

PDR

UNITED STATES  
NUCLEAR REGULATORY COMMISSION

---

---

IN THE MATTER OF:  
  
DAVIS-BESSE INCIDENT

(INTERVIEW AND MEETING)  
  
(CLOSED)

SFRCS TRAINING

LOCATION: OAK HARBOR, OHIO      Pages 1 - 20  
  
DATE: July 11, 1985

---

---

ACE FEDERAL REPORTERS  
Official Reporters  
444 North Capitol Street  
Washington, D. C., 20001  
(202) 347-3700

8507290295 850711  
PDR ADOCK 05000346  
T PDR

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

-----  
THURSDAY, JULY 11, 1985  
-----

MEETING BETWEEN THE NRC FACT-FINDING TEAM AND TOLEDO EDISON  
ON  
SFRCS TRAINING

NRC FACT-FINDING MEMBERS PRESENT:

DR. ROSSI

J. T. BEARD

L. BELL

TOLEDO EDISON MEMBERS PRESENT:

J. LINGENFELTER

R. SIMPKINS

W. ROGERS

P R O C E E D I N G S

(12:00 p.m.)

MR. ROSSI: This is going to be a short discussion -- I hope a short discussion -- on operator training related to the SFRCS manual actuation. And we had a call from Wayne Lanning, who is a member of our Team, yesterday, and he referred to a January 31st, 1985 letter to John Stoles on the subject of, I guess, inadvertent actuations of SPRCS.

And he indicated that that letter stated that the fact that inadvertent low pressure actuation of the SFRCS could lock all other actuations, and that the main point we want to talk about is that the letter indicated that the operators had been trained on that potential and that fixes were being considered.

MR. BEARD: You know, I would like to make sure we understand the first part, too, what they mean by that statement at some --

MR. ROSSI: Yeah. And so with that sort of introduction, could you tell us what you know of statements that were made in the letter, and what sort of training had the operators been provided?

MR. LINGENFELTER: Okay. Let me lead into that, because I was the author of the letter.

And the statement was made describing the fact that we knew the operators who were aware of the misarrangement

#7-2-SueWalsh of the actuation switches.

2 MR. ROSSI: Okay. Now, the misarrangement has to  
3 do with the diagonal arrangement of the two buttons that  
4 they would push under certain circumstances, rather than  
5 having them located right on the same horizontal line.

6 MR. LINGENFELTER: That is correct.

7 MR. ROSSI: Okay.

8 MR. LINGENFELTER: And my basis for making that  
9 statement was that people who have taken the licensed opera-  
10 tor training in my group knew that that training had been  
11 provided. In other words, I did not go back and look at all  
12 the training records to find out exactly where it was  
13 covered, but we have people -- we knew the operators who  
14 are aware of that particular problem.

15 And that was what my sentence was based upon.

16 MR. BEARD: Okay. Let me ask you, Jack, on this  
17 statement -- this statement apparently was made that if low  
18 pressure manual actuation occurs it "blocks other inputs."

19 What does that mean?

20 MR. LINGENFELTER: No, no. It doesn't block other  
21 inputs. Well, it would override actual inputs, just like  
22 in the event that happened on the 9th.

23 This statement was made that if you push -- in a  
24 non-diagonal fashion, you push the low pressure button so  
25 that one channel recognizes one steam generator is bad and

#7-3-SueWalsh1 the other channel recognizes the opposite generator is bad,  
2 then both steam generators get isolated; 599 and 608 go  
3 closed. So that cuts off the feedwater.

4 MR. ROSSI: That was the meaning of your statement?

5 MR. LINGENFELTER: Yes.

6 MR. ROSSI: That was the meaning of your statement?

7 MR. LINGENFELTER: It doesn't change anything  
8 else. I mean, all the main feed isolation occurs, everything  
9 else. But the problem becomes that you don't have any  
10 auxiliary feedwater.

11 MR. BEARD: So, you are really, if I understand you  
12 right, referring to the fact that the way the system is de-  
13 signed all the low pressure actuation inputs have priority over  
14 all other inputs. And in that sense it sort of blocks other  
15 signals and also cuts off aux feedwater input?

16 MR. LINGENFELTER: Right.

17 MR. BEARD: Okay.

18 MR. LINGENFELTER: That's fair.

19 MR. BEARD: I think I understand what you were  
20 referring to.

21 MR. ROSSI: Okay. Now, what can you today -- what  
22 do you know about the training of the specific operator that  
23 was on duty that pushed the switches incorrectly on June 9th?

24 Do you know anything about whether he had had  
25 training related to the switches? If you don't know --



#7-4-SueWalsh,

MR. SIMPKINS: I'm pretty sure that he had. I  
can't verify it positively. But I know that -- how the  
licensed group that he went through -- I can't verify that.  
I know how the licensed group that he went through had the  
training on the SFRCS and also the ATOG training that was  
conducted later, last year, the November/December time frame.

He had a specific transient where -- in fact, it  
was a B&W run transient that ran on a computer printout, all  
the stuff with the safety bit to verify when they got in  
that section of the emergency procedure that they would actuate  
on low pressure.

MR. ROSSI: Had they -- what sort of general training  
do you give to the operators related to the switches? Do  
you take them into the control room and show them the switches  
or --

MR. SIMPKINS: This training, the ATOG, we physically  
walk them through a mockup control room.

MR. ROSSI: A mockup control room?

MR. SIMPKINS: Yeah.

MR. LINGENFELTER: You know, the control room mock-  
up was prepared for the control room design, to be used as a  
training -- sort of a training aid.

MR. ROSSI: Okay. So you walked them through a  
mockup control room, and there you have the switches mocked up.

And do they -- do you know if those switches on that

#7-5-SueWalsh

mockup have the little red tape under the fourth buttons  
down that are used for low level? Do you happen to know?

MR. SIMPKINS: I would have to look. I don't  
know or don't remember what time the pictures were taken.

MR. LINGENFELTER: I couldn't tell you on that.

MR. ROSSI: Is the mockup here now? Is it at  
the site? Is it in this building?

MR. LINGENFELTER: It's over towards the plant.  
It's outside the protected area. It's a little -- not that  
direction. It's in a little warehouse building.

MR. ROSSI: Is it a full-scale mockup?

MR. LINGENFELTER: Yes.

MR. ROSSI: Okay. If we were to go over and  
look at it today and whatever the status is of the red tape,  
would there be any guarantee or assurance that if the red  
tape is not there today that it wasn't there then, or vice-  
versa?

MR. LINGENFELTER: No, there wouldn't be any  
assurance, but my feeling is that the red tape was put  
there for the serious control room fire which came up in --  
that evolution occurred in '84.

MR. SIMPKINS: Late '84 I believe.

MR. LINGENFELTER: And the mockup was based on  
the status of the plant as of '83. There have been some  
changes made to it that I doubt that that tape addition was

#7-6-SueWalsh 1 made -- in fact, I'm sure that the tape addition would not  
2 have been made.

3 MR. ROSSI: So the tape would not have been there  
4 when they were training? And really the training on the  
5 manual actuation of the SFRCS is primarily based on the  
6 mockup and not in the control room training?

7 MR. SIMPKINS: Well, for this particular training  
8 it was only because we had a mockup available. We hadn't  
9 had it before.

10 MR. LINGENFELTER: The tape you are referring to  
11 is on the low level?

12 MR. ROSSI: The -- yes.

13 MR. LINGENFELTER: Okay. Now, the particular  
14 question we are talking about here, of course, is the cross  
15 pattern of the low pressure switches. The tape --

16 MR. ROSSI: Would have no distinguishing marks  
17 there other than just knowing.

18 MR. SIMPKINS: The operators were walked through  
19 the control room for different procedures and shown the red  
20 tape from the low level trip buttons in the actual control  
21 room. But I can't swear that this guy that pushed the wrong  
22 buttons was a reactor operator at the time that he did that  
23 or not.

24 I'm not sure.

25 MR. BELL: In your training lecture for the steam



#7-7-SueWal

and feedwater rupture control system, do you point out to the operators that if the two end line buttons are pressed that part of the SFRCS design is adversely effected?

MR. SIMPKINS: The last time it was given in requalify the SFRCS lecture was in '83, and the information I found on that, there is nothing that specifically said, you know, that this is required. All the design basis I think was gone through as far as how it actuates on low pressure. But I can't guarantee.

I sat through the lecture, but I just can't remember if he specifically said two low pressure buttons one on each side would enable the aux feed system.

The lecture going on currently now, which is after the fact, certainly points it out.

MR. ROSSI: So there may not have been a lot of stress in the training on all those problems with the buttons?

MR. SIMPKINS: I know it was brought up that you have to cross the buttons. But I can't verify that it was brought up, what happens if you don't.

I know that it was brought up, the actuation on low level if you only hit one and only hit one actuation channel. But I can't swear if that was covered.

MR. BELL: Jack, had your department considered the possibility of this incident prior to its occurrence?

#7-8-SueWalsh 1

2 MR. LINGENFELTER: You mean in specific terms  
3 of having a guy push the top two buttons?

4 MR. BELL: Or -- yes, the top two buttons.

5 MR. LINGENFELTER: Okay. The top two buttons,  
6 as opposed to if you were trying to push it on low pressure,  
7 diagonal. That was specifically what we had been concerned  
8 with when we -- in the human engineering discrepancy, the HED,  
9 that we had.

10 In other words, we never -- we never contemplated  
11 that he would hit the top two buttons instead of the fourth  
12 ones down, if that's what you are aiming at.

13 MR. BELL: That's what I was asking, yes. The  
14 consequences of inadvertent actuation on SFRCS on a low  
15 steam generator pressure in Number 1 steam generator and a  
16 low steam generator pressure in Number 2 steam generator.

17 MR. LINGENFELTER: Yeah. With the HED, we  
18 identified, we looked at that problem and again as opposed  
19 to -- the problem we are actually looking at here, is he hit  
20 the top two buttons instead of the fourth one down. We didn't  
21 think of that as part of the HED I guess.

22 MR. BEARD: Let's see if I can summarize and make  
23 sure I understand. Because of the HED, the deficiency, I get  
24 the impression that you made sure that at your training  
25 program you emphasized to the operators that if they have a  
steam generator they had to use the diagonal approach rather

#7-9-SueWalsh1      than some other approach.

2                    MR. LINGENFELTER:    Right.

3                    MR. BEARD:    All right.    Now, that's the point  
4                    number one.    Point number two is, I don't think I hear you  
5                    saying that you emphasize in the training that if he were  
6                    to push it straight across the impact on what that would  
7                    have on other actuation signals such as low level.

8                    MR. LINGENFELTER:    That specific action and its  
9                    consequences and its impact on plant was probably not pointed  
10                   out.

11                   MR. BEARD:    The point I'm trying to get at is,  
12                   I think you were emphasizing when you got this situation,  
13                   here is the right way to do it.

14                   MR. LINGENFELTER:    Right.

15                   MR. BEARD:    And you probably also -- or, I would  
16                   guess the instructor would have said if he did it straight  
17                   across that's the wrong way to do it.    You know, I would  
18                   imagine that would be a typical part of the lecture.

19                   But, what I'm trying to get to is, you didn't  
20                   really point out that if he does it in the straight horizontal  
21                   manner, he not only doesn't get what he wanted to get but he,  
22                   in effect, blocks the SFRCS from other inputs, which seems  
23                   to be the statement which was made in the letter.

24                   See, the statement in the letter, as it was read  
25                   to me yesterday, was -- and it was read verbatim, and

#7-10-SueWalsh

obviously I don't have it in front of me, and you don't either -- but it said that we recognize that when you have low pressure actuation that this blocks all the other inputs to the SFRCS system. But our operators have all been trained on this, and they are all checked out, and they know about this potential problem.

MR. LINGENFELTER: No, that's not the way it reads.

MR. BEARD: Okay. That's where --

MR. LINGENFELTER: That was certainly not the intent of the thing. And I may have to go back and get a copy of it for you.

But, it was -- and it really hadn't to do with the blocking of other signals. It was -- we were more concerned about the blocking of feedwater specifically with that activity.

And again we were basing it on the assumption that the only time the guy would even aim his fingers at those top buttons would be if he were trying to actuate a low pressure.

MR. BEARD: Okay.

MR. LINGENFELTER: So, what we were concerned with is that he understood that he had to hit the diagonal.

MR. BEARD: Right.

MR. LINGENFELTER: It wasn't a matter of -- the

#7-11-SueWalsh

thing that we were trying to come across with had nothing to do with what happened here in terms of hitting the top buttons versus the fourth ones down.

MR. ROSSI: Is part of your standard training and policy at this plant that the operators should manually initiate safety functions when they see that they are on the way to being automatically initiated?

I mean, is that something that is a standard policy?

MR. SIMPKINS: No. In fact, it's specifically not to be done in the safety features.

The only system that is manually actuated is SFRCS by the procedure which says if the automatic actuation fails to actuate it on low level. And that is strongly emphasized throughout training.

END #7  
M.Simons flws



Sim 8-1

1 MR. ROSSI: Is it a policy at the plant or part  
2 of the training that when you have a loss of main feedwater  
3 transient that the operators should manually initiate the  
4 SFRCS low level in anticipation or prior to giving the  
5 automatic signal?

6 MR. SIMPKINS: It was strongly emphasized to  
7 follow the emergency procedure and that guides you into  
8 actuating on low level if SFRCS does not actuate.

9 MR. ROSSI: But only if it doesn't actuate  
10 automatically and there is nothing that says do it in  
11 anticipation?

12 MR. SIMPKINS: That is not true. It does in a  
13 round-about way because if you get into loss of coolant or  
14 lack of heat transfer, then you actuate SFRCS and verify your  
15 raised steam generator levels to 124 inches and trip the  
16 reactor coolant pump.

17 MR. BEARD: You are the guy that trains the  
18 operators, right, or one of your guys?

19 MR. SIMPKINS: I was involved in some of the  
20 training, yes.

21 MR. BEARD: Would your training have included  
22 consideration of that if you lose level in the generator  
23 for whatever reason and you are approaching the automatic  
24 actuation point that it might be a good idea to conserve  
25 what inventory is in there and that one way one might do

Sim 8-2 1 that is to go ahead and manually actuate the low level  
2 actuation?

3 MR. SIMPKINS: No.

4 MR. BEARD: That is not part of your training?

5 MR. SIMPKINS: It is not part of the training.

6 The dead band between low-level limits and the SFRCS trip  
7 setpoint is so close that it is ---

8 MR. LINGENFELTER: That is if you ~~are~~ in a post-  
9 trip situation, which we have been in a number of times. I  
10 think I know the direction of your question. It is not  
11 uncommon, nor is it prohibited specifically for an operator  
12 to manually actuate SFRCS in the situation he was in because  
13 the levels were dropping and the speed on the turbine was  
14 dropping and he knew he was going to buy it sooner or later.

15 The problem they have with that is the way the  
16 system works. He turns right around and fills them right  
17 back up to where they already were in a real fast fashion.  
18 They do not like the overcooling transient that results from  
19 that. So they anticipate it.

20 MR. ROSSI: So it is a policy at least at the  
21 plant that they push the buttons in anticipation of low level  
22 for the kind of transient that occurred?

23 MR. LINGENFELTER: It is not a firm policy. It  
24 varies from shift to shift. It depends on how they feel  
25 comfortable with operating in that particular situation.

Sim 8-3

1 Some shifts don't do that. But we, knowing the way the  
2 system responds to it, have never specifically precluded  
3 somebody from trying to do that, especially given their  
4 concern or potential concern not knowing exactly the status  
5 of the SFRCS.

6 MR. ROSSI: So maybe a correct way of stating  
7 it is that the procedures neither tell them to do it, nor  
8 tell them not to do it.

9 MR. SIMPKINS: I would have to look at the  
10 procedure. I can't remember the specifics on if for some  
11 reason both feed pumps were tripped at power with the  
12 supplementary steps telling them specifically what to do.

13 MR. ROSSI: We have that procedure anyway.

14 MR. BEARD: Are you talking about the ATOG  
15 procedure?

16 MR. SIMPKINS: I believe that does tell you to  
17 manually actuate it on low level if both feed pumps go away  
18 on a trip and SFRCS doesn't actuate.

19 MR. ROSSI: Well, there is a difference between what  
20 you said and what he did. What I have heard you say several  
21 times is that the procedure specifically says that if you  
22 don't get the automatic actuation of SFRCS, then you manually  
23 initiate it. And the question is does the procedure tell  
24 him to manually initiate it before he gets the automatic  
25 initiation in anticipation ---

Sim 8-4

1 MR. SIMPKINS: It does because it doesn't  
2 mention say the words if SFRCS does not automatically  
3 initiate in the places I am thinking of, and it is just  
4 recalling from memory the action that I am referring to.  
5 One of the supplementary action steps is that you verify  
6 proper feed water response. If not, you go to the next step  
7 which asks has SFRCS actuated.

8 MR. ROSSI: Well, we can check on the procedure  
9 there. We don't really need to depend on everybody's memory  
10 of the procedure because we can look.

11 MR. BEARD: Well, I guess the only thing that  
12 I would like to make sure that I understand 's that I gather  
13 that as far as the general training that all operators get,  
14 you do not emphasize or bring up that one should try to  
15 manually actuate on low level in anticipation of some  
16 situation like Jack referred to, but that certain shifts  
17 may be more comfortable in choose to operate in that manner.  
18 Is that a fair statement?

19 MR. LINGENFELTER: That would be my perception.  
20 I won't speak for training.

21 MR. ROSSI: I also heard the statement that  
22 the procedure may be written to tell them that if they have  
23 a loss of feed that they should manually initiate SFRCS  
24 and it doesn't say if it isn't initiated automatically or  
25 anything. It may just say if I have lost main feed to

Sim 8-5

1 manually actuate SFRCS, but we can look.

2 MR. SIMPKINS: I believe it uses the words  
3 verify proper SFRCS actuation. I really can't remember.

4 MR. ROSSI: Well, we can check the procedure.

5 MR. BEARD: But it would be a follow-up action,  
6 as I understand the way you are describing it, to something  
7 having not happened automatically.

8 MR. ROSSI: That is the question though. It may  
9 or may not be, depending on how it is worded.

10 MR. BEARD: But what I hear the gentleman saying  
11 is from memory, for whatever that is worth. What he  
12 remembers is that the part that tells him to actuate is the  
13 follow-up to having him check to see if it happened already  
14 automatically.

15 MR. SIMPKINS: Yes.

16 MR. BEARD: Okay. And we can check the procedures  
17 and look at it.

18 MR. ROGERS: In your training an operator manually  
19 actuating SFRCS on low level, would it be considered a  
20 procedural violation or in any way an imprudent operation  
21 by the operator, given the training they have been given ---

22 MR. SIMPKINS: To manually actuate SFRCS, no, by  
23 no means no.

24 MR. ROGERS: That is okay.

25 MR. ROSSI: So the procedure doesn't prohibit



Sim 8-6

1 it either.

2 MR. SIMPKINS: Right.

3 MR. ROSSI: There is no prohibition in either  
4 the training policy or the procedure for doing it. It is  
5 left up to the operator's discretion basically.

6 MR. SIMPKINS: I can't remember the exact words  
7 of the procedure. I am sorry.

8 MR. ROSSI: We will have to check it.

9 MR. SIMPKINS: I don't know if that is a fair  
10 statement to make.

11 MR. ROGERS: I guess I am just look at it from an  
12 operating philosophy for people that have had operator licenses  
13 and the general tradition that it happened given your feedwater  
14 problem and the problems you have had with rapid feedwater  
15 reduction. It is not an uncommon occurrence for your operators  
16 to punch out SFRCS manually.

17 MR. SIMPKINS: Right.

18 MR. ROSSI: That has been your observation is that  
19 they generally do do that.

20 MR. ROGERS: They are very concerned because of the  
21 way rapid feedwater reduction operates. There is a two-minute  
22 timer in there and there are some questions in that two-minute  
23 time frame when you are sitting there watching the feedwater  
24 and trying to get a feel for what is really going on, and as  
25 levels come down, and if they feel that rapid feedwater

Sim 8-7 1 reduction isn't going to take over and do what they want it  
2 to do, I think it is a safe assessment to say that they go  
3 ahead and take the system into SFRCS by manually actuating.

4 I think there have been cases where before the  
5 manual actuation takes place, which they have intentions of  
6 doing, the automatic system eventually takes over. There have  
7 been cases where they have been in that transition before.  
8 Correct me if I am wrong.

9 MR. ROSSI: Larry.

10 MR. BELL: Would you tell me the length of the  
11 lecture on the SFRCS system in the hot license training program?

12 MR. SIMPKINS: I believe it is four hours. I am  
13 pretty sure that is about the length of it.

14 MR. BELL: Earlier you didn't mention the fact  
15 that it was even included in the hot license program. You only  
16 addressed a requalification lecture. So I wanted to make  
17 sure that it was included in the hot license program.

18 MR. SIMPKINS: There are also specific signoffs  
19 before they even go into the hot license class that that system  
20 is checked out by a reactor operator.

21 MR. BELL: On a slightly different subject if  
22 you are in the training department. Would the area that you  
23 work with include training on aux feedwater systems?

24 MR. SIMPKINS: Yes.

25 MR. BELL: All right. In association with the

Sim 8-8

1 training that you give the people, and I am referring  
2 specifically to non-licensed individuals, is that in your  
3 jurisdiction?

4 MR. SIMPKINS: Yes.

5 MR. BELL: Okay. Does that training include  
6 recovery type operations, such as relatching the turbine  
7 trip throttle valve?

8 MR. SIMPKINS: Yes.

9 MR. BELL: So that from a training perspective  
10 if a guy has been through your course and his card is  
11 signed off, so to speak, on aux feedwater, one would expect  
12 that the guy knows how to reset the trip throttle valves?

13 MR. SIMPKINS: Yes.

14 MR. BELL: Thank you.

15 MR. ROSSI: Anything more?

16 MR. BELL: No.

17 MR. ROSSI: Okay, that is the end of that then.

18 (Whereupon, at 12:10 p.m., the meeting concluded.)

19 \* \* \* \* \*

20

21

22

23

24

25

CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the  
NRC ~~COMMISSION~~ FACT FINDING TEAM.

In the matter of: DAVIS-BESSE INCIDENT

Date of Proceeding: July 11, 1985

Place of Proceeding: Oak Harbor, Ohio

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

MYRTLE H. WALSH  
Official Reporter - Typed

GARRETT J. WALSH, JR.  
Official Reporter - Typed

*Myrtle H. Walsh*  
Official Reporter - Sigt.

*Garrett J. Walsh Jr.*  
Official Reporter - Signature

MARY SIMONS  
Official Reporter - Typed

*Mary C. Simons*  
Official Reporter - Signature