14th revealed
7 that there were some issues that the Commission considered
8 unresolved, and for this reason, we did not vote on whether or
9 not to allow restart of the unit.

10 As I recall some of the issues that were considered
11 unresolved involved management and training matters. The staff
12 is back with us to discuss these issues.

13 I would like the staff to start by addressing the
14 issues related to management and training, then we can discuss
15 the issues related to hardware.

16 At the conclusion of our meeting today, I plan to ask
17 the Commissioners to vote on whether or not restart of Salem
18 Unit 1 should be permitted.

19 It would be helpful to guide the staff's
20 presentation if any Commissioners have any particular matters
21 they would like to have addressed, to bring them up if
22 possible in advance. I for one am interested in further
23 details on breakage of the tabs and there was a report in a
24 recent PN.

25 Do any of my fellow Commissioners have opening remarks?

1 I am not suggesting you can't bring them up later, but I thought
2 it might be helpful.

3 COMMISSIONER GILINSKY: We got a letter from Darrell
4 Eisenhut from Mr. Uderitz which is dated April 22nd, from Public
5 Service, which just appeared a few minutes ago, with many,
6 many attachments, which raise questions about the accuracy
7 of the various things that have been said and written here.

8 I wonder if you could explain the significance of
9 this or what this is?

10 MR. EISENHUT: Certainly. Following the Commission
11 meeting of a couple of weeks ago, there were a number of issues
12 where we thought there were questions that needed to be
13 clarified and what we did, I believe the letter was about a week
14 ago, we went back to the utility and got from him answers in
15 writing. A lot of those answers formed the basis for the
16 Commission briefing today.

17 The briefing we are giving today is addressing a lot of
18 those questions that were answered in there.

19 There was also at the same time a letter of the same
20 date from Mr. Uderitz of Public Service to Mr. Starostecki, in
21 answer to a letter that he had sent him also, to try to follow
22 up and clarify some questions that came up at the last
23 Commission meeting.

24 COMMISSIONER AHEARNE: You are saying that what you
25 are going to say today you have incorporated information that

1 is included in this?

2 MR. EISENHUT: Yes; that is correct.

3 COMMISSIONER GILINSKY: You have had an opportunity to
4 review these letters?

5 MR. EISENHUT: Yes, we have. In fact, it has sort
6 of been a continuing discussion as we have been going along.
7 We actually had the benefit of last Thursday, a discussion
8 where Mr. Denton, myself and a number of staff went both to
9 the utility, to the plant, and we also went to the Franklin
10 Research Center. On Friday of last week, we had a meeting
11 between the NRC and our consultants, namely Franklin Research
12 Center, and Public Service and their consultants, Westinghouse.

13 That meeting was held in Philadelphia at the Franklin
14 Research Center Lab. Also on last Friday we had a couple of our
15 staff visit the Westinghouse manufacturing facility, where they
16 manufacture these undervoltage trip attachments in Pittsburgh.

17 All of these things have been going in parallel and
18 have been forming the bases and the understanding; many of them
19 were confirmatory. We have been hearing information. We felt
20 that because of the significance of a number of the issues
21 that we wanted everything documented.

22 COMMISSIONER GILINSKY: This is dated April 22nd.
23 Did you have this material before?

24 COMMISSIONER AHEARNE: Actually, later than that.
25 If you will notice, the sworn statement is the 24th.

1 MR. EISENHUT: I believe that is correct. In fact, it
2 was submitted to us pursuant to a 50.54(f) letter and it was
3 requested to be submitted to the staff by yesterday, which it
4 was.

5 COMMISSIONER GILINSKY: When you say you reviewed it,
6 does that mean you reviewed it yesterday?

7 MR. EISENHUT: We reviewed it yesterday, and as I
8 said, several pieces of the attachments we had been reviewing
9 both at various meetings where we have been having discussions
10 and the letter was really the formal documentation of a number
11 of understandings.

12 A number of the attachments, in fact, we had the
13 benefit of looking at in the meetings we had at the Salem
14 facility and at the Franklin Center on Friday.

15 COMMISSIONER GILINSKY: I gather you are saying there
16 is nothing in these letters that disagrees fundamentally with
17 the positions that the staff now have taken, or if there is,
18 you will tell us about it?

19 MR. EISENHUT: If there is anything, we will
20 certainly. That is in fact what we are talking about here
21 today in the briefing.

22 As I said, it sort of forms the bases of where we are
23 and it was really meant to be the documented bases.

24 COMMISSIONER GILINSKY: Does it change our
25 understanding of things as reflected in the SER and responses

1 I got to questions?

2 MR. DIRCKS: I think there is some factual data
3 updates but according to what I've heard, there are no changes
4 in the conclusions that the staff has.

5 COMMISSIONER AHEARNE: Not even on operability testing
6 of August 20th and January 6th?

7 MR. EISENHUT: In response to the Commissioner's
8 specific question, because I remember you had four specific
9 items you identified in a memo. Perhaps Mr. Starostecki should
10 address that. His letter of April 22nd tried to encompass those
11 four items in substance and tried to pin down the details of
12 those aspects.

13 MR. STAROSTECKI: The questions related to the
14 operability, we really, based on what the licensee has told us
15 and based on the inspection effort we have made, we find
16 records for the August 20th testing and that has not changed.
17 The January 6th testing that was done, we have not been able to
18 find the records and it is what the licensee is telling us in the
19 letter but we can't substantiate it with any surveillance
20 records.

21 The answer for post-maintenance operability testing
22 still stands as we indicated previously. What they have
23 clarified is what testing has been done and you can see the
24 dates that the testing was done.

25 The answer really is not changed. We are fine tuning

1 what was done and what relationship did or did it not have to
2 the breaker performance.

3 COMMISSIONER GILINSKY: Why don't you go on?

4 COMMISSIONER AHEARNE: One item that I would like to
5 make sure the staff covers is their current position with
6 respect to what ATWS modifications they believe are going to
7 be necessary, what ATWS hardware modifications.

8 COMMISSIONER ASSELSTINE: I had three items that I
9 would like to see covered at some point in the presentation.
10 The first has to do with the discussion in the SER, of the
11 review of deficiency reports for work order procedures, and
12 specifically I would like the staff to discuss the significance
13 of the number of deficiency reports for work orders in light of
14 the total number of orders reviewed, the significance of
15 the deficiencies that were identified and what the results
16 of that review indicated as far as the need to take a further
17 look at work orders, going back in time beyond the sample that
18 was chosen for the review.

19 My second question has to do with the management
20 review to be performed by Management Analysis Company. My
21 understanding from the SER is that management review really
22 is a detailed review of the utility's management and not just
23 maintenance or quality assurance, and my question is really
24 whether the short time period allowed for the management
25 review is sufficient to assure a thorough and detailed review

1 of the management of the organization.

2 My third question really has to do with the report
3 that we have just received from the Generic Implications Task
4 Force. My question there really is are there significant
5 findings by the Generic Implications Task Force that have
6 implications specifically for the restart decision.

7 CHAIRMAN PALLADINO: Thank you. Any others?

8 (No response.)

9 CHAIRMAN PALLADINO: I will turn the meeting over to
10 Mr. Dircks.

11 MR. DIRCKS: Going into this, I think we might have the
12 answers to the questions. One thing the Commission specifically
13 asked for last time we were down was the confirmation of the
14 training program that we had. We did submit that on April
15 22nd.

16 COMMISSIONER AHEARNE: Yes. The reason I didn't ask
17 any more questions is because you had answered it.

18 MR. DIRCKS: Good. Beyond that, I think the best
19 thing to do is go down the outline. Harold?

20 MR. DENTON: We took all the issues which had been
21 raised at the last meeting. As Darrell said, attempted to
22 run down answers and see if they changed.

23 What I would like to do is just give you a very brief
24 overview of what we are able to present today, and then go
25 to the issues that I understand you are most interested in.

1 With regard to hardware, we did obtain the two breakers
2 which were in place on the day of the failure, gave those to
3 Franklin Institute and they have had a chance to examine those.

4 COMMISSIONER AHEARNE: Those are the two that failed?

5 MR. DENTON: Yes, the two that failed. Franklin is
6 here today as our consultant and at some appropriate time can
7 report to you on their findings.

8 COMMISSIONER AHEARNE: Did you get them from
9 Westinghouse? Is that where they were?

10 MR. EISENHUT: That is correct. In fact, that is
11 one of the questions that was documented in our April 22nd
12 letter. We wanted to be sure that the ones that in fact were
13 at Westinghouse were in fact the failed UV attachments and
14 then those two were shipped disassembled to Franklin, along
15 with one other undervoltage trip attachment which Westinghouse
16 had in their possession, which had been examined visually but
17 not disassembled. That was a total of three.

18 We previously had given Franklin a fourth, it was
19 actually the first at the time, undervoltage trip attachment,
20 so they have a total of four of the eight undervoltage trip
21 attachments from the Salem facility.

22 The one modified undervoltage trip attachment here,
23 Franklin doesn't have this in their possession yet. This
24 is one of the modified versions of the undervoltage trip
25 attachment that Westinghouse is now issuing and in fact

1 Salem has agreed to provide one of those to Franklin.

2 MR. DENTON: Let me just go through the issues that
3 we are prepared to present and maybe come back and get into
4 each one.

5 Human factor issues; our examiners did return to the
6 site last week. As Darrell said, Hugh Thompson has been there
7 to look at the training and the first out panels and there
8 are a number of people who have been there and looked at it.

9 On the management issues, we did examine the 600 work
10 orders and we are prepared to tell you what we have found on
11 those. The company has got a further letter from BETA and
12 in the course of the presentation, we will answer your
13 questions, Commissioner, about management studies that are
14 ongoing.

15 We will cover the broken tab that was discovered the
16 morning of the day I was going up, and then in concluding,
17 we will mention the fact there is a 2.206 outstanding and we
18 have to act on it, and those kinds of things.

19 I understand the Commission would like to go through
20 the management issues first. I would propose that we pick
21 out that topic and discuss that one and then come back to the
22 others and be sure that we cover each of your concerns as you
23 like.

24 The hardware presentation is probably going to be
25 quite long and we can postpone that one to last.

1 MR. STAROSTECKI: Let me just explain what was done
2 in the work order area. Initially the utility had looked at
3 their work orders and identified 35 work orders that they
4 consider misclassified in accordance with the procedures and
5 system they had in place prior to the events.

6 COMMISSIONER GILINSKY: Which work orders are you
7 talking about?

8 MR. STAROSTECKI: We are talking like the work order
9 for the reactor trip breakers, one example where they didn't
10 classify it as safety grade.

11 COMMISSIONER GILINSKY: Which work orders were
12 examined?

13 MR. STAROSTECKI: This is the utility's work orders
14 that they had in the plant. They had written work orders to
15 do some maintenance.

16 COMMISSIONER GILINSKY: Over what period, and what
17 category?

18 MR. STAROSTECKI: This is since institution in '81
19 and they looked at all work orders under the old system.
20 That is where the number "35" comes from.

21 COMMISSIONER GILINSKY: Safety related and non-safety
22 related?

23 MR. STAROSTECKI: This was just looking at what work
24 orders they -- they looked at all work orders and said, based
25 on the process we had in place before the events, what work

1 orders were non-safety graded should have been safety grade.
2 That's all they looked at to identify the 35.

3 COMMISSIONER GILINSKY: They only looked at the non-
4 safety grade work orders to see if there were any of them that
5 were misclassified?

6 MR. STAROSTECKI: The second part of the effort
7 involved looking at all. After they found the 35, they then
8 changed the way in which they were looking at work orders
9 and instituted a procedure that said rather than being very
10 restrictive, they broadened the issue and said, if the component
11 although it may not be safety grade, if it is in a system that
12 we consider safety grade or safety related, we will consider
13 the work order safety related. At that point in time, they
14 looked at all work orders and the exact date is written in
15 the Safety Evaluation Report.

16 They looked at all work orders at that point and
17 that's when the number of about 873 work orders were identified
18 as not being properly classified. The difference is that the
19 classification definition changed. They simply said let's
20 start talking about a system classification rather than an
21 individual component classification.

22 The resolution of some of these 800 odd work orders
23 involved 642 deficiency reports.

24 COMMISSIONER GILINSKY: Let me understand. These
25 are work orders that were classified as non-safety related?

1 MR. STAROSTECKI: These are work orders, 873 have
2 been identified as not being safety related that appear to
3 be involved with either safety grade or safety related systems.
4 These were obviously not classified according to a new
5 definition properly.

6 MR. DENTON: The way I understand it is they had some
7 20,000 work orders which had been executed in the plant. They
8 went back and looked at all of the work orders that had been
9 executed over some time period, checked to see were they
10 considered safety related or not. Out of that, they found
11 some of them that were not called safety related that were
12 properly called non-safety related.

13 I understand there was about 800 that they decided
14 were safety related and that were misclassified. That got
15 down -- some of them were the same item, double counted in
16 the system, and that got down to 600 that were considered
17 misclassified with regard to safety related or not.

18 COMMISSIONER AHEARNE: One thing that is confusing
19 between the two descriptions is, Harold, I got the impression
20 that what you just said is that it was an actual misclassi-
21 fication, and Rich, from what you said, I thought it was
22 that they changed their classification.

23 MR. STAROSTECKI: It is really both. What we are
24 saying is based on an initial survey, it raised questions about
25 their initial classification scheme.

1 COMMISSIONER AHEARNE: Is there anything that would
2 have put that classification scheme into the area of a
3 requirement, that is would you have concluded that their
4 original classification scheme itself was a mistake?

5 MR. DENTON: Let me answer it this way, Commissioner.
6 We tried to take a skeptical view toward what they were telling
7 us. They told us about this reclassification and how they
8 got the list down. The bottom line was that out of all this
9 re-look that they did and I looked at a number of them myself
10 that they had disposed of and the staff looked at a large
11 sampling, and we got down to about 35 that were really ones
12 that could have made a difference and we looked at the
13 resolution on those.

14 I think the answer to your question is none of those
15 35 rose to a level of concern, where for one reason or another,
16 even though it had been misclassified, the system had been
17 tested after it was returned to service, there was a cap screw
18 replaced here or something there, it tended to be minor items
19 and you didn't find in this big batch things like scram
20 breakers, containment penetration, ECCS equipment.

21 I can't answer the question why did it turn out that
22 way, but for some reason, the ones that had been misclassified
23 tended to be peripheral sort of items and ones on which they
24 had documentation that systems were tested after that was
25 done even though it was not classified originally as safety

1 related.

2 CHAIRMAN PALLADINO: Except for the breakers?

3 MR. DENTON: Except for the breakers. The breakers
4 at one end of the spectrum, all the others are pretty low
5 level things, just looking through that list and talking to
6 the Inspector about it, and Rich has a lot more information.

7 They are just not major items of concern.

8 COMMISSIONER ROBERTS: Is this 35 out of a population
9 of 20,000?

10 MR. STAROSTECKI: We are talking about 15,000 to
11 16,000 as the total population that was examined. Out of that,
12 the licensee was able to reconstruct and find paperwork and
13 records and documentation for almost all of the 873 that are
14 in question. There were 34 for which they could not find any
15 documentation and they had to go back and redo tests, replace
16 seals.

17 Although as Harold says, they were not major safety
18 problems identified, it does point to a problem with the
19 process itself and the documentation.

20 COMMISSIONER ROBERTS: You are talking about two
21 tenths of one percent.

22 MR. EISENHUT: That is correct. We were just
23 checking the numbers on our SER on page 25 and 26. The
24 actual detailed numbers are in there.

25 In essence, it gets down to these 35 work orders

1 which were erroneously classified under previous work practices.
2 There were a number of others that lacked documentation.

3 What we did and one of the attachments to the letter
4 of last Friday is actually a listing of the 35, and we actually
5 reviewed at least half of those just as a check, by going
6 through and seeing the kinds of things they are, and quite
7 a few of them is where the work order did not specifically
8 call for the use of a particular procedure, but when they went
9 out and in fact looked, they did in fact use the right
10 procedure. It's somewhat coincidental. It wasn't required
11 by the work order but in fact they had.

12 MR. DENTON: I just didn't see the need to write
13 another SER. What I did was establish that the Resident
14 Inspector had looked at it, our Division of Engineering had
15 looked through it, Rich audited it, I looked at it. We just
16 couldn't find in that list anything that really arose to
17 any real safety concern. It showed a certain laxness in the
18 classification that should have been better, but not knowing
19 a priori what to find, you might expect that you would find
20 other important safety failings in there, but it just didn't
21 work out that way.

22 The breakers were clearly by far the only significant
23 item. All the others were very minor maintenance sort of
24 things and they had a basis for all but the 35 and then they
25 checked the 35.

1 COMMISSIONER GILINSKY: Of the 15,000, how many would
2 you say are safety related and how many are not?

3 MR. STAROSTECKI: These are 15,000 total. How many
4 of the total were safety related, I don't have that number
5 off the top of my head.

6 MR. DENTON: You have a sentence on page 25, of the
7 15,670, approximately 11,550 were determined to be properly
8 classified non-safety related without further review.

9 COMMISSIONER GILINSKY: About a third, it sounds like,
10 or less than that.

11 MR. DENTON: Then they sent the 4,100 over --

12 MR. STAROSTECKI: Of the ones classified as non-
13 safety, it appeared that about a third were to be determined
14 properly classified without further review.

15 On the bottom of page 25 -- I don't have the exact
16 numbers for both safety and non-safety.

17 COMMISSIONER GILINSKY: Let me ask you this. Was
18 any -- what we are talking here about is classification,
19 if they were properly put in the right pigeon hole. Was
20 any look taken at the safety related work orders to see if
21 they were properly executed? After all, they are the more
22 important ones.

23 MR. STAROSTECKI: I don't know what kind of review
24 we did. I don't think we did a thorough review of looking at
25 their safety grade work orders they had processed.

1 MR. DENTON: I think from my standpoint, my questions
2 to the staff, they were directed toward the misclassification
3 not the implementation of the ones that had been properly
4 classified.

5 MR. EISENHUT: Misclassification and potentially the
6 unsafe, that is, of the 15,600 or so which had been previously
7 classified non-safety, is clearly where we put our focus.
8 Should they have been safety, there could have been a safety
9 impact for actually doing those.

10 COMMISSIONER GILINSKY: At the same time, you were
11 dealing largely with equipment which is less important and the
12 more important question it would seem to me is are the safety
13 related items being put in properly.

14 MR. STAROSTECKI: I think you have to keep in mind,
15 of the ones that we found misclassified, there were a number
16 that were dealing with safety related and safety grade systems.
17 However, the safety significance of it was minimized when you
18 looked at the nature of the work.

19 COMMISSIONER GILINSKY: I understand.

20 MR. STAROSTECKI: It's just of interest when you look
21 at the large number that you can in fact resolve the right
22 procedure was used, although you may not have had the QC
23 inspector there, the ultimate resolution was to look at the
24 documentation, find that the right procedure was used and see
25 that the leak was satisfactorily corrected.

1 There is some degree of confidence for one reason
2 or another that even though they were misclassifying in a
3 large number of cases, they were doing the work properly.

4 COMMISSIONER GILINSKY: You are talking about the
5 few safety related items that wandered into the non-safety
6 related area. I am talking about the bulk of the safety
7 related items.

8 MR. EISENHUT: I think the only reason we didn't
9 go through the detailed audit in that area was we were looking
10 principally for a case where something could have been
11 classified, classified, not carried out, classified in the
12 wrong unsafe direction, and so our emphasis was on this large
13 number of work orders that were classified non-safety and
14 we actually went to the utility and had a flow path of how
15 it broke down and tried to take it through each step of the
16 way, ultimately down to the 35, and then because we kept,
17 as Harold said, we kept doubting, well, how significant are
18 the 35, we asked him in this April 22nd letter or 24th letter
19 to itemize all the 35. It is an 18 page listing there. He
20 went through one after another after another.

21 COMMISSIONER GILINSKY: I understand what you did.

22 MR. DENTON: I don't think we can assure you that
23 these other ones that were properly safety classified were
24 executed properly. That would have to be covered by the
25 normal inspection program. It was not a part of this look.

1 MR. STAROSTECKI: I think it is also worthwhile to
2 recollect that when we originally started this, we wanted to
3 see what kind of problem were we going to get into and
4 obviously, as we went through it, we did not find a situation
5 that really warranted us really pursuing it. We satisfied
6 ourselves that there was -- we had a handle on it and we did
7 find some lapses, but is it a catastrophic problem that really
8 raised serious concerns on my part, the answer is no.

9 CHAIRMAN PALLADINO: Do you have confidence in the
10 QA program to believe any work orders that related to safety
11 equipment were properly done? Is there any basis for
12 assurance on that?

13 MR. STAROSTECKI: Based on the normal inspection
14 program, we have the confidence that people follow the
15 procedures and the instances where they have not followed the
16 procedures, it has generally been in certain areas, tagging
17 out equipment, actual physical corrective maintenance, we
18 may in fact find some deficiencies once in a while in the
19 normal inspection program.

20 I think I have confidence based on the results that
21 we have a good maintenance program.

22 COMMISSIONER GILINSKY: Our inspection program missed
23 the items of greatest significance there.

24 MR. STAROSTECKI: That's true, in terms of missing
25 and not looking specifically at the reactor trip breakers.

1 I might point out that we do a sampling program. On
2 the day that the breakers were being maintained in January,
3 we did have inspectors looking at the process and we did raise
4 concerns about the lack of a procedure. We did raise concerns
5 about the lack of a preventive maintenance program.

6 From that standpoint, we were looking into it.

7 CHAIRMAN PALLADINO: Much of their maintenance
8 deficiency was due in part to misclassification, was it or was
9 it not? Since we seem to have a misclassification, it would
10 appear that was one of the problems.

11 MR. EISENHUT: One could certainly argue it flows
12 from that and in fact a number of the other issues, you could
13 probably make an argument that if it was classified properly,
14 you would not be leading into all these other discussions.

15 That certainly looks at it as a root of one of the
16 major concerns that we have, that it wasn't even on the
17 Master Equipment List, then if it is not on the Master
18 Equipment List, there is a procedure to be followed for
19 reviewing an item, that aspect was not carried out properly
20 and when it was looked at, the work orders associated with
21 that equipment had been misclassified.

22 We really centered on what is the equipment, what
23 is its classification, what procedures are used for evaluating
24 items on the list, really focusing in that area.

25 COMMISSIONER GILINSKY: There were also problems with

1 maintenance. INPO pointed this out. I would think you would
2 be a little more hesitant about expressing confidence.

3 MR. DENTON: Let's talk about the general issues.
4 They retained two consultants to do some studies. BETA has
5 been retained to look at the immediate response to the
6 problems that have been identified by the breakers. They are
7 also doing a longer term management look at the company and
8 how things might be improved. They have the MAC Corporation
9 looking at two aspects. One is a QA part of the company.
10 They are looking at the procedures, the practices, the people,
11 the organization. They are also looking at management in
12 general.

13 They have undertaken these two broad looks at how
14 they might strengthen the QA function and how they might
15 strengthen their own management. They have two different
16 firms. I will defer to Rich as to the schedules.

17 The company is looking to these two audits for their
18 operations for improvements, and for an overall assessment
19 of QA, we have to rely on our normal inspection program and
20 normal techniques. We did not go back and try to redo in one
21 week the inspections that went on over a period of years.

22 COMMISSIONER GILINSKY: Our inspections or audits,
23 as we characterize them, you can't be sure you will catch all
24 the things that are wrong. Only over a period of time can
25 you expect to do that.

1 I would say however we come out here, that maybe we
2 ought to take a look at the safety related items and see how
3 they fared.

4 MR. STAROSTECKI: I agree, and especially in light
5 of the fact that I do make a distinction between preventive
6 maintenance, where I think INPO came down pretty hard, and
7 where the licensee does have a program in place and one of
8 our priorities now is obviously go make sure it gets
9 implemented.

10 I do make a distinction between the preventive
11 maintenance program and the corrective maintenance program
12 and thirdly, the quality control that is exercised when those
13 things are done.

14 Overall, I have to say the programs are either there
15 or there are some better programs being developed. It is really
16 now up to us to go in and make sure they are being implemented
17 properly.

18 COMMISSIONER GILINSKY: Wasn't that the point that
19 you raised in the SER? It wasn't the programs, it was how
20 they were being carried out.

21 MR. STAROSTECKI: I agree, it is the attention to
22 detail that we were concerned with originally. That's why
23 we need to be in there and making sure the changes they are
24 instituting with the first line supervisors and that the
25 results of all these other studies are going to bear some

1 fruit.

2 COMMISSIONER GILINSKY: At any rate, let me just repeat
3 my suggestion. I think the safety related items ought to get
4 looked at, too.

5 CHAIRMAN PALLADINO: By that you mean actually check
6 to see if work orders were done?

7 COMMISSIONER GILINSKY: Were executed properly.

8 MR. DIRCKS: You want an audit of the safety related
9 work orders?

10 COMMISSIONER GILINSKY: I think they should all be
11 examined, but this isn't something that is going to get settled
12 here.

13 MR. DENTON: Let's put timeframes on these BETA and
14 MAC studies before we leave them. I understand another BETA
15 letter came in today dealing with the broken tab and that will
16 be provided to you.

17 COMMISSIONER AHEARNE: You are going to discuss that
18 later?

19 MR. DENTON: Yes, we are going to discuss that later.
20 the long range BETA study, Do you remember how many people
21 are working on the long range management work?

22 MR. STAROSTECKI: On the order of about five.

23 MR. DENTON: To be completed in two or three weeks
24 so that would be BETA's recommendations to the company.

25 COMMISSIONER GILINSKY: Who is BETA?

1 MR. DENTON: It is a consultant group.

2 COMMISSIONER AHEARNE: You say they were looking at
3 the actions of the flow particularly related to these problems?

4 MR. DENTON: They call it a short term and a long
5 term. For the short term, they look at the short term fixes
6 that the company was putting in place. They are taking a longer
7 term management look, looking at areas other than just the
8 ones that flow from this problem.

9 COMMISSIONER AHEARNE: What is the difference between
10 that longer term look and the MAC look?

11 MR. DENTON: I think there is an overlap in it. They
12 seem to be both looking at somewhat the same area. MAC is
13 putting more resources into it, it appears. I think BETA
14 intends to have their report provided and their study finished
15 in about two or three weeks, as I understand their timeframe.
16 MAC has got more resources.

17 Part of MAC is going into relooking at the QA program
18 in general of the company and the other part of their resources
19 are going into a management study. I understand on those
20 studies that they are not due to be done until mid-July,
21 mid-June.

22 MR. STAROSTECKI: Mid-June.

23 MR. EISENHUT: The order and the SER had some dates
24 in it and those dates have been revised slightly. The interim
25 report now is May the 9th and the final report with the

1 recommendations, I believe, is something like the week of June
2 13th.

3 CHAIRMAN PALLADINO: Is this MAC's?

4 MR. EISENHUT: This is the MAC approach.

5 COMMISSIONER GILINSKY: Is MAC a company that knows
6 about powerplants or are they just a general management firm?

7 MR. STAROSTECKI: No. MAC is a company that has been
8 very much involved in both fossil and nuclear powerplants.
9 NRC has a working experience with MAC. In Region I, MAC was
10 heavily involved and still is in the Boston Edison Company
11 situation with Pilgrim, and they are also involved, I think,
12 in Zimmer. They have been retained by a number of nuclear
13 powerplants.

14 The expertise in MAC is that of experienced people
15 who have been in the powerplants and have that kind of working
16 experience.

17 CHAIRMAN PALLADINO: Is any of the work that is to
18 be done by BETA to be done before restart?

19 MR. DENTON: A lot of it has been done and since they
20 have looked at the cause of breaker failures and have made
21 recommendations in this area. Of course, two recommendations
22 have been complied with. The company has obtained a letter
23 from Westinghouse certifying the appropriateness of these
24 breakers and those kinds of things have been complied with.

25 They have also looked at the broken tab and they have

1 written a letter on it.

2 CHAIRMAN PALLADINO: Are there any that have not yet
3 been completed that would have to be awaited for prior to
4 restart?

5 MR. DENTON: I don't think so.

6 MR. DIRCKS: Again I think we want to stress and there
7 is nothing we have said here in giving an update, except for
8 some of the work order material, that differs from the
9 conclusion of the SER and the description we have given in
10 that.

11 COMMISSIONER ASSELSTINE: I gather from what Rich
12 was saying, the time table for the MAC evaluation, it is a
13 little bit more relaxed than what is indicated in the SER.

14 MR. STAROSTECKI: Originally we were looking at a
15 draft interim report, May 2nd, and that has been expanded a
16 little bit, and I think rightfully so.

17 COMMISSIONER ASSELSTINE: Are you satisfied that the
18 MAC review effort is taking enough time so that they really
19 will do a thorough evaluation, both with the QA and the
20 management side, that it's not -- my concern quite frankly
21 was that when I saw the May 2nd date, is this appeared to be
22 something that was a bit too rushed, perhaps more to satisfy
23 a requirement for conducting a management review rather than
24 one that would focus on the substance of the issues.

25 MR. STAROSTECKI: I think you have to acknowledge

1 there are two MAC teams, one of about four people, the second
2 one of about eight people, and the second date for the overall
3 study has been relaxed and we agree with it. I think there
4 is no sense in rushing into it. I would rather have a better
5 quality job, recognizing that the results are going to produce
6 an action plan that is not going to go away, that is going
7 to require some kind of program for the next year or two.

8 COMMISSIONER AHEARNE: Are these studies that you
9 are requiring, you are encouraging, you think it is nice they
10 are doing it, or all three?

11 CHAIRMAN PALLADINO: None of the above.

12 MR. STAROSTECKI: I think you have to say we are
13 requiring them by virtue of the fact they are included in the --

14 COMMISSIONER AHEARNE: The reason I asked the question
15 is I am puzzled by what it is that you are looking to get out
16 of them, because it sounds like you are looking for something
17 to come out of it, but it is not something that you feel is
18 necessary before the plant gets restarted, but yet it is some
19 valuable piece of information.

20 I wasn't sure whether you were telling us about them
21 because this just represents further interesting things that
22 are going on at Salem or whether there is an integral element
23 that you would have, if they hadn't done it, would have said
24 then you couldn't recommend restart.

25 MR. DENTON: I think we are trying to walk a line

1 between -- what we have identified as one of their management
2 problems was following exactly to the letter what is required
3 but don't necessarily think up the new programs themselves,
4 so we are requiring these management studies but we have not
5 spelled out in great detail like the scope and details to do.
6 We are trying to give the company a chance to use these and
7 take a hard internal look and come up with some improvements
8 that they want, not just because we are saying do one.

9 We are requiring them. I think that is the best way
10 I can answer that. I am putting a few strings on it as to
11 the scope and depth, and we are letting them take a look at
12 what they think is appropriate and we will review the answers
13 that come back.

14 They did change the plant manager. You were informed
15 of that change.

16 COMMISSIONER AHEARNE: Yes, but the way they described
17 that is that had been a change in the works as a part of their
18 normal rotation, that they put a halt to it because of this
19 review process, they didn't want it to look like it was
20 immediately associated with it, but now they are going ahead
21 with it. I didn't see that as coming from any management
22 studies. Is that wrong?

23 MR. DIRCKS: I don't think that was part of it.

24 MR. DENTON: That is a change that has occurred. It
25 didn't come from these management studies.

1 MR. STAROSTECKI: I think it is appropriate at this
2 time with a change in station manager, with about a year's
3 experience with a decentralized organization in South Jersey.
4 We have everybody's attention as a result of these events and
5 they are going to be a little bit more careful.

6 By the same token, we don't want to go through this
7 exercise every six months with the utility, and I think that
8 is why the management study was required and I think it is
9 also desirable because it is going to get experienced people
10 to look at the problem with a new set of eyes.

11 COMMISSIONER AHEARNE: Would it be correct to say
12 it would be acceptable if the management study reached the
13 conclusion that no changes were necessary?

14 MR. DENTON: If it was well substantiated and we
15 agreed with it, yes.

16 CHAIRMAN PALLADINO: Anything more on management?

17 COMMISSIONER ASSELSTINE: That satisfies my question.

18 MR. DENTON: Shall we go next to the human factor
19 issues and the training?

20 Last time we discussed the fact that in our first
21 check, some of the operators didn't know the items that we
22 thought they should have.

23 COMMISSIONER GILINSKY: Could I stop you for a minute?

24 I raised a point a couple of weeks ago when we had
25 our previous meeting. It seemed to me they raised separate

1 kinds of management issues. I don't see them responded to
2 in any way in any of the documents which have been unchanged.
3 They are not reflected in the restart conditions. It may well
4 be that they are dealt with in Mr. Uderitz's submission but
5 I haven't had a chance to look at that since that just came
6 a few moments ago. In any case, it comes from the licensee.

7 I just wondered what the status of those are or do
8 you not see them as raising particularly important points?

9 MR. DIRCKS: Do you mean the issues raised by
10 Mr. Smith?

11 CHAIRMAN PALLADINO: Raised by responses to the
12 questions by Commissioner Gilinsky.

13 COMMISSIONER GILINSKY: No, raised by responses to
14 the questions that I asked. They raised enforcement questions
15 but that's a separate issue. They were talking about restart.

16 I felt that to the extent that the facts there were
17 correct, they raised questions about inattention to problems
18 after these have arisen or have been pointed out as opposed
19 to overall carelessness.

20 MR. STAROSTECKI: That's why we took the approach
21 we did with having in the interim, and I am talking about
22 interim being about a year, and the utility agrees to have
23 this management oversight group to get an independent look
24 at how the safety review committees and independent safety
25 groups are functioning.

1 Today I agree that yes, this was not acceptable to
2 let these kind of problems go without some kind of investigation
3 or further evaluation.

4 COMMISSIONER GILINSKY: My point was those points
5 were not reflected in the document we had last time, which is
6 the same document we are dealing with today. It may be that
7 you have some comments. We haven't received any submissions
8 on these.

9 MR. DENTON: I don't know how to deal with them.
10 Your comments state the fact that these happen and they
11 illustrate a poor response and we asked the company to comment
12 on it but we felt the actions we were taking in each of these
13 areas was the appropriate response for that, except for
14 enforcement.

15 COMMISSIONER GILINSKY: The actions you are taking
16 here respond to the problems as we understand them as of a
17 couple of weeks ago and respond to the problems of inadequate
18 maintenance over the period up to the failure of the breakers,
19 takes into account the matter of the post trip review and so
20 on. These things were known at the time.

21 We did not know the answers to the questions I
22 raised about swapping breakers and so on, at the time this
23 document was put together.

24 I don't see anything that has come from you since
25 then that reflects concern about these items.

1 COMMISSIONER AHEARNE: Actually there is the document
2 that came in the last couple of days.

3 COMMISSIONER GILINSKY: You are talking about something
4 else. That is a separate issue. We are talking about restart
5 here.

6 MR. EISENHUT: I want to make sure we are all
7 communicating. You are referring to the four points in your
8 April 18th memorandum?

9 COMMISSIONER GILINSKY: Right. I would like to
10 understand whether the points are correct or not and my
11 impression is that this may end some disputes as to some of
12 those. I would like to know what the facts are.

13 COMMISSIONER AHEARNE: The audience may be a little
14 mystified at this stage. You said why don't we make sure we
15 are communicating. Why don't you summarize the questions you
16 asked.

17 COMMISSIONER GILINSKY: Good point; you are always
18 thinking of the audience.

19 I raised questions about actions which were taken
20 by the company following trip breaker failures on August 20th
21 and January 6th, that it appeared to be from the answers I
22 received from the staff that the plant was restarted without
23 completing investigation of the breaker failure mechanisms,
24 that the licensee failed to examine the remaining breakers,
25 which were subject to essentially identical service conditions,

1 or at least all of the breakers, that breakers were replaced
2 following those failures with breakers which were apparently
3 not known to be operable, and the plant restarted without
4 fully testing replacement breakers.

5 I understand the company disputes that point. If
6 it's not right, we ought to drop it. If it is right, I think
7 it is an important point.

8 Also, again, in mid-January, when there was a certain
9 amount of maintenance on some of the breakers, it is a little
10 unclear to me on how many, that they were not all maintained
11 at that point, when a great deal more was known about the
12 problems with the breakers.

13 It seems to me these raised questions, as I said
14 earlier, of inattention to problems once they were known, as
15 opposed to the kinds of things we were dealing with earlier,
16 which is simply failure to realize there were problems.

17 It seems to me that these sorts of items, if correct,
18 and I want to be sure if they are or aren't, raise questions
19 which ought to get reflected, first of all, to be considered
20 and second of all, reflected in the restart conditions.

21 CHAIRMAN PALLADINO: Three of your questions I think
22 relate to the fact that perhaps the operating personnel didn't
23 use good commonsense and follow through. The one, number
24 three, I think, was refuted by the licensee. I think the
25 point that perhaps Commissioner Gilinsky is getting at and

1 one I am certainly interested in is have we corrected their
2 management approach so that this lack of good follow through
3 has been overcome?

4 COMMISSIONER GILINSKY: Let me just make a point.
5 You said they refuted that point. They disputed it, and you
6 may well be right. I just don't know at this point.

7 MR. DENTON: It is like any other action. We think
8 that the actions we are taking would improve performance. We
9 have a number of tools at our disposal.

10 In dealing with the company, it was my assessment
11 that it has taken hold and it is going to be better the next
12 time but how we prove that, short of doing a MAC study
13 ourselves, which I'm not sure would have any real insights,
14 I don't know how to get at that.

15 We are going on the premise that maybe your points
16 are valid, that's the way they behaved then and they need to
17 do better and that is why the order and enforcement actions
18 and the other actions.

19 MR. DIRCKS: I think the point we discussed earlier,
20 maybe not here but in previous meetings, is that we think the
21 treatment that has been prescribed in the SER would deal with
22 these symptoms, of some difficulties in post trip review and
23 management QA and the QA procurement, QA of maintenance, rather
24 than say this happened or didn't happen, I think we discussed
25 some of this in the enforcement meeting, but we think that

1 the treatment or the remedial action that we are prescribing
2 or recommending in here would deal with these issues.

3 CHAIRMAN PALLADINO: I was looking for that
4 information, for that position.

5 MR. DIRCKS: We think it is covered in the
6 recommendations in the SER.

7 MR. EISENHUT: I think this is an overall package.
8 I think there is only one where there is even any question.
9 I think the other three, I think we generally agree with the
10 statements in the memo and certainly I don't think any of us
11 were saying we should disagree with those.

12 Mr. Uderitz's letter to Mr. Starostecki of April 22nd
13 or dated April 22nd, page three and four, question four is
14 the only one that even goes to refute any of those, and that
15 is a very minor area, and that is whether or not on August
16 the 20th, 1982, when they swapped the breakers, did they or
17 did they not test it, and this letter says it was tripped
18 to the undervoltage trip attachment and it was not tested
19 via the shunt.

20 MR. STAROSTECKI: The key thing here is the
21 inspectors. We have been able to independently look and
22 find surveillance records that support that. There is no
23 disagreement on August 20th. Similarly, the licensee claims
24 that after the January 6th exchange of breakers, he also did
25 test. We have not been able to find any records or

1 documentation to support that. We know that based on what
2 the licensee says, the tests that were done would not have
3 tested necessarily the UV attachment itself, but the issue
4 is sort of moot because we don't have any records.

5 COMMISSIONER AHEARNE: Is the licensee claiming it
6 from memory?

7 MR. STAROSTECKI: The letter indicates they tested
8 it via the protection system which would exercise the UV
9 attachment. We don't have any records to show that kind of
10 test was done.

11 COMMISSIONER AHEARNE: As far as you know then at
12 the moment, this is just the licensee's memory?

13 MR. STAROSTECKI: That is correct, it's recollection
14 based -- it would appear to me based on interviews that he
15 has had with his personnel.

16 MR. EISENHUT: Just to make sure the record is
17 straight, the letter actually says it was tested two ways
18 following January 6th. First it was tested from the manual
19 trip, manual reactor trip switch which tripped both the shunt
20 trip and the undervoltage trip and it was also tripped via
21 the undervoltage trip from the protection system.

22 His letter stated that he in fact tested it twice.

23 That is the only question that I know there is any
24 question about the statements in Commissioner Gilinsky's
25 April 18th memo and I believe in fact we generally agree.

1 CHAIRMAN PALLADINO: How does that impact on the
2 management issues?

3 MR. STAROSTECKI: We had already considered the issue
4 of post maintenance operability testing and the management
5 and this just lends support to the fact that this was a weak
6 area and steps needed to be and were taken to correct that
7 deficiency.

8 CHAIRMAN PALLADINO: All the breakers in there now
9 are new ones and have been tested? Is that correct?

10 MR. STAROSTECKI: Unit 2 has none. Unit 1 has new
11 ones. I can't tell you right now today whether they have
12 been tested, because the technical specifications required
13 certain things within seven days.

14 MR. EISENHUT: They have been tested. In fact, the
15 Unit 1 trip attachments have undergone a rather extensive base
16 line test program and we will be addressing that in a couple
17 of moments, I think.

18 CHAIRMAN PALLADINO: I would suggest that we go on,
19 unless there are additional questions.

20 COMMISSIONER GILINSKY: Let me just make a brief
21 comment. In Attachment 1 of the SER, you have seven and a
22 half pages of detailed conditions that you are attaching to
23 restart, with numerous items on each page.

24 I guess I am surprised -- items which reflect our
25 understanding as of a couple of weeks ago when some of these

1 items were not known, and without having studied them in detail,
2 I'm still a little surprised that nothing is needed to take
3 account of the additional information. At this point, I don't
4 have a specific proposal.

5 MR. EISENHUT: I think you will see on the bottom
6 of our slide, it says "update the SER and Order." There are
7 some minor changes that are needed for the SER and the Order
8 which we propose to make prior to start-up and those are the
9 ones we basically have been discussing here with the Commission.

10 If there is a changed fact, if there is a change
11 in some details, we intend to make those in the SER. We
12 believe that the overall remedy that we are proposing from
13 an enforcement standpoint and the overall package that we are
14 putting together as conditions for restart adequately address
15 those and encompass those changes without really no basic
16 change to the overall items.

17 CHAIRMAN PALLADINO: Can we go on? Do you want to
18 cover training next?

19 MR. DENTON: For training I mentioned that we had
20 some examiners at the site. They re-verified that this
21 knowledge had been learned. We sent down a note to that
22 effect.

23 COMMISSIONER AHEARNE: The only question I have is
24 in the eight that you randomly selected and re-verified, did
25 you do those eight separately or altogether?

1 MR. THOMPSON: They were done separately. They were
2 four selected at the simulator and requalification training
3 program and four were selected at the operating plant itself
4 and we did them separately.

5 COMMISSIONER AHEARNE: When you went through the
6 walk through, they were done --

7 MR. THOMPSON: Individually; correct.

8 MR. DENTON: A number of us have looked at these,
9 the color, the first out panel and the silence and acknowledge.
10 I think the staff's view is they were fine for restart but
11 should be considered as part of the control room review,
12 which is what we had suggested last time.

13 CHAIRMAN PALLADINO: Was it as difficult to tell the
14 colors as seemed to be the indication?

15 MR. DENTON: I didn't have any difficulty.

16 COMMISSIONER ASSELSTINE: It looked pretty red to
17 me when I was there.

18 MR. DENTON: They are not as red as you sometimes
19 find, but clearly distinguishable in my opinion. To answer
20 Commissioner Ahearne's questions, they could be modified by
21 changing bulbs. The silence/acknowledge question that
22 Commissioner Gilinsky raised is an interesting one. As we
23 discussed last time, when you depress that knee level switch,
24 it not only turns off the audible alarms, it clears the board
25 of any signals which have cleared.

1 I find that a number of plants are designed that way
2 around the country. There are also plants which have
3 individual buttons for silencing alarms and then clearing the
4 board.

5 In talking to the operators, often they think they
6 are in a situation in which they need to clear the board and
7 start all over with the new alarms.

8 I think this is sufficiently complex because of the
9 way they are wired up, with different panels and alarms, but
10 it should be part of the control room review that is coming
11 up and it might well be they are able to find an improvement.

12 I don't feel comfortable with the situation. I know
13 what we might require and justify in an order.

14 CHAIRMAN PALLADINO: Any other questions?

15 COMMISSIONER AHEARNE: I am not sure if it is under
16 human factors. I know April 15th has now passed. There was
17 a requirement that they have submitted schedules updating their
18 ALP. Did they do that?

19 MR. EISENHUT: Yes, they did. In fact, since that
20 letter came in, I think there has actually been an iteration
21 on it already. We have been told from the utility that they
22 expect to give us the detailed control and design review
23 report by the end of 1983. Everything will be upgraded and
24 put in place during 1984, with the exception of the SPDS,
25 which is a long lead item. That information is as recent as

1 this morning.

2 MR. DENTON: Turning next to hardware issues, I would
3 like to ask our consultants from the Franklin Research
4 Institute to join us at the table.

5 Let me introduce Dr. Zenons Zudans, which some of
6 you many know from ACRS. He is a Vice President of Franklin.
7 I will let him introduce his associate.

8 DR. ZUDANS: To my left is Gary Toman. He did all
9 the test work and examination work associated with UVTA's
10 and my role today is only to introduce the subject in general
11 and I decided to state the conclusions at the beginning, so
12 that would give you an opportunity to ask more profound
13 questions, and then Gary will begin to give you the technical
14 details.

15 In this role, I am not the technical expert. I am
16 only here to introduce the technical expert.

17 CHAIRMAN PALLADINO: That happens to all of us.

18 DR. ZUDANS: I would like to introduce Dr. Carfagno.
19 He is in charge of the department in which Mr. Toman works
20 and he is very closely related to all the equipment
21 qualification procedures and he runs our nuclear engineering
22 department.

23 (SLIDE.)

24 DR. ZUDANS: In the process of this work, we had a
25 certain scope defined. It really didn't come about in one

1 instance. It developed as things progressed. The key issue
2 was to identify the most probable cause of failure of these
3 undervoltage devices.

4 Also, we proceeded to evaluate existing and proposed
5 and required maintenance procedures, and that piece of work
6 is still in the process.

7 As the mind is made up, it becomes easier and easier
8 to define what steps you have to take to prevent recurrence
9 of such an event.

10 We expect that we will be participating in review
11 of the life test procedures, because it is with you essentially
12 as a necessity to establish what kind of a life this
13 particular device may have in the given operating environment
14 in which it must reside. We also want to find out exactly
15 what statistical characteristics that kind of a life carries
16 with it, what is the confidence level, the probability of
17 failure if it is called upon to perform and so on. That work
18 is not defined yet. It is not done. It is a future effort.

19 We are also being called to support this licensing
20 effort and other related licensing efforts on an "as needed"
21 basis.

22 With this statement of what we are called upon to
23 do, I would like to turn to the next slide and state the
24 conclusions.

25 (SLIDE.)

1 DR. ZUDANS: The reason for my stating the conclusions
2 before Gary has a chance to describe the technical efforts
3 is to prepare you so you can attack it more profoundly.

4 We concluded after Gary's examination that the
5 most probable failure mechanisms are due to wear aggravated
6 by lack of maintenance.

7 It may be aggravated by misconception as to what the
8 device needed to have done to it. As you will see, it should
9 not be subjected to any exercises essentially other than
10 very minimum maintenance.

11 I also wanted to evaluate as to what can we state
12 at this time relative to being able to perform the services
13 called for, as to the device.

14 We came to the conclusion that if personnel is
15 prevented from interfering with a device and instructed in
16 how to perform the minimum maintenance required, the device
17 is okay. It could be used for essentially any period of time,
18 at least for the next six months.

19 COMMISSIONER AHEARNE: Any period, not 20 or 30 years?

20 DR. ZUDANS: No. Any period of time. I should have
21 used the term "any reasonable period of time," as a minimum,
22 six months in our opinion.

23 There is really basically nothing wrong with the
24 device other than the people who are exposed to it did not
25 know what they should do or should not do.

1 The other fact that we found out is that the device,
2 as the device deteriorates, it is detectable. In other words,
3 it will let you know it is hurting. All you have to do is
4 follow simple procedures. You should never repair the device,
5 you should never repair it. You just throw it away and replace
6 it with another device.

7 Whether or not pieces of it can be used to generate
8 another device which is old, that is another issue. The
9 device is not to be repaired at the site. It is only a single
10 attachment in our opinion allowed to the device in the field
11 and Gary will explain the meaning of that.

12 As a matter of fact, that was not the case in this
13 exercise. Essentially everything was done to it for whatever
14 reasons, lack of understanding --

15 COMMISSIONER GILINSKY: What was not the case?

16 DR. ZUDANS: In the current use of these devices,
17 apparently repairs were permitted to the device on the site,
18 adjustments, repairs, adjustments of different pieces of the
19 mechanism, which should not be allowed.

20 In other words, we found that if the device as
21 manufactured is installed and the proper lubrication provided,
22 it will live its life without any further attention to it.

23 COMMISSIONER GILINSKY: Was improper repair a factor
24 here?

25 DR. ZUDANS: Yes, sir.

1 COMMISSIONER GILINSKY: It doesn't seem to be reflected
2 in your conclusions.

3 DR. ZUDANS: Our conclusion is you shall not touch
4 it, just leave it as it is, aside from lubrication.

5 CHAIRMAN PALLADINO: Or replacement?

6 DR. ZUDANS: Or replace it if it deteriorates.

7 COMMISSIONER GILINSKY: These are conclusions about
8 these devices in general as opposed to the particular failure
9 that we are concerned about here?

10 DR. ZUDANS: Yes, sir. This is in general, general
11 conclusions in our opinion.

12 COMMISSIONER AHEARNE: Some minimum maintenance is
13 required?

14 DR. ZUDANS: Yes. Gary will talk about the
15 maintenance and we understand that maintenance is prescribed
16 by Westinghouse, the manufacturer. As far as my position is
17 concerned, we do not find anything wrong with that.

18 COMMISSIONER GILINSKY: Do you have any thoughts
19 about the particular failure at Salem?

20 DR. ZUDANS: Gary has a whole bunch of interesting
21 stories about that.

22 COMMISSIONER GILINSKY: Let's hear them.

23 (SLIDE.)

24 MR. TOMAN: Basically I am going to go over four
25 areas. First is a description of the operation of the device

1 and then a description of the most probable causes of failure,
2 again to reiterate the conclusions and then to give
3 recommendations.

4 COMMISSIONER AHEARNE: Where necessary, perhaps you
5 can make sure you are distinguishing between conclusions you
6 are drawing on the specific devices that failed versus general
7 conclusions you are drawing about that type of device.

8 MR. TOMAN: The first picture shows the basic device
9 with a lot of labeling.

10 (SLIDE.)

11 MR. TOMAN: This is a side view of a circuit breaker.
12 I put this up just to show where the trip bar is that we are
13 concerned with, which is where the undervoltage trip attachment
14 interacts with the circuit breaker.

15 This is the trip bar going back into the trip latch.
16 This is the bar right here. It is lifted by the undervoltage
17 trip attachment.

18 (SLIDE.)

19 MR. TOMAN: This is a picture of the same circuit
20 breaker with the undervoltage trip attachment superimposed
21 upon it, so you can see how it fits onto the circuit breaker.
22 You have an actual trip attachment here.

23 The little tab at the bottom is both the one that
24 broke off on the recent incident and it is also the one that
25 lifts the trip bar for proper operation.

1 At this point, I will go to my model. In order to
2 try to show the operation, I had a model made to show how the
3 device works.

4 In this position, it's tripped. The trip lever,
5 which is the little tab, is in the up position. It only has
6 to move a very short distance to trip the circuit breaker.
7 When the circuit breaker opens, the bar from the circuit
8 breaker forces this lever back and forces the device to reset
9 by compressing the main spring. This is the power spring here.

10 At the same time, the latch is partially made up.
11 If now the coil is energized, it causes the moving core to
12 push out the bottom of this lever. The pivot point of that
13 lever is the rotating "D" section latch.

14 When the circuit breaker goes closed, it no longer
15 forces this lever back. This lever moves forward slightly
16 and this is energized, this latch remains made up. It is now
17 armed, ready to trip the breaker and the coil is de-energized.
18 When that coil is de-energized, the force, it prevents this
19 arm from rotating, the spring that closes to rotate, it
20 causes that to happen and it worked beautifully that time.

21 It released the latch and the breaker is tripped.

22 I will do it one more time. This coil is de-energized,
23 this rod no longer pushes, and the latch falls off. The force
24 of the spring trips, lifts the trip bar, tripping the circuit
25 breaker.

1 (SLIDE.)

2 MR. TOMAN: I would like to discuss the items that
3 were included in my review to date. The first work I did
4 was to attend a site visit with Mr. Noonan, where we discussed
5 things with the maintenance and operating personnel to try
6 to get some history of the device, to determine how it had
7 reacted previous to the event and to get a general feel for
8 the way the conditions surrounding the incidents were.

9 That date, we also received the Unit 2 "B" under-
10 voltage trip attachment, which we asked for one; that was the
11 one we received.

12 I evaluated it and tested that device.

13 COMMISSIONER AHEARNE: That was not one of the ones
14 that failed?

15 MR. TOMAN: No, it was not. It was from Unit 2.

16 Early on I recognized that there could be some
17 variations from device to device. I went back to Salem to
18 try to see as many other devices as I could. It turned out
19 that one was available for my review. I did make a list of
20 variations between the two.

21 Also at that time I asked to observe the circuit
22 breaker with an undervoltage trip attachment so that I
23 could watch it in operation. The one that was available was
24 the one I had in my briefcase. I put the 2 "B" on one of
25 the Unit 2 circuit breakers.

1 To observe the operation, I did not realize at first
2 that they had DC power available. We put this on the circuit
3 breaker and I let it go manually like that (indicating). On
4 the first few trys, on the first try, I got no trip of the
5 circuit breaker. On the second try, similarly. After that,
6 we began getting repetitive trips of the circuit breaker and
7 when they did energize it electrically, we also got
8 repetitive trips of the circuit breaker.

9 I did observe with the 2 "B" device a non-trip of
10 a circuit breaker. It may not have been totally indicative
11 of the conditions associated with the Unit 1 devices. Again
12 the control of the device I had was not superb. It is not
13 known that condition would have existed in use in the plant.

14 On the 17th of March I went back to test --

15 COMMISSIONER AHEARNE: Excuse me. In testing the
16 device back at Franklin, had you run into any problems with
17 it?

18 MR. TOMAN: I had noted conditions which I will get
19 into in a minute about the failure modes that I have noted.

20 CHAIRMAN PALLADINO: Did you identify why it did not
21 trip those first two times?

22 MR. TOMAN: It goes along with one of my failure mode
23 statements.

24 On the 17th I went back to determine what the trip
25 bar forces were on the Unit 1 devices. It turned out that

1 I was allowed to take measurements on two of the devices on
2 Unit 1, the trip bar that is, the force required to lift the
3 trip bar, and on all four of Unit 2. At that time I did find
4 out that one of the Unit 1 trip bars had a high force with
5 respect to what was expected.

6 After that I went back to Franklin and we disassembled
7 the device, my Unit 2 device, for microscopic examination of
8 the components and then lastly, I received from Westinghouse
9 the 1 "A" and 1 "B" components that were not assembled. We
10 did an examination on those to see if there were any changes
11 in our findings.

12 COMMISSIONER AHEARNE: They were not -- what did you
13 say?

14 MR. TOMAN: They were not assembled. It was a
15 disassembled device.

16 CHAIRMAN PALLADINO: Disassembled what, undervoltage
17 coil?

18 MR. TOMAN: Both of them were totally disassembled,
19 the entire novice section was off, the back was off, the coil
20 was separate.

21 COMMISSIONER AHEARNE: You had a collection of pieces
22 which were identified as being --

23 MR. TOMAN: They had been kept separately.

24 MR. EISENHUT: These are the two devices in the
25 April 22nd letter that have now been identified as the two

1 failed breakers from Unit 1?

2 MR. TOMAN: My understanding is Public Service had
3 disassembled 1 "A" very early on and sent that to Westinghouse.
4 They sent the assembled 1 "B" to Westinghouse which was
5 examined, tested and then disassembled by Westinghouse.

6 MR. DENTON: The only point that you didn't mention
7 was at last Friday's meeting Westinghouse was supposed to tell
8 you what they did, what their examination was. Did that
9 meeting occur?

10 MR. TOMAN: Yes. We had a meeting on Friday of last
11 week, where Public Service, Westinghouse, the NRC and Franklin
12 Research met at Franklin Research Center. We discussed it.
13 Westinghouse presented their findings. Franklin presented
14 their findings. We determined if there was any significant
15 variations and there were not.

16 There was no debate concerning one set of findings
17 versus the other. We did find out a little bit more about
18 each other's research effort and why there seemed to be
19 disagreements early on and they went away during the meeting.

20 During my evaluation of the 2 "B" device, I determined
21 two basic failure modes which could have caused a failure to
22 trip. I will go back to the model.

23 CHAIRMAN PALLADINO: These are the two failure modes
24 in general?

25 MR. TOMAN: These are the two most probable ones

1 that I found.

2 DR. ZUDANS: As observed on actual devices.

3 MR. TOMAN: I found indications on the 2 "B" device.

4 The first one is the pivot point for the latch
5 pin and the latch pin to moving latch increase friction and
6 it would tend to make the device not unlatch. What I observed
7 on my device was when I de-energized the coil slowly, which
8 is not the way it is done in the field, I grant you, it is not
9 done that way in the plant, I got a partial movement at one
10 voltage and as I continued to drop the voltage a few more
11 volts, I then got the remainder of the trip, indicating
12 bearing or some friction here, which leads me to believe that
13 it is possible for this thing to be de-energized and if there
14 is a degradation in the pin or the bearing surfaces and in
15 this latch, it could bind up and not go off the latch. That
16 is one possible failure mode.

17 The second possible failure mode--I think at this
18 point I also want to discuss a little bit about the nature
19 of the screw in the nose here. That connects to a spring
20 which comes down through the body of the device, and that is
21 what causes the rotation.

22 On my device, when I received it, this screw was
23 set all the way in, which reduces the spring tension, which
24 tends to prevent operation.

25 It is not known clearly when that adjustment was

1 made. Westinghouse also found that same kind of set-up when
2 they received the unit, the 1 "B" device. The 1 "B" has the
3 screw turned in.

4 CHAIRMAN PALLADINO: What kind of spring is that?
5 A compression spring?

6 MR. TOMAN: This is a coil spring that goes from the
7 end of the screw inside here down this way.

8 CHAIRMAN PALLADINO: The more you turn it in, the
9 less tension?

10 MR. TOMAN: It is in tension, you turn the screw and
11 it is tied to the back of the screw and it reduces the tension
12 on it.

13 One possible scenario for that having happened is
14 that sometime during the operation of the device, there is
15 another failure mode which leans toward a safe condition and
16 that is at a mode where the corners wear off of the moving
17 latch and the rotating latch, such that when you close the
18 circuit breaker, it no longer is holding this in a overtravel
19 position and even though it is energized, it falls off the
20 latch and causes the breaker to trip immediately. That is
21 referred to as trip free.

22 Someone believing they can cure that could back this
23 screw in to reduce the turning force. That is something that
24 could get you in trouble later because if you do have a
25 burr there, you no longer have the force to override that burr.

1 It is very critical that you don't turn this. If
2 you start getting a trip free situation, this is one of the
3 items that Dr. Zudans said to replace the device immediately,
4 that is for that condition.

5 You would have one and you test it and you find
6 that it doesn't move smoothly when you de-energize it
7 gradually, that it does hang up partially, that indicates you
8 have burring there and you probably should get it replaced
9 or reconditioned by the factory.

10 The second failure mode I observed in the 2 "B"
11 device was there is a spring on the device. It is a flat
12 phosorhron spring that pushes this forward. In the latched
13 position, it was hard against the back. The roughness of the
14 back of the latch had worn into the spring and caused friction,
15 and there also is additional friction down at the bottom, and
16 that led me to a scenario where the output force of this
17 device was reduced and the speed with which it traveled was
18 reduced, therefore it could come up with the inadequate force
19 to trip the circuit breaker.

20 That is a possibility, especially if the circuit
21 breaker trip bar force increases, as observed on the Unit 1
22 "A" devices before it was corrected recently.

23 Those are the two primary failure modes I have.
24 One is the arm not traveling forward and the other is even
25 after the latch comes off, the device doesn't have the energy

1 it once had when it started out new.

2 CHAIRMAN PALLADINO: What keeps the friction on that
3 spring?

4 MR. TOMAN: It was hard against the back. The
5 roughness of the back of the latch had worn a groove, a very
6 rough groove into the spring, and also down in the pivot points
7 there was signs of wear. You can improve this by smoothing
8 the back.

9 The one I had appeared not to have been smoothed.
10 I understand the newer method of manufacturing does require
11 the back to be smoothed, the front to be smoothed and the
12 latch areas to be smooth so you don't have burrs from
13 manufacturing.

14 Some of the lubrication points now are the back of
15 the spring, this pin here (indicating), the pivot points
16 here (indicating) and I understand some of the other pivot
17 points but I'm not exactly sure what points they are at this
18 time.

19 Those are my two main failure modes.
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tape 2A-1

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COMMISSIONER AHEARNE: Are those failure modes that you think would have been prevented with adequate maintenance or are they design weaknesses or manufacturing weaknesses?

MR. TOMAN: The device I had did have rough surfaces. The newer manufacturing standard requires those to be smooth. So that would get rid of some of the friction right away.

COMMISSIONER AHEARNE: You have looked at three devices?

MR. TOMAN: Yes. There are some differences in 1 "A" and 1 "B". The 1 "B" and 1 "A" do not appear to have had a strong force against the back by the spring. They appear to have been looser.

COMMISSIONER AHEARNE: So you don't see the groove on the spring?

MR. TOMAN: Right. I did see a notch in the nose of the travelling latch on the 1 "A". I did see very heavy wear down in the lower trip lever assembly on the 1 "B". so either that on the frictions could have been on the 1 "B" and possibly the travelling on problem on the 1 "A".

COMMISSIONER AHEARNE: So if I understand correctly what you have said is that you identified two basic failure modes for the generic device.

Now with respect to the two disassembled ones that you looked at, would you be willing to reach a

1 professional judgment as to what were the most likely causes
2 of failures for those two devices?

3 MR. TOMAN: On the 1 "A", I do see on the disassem-
4 bled, I have never seen the assembled ones and it is very
5 difficult to say what actually happened to it.

6 COMMISSIONER AHEARNE: I understand.

7 MR. TOMAN: But I did see a nick in this upper
8 area where when you do overtravel in the backward position
9 when the breaker goes open and then suddenly close the
10 breaker, that latch comes down rather hard on that latch
11 pin. I did see indication of a small nick caused by the latch
12 interfaces when they came together on the 1 "A".

13 So I would say perhaps the 1 "A" bound that way.
14 It is difficult to say for sure. On the 1 "B", I saw very
15 heavy friction and wear patterns in this lower spring-
16 bearing surfacing saying that perhaps there was reduced
17 output on that. But it was unclear exactly what was the
18 condition of either of them.

19 COMMISSIONER AHEARNE: You are less sure on 1 "B"
20 than you are on 1 "A"?

21 MR. TOMAN: I would say that I couldn't say for
22 sure. I have never seen it assembled and it is very difficult.
23 There are a number of oddities to the components. I would
24 say that on 1 "B", the friction indicates that this was a
25 very rough running area in here. So that could be a reduced

1 output one. So it seems that they have just the opposite
2 conditions.

3 COMMISSIONER AHEARNE: In your meeting with
4 Westinghouse since they at least had one of them before
5 it was taken apart, did they tell you they had any
6 conclusions as to why it had failed?

7 MR. TOMAN: Their conclusions were that there could
8 have been multiple causes. They did not come up with a
9 specific cause. Wear and friction, frictional anomalies
10 was what they suspected to be the most probable cause.

11 COMMISSIONER GILINSKY: What about the maintenance
12 that was conducted a month earlier? What was the effect of
13 that?

14 MR. TOMAN: The 1 "B" breaker may have been
15 maintained but not by Westinghouse.

16 COMMISSIONER GILINSKY: Do you know whether it was
17 maintained or not?

18 MR. TOMAN: Yes, it was maintained.

19 CHAIRMAN PALLADINO: By that, do you mean that it
20 was lubricated?

21 MR. TOMAN: The lubrication used was not the
22 lubrication which is recommended.

23 CHAIRMAN PALLADINO: But by maintaining, you mean
24 it was cleaned and lubricated whether it was done properly
25 or not?

4
1 MR. TOMAN: I can't say. I am told it was.

2 COMMISSIONER AHEARNE: Actually by the time you
3 had both of them disassembled, both of them by then would
4 have had an opportunity to have been lubricated, cleaned in
5 examination. Were both in that kind of condition?

6 MR. TOMAN: The condition I got it in was clean,
7 no lubricant. From what I understand, the 1 "B" had been
8 lubricated for sure and Westinghouse had taken the
9 lubrication off of it for the purposes of their testing.
10 It was the inappropriate lubrication.

11 COMMISSIONER GILINSKY: When you are saying that
12 it is the inappropriate lubricant, we have been through this.

13 MR. TOMAN: It is not the one that Mr. Esposito,
14 the repairman, used. This was something that was after the
15 event, it was lubricated with another lubricant.

16 COMMISSIONER GILINSKY: Oh, after the event?

17 MR. TOMAN: Yes.

18 COMMISSIONER GILINSKY: Then that would not have
19 affected the breaker failure?

20 MR. TOMAN: Right. That is why it was removed.

21 COMMISSIONER GILINSKY: What about the breaker
22 failure?

23 MR. TOMAN: The lubricant used in January time
24 frame was totally different than the lubricant required now.
25 It is a solvent with a light parafinic residual.

1 COMMISSIONER GILINSKY: Was this Calfonex?

2 MR. TOMAN: Calfonex 78-A. When you read the
3 listing of claims on the cans, they are very similar to
4 CRC-2-26. They are the same class.

5 COMMISSIONER GILINSKY: But using that lubricant
6 could have affected the operation of the breakers?

7 MR. TOMAN: It would have, perhaps. The 1 "A"
8 breaker had been the one that failed from Unit 2 that had
9 been moved over.

10 COMMISSIONER GILINSKY: Right.

11 MR. TOMAN: It perhaps would have helped and made
12 the thing look like it was perfect but as the solvent and
13 parafins evaporated, it could have gone back to the exact
14 same state it was in.

15 COMMISSIONER GILINSKY: So the lubricant wasn't
16 contributing to the failure. You say, it simply did not
17 help.

18 MR. TOMAN: The 1 "A" device had failed on Unit 2
19 in January. It was then put in the 1 "A" position and
20 sprayed with this spray. It seemed to be working fine.

21 COMMISSIONER GILINSKY: Have you done any tests
22 with that lubricant?

23 MR. TOMAN: Not this particular lubricant. We
24 finally got a can of this particular lubricant, this
25 particular Calfonex, on Friday.

6
1 COMMISSIONER AHEARNE: What you are saying is that
2 that lubricant, your tentative conclusion is that lubricant
3 lubricates but it doesn't last very long.

4 MR. TOMAN: It wasn't intended for this purpose.

5 COMMISSIONER GILINSKY: But that is speculation
6 at this point, I gather. You really haven't conducted any
7 tests with it.

8 MR. TOMAN: There is no firm testing on that.

9 COMMISSIONER GILINSKY: For a while we were blaming
10 the lubricant and then we went back and thought it was okay.

11 MR. TOMAN: It is like a contact cleaner you would
12 use. Its claims are that it displaces moisture and would
13 lubricate electrical contact surfaces.

14 COMMISSIONER GILINSKY: Doesn't Westinghouse have
15 experience with these breakers? Why would the man have used
16 a lubricant that wasn't the right lubricant?

17 MR. TOMAN: I do not know.

18 COMMISSIONER GILINSKY: I gather this is a common
19 lubricant used by Westinghouse for these breakers?

20 MR. EISENHUT: I think the point is that the
21 recommended lubricant today is totally different for obvious
22 reasons and Gary perhaps you want to comment on the recommended
23 lubricant today.

24 MR. TOMAN: The present lubricant is molybdenum
25

7
1 disulfide.

2 COMMISSIONER GILINSKY: Which was not originally
3 recommended?

4 MR. EISENHUT: That is correct.

5 COMMISSIONER GILINSKY: I will tell you why I asked
6 this. I don't have a particular view on the lubricant issue
7 but I am disturbed that we seem to have wandered back and
8 forth on it and now the lubricant seems to be a problem
9 again. It would be nice to get that straightened out.

10 MR. DENTON: We think we got it straight. Unless
11 we send out IE investigators, we can only tell you what we are
12 told.

13 COMMISSIONER AHEARNE: I think what Vic is pointing
14 out is that the original comment was that the lubricant might
15 have harmed the breaker and helped cause the failure.

16 MR. TOMAN: That was the original concern I had.
17 It would have been a common mode situation.

18 COMMISSIONER GILINSKY: But now you are saying
19 that it may have made it appear to have worked properly.

20 MR. TOMAN: It would have given momentarily relief
21 but not permanent relief.

22 COMMISSIONER GILINSKY: And not continues to be
23 effective. But that is really a supposition on your part
24 because you haven't conducted any tests. It is an interesting
25 hypothesis and I hope you will follow it up but I think at

1 this point it is nothing that we can rely on.

2 CHAIRMAN PALLADINO: I think though one of the things
3 that we want to know is whether the lubricant that is being
4 put in there now is going to be effective and on what basis.

5 MR. DENTON: Let me come back and stress one point.
6 You made the point that the screw on the end had been
7 tightened all the way in.

8 MR. TOMAN: Yes.

9 MR. DENTON: Which tended to reduce its operating
10 forces. Also, you showed me that that leaf spring had been
11 gouged apparently by a screwdriver, someone rather inartfully
12 trying to make an adjustment.

13 MR. TOMAN: That was on the 1 "B" device and we
14 don't know when that occurred.

15 MR. DENTON: So there were several instances in
16 looking at these breakers that you could tell there were
17 gouges and scrapes that someone was trying to adjust them
18 to make them maybe work. You can also observe quite a bit
19 of wear. If it had not been lubricated, it had been wearing
20 and then it had also been inartfully handled with people
21 trying to force it with screwdrivers to get it in a more
22 operating mode. So I think you put those two things together
23 is what led you to your conclusions that it is best not to
24 try to repair it but to replace it.

25 MR. ZUDANS: That is the key point that we want to

9
1 make. Do not attempt to repair it. It is not intended for
2 field repair. There is only one adjustment that field
3 should make and Gary will explain that.

4 COMMISSIONER AHEARNE: One of the questions I was
5 trying to get an understanding for is whether your conclusion
6 you just reached would lead me to conclude that you are
7 saying that it is not a device that should be expected to have
8 multiyear life.

9 MR. ZUDANS: I wouldn't go that far, but please
10 finish.

11 COMMISSIONER AHEARNE: The impression I am getting
12 is that you shouldn't expect a multiyear life and be the
13 subject of a periodic maintenance program, that instead
14 it should be something with perhaps a minimum maintenance
15 program with surveillance tests and when symptoms show up,
16 replace.

17 MR. ZUDANS: You phrased it better than I can
18 possibly do. The device does not allow any hardware modifi-
19 cation on site. The only thing you are allowed to do is to
20 lubricate in accordance with prescriptions. When it begins
21 to fail, that is the end of life. You replace it. Whether
22 the life is one year, two years or ten years, we do not know
23 at this time because further tests are necessary for that.

24 CHAIRMAN PALLADINO: Do you have a comment?

25 MR. NOONAN: I was going to comment on the

10 1 lubrication. We have looked at the Calfonex and the CRC-2-26
2 and while that was probably the wrong type of lubricant to
3 use for this device, the new lubricant as specified by the
4 service bulletin as put out by Westinghouse calls for this
5 molybdenum disulfide type lubricant. It is identified by
6 number and we have looked at it closely enough that we do
7 not have any problems for its future use.

8 COMMISSIONER GILINSKY: It seems to me that we
9 ought to go into this further when we consider the generic
10 implications.

11 COMMISSIONER AHEARNE: I disagree, not that I don't
12 agree that we ought to look into it further in generic, but
13 the point that I was trying to understand here is -- let me
14 say it a different way. There is a difference between whether
15 the Salem operating plant crew were making a lot of mistakes
16 and therefore messing up these devices or whether the
17 devices themselves perhaps aren't very well designed for the
18 type of life they were in. That is a very specific issue.

19 COMMISSIONER GILINSKY: I think there is certainly
20 a little of both or a lot of both.

21 CHAIRMAN PALLADINO: Perhaps one of the reasons
22 they worked so well for so long was that it didn't require
23 any maintenance.

24 (Laughter.)

25 CHAIRMAN PALLADINO: That seems to be implied from

1 what you said.

2 COMMISSIONER GILINSKY: The maintenance could have
3 overcome the deficiencies in the device.

4 CHAIRMAN PALLADINO: I think we are speculating on
5 a number of points. Commissioner Gilinsky is going to leave
6 promptly at two minutes before four. You said you had to be
7 out of the building at four so I gave you two minutes to get
8 out.

9 COMMISSIONER GILINSKY: I think John has an
10 important point.

11 CHAIRMAN PALLADINO: I think it is a very important
12 point.

13 MR. DENTON: I will attempt to answer the
14 Commissioner's question. Was it the type of maintenance that
15 it did get or was it the kind of lubrication that it didn't
16 get?

17 MR. ZUDANS: I think our current view based on what
18 we have seen is that they should not have been attempting to
19 either lubricate or repair. They were beyond repair. They
20 had lived their life. Whether or not it was because they
21 were not maintained during the life properly which involves
22 the proper lubrication or what, but they could not be
23 repaired and those results were shown up. This temporary
24 lubrication and bending the springs and pushing things
25 out of place helped maybe for one month, but it was

1 inevitable. That is all there is.

2 COMMISSIONER AHEARNE: In the two that did fail,
3 you say that you saw excessive wear around that lower spring,
4 the trip spring area.

5 MR. TOMAN: On the 1 "B", this area was distressed
6 and also there was a very heavy wear groove indicating a
7 significant number of operations and obvious harsh forces
8 down here to get it to latch. Therefore, when it is
9 compressed it would also get friction from the opposite
10 direction. We also saw friction in the brass bearing surfaces.

11 COMMISSIONER AHEARNE: Did you see in those two
12 devices, those two disassembled devices, a number of the
13 problems that were just mentioned, that is, the marks of
14 manually bending springs or screwdriver scrapes and such?

15 MR. TOMAN: As received by Westinghouse, they found
16 the 1 "B" screw backed in. They found this phosphorus bronze
17 spring mangled bent and when we put it under a microscope
18 it looks like somebody prod it from the back and tried to make
19 it work better. That forcing it forward won't cause it to go
20 unlatched because this pin stops it so whoever did it did not
21 know what they were doing. We don't know when it occurred.

22 The 1 "A" device, I did find that the latch pin has
23 a bend in it. I don't know when that occurred it, also, but
24 that has a bend in it, a slight downward bend across it.

25 Those are indications that perhaps someone did

13 1 adjust it. The inward adjustment of the screw indicates they
2 may have tried to overcome the trip free situation.

3 COMMISSIONER GILINSKY: This was the one maintained
4 by Westinghouse?

5 MR. TOMAN: No. That one was definitely not
6 maintained by Westinghouse. The 1 "B" was not. The 1 "A" was.
7 The 1 "B" was not maintained by Westinghouse. It was in the
8 bypass position and that was supposedly maintained by Public
9 Service personnel.

10 COMMISSIONER AHEARNE: But the 1 "A" was?

11 MR. TOMAN: Yes. That did not have all the
12 obvious signs of bending, obvious signs of damage.

13 COMMISSIONER AHEARNE: You say the latch pin was --

14 MR. TOMAN: Was slightly bent. You could not see
15 that if it was assembled. You can see it under a scope
16 and if you are good, you can see it when it is in your hand.
17 It is not a severe bent. I did find the worst notching on
18 the 1 "A" latch under the scope.

19 COMMISSIONER AHEARNE: That you ascribed, I thought,
20 more to friction.

21 MR. TOMAN: That is the wear situation.

22 CHAIRMAN PALLADINO: Are you going to go on to
23 recommendations?

24 MR. TOMAN: Yes. I think I will go through two
25 slides here. Would you put the last slide on, please?

14

1 (SLIDE.)

2 MR. TOMAN: I have five recommendations and one
3 reiteration of Dr. Zudans' comment earlier. The first
4 recommendation was to establish the acceptance criteria for
5 parameters affecting correct operation of the undervoltage
6 trip attachment. This appears to have been done through
7 the licensee and Westinghouse.

8 Second was to prepare methodology for acceptance
9 tests. That has been done by the licensee.

10 For short term, establish a replacement interval
11 based on testing and operating experience. This is what we
12 believe would be six months.

13 COMMISSIONER AHEARNE: The short term would be the
14 six months, I take it?

15 MR. TOMAN: Yes, perhaps longer. You have to
16 repeat the baseline tests and such.

17 Fourth is the long term application, conduct life
18 testing of the device to show that it can successfully operate
19 for the intended lifetime with proper maintenance.

20 COMMISSIONER AHEARNE: Do you know whether that is
21 being done?

22 MR. TOMAN: That is proposed at this point.

23 MR. EISENHUT: That is a piece of the order and,
24 in fact, I guess that is one of the items that we were going
25 to clarify. Where before we had a line item that said there
should be a proposed test program submitted in May. We have

1 now told the licensee and we will be fixing the words here
2 that the test program should also include things like
3 statistically significant samples.

4 COMMISSIONER AHEARNE: It is a life testing program
5 that would meet a testing laboratory's criteria?

6 MR. EISENHUT: Yes. In fact, it is our commitment
7 that we intend to use Franklin during that process to be
8 reviewing it to insure that their recommendations are
9 appropriately carried out.

10 MR. TOMAN: The last recommendation is to perform
11 baseline testing on each of the devices that that future
12 testing can be compared with this baseline. Trending of the
13 variations in the device could then be performed to determine
14 if degradation is occurring.

15 The last thing I would like to say is if you do
16 detect any of the failure modes, the benign ones or the
17 beginning of the other ones, the unsafe ones, the device is
18 not meant to be repaired. It should be replaced at that time.

19 If the device unlatches every time you try to open
20 the circuit breaker and trips the breaker immediately, there
21 is nothing you can do locally to repair it.

22 COMMISSIONER AHEARNE: It is sort of like
23 recommendation six.

24 MR. TOMAN: Yes. If you do see that on gradual
25 deenergization it hangs part way, that is indication of

16 1 notching and replacement is necessary.

2 CHAIRMAN PALLADINO: That suggestion should be
3 looking at this every so often.

4 MR. TOMAN: That would be part of your testing
5 procedure.

6 CHAIRMAN PALLADINO: What about lubricating? How
7 frequently should they be lubricated?

8 MR. TOMAN: I believe it is not recommended at
9 six month intervals but that was the manufacturer's recommen-
10 dation.

11 CHAIRMAN PALLADINO: Do you have any feel for
12 what the minimum life might be?

13 MR. TOMAN: Even under reasonably abused conditions
14 these lasted, they were manufactured in early 1970's.

15 CHAIRMAN PALLADINO: What I am trying to get at
16 the period of time over which we might be operating this
17 plant would not exceed the time for this testing, the cycle
18 testing?

19 MR. TOMAN: Do you mean the six month period?

20 CHAIRMAN PALLADINO: Yes.

21 MR. TOMAN: I am not sure how long that testing
22 is going to take but in the meantime, you would be doing a
23 second set of baseline tests for comparison purposes to the
24 first to see if degradation is occurring.

25 MR. ZUDANS: In other words, the six month test

17
1 doesn't mean the end of the story. You operate for six
2 months. You do another baseline test. Find no changes.
3 Continue operation.

4 MR. TOMAN: You may find that you get the life
5 time test started and have it part way through, we should
6 have many more operations than you would expect in a six
7 month period, so you would have a basis to continue on with.

8 COMMISSIONER AHEARNE: Are those warning criteria
9 sufficiently clearly defined? I guess I really ought to ask
10 our staff.

11 MR. EISENHUT: Yes. In fact the last page of the
12 SECY document, 83-98E, is a table which is attached to the
13 order which is the specific items in that six month surveil-
14 lance maintenance program and those are the criteria that
15 Franklin -- that we have identified working with Franklin
16 that are the baseline. Those are the items you look at in
17 the period of six months and you continue to monitor and
18 those are the indicators you would see from that.

19 COMMISSIONER AHEARNE: What Franklin said for
20 example, don't try to repair it, is that somewhere in there?

21 MR. EISENHUT: You are one step ahead of me here.
22 One more item that has come out and the one revision we would
23 make to this overall package is that if an undervoltage
24 trip attachment exhibits any of the failure modes that are
25 prescribed here, then you replace it. You report it to us

18 1 and you don't try to repair it. That is the only piece that
2 is missing from the previous package. I think that is the
3 evolution. Those are the kinds of items I referred to before
4 where we propose making this package, of course, consistent
5 with the minor fine tunes that we made here in the presenta-
6 tion.

7 COMMISSIONER AHEARNE: It sounds very good.

8 MR. DENTON: There are two issues regarding this
9 breaker we wanted to bring up and perhaps, Vince, you could
10 join us.

11 One is last week it was found that one of the tabs
12 on the attachment had broken off. This was an attachment
13 that had been received in their receiving department and had
14 actually been installed on the breaker before they discovered
15 that the tab was missing.

16 CHAIRMAN PALLADINO: That was the part of it that
17 I was most interested in. With all the attention given to
18 this item, that so little attention would be given by the
19 maintenance crew to get it installed and not notice that
20 it was broken and that gets back to the kind of initiative
21 that we are looking for not only in the operators but in the
22 maintenance crew.

23 MR. DENTON: I agree with you, Mr. Chairman. I
24 would have assumed that these breakers would have been
25 treated gold bars from the moment they arrived.

1 CHAIRMAN PALLADINO: There is something still a
2 little worrisome in the way, I hate to call it management, but
3 in a sense it is the management attention to the maintenance
4 areas.

5 MR. DENTON: The discovery of the missing tab when
6 they attempted to test the breaker led to an all out search
7 to find the tab. It was found on the floor in their
8 receiving room, I believe, and they went back through the
9 way it had been packaged and I understand that there is
10 agreement now among ourselves and Westinghouse and the
11 company that these have been shipped in a manner where these
12 tabs were not properly packaged and were sticking through
13 the bottom of the package.

14 MR. NOONAN: They most likely were at the bottom
15 of the package.

16 MR. DENTON: It failed somewhere between shipping
17 from Westinghouse and installation.

18 COMMISSIONER AHEARNE: It broke off, you mean.

19 MR. DENTON: Yes.

20 MR. EISENHUT: In fact, from looking at the actual
21 box as they were packaged, when we looked at it at the site,
22 they were stored and shipped in a mode where the tab, four
23 devices are shipped into a cardboard box, and in fact you
24 can see three puncture holes.

25 MR. NOONAN: Three puncture holes.

20 1 MR. EISENHUT: From where three of the tabs were
2 significantly embedded in the bottom of the box.

3 CHAIRMAN PALLADINO: The question I wanted to ask
4 is, is there anything in the conditions for restart that
5 would give us confidence that the maintenance people would
6 be brought into the same spirit of intellectual curiosity
7 as the other people?

8 MR. EISENHUT: Yes, I think so. I think there are
9 several steps. First, the utility has embarked on a program
10 as we discussed in the last meeting and outlined in the
11 report of going back through a training program of all
12 maintenance supervisors to try to reindex them that this is
13 a nuclear plant. It is not a fossil plant. And bring them
14 up to the level where we certainly and they believe that it
15 should be.

16 As Harold mentioned and the Chairman mentioned,
17 it is a little bit hard to believe that you would get this
18 gold-plated item that people have been waiting on for two
19 months, you ship it in, it goes through shipping and receiving,
20 people check it off, they insure that they have the right
21 component and then they actually install it on a breaker.
22 Now granted, the breaker was not in the plant in the cabinet
23 but it was still in the engineering/maintenance shop where
24 they test the device and they had it actually installed and
25 attempted to test it before they realized that it wouldn't

21 1 trip the breaker bar and then when you looked, you find the
2 tabs missing. We think that level of training is something
3 that is very important to go back and retrain them.

4 We think this package adequately addresses that
5 part of the overall structure. Also, I should point out
6 that the MAC program will be, in fact, looking very broadly
7 across the line at the management philosophy of all of this.

8 CHAIRMAN PALLADINO: Will any of this training
9 be done soon for the maintenance people?

10 MR. EISENHUT: I believe the maintenance has
11 already if not begun should very shortly. Rich.

12 CHAIRMAN PALLADINO: Is it something in a reasonable
13 period of time?

14 MR. STAROSTECKI: They are developing a program
15 and they are going to get all their people through it. It
16 is going to take a few months to get it done.

17 In the interim, I would also mention that we have
18 in the package and we are getting satisfaction on the post-
19 maintenance operability testing that is one of the things
20 that uncovered this, demanding more assurance that when you
21 do some work, it is going to work right.

22 We are approaching it on two fronts.

23 MR. DENTON: One other issue on breakers that
24 I wanted to call to your attention concerns the statistical
25 control of the manufacture of these breakers. The breakers

22
1 that are actually installed in Unit 1 went through the
2 Westinghouse QA control process in which they statistically
3 sample the parts of the breaker and put them together.

4 We sent some people to the Westinghouse manufactur-
5 ing plant to observe their process and apparently as a result
6 of that visit and some questions raised, Westinghouse is
7 upping their measurement of certain parts of this breaker to
8 100 percent quality control checks of dimensions and
9 tolerances.

10 COMMISSIONER AHEARNE: Does that include the
11 packaging department?

12 (Laughter.)

13 MR. DENTON: I don't know.

14 COMMISSIONER AHEARNE: It is not a facetious
15 comment obviously.

16 MR. DENTON: The new breakers then will have
17 100 percent dimensional quality control checks. The breakers
18 that are actually installed and which have passed the
19 testing have the other statistical sampling by Westinghouse.
20 The company has proposed to obtain still another complete
21 set of breakers from Westinghouse that have been 100 percent
22 checked for the dimensions and begin the testing on those
23 and if they have an opportunity to put those in, they would
24 replace the existing ones although Westinghouse certifies
25 that the design of the ones which are installed have not

1 changed and that they felt they had an adequate statistical
2 data base before but this will provide greater assurance.

3 COMMISSIONER AHEARNE: But your previous SER had
4 indicated that some Westinghouse representative had indicated
5 that one ought not to look for extended life out of these
6 devices. Does Westinghouse have a recommended life?

7 MR. DENTON: It wasn't talking about the life as
8 much as the dimensional control over the original in this
9 case.

10 CHAIRMAN PALLADINO: Of what?

11 MR. DENTON: Control over the original device.
12 If you buy one tomorrow from Westinghouse, I understand
13 there would be more rigid control over the individual
14 component dimensions than were in the ones they sold yester-
15 day. Ten critical dimensions are now being checked on every
16 breaker whereas before they randomly selected these parts
17 to be sure that they were the proper size.

18 So we debated whether we should have Salem put
19 in this new breaker which had more precise QA in the shop
20 than the old one or not and I wanted to get the Commission's
21 sense on that one.

22 COMMISSIONER AHEARNE: I am referring to the
23 statement you have. It says, "On March 18, 1983, Westinghouse
24 Switchgear Division personnel indicated that this particular
25 attachment must be replaced sometime during the life of the

24
1 plant. Criteria for determining when to replace this device
2 did not appear to be available." With reference to that, I
3 was wondering whether Westinghouse separately had made a
4 determination for this?

5 MR. DENTON: That is a separate issue from the
6 history I was trying to raise which is the QA that is
7 exercised at Westinghouse before it leaves the shop. Let me
8 ask Vince.

9 MR. NOONAN: Westinghouse has not made any type of
10 recommendation as to replacement of this device. In fact,
11 the statement was made there, they have subsequently said
12 that that was not the message they intended to convey with
13 this.

14 COMMISSIONER AHEARNE: I see.

15 MR. EISENHUT: In fact, Attachment B to the letter
16 dated April 22 from the utility to myself, one thing we asked
17 them to do was get in effect a certification from Westing-
18 house that, in fact, these breakers are good -- these UV
19 devices are good for this application, for this intended use
20 in their present state and there is a certification there.

21 It is fair to say that we are not happy with the
22 overall result of where we are on the expected life and that
23 is one thing we are looking for in this program that we
24 expect to get next month in May. Really, how good are they?
25 We feel comfortable that they are reliable enough for the

25 1 short term, but it is something that we are going to continue
2 to explore.

3 COMMISSIONER AHEARNE: This isn't exactly a --

4 MR. EISENHUT: A ringing endorsement.

5 COMMISSIONER AHEARNE: A ringing endorsement.

6 MR. EISENHUT: You are right. That's the way I
7 looked at it. It is something that we are going to continue
8 to pursue very vigorously.

9 MR. DENTON: We don't know the full life of these
10 if they are properly maintained yet. Our consultant has
11 said that they think they can go for at least six months.
12 They have gone for a number of years under a very abusive
13 condition and lack of lubrication. They think that they can
14 go for at least six months if they keep their hands off and
15 lubricate them. Maybe during that period we will establish
16 a better baseline for longer life.

17 CHAIRMAN PALLADINO: Let me interrupt. Commissioner
18 Gilinsky does have to leave. I don't want to cut off the
19 questioning and I know there are two general areas still
20 to be covered. Vic would like to make a statement before he
21 leaves. We will proceed. Let's hear your statement.

22 COMMISSIONER GILINSKY: I don't want to stop the
23 meeting but I do want to share my thoughts with you before
24 I leave. I have to catch an airplane and unfortunately will
25 have to leave early.

26. 1 The first point is and I would just like to repeat
2 my comment about taking a look at the safety related work
3 orders. However the Commission comes out and I expect that
4 it will approve restart of the reactor, I think that ought
5 to be looked at.

6 I also continue to feel that the restart conditions
7 in Attachment 1 do not reflect the concerns I raised. For
8 example, in the maintenance area the items are very closely
9 related to breakers, UV attachments. They don't really deal
10 with the failure to have maintained similar equipment when
11 certain of the items were found to need maintenance and
12 when the others should have been looked at.

13 Also, in the post-trip review I am pleased that
14 there is an item that relates to that, but there was a
15 procedure on post-trip review and it didn't seem to have
16 worked somehow.

17 Perhaps more importantly in the post-maintenance
18 operability testing area which again picks up one of the
19 areas I mentioned in my memo, there are no short term
20 actions. The actions are long term actions. So there
21 are no conditions in that area before restart. I think there
22 should be.

23 Altogether, I would not approve the operation
24 of the plant at this point and I hope you understand that
25 one does not likely recommend not operating a plant of this

27
1 sort which has been operating and which is a valuable
2 investment. I don't think one can disregard that sort of
3 thing.

4 But in the last analysis, approving or not approv-
5 ing depends on whether one has confidence that the plant
6 will be operated safely. That, to a large extent, depends
7 on your view of the people who are running it, running it
8 directly and the people who are managing the operation.

9 I must say here I was disappointed in the presenta-
10 tion the company made last week and have been affected by
11 it. It wasn't what I expected from the company that had
12 experienced the problems it had experienced. There was a
13 certain amount of suggestion that the event at least from
14 the point of the public should have been a non-event,
15 that we blew it up out of proportion or at least contributed
16 to others blowing it up out of proportion.

17 I thought an overly relaxed attitude about the
18 way the company was dealing with the excessive number of
19 reactor trips which is a contributing factor to this
20 situation, the defense of the management of the plant on the
21 basis of studies that are unrelated to the nuclear area,
22 things like bond ratings, a feeling that they were unjustly
23 accused and also a comment that lack of follow up and
24 attention to detail was characteristic of large organizations.
25 Perhaps it is, but somehow that was not what I expected to

28 1 hear. The suggestion that there is a record-keeping problem,
2 but not the assessment of the problems that I expected. I
3 must say. At the end, the company representative said that
4 he felt now they really knew what to do to correct the
5 shortcomings, but I don't believe he really said what that
6 was.

7 I guess regretfully I am not convinced that the
8 problems have been cured to the extent that would permit
9 operation of the plant.

10 CHAIRMAN PALLADINO: Do you have any suggestions
11 on what needs to be done?

12 COMMISSIONER GILINSKY: It puts us in an awkward
13 position. I think this is the sort of thing that we ought
14 not to be prescribing in a detailed Napoleonic Code for every
15 plant. It seems to me that it is really up to the company
16 to present a program which we then say, "Fine. That looks
17 good."

18 CHAIRMAN PALLADINO: What features of this program
19 particularly don't you find good or acceptable, I guess, is
20 a better word?

21 COMMISSIONER GILINSKY: I am responding more, I
22 think, to what I sensed from the company. One deals here
23 to some extent I suppose in impressions formed over a short
24 period of time but that was an opportunity for the company
25 to put its best foot forward and I did not find that a

1 presentation that convinced me to approve it.

2 Those are my views. Thank you.

3 CHAIRMAN PALLADINO: Let's see. We have other
4 questions we still want to address and I do intend to call
5 for a vote unless the Commission moves otherwise.

6 COMMISSIONER GILINSKY: I apologize for leaving.
7 I don't think it will alter the result. I would have liked
8 to participate longer. Thank you.

9 CHAIRMAN PALLADINO: Did you have more Harold
10 on your presentation?

11 MR. DENTON: I think we never did answer
12 Commissioner Ahearne's question about what is the relation-
13 ship between --

14 CHAIRMAN PALLADINO: And you haven't answered the
15 one on generic --

16 MR. DENTON: This proposal and the generic study.
17 We tried to work very closely together and it was my view
18 that we didn't have to wait for the approval of the generic
19 action for this action. We see these as short term. We
20 tried to feed all of the information we have into the other
21 one. I understand you have a draft of the generic approach
22 to the problem.

23 I think we have tried to treat them as two
24 entities that are not inconsistent with each other.

25 COMMISSIONER AHEARNE: I think the question would

30
1 be, is there anything that has come up in the generic study
2 that you believe should have been flowed back into the
3 issues with respect to Salem that haven't been?

4 MR. DENTON: Let me ask Roger Mattson.

5 COMMISSIONER AHEARNE: Obviously the answer is
6 "of course not."

7 (Laughter.)

8 COMMISSIONER AHEARNE: But for the record, you
9 ought to --

10 MR. DIRCKS: There are no obvious answers.

11 MR. DENTON: There wasn't this morning but let's
12 check, there could be.

13 MR. MATTSON: I think there have been a number of
14 times when we have found things looking generically that we
15 have gone to the people that were in charge of the restart
16 and said were you aware of this as there have been times
17 when they found new things that they have come to us and
18 said were you aware of that.

19 COMMISSIONER AHEARNE: Sure.

20 MR. MATTSON: I could probably list some times
21 we have talked.

22 COMMISSIONER AHEARNE: The only question is,
23 is there something that you have found generically that
24 you believe ought to be applied in the Salem case and your
25 colleagues on the staff have resisted you?

31
1 MR. MATTSON: No, sir.

2 COMMISSIONER AHEARNE: Thank you.

3 MR. EISENHUT: Harold, I got slipped a note here
4 to clarify just to make sure that we keep the record
5 straight. When the staff went up to Pittsburgh last week,
6 it really was not as a result of their going up that
7 Westinghouse changed the 100 percent inspection. We may
8 have left that impression. In fact, Westinghouse had decided
9 to do the 100 percent inspection of the ten critical
10 components even prior to our questioning.

11 COMMISSIONER AHEARNE: After this meeting, they
12 will inspect their packaging facility.

13 MR. DENTON: I think we did answer or attempted to
14 your question about the work orders.

15 COMMISSIONER ASSELSTINE: Yes.

16 MR. DENTON: Maybe I should check here to see if
17 there are other questions.

18 COMMISSIONER AHEARNE: The outstanding one that I
19 had was in your previous order that you had proposed, you
20 had spoken explicitly about some ATWS modifications, in
21 particular diverse systems. I wonder if there has been more
22 thought about that.

23 MR. DENTON: Yes. I think last time we talked
24 about whether it should be -- whether the definition of
25 diversity meant that it should be a different manufacturer.

1 COMMISSIONER AHEARNE: Right.

2 MR. DENTON: I have looked at this breaker and
3 it appears to be room on that breaker for at least one more
4 attachment and I talked to the company about it so I think
5 in view of what I have learned, I would make that of a
6 different manufacturer in the order, whereas, last time it
7 didn't reach quite that far.

8 COMMISSIONER AHEARNE: Are you saying that you
9 are proposing -- is there a different order that is being
10 proposed?

11 MR. DENTON: It is basically the same.

12 MR. EISENHUT: I think it is the same order and
13 I think one of the things that we need to look it is
14 we will certainly be looking at these words. I know Harold
15 and I have been discussing it but also at the same time the
16 staff and there may not be another manufacturer that we have
17 more confidence in other than, for example, the shunt coil
18 which is the suggestion in here.

19 Remember, it says, "For example," presently in the
20 order.

21 It is really to look for a diverse way of
22 activating or tripping the scram breaker. I think we may
23 well conclude that the shunt trip mechanism hooked to an
24 automatic RPS signal turns out to be adequate.

25 Remember now this is short of a show cause provision

33
1 and within 60 days a licensee shall do an evaluation.

2 COMMISSIONER AHEARNE: But it is essentially
3 saying that you are there supposed to do something. I was
4 just trying to make sure I understood what it was they were
5 supposed to do.

6 MR. EISENHUT: There is some debate over what that
7 is yet. I think we certainly would like the utility to
8 evaluate.

9 COMMISSIONER AHEARNE: But it is certainly a good
10 idea that if we are going to send an order out that at
11 least we understand what we are asking. We may not know
12 what the answer is we want back but at least we ought to
13 know what the question is.

14 COMMISSIONER ASSELSTINE: That is correct.

15 MR. MATTSON: This is one place where there is
16 some strong feedback between the generic implications and
17 the plant specific implications. I think there is a growing
18 body of thought to propose to you gentlemen when you act
19 on the ATWS rule in its final form, that you consider
20 putting out a new proposed portion to that rule to require
21 a diverse means for the Westinghouse system to interrupt
22 power to the control rods separate from the current scram
23 system and the current breakers.

24 Given that that should occur through rulemaking
25 and we would go with the proposed step in all likelihood

1 first, then where is the proper place to draw the line with
2 the operating Westinghouse plants of which this is one.

3 We think that the addition of the shunt to the UV
4 attachment as a diverse means to trip the breakers is
5 acceptable for the short term.

6 That doesn't mean that we are giving up on the
7 other diversity. It seems like there is a more orderly way
8 to do it.

9 COMMISSIONER AHEARNE: Rather than a diverse
10 breaker, a diverse mechanism to trip the breaker.

11 MR. MATTSON: Yes.

12 MR. DENTON: I think I had used the word "breaker"
13 and "attachment" imprecisely. I never intended for the order
14 to say a different breaker because it wasn't the breaker's
15 fault, the breaker being the big thing with the flame
16 arrester and the contacts and so forth. I was really
17 thinking of this undervoltage attachment when I have been
18 describing diversity not a different breaker per se.

19 The breaker weighs about 150 pounds and appears
20 to be working reliably when these attachments work.

21 COMMISSIONER ROBERTS: I have an irrelevant
22 question. What does that piece of equipment cost?

23 MR. MATTSON: I can give you a guess of about
24 \$600.00.

25 MR. EISENHUT: I have heard the number \$600.00 too.

34.

2B

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1 Westinghouse is here.

2 COMMISSIONER AHEARNE: I am sure there is someone
3 in the audience who knows the answer to that question.

4 MR. RAWLINGS: In volume, it is about \$600.00.

5 (Laughter.)

6 CHAIRMAN PALLADINO: Any other questions?

7 COMMISSIONER AHEARNE: Yes. One of the problems
8 I was having with the order last time is that I was trying
9 to understand the purpose of the order and as time marches
10 on, it gets even fuzzier in my mind what is the purpose of
11 the order since a lot of the order obviously is saying
12 do things which you have already done.

13 MR. EISENHUT: For those pieces, it is very
14 straight forward. We are just following the past practice
15 and guidance from the Commission to make items strictly
16 enforceable and if an item is important to us and has been
17 completed, this is now make those items that we relied upon
18 as part of the program as enforceable and as dates come and
19 go, we will certainly have to look at the dates.

20 COMMISSIONER AHEARNE: If it is something that
21 they have completed and we have checked?

22 MR. EISENHUT: It is simply sort of a confirmatory
23 order. There are items in it which, in effect, are show
24 cause type items such as the item that we talked about
25 earlier about fixing the scram breakers. There are items in

36' 1 it which originally were just simply order items to do the
2 following which the utility has, of course, as time has
3 overtaken us has subsequently gotten under way and, in fact,
4 is well along to completion.

5 COMMISSIONER AHEARNE: For example, you have an
6 item in here which orders them to have a management study
7 done by the Management Analysis Company. Prior to restart
8 engage BETA Corporation.

9 MR. EISENHUT: That is the page the last time we
10 didn't get to you to, it was an item where we were going to
11 clarify. This item is not ordering them to engage BETA.
12 The terminology there was a little different. It will now
13 have to say supply the results to us in whatever the time
14 frame is as time overtakes us.

15 These are the kind where I mentioned that we will
16 be updating the order and the SER. I expect that it will
17 take a day or two to do that to make sure that the terminol-
18 ogy in here correctly reflects the items as we discussed
19 them here in the Commission meeting.

20 COMMISSIONER AHEARNE: I guess my attitude here
21 with respect to the order specifically at this stage is I
22 am not really sure what it is going to end of saying.

23 CHAIRMAN PALLADINO: I wasn't going to propose that
24 we approve or disapprove the order. But I would expect the
25 staff to look at it carefully and make sure that it is up

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1 to date and that some of these poor choices of words would
2 be corrected.

3 MR. DENTON: With that understanding about the
4 order, we would just bring it up to date with today's
5 knowledge.

6 CHAIRMAN PALLADINO: Were you going to put out a
7 supplement to the SER?

8 MR. EISENHUT: This SER has not been issued as an
9 SER. So we would update the SER. The only other area that
10 I would mention is the first item that we had on the slide
11 which was we did quite a bit of work now tracing the location
12 of the undervoltage trip attachments and that has been
13 discussed at length in the April 22nd letters so we will
14 amend the SER to update that portion.

15 This SER has not been issued as an SER. So it will
16 be an SER with an order.

17 MR. DENTON: There are two other issues that I want
18 to call your attention to. One is we do have this pending
19 petition, 2,206 request, from the Public Advocate of New
20 Jersey that I would need to act on prior to permitting
21 restart.

22 CHAIRMAN PALLADINO: What was the essence of that?

23 MR. DENTON: That request as I recall the hearing
24 prior to restoration of the license and a number of other
25 actions. Then I understand that the New Jersey legislature

1 just passed a resolution but I have not been able to obtain
2 a copy of that. I thought perhaps OGC might have gotten it
3 by now.

4 MR. PLAINE: We have not received it.

5 CHAIRMAN PALLADINO: I have a comment that I would
6 like to translate to a question in the end. While Commis-
7 sioner Gilinsky was concerned about the performance of the
8 applicant at the last meeting particularly with respect
9 to the question of a non-event, I did raise that question
10 at the meeting and as I recall it was more in reference to
11 the way the media characterized it or the way the media
12 should have characterized it, I guess.

13 At the last meeting the licensee did try to show
14 that they had used some initiative in the past on major
15 undertakings and while that was laudible, I still have this
16 little concern, have they really reoriented their thinking
17 and is any of the plan that is underway such that we can
18 be sure that they will reorient their thinking and when I
19 say "their thinking," I am thinking even down to the
20 maintenance people and the people that work on the assembly
21 of these components.

22 That is why I kept asking you what assurance you
23 had or what is the source of your confidence that this
24 will come about. I am not questioning your source and I
25 am just interested in hearing you express your confidence and

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1 what you base it on with regard to the management aspect,
2 not so much from what they did last week but what has been
3 going on during this whole period.

4 MR. DENTON: As Commissioner Gilinsky said, our
5 exposure has been mainly on this issue and we have worked
6 rather microscopically at their performance in this issue.

7 The thing that I find most disconcerting in their
8 performance is their quality insurance and maintenance.
9 In other words, it seems like if look at the work orders
10 they were misclassified. The fact that they didn't get
11 the manufacturer's bulletins for maintenance in all of the
12 cases, that they didn't handle the breakers properly,
13 they didn't handle the new breakers properly -- I think it
14 is in that maintenance area that improvements need to be
15 made.

16 I also concluded that they couldn't be made
17 overnight. I think they are moving in the right direction
18 when they get the BETA Corporation and MAC. They have
19 changed the plant manager.

20 In talking to them, I get the feeling that they
21 have learned their lesson in this area. They have been
22 examined very closely.

23 CHAIRMAN PALLADINO: I think they have.

24 MR. DENTON: I don't know how to guaranty it in
25 the future though other than by watching their performance

1 closely and seeing.

2 MR. DIRCKS: As far as their thinking goes, we
3 can't do too much. We have looked at the range of actions
4 that they are taking up their, their remedial actions,
5 the reforms that they are instituting. They all seem to be
6 moving in the right direction and if carried out, they
7 should assure adequate performance.

8 It is always difficult to get into the question
9 of attitude and are they doing it out of a motivation on
10 their own or are they being pushed into it. We can't
11 answer that.

12 I do think that the range of actions that we
13 prescribe would move them in the right direction. Quite
14 honestly I think we have run out of things we can recommend
15 and we just don't have other actions. There may be others
16 out there as we go into it and observe performance. But at
17 this stage, I don't think we have too much more that we can
18 put on the table.

19 CHAIRMAN PALLADINO: That was the only place where
20 I had uncertainty with regard to restart. Your assurance
21 and your being on top of this as being the basis of your
22 assurance is very important in my vote in that regard.

23 MR. DENTON: I think perhaps we should ask Rich
24 Starostecki if he would like to answer that question.

25 MR. STAROSTECKI: I would just like to add that I

41. 1 agree fully with what Harold said and you are looking at an
2 attitude problem that is going to be difficult to correct.
3 I also come from the standpoint of the experience last year
4 when they had the six or seven week strike and the licensed
5 operators did successfully maintain and operate the plant.

6 One of the things that has recently been done
7 that gives me some more assurance is they are getting
8 people like licensed senior reactor operators into the
9 maintenance department to assist those department managers
10 in focussing the efforts of the supervisors.

11 So as an interim step, that is a positive measure
12 and look forward to any future changes as a result of the
13 MAC coming in some kind of a structure progressive manner
14 rather than making a radical change overnight. But to foster
15 the improved communications within the plant, they I think
16 have taken some initiative with the transfer of an SRO to the
17 maintenance department with a rotation of key managers
18 in the station.

19 When you look at some of the underlying issues,
20 it is communication and it is attention to detail and it is
21 QC involvement and there have been initiatives in all those
22 areas. I am optimistic and I see a program that is going to
23 get some results in the near term and the long term.

24 CHAIRMAN PALLADINO: Thank you.

25 MR. DENTON: One other comment that we would like

1 to make along that general line, Hugh Thompson looked at
2 their new facility for training of maintenance personnel
3 and other personnel and I would like for him to comment on
4 that.

5 MR. THOMPSON: During the site visit because of
6 the issue in maintenance, I did take the opportunity to
7 look at their training center as it relates not only to
8 operator training but to the maintenance training. I think
9 it is probably the most extensive facility for training
10 of non-licensed individuals, maintenance instrumentation
11 individuals, health physics people. They have a major
12 facility there. They have mock-ups for reactor coolant
13 seal pump replacement. They have taken the steps, I think,
14 and have in place the capability to train their maintenance
15 people and the instrumentation people along the lines
16 that we would think would provide the adequate correction
17 of the deficiencies that we have identified.

18 I think they have really indicated a commitment
19 of resources to the training of these individuals and I
20 was quite impressed with their facility and their commitment
21 and I think with the identification of the deficiencies,
22 they will have in place that capability to carry out the
23 training in these areas.

24 CHAIRMAN PALLADINO: Thank you. John, did you have
25 a comment?

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1 COMMISSIONER AHEARNE: Yes. I have one question
2 and one comment. The question is we did just at least as
3 far as the Commission is concerned just received this fairly
4 large package, the one that was sent to you, Darrell, and
5 the one that was sent to Rich Starostecki. You mentioned
6 that you were confident that the material we have in front
7 of us takes into account all of that information because
8 none of it was really new to you.

9 Bill, I would like similar assurance and it need
10 not be now, but similar assurance that IE in the other
11 package you sent up to us also takes this into account.
12 There do seem to be some of the points that are made here
13 that seem to be a little bit different.

14 MR. DIRCKS: That is the point I was trying to make
15 earlier. Some of the material we are discussing has an
16 impact on that other issue more than this issue.

17 COMMISSIONER AHEARNE: Yes.

18 The comment is that the NRC isn't just seeing Salem
19 for the first time so I am uneasy about another lesson.
20 It appears to me that we ought be thinking about if the
21 management is as pervasively bad as Commissioner Gilinsky
22 seems to think it is and some of the Chairman's remarks
23 I will say leave a sense of uneasiness about and my question
24 is why hasn't the NRC addressed it before. Perhaps we ought
25 to be relooking at our own ratings of utilities at the SALP

1 type program. Maybe we are unwilling to believe results.
2 Perhaps we ought to be putting more emphasis on it.

3 Perhaps we are putting too much reliance on INPO
4 or perhaps we are not putting enough reliance on INPO. I am
5 not sure. I am just uneasy about coming up and having what
6 seems to be a description of a larger generic problem
7 which surfaces as a result of an episode one or two single
8 instances. I recognize the SER points well in the past
9 there have been some comments. I would have to say that I
10 don't recall any kind of a major issue being made of Salem
11 management even at the time when we were doing the Salem 2
12 licensing.

13 CHAIRMAN PALLADINO: Any further comments?

14 (No response.)

15 CHAIRMAN PALLADINO: The question as I see it
16 before us and I tried to write it out so I could reproduce
17 it if somebody asked me to, the Commission is being asked
18 two questions, I believe, one, to approve the staff's
19 conclusion contained in the NRC Safety Evaluation Report
20 dated April 8 and subject to such changes you might make,
21 that the licensee's action provide reasonable assurance
22 for restart of the facility and two, to permit the staff to
23 authorize restart when the staff is satisfied that the
24 necessary actions have been concluded.

25 Is this a reasonable representation of the

1 question we ought to vote on?

2 COMMISSIONER AHEARNE: Where does the order fit
3 in?

4 CHAIRMAN PALLADINO: I didn't mention the order.

5 COMMISSIONER AHEARNE: But it is attached to the
6 SER.

7 CHAIRMAN PALLADINO: I was not speaking directly
8 to the order. I was speaking more to the conclusions.
9 However, I am allowing that they are going to revise it.

10 COMMISSIONER AHEARNE: I will agree from what
11 I have read, seen and heard that I am willing to allow
12 that the plants be restarted with the programs that are
13 underway and are in place.

14 I am not willing to approve the order.

15 CHAIRMAN PALLADINO: I was not indicating that
16 we need to approve the order. Do you think we need to?

17 COMMISSIONER AHEARNE: I had thought that that
18 is why it was sent up to us as a part of this package.

19 MR. DIRCKS: Is it the concept of the order, John,
20 or the way that order has been written?

21 COMMISSIONER AHEARNE: It is the way this order
22 is written.

23 MR. DIRCKS: You would not object to an order
24 from the staff authorizing it.

25 COMMISSIONER AHEARNE: I obviously am not on

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46 1 principle going to object to an order from the staff to
2 a plant saying you must do certain things. That is too
3 general a statement. There are a lot of things in this
4 particular order that I just don't think makes much sense.

5 CHAIRMAN PALLADINO: John, do you want the order
6 to come back to the Commission? That is what I am trying
7 to determine.

8 COMMISSIONER AHEARNE: The order came to the
9 Commission once.

10 CHAIRMAN PALLADINO: I know.

11 COMMISSIONER AHEARNE: Now I find as I vote on
12 this order, I couldn't accept it. I am willing to say
13 that if the staff takes into account all of the concerns
14 that have been expressed, but it is obviously they have
15 not been all that clear, but it is all right with me.
16 If they don't take into account all of the concerns, I guess
17 then I will send them a memo telling them so.

18 My concerns are there is a lot in the order that
19 is not clear that is needed to be in the order. There are
20 some things that are in the order like hire a specific
21 company that I think is a precedent for the NRC that is not
22 a very good idea. Then I think there are some segments of
23 the order that are unclear such as the ATWS fixes and I
24 would like to make sure we understand that whatever we are
25 ordering them to do in the way of an ATWS fix is going to be

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1 consistent with what we are going to end up in general going
2 out with ATWS.

3 My understanding is what we are ordering here is
4 a very small step and so that it would not put us in the mode
5 of ordering them to do something that later we would decide
6 not to order them to do.

7 I don't have any problem in that sense. But given
8 those kinds of changes, I would be willing to let the staff
9 go ahead and issue the order after those revisions.

10 Those are major revisions.

11 MR. EISENHUT: I would only address one, the
12 ordering of the specific company, that is not the staff's
13 present proposal. That is what I meant a while ago and
14 that, in fact, was an oversight of taking words directly
15 from the utility response.

16 It is confirmatory in the sense of confirming the
17 specific commitment from the utility.

18 COMMISSIONER AHEARNE: Darrell, by the time that
19 those kinds of things have been made, then it gets really
20 back to Bill's original question. Do I object to something
21 that says, "Order modifying license at the beginning,
22 signed Harold Denton at the end."

23 MR. DIRCKS: Here is a possible suggestion. Could
24 we have a very simple order authorizing the restart subject
25 to any conditions and terms that may be agreed by letter or

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1 by agreement between the utility and the--

2 COMMISSIONER AHEARNE: Fine.

3 MR. DIRCKS: We can do that.

4 COMMISSIONER ASSELSTINE: To what extent though
5 does that minimize the binding and enforceable nature of those
6 commitments?

7 MR. DIRCKS: If we make it subject to a letter of
8 agreement between the two.

9 COMMISSIONER ASSELSTINE: Yes.

10 MR. EISENHUT: We can make it as a confirmatory
11 order where we specifically reference if the utility meets
12 all the appropriate requirements.

13 COMMISSIONER ASSELSTINE: Fine.

14 CHAIRMAN PALLADINO: Subject to that approach,
15 I guess that we would come down to the question of yes or
16 no to permit the staff to authorize restart when the staff is
17 satisfied that the necessary actions have been completed.

18 COMMISSIONER: Perhaps I could make just one more
19 comment. I share, Joe, I guess some of the concerns that you
20 have voiced. There appears to have been some problems at
21 this particular utility as evidenced by these events. I guess
22 I would characterize them in some of the ways that you have in
23 the past, the lack of intellectual curiosity and a pursuit of
24 questions that arise and also the lack of attention to detail.

25 I am satisfied with the package that is here. I

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1 can't think of anything else that ought to be in there.
2 One thing that we might also consider is perhaps some more
3 inspection attention to this particular plant over the next
4 six months to a year to get some more follow up and get as
5 much direct experience as we can on how they are doing in
6 both implementing the elements that they have committed to
7 and perhaps in developing the kind of aggressive attitude
8 and initiative that I think all of us would like to see
9 and that they profess to be pursuing.

10 I think that might be one other element of helping
11 to assure ourselves that they continue to move on the right
12 track.

13 CHAIRMAN PALLADINO: That is a good suggestion.

14 On the basis that there has been movement in the
15 right direction and on the basis of the staff's feeling
16 that they have a reasonable likelihood of succeeding in
17 the change of approach and attitude and the fact that they do
18 have these management companies looking over their shoulder,
19 I think with those I would be prepared to vote to permit the
20 staff to authorize restart when the staff is satisfied the
21 necessary actions have been identified and completed.

22 How do others vote on that?

23 COMMISSIONER ROBERTS: Aye.

24 COMMISSIONER AHEARNE: Yes.

25 COMMISSIONER ASSELSTINE: Yes. I am in favor of

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1 that.

2 CHAIRMAN PALLADINO: That clears you to proceed.
3 I presume these conditions would be done by separate letter
4 or confirmatory order which I would hope that the Commission
5 would at least have a chance to see on a negative vote basis.

6 MR. DIRCKS: Right.

7 COMMISSIONER ASSELSTINE: I would join Commissioner
8 Ahearne in the comment he made about trying to be as clear
9 as possible on the ATWS changes so at least we are clear and
10 they are clear about what it is that we expect to see there
11 so we don't get into a situation where we get going off in
12 divergent directions.

13 MR. DIRCKS: We will clear that up?

14 CHAIRMAN PALLADINO: Anything more that needs to
15 come before us?

16 COMMISSIONER ASSELSTINE: I would like to make one
17 final comment. My sense particularly after this meeting is
18 that I think that the staff has done a very good job in dealing
19 with a fairly complex and complicated situation here, one
20 that hasn't been very easy over the past few months.

21 I would just comment that I think the staff has
22 done a good job and carried out their responsibilities very
23 well in putting together the package and the changes.

24 CHAIRMAN PALLADINO: I am sure that the staff
25 appreciates that. It is something that we often forget to say

51 1 when it is appropriate and I am glad you reminded me.

2 Is there anything further?

3 (No response.)

4 CHAIRMAN PALLADINO: Thank you very much. We will
5 stand adjourned. |

6 (Whereupon, the Commission meeting was adjourned
7 at 4:32 o'clock p.m., to reconvene at the Call of the Chair.)

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the
NUCLEAR REGULATORY COMMISSION

in the matter of: Discussion/Possible Vote on Restart of
Salem Units 1 and 2

Date of Proceeding: Tuesday, April 26, 1983

Docket Number: _____

Place of Proceeding: Rm 1130, 1717 "H" St., N.W.
Washington, D.C.

were held as herein appears, and that this is the original
transcript thereof for the files of the Commission.

Marilynn M. Nations

Official Reporter (Typed)

Marilynn M. Nations
Official Reporter (Signature)

FRC PRESENTATION BEFORE NRC COMMISSIONERS

APRIL 26, 1983

CONCERNING SALEM REACTOR TRIP CIRCUIT BREAKER
UNDERVOLTAGE TRIP ATTACHMENTS

INTRODUCTION BY

ZENONS ZUDANS - SENIOR VICE PRESIDENT, FRC

- FRC'S ROLE IN THE EVALUATION OF THE UNDERVOLTAGE TRIP ATTACHMENT (UVTA).
- SUMMARY OF CONCLUSIONS.

TECHNICAL DISCUSSIONS BY

GARY TOMAN, SR. STAFF ENGINEER, FRC

- DESCRIPTION OF OPERATION OF THE UVTA.
- DESCRIPTION OF THE MOST PROBABLE FAILURE MODES.
- CONCLUSIONS.
- RECOMMENDATIONS

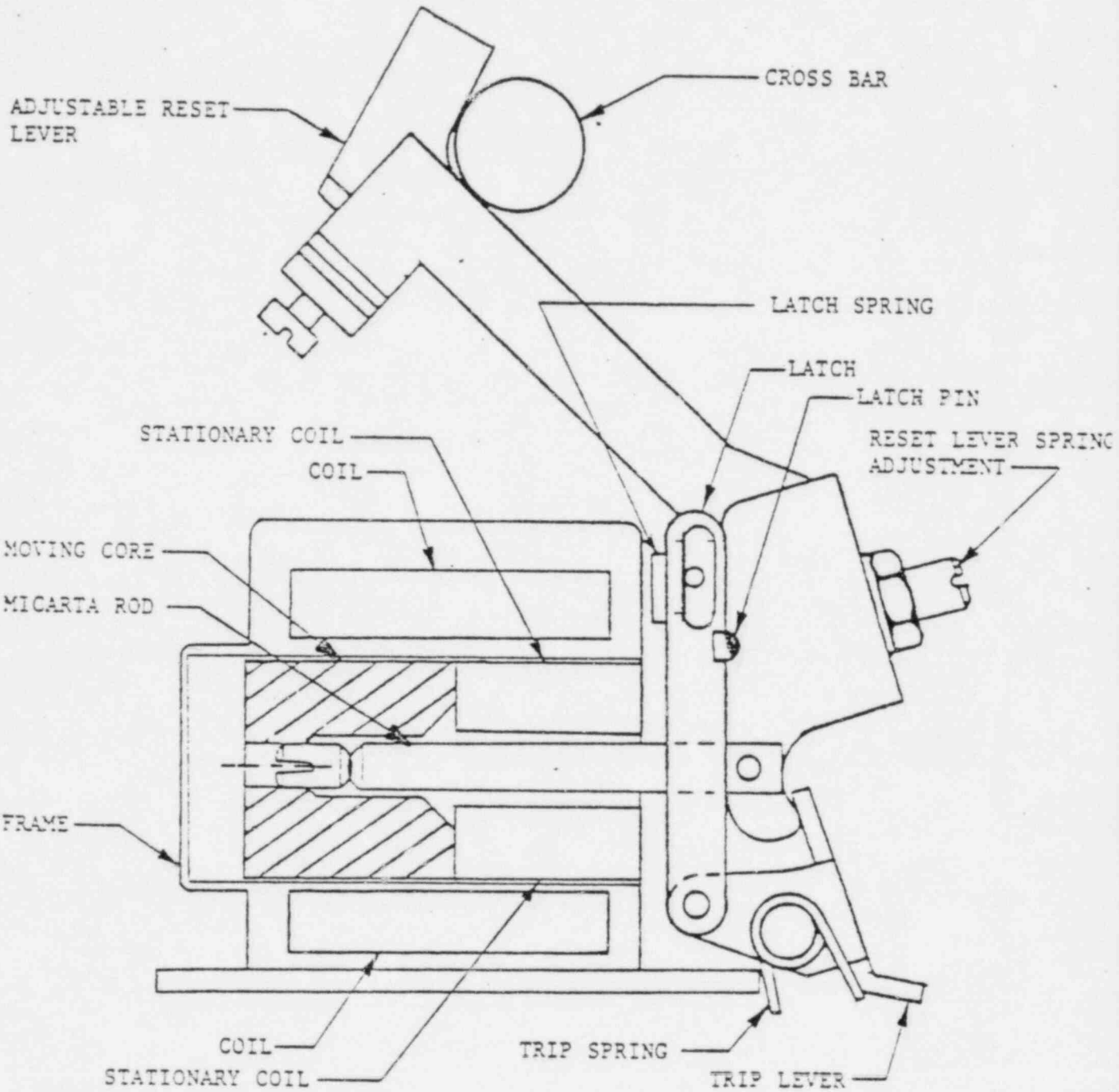
SCOPE OF FRC'S EFFORT

STATUS

- | | |
|----------------------------------------------------------------------|-------------|
| 1. DETERMINE MOST PROBABLE CAUSE OR CAUSES OF FAILURES OF THE UVTAs. | DONE |
| 2. EVALUATION OF EXISTING AND PROPOSED MAINTENANCE PROCEDURES. | IN PROGRESS |
| 3. REVIEW OF PROPOSED LIFE TEST PROCEDURES. | FUTURE |
| 4. SUPPORT FOLLOWUP LICENSING EFFORTS. | AS NEEDED |

CONCLUSIONS

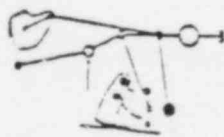
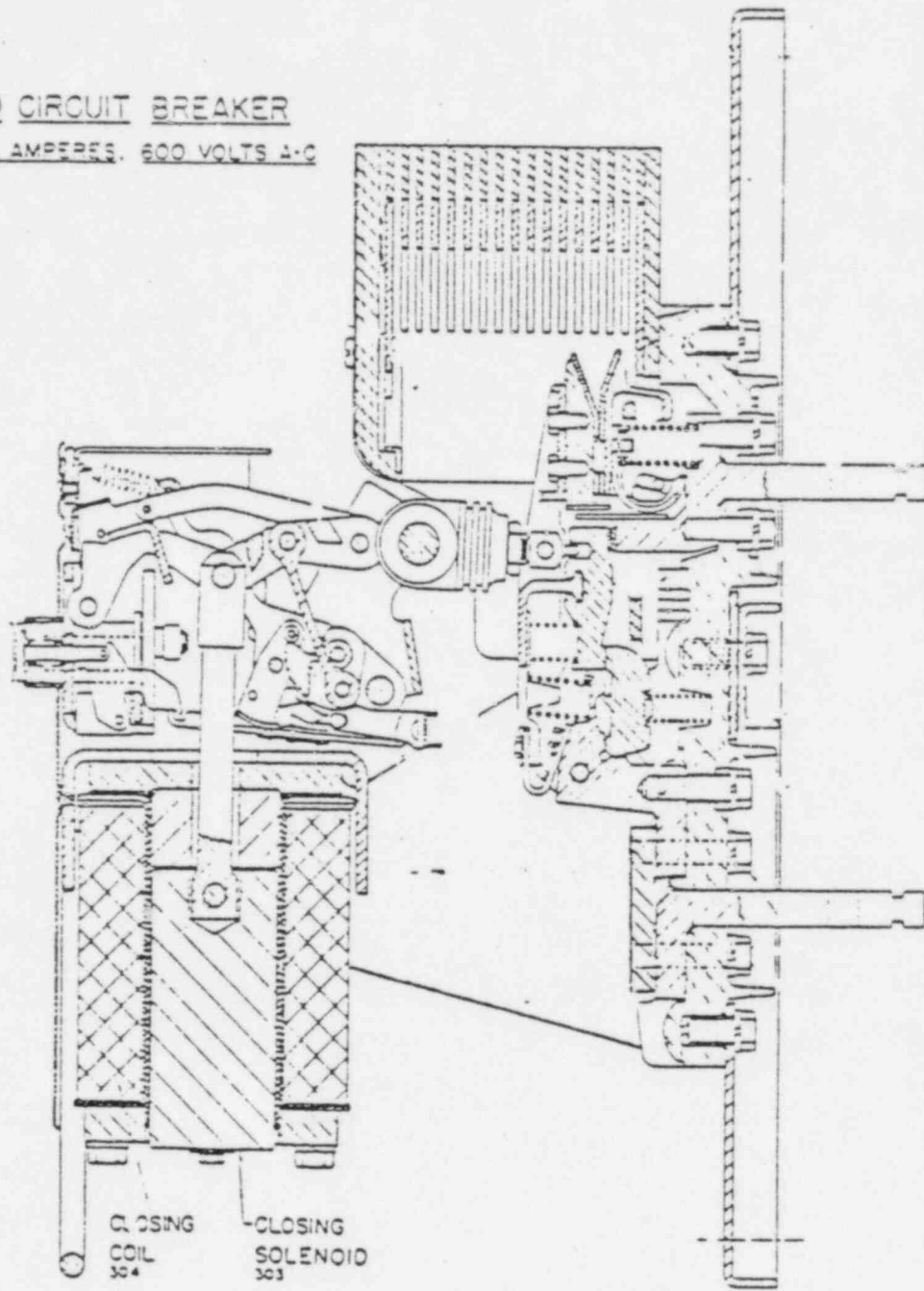
- THE MOST PROBABLE FAILURE MECHANISMS ARE DUE TO WEAR AGGRAVATED BY LACK OF MAINTENANCE.
- IMPROVED MAINTENANCE AND SURVEILLANCE, COMBINED WITH A CONSERVATIVE REPLACEMENT INTERVAL, BASED ON OPERATING HISTORY AND TESTING, WILL REDUCE THE PROBABILITY OF FAILURE ADEQUATELY TO ESTABLISH A SHORT-TERM OPERATING PERIOD.
- DETERIORATION IS DETECTABLE.



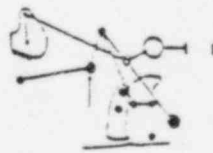
UNDervOLTAGE TRIP ATTACHMENT

DB-50 CIRCUIT BREAKER

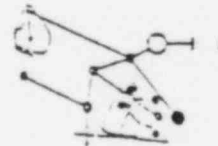
1600 AMPERES, 800 VOLTS A-C



CLOSED



TRIPPED

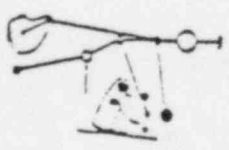
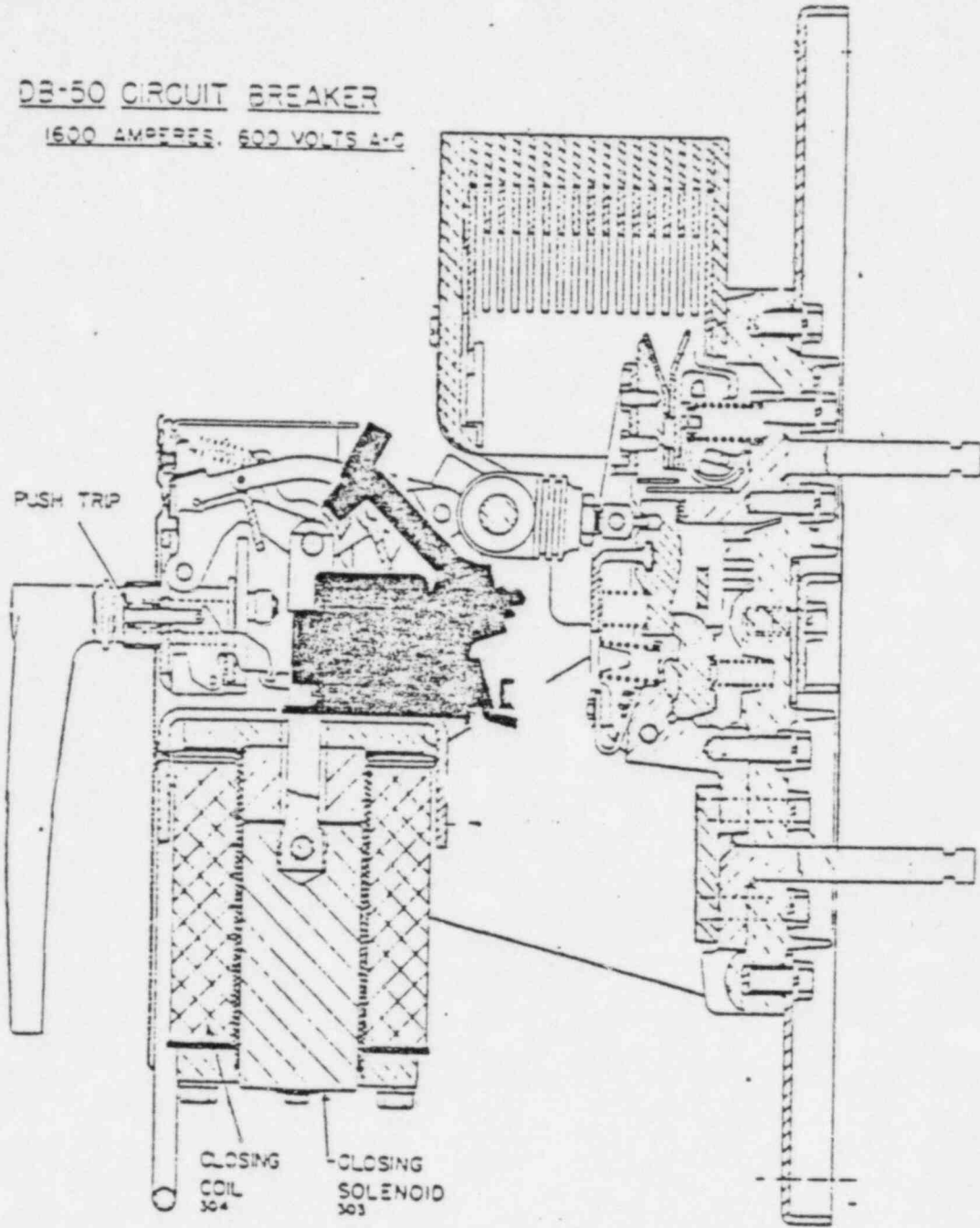


OPEN (RESET)

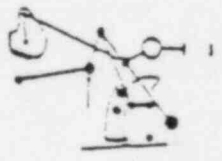
DB50 CIRCUIT BREAKER WITH "TRIPPED"
UNDervOLTAGE TRIP ATTACHMENT SUPERIMPOSED.

Circuit Breaker would start to open in this condition.

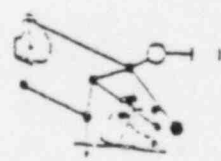
DB-50 CIRCUIT BREAKER
1600 AMPERES, 600 VOLTS A-C



CLOSED



TRIPPED



OPEN (RESET)

ITEMS INCLUDED IN REVIEW

- DISCUSSIONS WITH MAINTENANCE AND OPERATING PERSONNEL
(SITE VISIT 3/3/83).
- EVALUATION AND TESTING OF UNIT 2"B" UVTA.
- COMPARISON OF UNIT 2"B" DEVICE WITH OTHER DEVICE AT SALEM
(SITE VISIT 3/10/83).
- OBSERVATION OF UNIT 2"B" DEVICE ON CIRCUIT BREAKER
(SITE VISIT 3/10/83).
- MEASUREMENT OF UNIT 1 CIRCUIT BREAKER TRIP BAR FORCES, VISUAL
INSPECTION OF NEW UVTAs (SITE VISIT 3/17/83).
- MICROSCOPIC EXAMINATION OF UNIT 2"B" LATCH COMPONENTS.
- EVALUATION OF UNIT 1"A" AND 1"B" UVTA COMPONENTS AND MICROSCOPIC
EXAMINATION OF LATCH COMPONENTS IN AS-RECEIVED CONDITION (4/18/83).

RECOMMENDATIONS

THERE ARE 5 RECOMMENDATIONS AS A RESULT OF THE EVALUATION:

1. ESTABLISH ACCEPTANCE CRITERIA FOR PARAMETERS AFFECTING CORRECT OPERATION OF THE UNDERVOLTAGE TRIP ATTACHMENT.
2. PREPARE METHODOLOGY FOR ACCEPTANCE TESTS.
3. FOR SHORT TERM APPLICATION, ESTABLISH A REPLACEMENT INTERVAL BASED ON TESTING AND OPERATING EXPERIENCE.
4. FOR LONG TERM APPLICATION, CONDUCT LIFE TESTING OF THE DEVICE TO SHOW THAT IT CAN SUCCESSFULLY OPERATE FOR THE INTENDED LIFETIME WITH PROPER MAINTENANCE.
5. PERFORM BASELINE TESTING ON EACH OF THE DEVICES SO THAT FUTURE TESTING CAN BE COMPARED WITH THIS BASELINE. TRENDING OF VARIATIONS IN THE DEVICE COULD THEN BE PERFORMED TO DETERMINE IF DEGRADATION IS OCCURRING.

SALEM

COMMISSION MEETING - 4/26/83

● HARDWARE ISSUES

- LOCATION OF UTAs TRACED
- W CERTIFICATION
- FRANKLIN RESEARCH CENTER
 - 2 FAILED UTA
 - 2 OTHER UTA
 - 1 "MODIFIED" UTA

● HUMAN FACTOR ISSUES

- VERIFIED ADEQUACY OF ATWS TRAINING PROCEDURES
- REVIEWED FIRST OUT PANEL
 - COLOR
 - SILENCE/ACKNOWLEDGE

● MANAGEMENT ISSUES

- WORK ORDERS RECEIVED
- BETA RECOMMENDATIONS

● OTHER

- BROKEN UTA

● CONCLUSION

- CONCERNS/QUESTIONS RESOLVED
- ACTION ON 2.206
- UPDATE SER/ORDER PRIOR TO RESTART

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APR 22 1983

MEMORANDUM FOR: Chairman Palladino
Commissioner Gilinsky
Commissioner Asselstine
Commissioner Ahearne
Commissioner Roberts

FROM: William J. Dircks
Executive Director for Operations

SUBJECT: SALEM RESTART

At the Commission Meeting on April 14, 1983, you requested that NRR verify that the licensee had performed the actions identified in the Salem Restart Evaluation, dated April 11, 1983.

In response to this request, a Review Plan, Enclosure 1, was developed and a team of one Training and Assessment Specialist and one Systems Engineer went to the Salem Nuclear Training Center and Salem Unit 1 to perform this review.

The results of our review are provided as Enclosure 2. Based upon this review, the staff concludes that the ATWS training program for the licensed operators and equipment operators complies with all the actions required in the Salem Restart Evaluation and is acceptable for restart.

(Signed) T. A. Rehm

for William J. Dircks
Executive Director for Operations

Enclosures:
As stated

cc:
/SECY
OGC
PE

NRC SHORT TERM PLAN TO ASSESS CORRECTIVE ACTION PROGRAM (SUPP. 1)
B.2 OPERATOR TRAINING

SALEM COMMITTEE PER CAP (SUPP. 1)	NRC ASSESSMENT ACTIONS	MATERIALS REQUIRED FOR ASSESSMENT
1) Conduct practical exercise in Control Room/ Simulator Room of revised procedures	<ul style="list-style-type: none"> - Review practical exercise plan - Walk through random number of operators in the performance of the revised procedures 	<ul style="list-style-type: none"> - Lesson plan - Attendance sheets - Schedule - Copy of revised procedures
2) Conduct analysis of exams with answer key	<ul style="list-style-type: none"> - Examine review method used 	<ul style="list-style-type: none"> - Documentation of review - Plan used in conducting review
3) Review testing weaknesses	<ul style="list-style-type: none"> - Examine documentation of issuance of exams and keys - Interview random number of operators regarding returned copy of exam and key 	<ul style="list-style-type: none"> - Records - Returned copies of exam and key
4) Distribute letter identifying weaknesses to each operator	<ul style="list-style-type: none"> - Examine letter - Interview random number of operators regarding this letter 	<ul style="list-style-type: none"> - Copy of letter
5) Counsel each trainee on all procedure test items missed	<ul style="list-style-type: none"> - Examine counseling plan, methods - Examine schedule (if available) - Interview random number of trainees regarding counseling sessions 	<ul style="list-style-type: none"> - Plan, methods - Schedule (if available)

6) Retrain and retest individuals requiring remedial action

- Review retraining materials, lesson plan
- Examine test

- Instructional materials
 - Lesson plan
 - Test
-

7) Conduct walk through on alarms and RPS indicators

- Review RPS walk through plan (held jointly with procedures practical exercise)
- Walk through random number of operators on the location of annunciators

- Lesson plan
 - Attendance sheets
 - Schedule
-

8) Conduct walk through audit of Equipment Operator (EO) knowledge of breaker location, type and operation in ATWS related procedures

- Review Audit Plan
- Interview random number of EOs regarding the identification and operation of appropriate devices

- Attendance sheets
 - Schedule
 - Walk through plan
-

9) Distribute handouts to operators on ATWS training

- Examine revised student handouts
 - Interview random number of operators regarding these revised handouts
-

- Copy of revised handouts

REVIEW RESULTS

- 1) Conduct practical exercise of revised procedures in Control Room.

Attendance sheets and schedules showed that all operators successfully completed a walk through of the procedures. In addition, eight randomly selected operators successfully completed an additional walk through conducted by NRC personnel.

Personnel were required to respond to initiating events and enter into immediate actions prescribed by procedures. In addition, they also provide rationale for specific steps. All exercises contained an ATWS event.

All personnel responded properly to the ATWS event; however, in subsequent immediate action steps, three members did not include use of the station P. A. system to announce the type of emergency. Announcement of the emergency is the last step of nine major steps in the reactor trip procedure. One step includes five additional actions required for an ATWS event, while multiple failures may add an additional ten actions to the procedure. Several members were asked not to speak during the exercise but only use a pointer to identify equipment and controls. Most could perform the five ATWS steps in proper sequence within 15 seconds using this technique.

The staff believes that the announcement of the emergency does not present a severe omission since additional staff in the control room will be reading procedures to verify immediate actions and continuing into the subsequent actions of the procedure.

2) Conduct analysis of exams with answer key

The staff conducted a review of the test item analysis which was conducted by Salem training consultants. This analysis was found to be a satisfactory method for identifying general test weaknesses.

3) Review testing weaknesses with operators

Records showed that each operator received his graded exam and answer key.

4) Distribute letter identifying weaknesses to each operator

Records showed that each operator received a copy of this letter. In addition, interviews with the same eight randomly selected operators verified that each had received a copy of this letter.

- 5) Counsel each trainee on all procedure test items missed

Records showed that all operators had been individually counseled. In addition, interviews with the same eight randomly selected operators confirmed that each had been individually counseled regarding all items missed as part of training on the revised procedures.

- 6) Retrain and retest three* individuals requiring remedial action

The staff's review confirmed that these operators were individually counseled regarding all items missed on their exam, received remedial training on the revised procedures, successfully passed a newly created exam and successfully completed a walk through on the revised procedures.

*Upon review of the examination results, Salem personnel discovered a third individual requiring remedial training.

- 7) Conduct walk through on alarms and RPS indicators

Attendance sheets and schedules confirmed that all operators successfully completed a walk through on the location of alarms and RPS indicators, and types of signals. In addition, the same eight randomly selected operators successfully completed an additional walk through conducted by NRC personnel.

- 8) Conduct walk through audit of Equipment Operator knowledge of breaker location, type, and operation in ATWS related procedures.

Attendance sheets and schedules confirmed that each Equipment Operator successfully completed a walk through of breaker location, type and operation. The staff judged the Audit Plan used to be satisfactory.

In addition, seven randomly selected Equipment Operators successfully completed an additional walk through conducted by NRC personnel.

- 9) Distribute handouts to operators on ATWS training

Review of the revised handouts verified that they are now properly referenced to learning objectives and properly indexed. Records showed that each operator received a copy of these revised handouts.

Conclusion: Based upon this review, the staff concludes that the ATWS training program for the licensed operators and equipment operators complies with all actions required in the Salem Restart Evaluation, April 11, 1983, and is acceptable for restart.

TRANSMITTAL TO: Document Control Desk, 016 Phillips

ADVANCED COPY TO: The Public Document Room

DATE: 4/28/83 cc: OPS File

FROM: SECY OPS BRANCH C&R (Natalie)

Attached are copies of a Commission meeting transcript(s) and related meeting document(s). They are being forwarded for entry on the Daily Accession List and placement in the Public Document Room. No other distribution is requested or required. Existing DCS identification numbers are listed on the individual documents wherever known.

Meeting Title: Dis/Pass Vote on Restart
of Salem Units 1 & 2

Meeting Date: 4/26/83 Open Closed

DCS Copies
(1 of each checked)

Item Description:	Copies Advanced To PDR	*	Original Document	May be Dup*	Duplicate Copy*
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2. <u>Memo Edo to</u> <u>com. dated 4/22/83</u>	<u>1</u>	*	—	<u>1</u>	—
3. _____	—	*	—	—	—
4. _____	—	*	—	—	—

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