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OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: U.S. NUCLFAR REGULATORY COMMISSION

Title: INTERVIEW OF: JOHN "GUS" WILLIAMS
DEAN GUSTAFSON
GLENN MCCARLEY

Docket No.

LOCATION: WAYNESBORO, GEORGIA

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ADDENDUM TO INTERVIEW OF John C. Williams
(Print Identity of Interviewee)

Page	Line	Correction and Reason for Correction
3	18	"cold" instead of "full"
4	4	4.0.5 instead of 405
4	5	XI instead of 11
5	25	check valves instead of CPC
6	15	add Jerry before turbine.
6	18	change 4 to 8. After interview I went through all check valves and verified that there are 2 check valves per accumulator that require disassembly. The valve closest to the accumulator was the item that I was discussing in line 21. The valves closest to the loop get a partial flow test also.
7	15	CVCS instead of CDCS
7	21	~~accumulator~~ RCS Loop "5" instead of air filter.
12	23	valve instead of valved.
13	3	delete "~~the~~ just kind of thickened in"
13	4	delete "spots"
16	24	"test" instead of "train"
17	17	change "2" to "to"
19	17	change "pressure" to "water that"
19	18	"comes" instead of "come"
24	9	change "stroked that" to "stroke times"
24	18	add "be" before "less"

Page 1 Date 4/11/90 Signature John Williams

ADDENDUM TO INTERVIEW OF John C. Williams
(Print Identity of Interviewee)

Page	Line	Correction and Reason for Correction
~~24~~	~~18~~	~~Typo~~
27	17	Change "exact" to "amount"
32	10	Change "band" to "dam"
32	10	Change "recon" to "REM"
32	19	Change "band" to "dam"

Page 2 Date 4/11/90 Signature John C. Williams

ADDENDUM TO INTERVIEW OF Dean Gustafson
(Print Identity of Interviewee)

Page	Line	Correction and Reason for Correction
7	23	Change witness response to Williams. I think Gus Williams provided the response.

Page 1 Date 4/5/20 Signature Dean E. Gustafson

ADDENDUM TO INTERVIEW OF Glenn A. McCarley
(Print Identity of Interviewee)

Page	Line	Correction and Reason for Correction
No corrections or clarifications.		

Page ___ Date 4/12/90 Signature Glenn A McCarley

U. S. NUCLEAR REGULATORY COMMISSION

INTERVIEW OF:)
)
JOHN "GUS" WILLIAMS)
DEAN GUSTAFSON)
GLENN MCCARLEY)
)

Site General Manager's
Conference Room
Administrative Building
Vogtle Electric Generating Plant
Waynesboro, Georgia

Thursday, March 29, 1990

The interview commenced at 10:25 a.m.

APPEARANCES:

On behalf of the U. S. Nuclear Regulatory Commission:

GENE TRAGER
WARREN LYON

On behalf of Carolina Power & Light Company:

MIKE JONES

On behalf of INPO:

PAUL DIETZ

P R O C E E D I N G S

MR. TRAGER: It is 10:25 a.m. on March 29, 1990. We are here to discuss work on check valves while at mid-loop. We have three individuals here from Plant Vogtle who we have asked to be with us. We will give them an opportunity to state their names and positions.

Whereupon,

JOHN "GUS" JOHNSON
DEAN GUSTAFSON
GLENN MCCARLEY

appeared as witnesses herein and were examined and testified as follows:

EXAMINATION

BY MR. TRAGER:

Q We are here to discuss work on check valves while at mid-loop. We have three individuals here from Plant Vogtle who we have asked to be with us.

We will give each of them an opportunity to state their names and positions.

A (Witness McCarley) My name is Glenn McCarley. I am Supervisor of the Independent Safety Engineering Group and, as such, am responsible for the evaluation of SOER 86-03, dealing with check valves.

A (Witness Gustafson) I am Dean Gustafson, Maintenance Engineering Supervisor. One of my responsibilities as it relates to the check valve is

implementation of the PM Program.

A (Witness Williams) And my name is Gus Williams. I am Performance Engineering Supervisor and I am responsible for the ISI-IST Program and I am also responsible for the engineering portion of the SOER 86-03.

BY MR. DIETZ:

Q Okay, what are some of the check valves that have to be maintained at mid-loop that require that condition, to be able to do either testing or maintenance?

A (Witness Williams) Well, normal and alternate charging. There are four valves total, two each normal charging and alternate.

Those are from the SOER 86-03. There are other accumulator discharge check valves. Those come from our IST Program and basically the requirement is to full flow check and if you are unable to do that, then you need to have some alternate means of verifying full flow and we have a relief request for full shutdown justification to do disassembly on a staggered basis, one valve per outage.

Q Okay, if I understand what you are saying is that on accumulators, you do not do a full flow test and therefore you must disassemble those check valves?

A (Witness Williams) Yes, that is true. It is not-- to do a full flow test, you would have to discharge an accumulator.

Q What regulation is requiring you to do a full flow test?

A (Witness Williams) It is the IST Program, tech-spec 405, which is just the generic thing, it says thou shalt comply with the ASME code, Section 11.

Q It would be possible for you to do a test either at shut down with the accumulator charged or as you came down, cooling down to do a flow test?

A (Witness Williams) The only way to achieve flow through those valves would be to dump it into the vessel. To do that, you would have to have the vessel head off.

There have been other plants, I believe, that have tried to do accumulator dumps and they have succeeded in getting nitrogen and binding up RHR pumps and other things.

Q What if you came down--was the pressure on the accumulator about 600 pounds?

A (Witness Williams) 600 pounds.

Q What if you came down to something like--had everything open and came down to about 500 pounds, would that not start putting water into the RCS?

A (Witness Williams) It would; however, that would not be a full flow test.

Q Okay, the condition is you must have full flow?

A (Witness Williams) Yes.

Q If somehow you could get relief from full flow,

would this mean then you would not have to do a disassembly?

A (Witness Williams) Well, the generic letter 89-04 basically states that you can't ever get away from a full flow test of the check valve.

Q Uh-huh.

A (Witness Williams) It does give you alternates to do that and the alternate that they discuss and about the only one that I have ever heard them accept is disassembly.

Q Uh-huh.

A (Witness Williams) If you do a partial stroke test, you still have not totally complied with the code. You have provided some increase, assurance that it is functioning properly, but you have never actually satisfied the code.

Q So what we are saying here, one of the conditions that is requiring you to do these at mid-loop, to open up these penetrations at mid-loop is a code requirement.

A (Witness Williams) Yes.

Q And part of our charter here is to look at regulations that get you into conditions, requiring you to be there, and the reason you have to do it is there is no maintenance valve between the check valve and the reactor in any of these paths?

A (Witness Williams) That is true.

Q For the safety injection systems.

A (Witness Williams) And charging CPC.

Q Charging, okay.

A (Witness Williams) We do have some check valves that we are able to full flow the pumps, RHR safety injection.

Q Okay.

A (Witness Williams) We do full flow test those, we do not disassemble them.

Q So the ones that require you to disassemble are only the accumulator check valves?

A (Witness Williams) Yes, sir, because of IST Program.

There are others in other portions of the plant, but they don't require mid-loop operation.

We have other disassemblies, like main steam to the turbine.

Q Right, but those are not--

A (Witness Williams) Those are not mid-loop required.

Q So at mid-loop, there are only four check valves that have to be periodically disassembled, and you do one of those every outage?

A (Witness Williams) That is a true statement.

Q During this outage, you were doing one of those?

A (Witness Williams) That is true.

Q When the event occurred, one of those check valves was open?

A (Witness Williams) I believe so, yes.

There was also the loop charging valve open also and that was disassembled through the 86-03.

BY MR. JONES:

Q And you say the driver for these is the ISI-IST.

A (Witness Williams) Program.

Q Program and how did the, the SOER?

A (Witness Williams) That got the other end, I believe that there wer more than one valve.

A (Witness Gustafson) Two driving forces independent of each other.

A (Witness Williams) Yes.

A (Witness Gustafson) Is that a complete statement?

A (Witness Williams) I believe so. We had the 036 valve on CDCS open for an SOER 86-03 check valve inspection, and we had an SI valve open.

BY MR. DIETZ:

Q Okay, having that other one open, that required you to be at mid-loop also?

A (Witness Williams) That is true, it was the inboard valve to the air filter.

Q Okay.

A (Witness Gustafson) We probably would not have had to go to mid-loop, but we would have had to lower the level in RCS below the flange.

Q Okay.

A (Witness Williams) The line physically comes out of the top of the loop and goes up about 7 feet and turns back and if you were able to get the water below that level, you could disassemble that valve.

Q But you would have to have the reduced water level?

A (Witness Williams) You would have to have the reduced water level.

Q Okay, and why does the SOER require you to do a disassembly?

A (Witness Williams) Well, the guidelines of the SOER basically have you look at the check valves in your plant that perform functions that you are concerned about. Higher reliability, safety functions, basically the things that you want to do to try and prevent your plant from undergoing a transient because this valve fails.

Q Uh-huh.

A (Witness Williams) We went through a set of criteria on the check valves in our plant that said, and they were based on the EPRI guidelines, if you have undeveloped--well, if you have too few pipe diameters upstream of your check valves, you may not have sufficient flow developed to maintain your check valve on its back stop and it may flutter. Fluttering over time would cause damage, and would lead to failures.

We also have misapplications that you look for, swing check valve upside down, and it would never actuate--that is kind of a farfetched case, but it is the only one that comes to mind currently.

All other basic attributes of the valve and how it was originally designed to see if it satisfied the EPRI criteria. The EPRI criteria basically leads you to the point where it passes all these criteria. There is a very little likelihood of failure in service.

Well, these check valves failed one of those criteria or more than one of those criteria. I am not certain which one.

Q Could you obtain that information?

A (Witness Williams) I can tell you which ones they failed, yes.

Q Okay.

A (Witness Williams) And we are--currently we have no way to monitor them in service because the only time they are in service is when the reactor is running.

The only other way we could monitor them is with disassembly.

Q Can you prove that they can pass flow and that they can check?

A (Witness Williams) Well, the problem is that during a cycle you really only run one charging line because

if you try and swap from one charging line to the other charging line while you are at power, you undergo a transient, a thermal transient that you are allowed only ten of in your lifetime and you try to avoid that, and so, once we start on a cycle with a check valve, with a flow path normal charging or alternate charging, you stay there, so basically the other flow path doesn't get any flow through it.

Q Would it be possible to do this with the vessel entirely flooded up or, you know, maybe all the way up near the top of the refueling cavity?

A (Witness Williams) Do a full flow?

Q Yeah.

A (Witness Williams) You probably could run a full flow test cold on the alternate train.

Q Which would then not require you to do other than reduce the level, or disassemble it?

A (Witness Williams) Yes, that is true, but we could verify that we could put the required or a full flow rate through it, yes, we have flow instruments that can measure that.

Q Would you, when you go back to the office, verify that that is in fact feasible, that that is a--maybe put that together in a memo or something?

A (Witness Williams) Uh-huh. Yes, sir.

Q What I am really--part of what we are trying to approach here are the things that are requiring you to be there. You have mentioned the EPRI report and the conditions in that, that this one failed one of those and therefore had to be periodically used, does this mean this valve gets taken apart every outage?

A (Witness Williams) No, one of the four will.

Q Okay, one in four, and the INPO SOER also requires you to disassemble it?

A (Witness Williams) It says that you are to insure that you do not have incipient failures, and it leaves basically up to us how we determine if we have incipient failures.

In the world of check valve monitoring, there are very few ways to monitor while you are on line. If you are in the turbine building, you could, if you had an acceptable acoustic emission device, one that was reliable, you could take a signature of the valve with that acoustic emission device and then periodically check it or look at it; but for the valves inside the containment--

Q You can't do that during operation but you could do it again if you did a full flow test at cold or something like that?

A (Witness Williams) You could, but I am not sure how much it would gain you, because you have to do it multiple

times and you would have to have some signature that you knew was good, and that is the biggest one.

Q What has the industry experience been with this check valve in this application? Have there been a lot of failures?

A (Witness Williams) Offhand I am not sure.

Q More looking for the risk.

A (Witness Williams) Yeah.

Q Say we do a full flow test and don't disassemble it.

A (Witness Williams) The only case that I am really familiar with is that, well, that was safety injection.

A (Witness Gustafson) Are they in the same configuration, does every plant have the--

A (Witness Williams) It is hard to say. Almost every plant that has charging, has some charging lines and they have isolation valves.

A (Witness Gustafson) Right.

A (Witness Williams) I am not sure though. There is one similar analogous thing and that is while you are running the one pump, are you familiar with Bulletin 88-08?

Q Right.

A (Witness Williams) Okay, you have a leak through check valved, after you had a leak through an MOV and it caused stratification, caused a crack, is about the only one that I am really familiar with.

Q Uh-huh.

A (Witness Williams) I am not certain that we have ever had disks come apart, they just kind of thickened in spots.

Q Are there any other things requiring, any new check valves requiring you to be at mid-loop, in terms of their conditions, or any other conditions during shutdown that put you in a reduced safety or risky operation to do check valve maintenance?

A (Witness Williams) Not that I can think of.

A (Witness McCarley) I am not aware of any, no.

A (Witness Williams) Most of the other valves we do full flow test and when we do that, we inject into the core and measure flow.

Q Okay, have you got any?

MR. LYON: Not on check valves, no. You have covered it. I have some other valves, but not check valves, which I will come to.

MR. DIETZ: Okay.

BY MR. JONES:

Q Let me ask your opinion on, if the issue is, we want check valves to be reliable because that reduces the risk to the plant, the overall risk, but if we are going into a mode to work on those check valves, this introduces a greater risk, then we have lost the bubbles on that.

First of all, let me ask you, what is your opinion, do we gain a lot out of these check valve tear down inspections over timing problems? Is the gain worth the risk? Or are we just tearing them down every time and finding they are okay?

A (Witness Williams) We have torn valves down and found problems but they weren't in the various points.

A (Witness Gustafson) I have one clarification. There were some we tore down in the secondary plant this time that we found problems with.

A (Witness Williams) Yes. We found damage, major damage that makes the valve not function at all.

Q So that, in general, for check valves the inspections are worth while, but for these particular ones, you haven't found problems?

A (Witness Williams) That is true, we have put them back together.

BY MR. DIETZ:

Q The check valves that you found with problems though, those were the ones where you couldn't do a full flow and a check type of test on them, or where they functioned, or you just dump them?

A (Witness Williams) Well, if you do a full flow test, you can prove that you can get full flow.

Q Right.

A (Witness Williams) You may not prove that the valve, that the disk has become dislodged.

Q Right, that is harder to get. It has also been proven that you didn't do a check on these, that they were check flow.

A (Witness Williams) Yes.

Q While in the secondary, it is easier to rip them a part, because--

A (Witness Williams) Uh-huh, well, these are on the feed pump.

A (Witness Gustafson) The disk were out of them altogether.

Q And that has been an industry problem altogether?

A (Witness Williams) Yes.

MR. DIETZ: Okay, anything else on the--

BY MR. JONES:

Q In your opinion, is it worth the risk to work on these valves, at the frequency we are doing them?

A (Witness Williams) Is that including the IST valves too?

Q Yeah, IST, all of the ones that require you to go to mid-loop, balancing the risk of being in mid-loop versus working on these valves, in your opinion, is it worth it?

A (Witness Gustafson) That is a difficult question to answer.

A (Witness Williams) In my opinion, the valves that don't see service, like the accumulators that just sit there on their seat, it's not totally logical to disassemble them and stroke them.

BY MR. DIETZ:

Q Where as the RHR check valve that is receiving a lot of flow or--

A (Witness Williams) Right.

Q That is actually having flow go through it all the time or a multiple amount of time, or like the alternate in normal charging check valves that have flow and pressure and are constantly in service, it does not seem to me to be consistent, but when you say in service, you mean opening and closing?

A (Witness Williams) Yes.

BY MR. JONES:

Q Have we tried hard enough to find alternate ways? For instance, Paul brought up the idea of an alternate way, flooding up and doing a full flow test, or when we do this maintenance at mid-loop, do we have to do it there pretty much?

A (Witness Williams) If we disassemble. On the accumulator discharge check valves, we have looked at a large number of ways to train.

A (Witness McCarley) You pursued earlier acoustic

testing and you alluded to that earlier in the conversation, but yet, my understanding is, you have not found a reliable range.

A (Witness Williams) Well, acoustic testing wouldn't work on accumulator discharge checks, because they don't move, they sit there.

Q Yeah.

A (Witness Williams) And the only way really to use acoustic testing is to have flow going through that valve and you listen to see if it is sitting there tapping, or see if it is hard against its back stop and you see no change in normal.

A (Witness McCarley) So, to answer your question, other means of testing has been investigated and no other alternative means have been found.

A (Witness Williams) Yes, and we have talked--SOER 86-03 has been a significant item every time INPO has come for the past three years, for three visits.

BY MR. DIETZ:

Q Has that dealt with these particular valves or does it deal with the program at all?

A (Witness Williams) It deals with the program as a whole.

Q Have you ever gotten into a discussion with the INPO people about the accumulator trunks, or in a special sense?

A (Witness Williams) We have gotten into discussions with the Commission about the discharge checks as a part of the relief request process.

Q Did you request relief on those, on the accumulator trunks to--

A (Witness Williams) We requested relief for full flow testing for disassembly, yes.

Q Could we get a copy of that request?

A (Witness Williams) The relief position.

Q Yes.

A (Witness Williams) Yes.

MR. DIETZ: Good.

BY MR. LYON:

Q When you take one of these guys apart and then reassemble it, how do you know it is going to work properly?

A (Witness Williams) How do we know?

Q Yes.

A (Witness Williams) One of the last things that they do before they button it up is to take the disk and just pull straight up.

Q Do they full stroke it manually and then button it up?

A (Witness Williams) That is part of his procedures, yes.

Q Do you feel that is an adequate test to pretty much

assure that it will operate as it is supposed to?

A (Witness Williams) Uh-huh.

Q And the reason I am asking is, in the one that you referenced where the nitrogen was injected, my understanding is they had done some actual maintenance on the valves and they were concerned that they wanted to make sure that they worked properly.

A (Witness Williams) Okay. We have, if we do a valve disassembly, we will try and do a partial stroke test, after we have done the valve test assembly.

Q And what does that stroke test consist of?

Excuse me, can you do that for the accumulator valves?

A (Witness Williams) No.

Q Okay, so you are locked on those?

A (Witness Williams) Yes. For instance, RWST suction 2, the centrifugal charging pumps, is the large pressure come out of the RWST and then we have a single pipe with two MOVs branched and then a single check valve to prevent back flow during a piggy back that would go back up the RWST, that check valve was disassembled this outage.

We physically checked it, lifted it, put it back in, reassembled and did a partial stroke test, after we had re-assembled, and that is basically in--are you guys familiar with 89-04?

Q No, what is that?

A (Witness Williams) That is the generic letter on IST Programs and they had several public meetings and they discussed at those public meetings questions by licensees and the NRC attempted to answer questions about that, and one of their answers that they gave was, if I disassemble a valve, what type of functional test should I do?

And the answer that came back from the Commission was, you should try and perform a partial stroke test.

Q Have you considered pressurizing your accumulators a little bit, like perhaps 50 or 100 psi and doing a partial stroke test with that configuration?

A (Witness Williams) After the disassembly or--

Q Yes.

A (Witness Williams) I haven't, no.

Q Are you aware whether anyone local has considered that?

A (Witness Williams) I would expect that no one has.

Q Do you think that might be a worthwhile thing to do?

A (Witness Williams) After the disassembly, we have already gotten to mid-loop. I am not sure that that would prevent us going to mid-loop, we would still do the disassembly.

Q Later on, your refuel--no, it would not prevent going to mid-loop, unless that could be a substitute, I

agree, but later on, as a follow-up kind of thing, after you had flooded up from mid-loop, would you think that would be a reasonable thing to do, or is there no need for it at this point?

A (Witness Williams) I would hesitate doing that.

Q Because?

A (Witness Williams) Because of the possibility of putting nitrogen in--

Q Even at that reduced pressure?

A (Witness Williams) Yes.

Q All right. You have mentioned voice monitoring several times as a way of looking at these valves, do you feel noise monitoring and the signature you get back is sufficient to take care of something like perhaps one of two bolts has shirred off and being held by the other bolt?

A (Witness Williams) I think you would hear a change in the sound.

Q So, where you could pick up those kinds of changes?

A (Witness Williams) I believe you could, but I am not sure that there is a piece of equipment that could do it yet.

Q So in the practical sense--it is just not practical?

A (Witness Williams) Theoretically, I think that, yes, you could take it an acceptable signature valve out on the day when it had a full flow going through it, and the

way the valve was stuck up against its back stop or tapping, and I think you could tell changes. You may not be able to diagnose what happened, but I think you could tell there was a change.

Q In the case that I was thinking of, where one bolt has gone because of perhaps thermal expansion and contraction, is still held by the other bolt and an alignment pin and if the other bolt is still holding, I was wondering how you know a signature would change?

A (Witness Williams) I think one of the things that we look for, as far as the SOER is concerned, is locking devices for internal components.

Q Yes.

A (Witness Williams) And if it has not got a locking device, that is an immediate, go look at it and lock it.

Q Well, that is a different story, because--

A (Witness Williams) But that is about the only way you can back off a nut.

Q No, I wasn't talking backing off, I am talking about guys that have broken because of things like inadequate heat treatment, as opposed to a physical backing out.

A (Witness Williams) But wouldn't you have had to have some type of load to make it fail?

Q Yes, such as a differential thermal expansion or just a plain thermal cycling, aging, embrittlement process.

(Brief pause.)

A (Witness Williams) I hadn't thought about that.

MR. DIETZ: You wanted to also talk about other valves.

MR. LYON: Yes.

BY MR. LYON:

Q The RHR suction line valves, is there any routine maintenance that you have to do with those?

A (Witness Williams) Which suction valves?

Q These are the ones--

A (Witness Williams) Out of the sumps?

Q No, this is coming out of the hot leg and going down to the RHR pumps, you will have a valve, you have got two valves in that suction line, is there any routine maintenance required for those valves?

MR. DIETZ: The drop down, R return pulling off, is that it?

MR. LYON: Right, and you have got two lines.

MR. JONES: Are you talking about the MOV?

MR. LYON: Right.

MR. JONES: Now, we have switched off the check valves.

MR. DIETZ: Yes.

MR. LYON: I made a sharp turn. Okay?

(Laughter.)

WITNESS WILLIAMS: There is a check valve in the suction line, but it comes off the containments.

MR. LYON: Oh.

WITNESS WILLIAMS: And we do do those and we have external devices where we manually stroke and check torque.

MR. LYON: That is different pipe.

WITNESS WILLIAMS: Okay.

On the MOVs, they are in our inservice testing program and we trend stroked that.

BY MR. LYON:

Q If you had to disassemble the MOV closest to the hot leg, have you ever been faced with that, or do you know the way in which you would go about doing that?

A (Witness Williams) We have never been faced with it.

Q All right.

A (Witness Williams) I would expect you would have to less than mid-loop, offload less than mid-loop, it comes off below.

Q It is essentially off the bottom of the hot leg.

A (Witness Williams) Yes, and so if you were at mid-loop, you would be full of water by the time you went to work on it.

Q That's right.

Q There are other valves in lines that come off low

points in pipes, let down drain kinds of things, is there any routine maintenance associated with those valves?

A (Witness Williams) I am not sure. The RHR check valves that are full flow tested. I am not sure.

Q Well, I was thinking more like you have got a little drain line, or a normal let down line, where you will have a valve that interfaces with the reactor coolant system, and I was wondering, is there any maintenance program associated with those, or if you did have to do something, would you be in a situation similar to the one we just discussed on those RHR valves?

A (Witness Gustafson) This is valve maintenance, not operator maintenance or anything like that?

Q That is correct, yes. Operator maintenance I am not concerned with really.

A (Witness Williams) I don't know.

MR. LYON: Okay.

BY MR. DIETZ:

Q Let's switch topics again now, steam generators and the eddy current testing. I understand this outage you did 70 percent?

A (Witness Williams) Approximately, four generators.

Q On four generators, and did you work that around the clock, is that what you did?

A (Witness Williams) Yes, we did.

Q Why did you do 70 percent this time?

A (Witness Williams) Our management is very committed to the EPRI guidelines for steam generators. Because of the experience that our management has had with Plant Farley, they are very concerned about the sustained or prolonged life of our generators.

Q Uh-huh.

A (Witness Williams) And we are also very active in the Steam Generator Owners' Group.

Q Uh-huh.

A (Witness Williams) The management of the plant wants to embrace the EPRI guidelines which say do 20 percent of four generators every outage.

The first outage for Unit 1, we did approximately 15 percent of two generators. Our original plan for that outage was to do the tech spec requirements. The scope for this outage was to try and put plant--Unit 1 back on the EPRI guideline requirements, so we would be at 40 percent in four steam generators.

The reason that the increase or the percentage was higher than 40 percent for generators 2 and 3, which were not done the first time, we additionally have concerns in our AVB region.

Q What is AVB?

A (Witness Williams) Anti-vibration bar areas, which

is primarily rows 21 and above. Model F steam generators and other steam generators of later vintages have seen wear, or accelerated wear in these areas. Because of our management's concern, we did 100 percent of the AVB regions. We did not necessarily do 100 percent of the tube, and in most cases, we only did the AVB region of those tubes, where they did not fall into the 40 percent scope, and so we did a mix of full exams that got us to the 40 percent criteria, to be back on line with EPRI, plus we did the remainder of the AVB areas in the U band.

Q Now, being that you are back on schedule, what will be the normal number of tubes that you will do in an outage?

A (Witness Williams) Normally, we will do 20 percent. I would expect that our management will continue to do the partial eddy current in the AVB region.

Q What do you mean? How much partial?

A (Witness Williams) Just the event.

Q Oh, okay.

A (Witness Williams) I expect they will do a hundred percent of the AVB that does not fall into the original 20 percent scope.

Q While you were doing this testing, what was the status of the RCS?

A (Witness Williams) Well, when we put in the nozzle bands, we were at mid-loop and then we flooded up and did

refueling activities.

Q Were mo ing through mid-loop while they were doing this?

A (Witness Williams) Yes.

Q Are you aware of the SOER that was written on the reactor cavity seal failure?

A (Witness Williams) Yes.

Q Okay, are you aware of the recommendations that were made in that SOER, the one I am particularly interested in is one that says to take extra cautions when you are moving fuel and have the steam generator bands in place?

A (Witness Williams) Yes, we have leak detection devices.

Q Okay.

A (Witness Williams) In the channel heads.

Q So any possibility of a catastrophic failure?

I believe the intent there was more to go to the point of considering putting the manway cover back on but not torqued down while you were moving fuel and not move fuel with --

A (Witness Williams) Couldn't eddy current that way.

Q --That is right, you couldn't, could you?

A (Witness Williams) Huh-uh.

Q But there is a period of time when you are not moving fuel, you off load your whole core and there is a

period of about three days.

A (Witness Williams) Right.

Q You could do eddy current testing during that?

A (Witness Williams) That is true and we would get refueled and then test.

Q Would you be able to do about 20 percent on each of the generators during that period?

A (Witness Williams) I don't believe so.

Q How long does it take to do the--

A (Witness Williams) This last iteration took approximately - it took approximately 11 days.

Q Eleven days to do 70 percent?

A (Witness Williams) Right.

Q Then 20 percent could be done in the area of about three to four days.

A (Witness Williams) True, but your set up time is your--the set up time is the vast majority of the time when you are probing tubes, unless you have a breakdown, it is very quick work really.

Q How much does it take to do the set up time?

A (Witness Williams) Probably a shift--a shift to a shift and a half.

Q Uh-huh, and you have got to do that in four generators?

A (Witness Williams) Uh-huh.

Q It would be possible to do them all concurrent?

A (Witness Williams) You could do them all concurrently, yes.

Q Would that shorten the time then if you did them all concurrent?

A (Witness Williams) You would still have that shift or shift and a half to put them in and take them out and then if you had to plug in your tubes, you would have the time it would take you to put your plugging device in.

Q Uh-huh. Had you considered any of that, doing it defueled?

A (Witness Williams) Yes, because of the scope, you know, or an outage extension would be, uh--

Q Who do we talk to about more in terms of the rationale that was used in dealing with the SOER recommendation?

A (Witness McCarley) I can review that with you. I don't have it with me now, but we can dig that out.

Q Okay. We will probably want to talk with you again on that line.

A (Witness McCarley) Okay.

MR. DIETZ: Any other?

BY MR. LYON:

Q Yes, have you considered leaving all of the manways on, except the one where you were actively involved in

inspecting tubes?

A (Witness Williams) Do four generators concurrently.

Q And then you do the other four and so you have--

A (Witness McCarley) No.

Q Four generators, I am sorry, I was thinking four manways. Each generator and then you wait until the next outage to get the other four.

A (Witness Williams) To get the other four, yeah.

Q Okay, but then, so you take off all the manways, put in the nozzle bands, and then do the steam generators?

A (Witness McCarley) Yes.

Q All at once?

A (Witness Williams) All concurrently, yes, 24 hours a day.

Q Okay. So--let me make sure I understand--so you are physically working in both sides of both steam generators at the same time?

A (Witness Williams) You may not physically be in--usually we probe from the hot leg side, usually you are not in the cold leg side all the time, but you do have the probe going over and coming back, and only when you do the inside rows, the rows one through about six, you have to go on to the cold leg side and probe from that side.

Q Is it feasible to only have one manway off while you are doing this?

A (Witness Williams) Uh--

Q Would that hold up your inspection--

A (Witness Williams) Off as in totally?

Q Off, as opposed to simply being bolted back in place as a back up in case that nozzle dam let go?

MR. DIETZ: He is not talking about having it fully torqued tight down.

WITNESS WILLIAMS: Okay. .. you had--I would have to check the elevations, but if you had one manway bolted on and you had a nozzle band fail totally, would the water go back up in the U tubes and come back down on the other side?

MR. LYON: If the top of the U tubes was lower than the top of your refueling cabinet.

WITNESS WILLIAMS: But it would only--it would only drain down to the top of the tubes, I think.

MR. LYON: Would that kind of an operation hold you up any, significantly?

WITNESS WILLIAMS: It would probably increase the man room. Taking it off, putting the nozzle band, putting back on.

MR. LYON. I understand.

WITNESS WILLIAMS: Taking off, putting in the cold leg fixture for the short probes, putting back on the other side.

MR. LYON: I understand. That is reasonable. Are

you aware of the process of installing and removing the nozzle bands?

WITNESS WILLIAMS: Me personally, you mean?

MR. LYON: Yes, are you familiar with that and the order in which the bands are put in and are removed?

WITNESS WILLIAMS: No, that is a maintenance function. I am not familiar with it.

MR. LYON: Okay.

MR. DIETZ: Is there anything else you would like, in these areas we have been talking, to put on the record?

Any regulation or anything that has impacted your ability in this area?

I know it is a wide open question.

(Laughter.)

WITNESS WILLIAMS: If you would give me a couple of days to think about it, I could probably come up with something.

MR. DIETZ: Come back to me if you do.

Okay. Thank you very much.

(Whereupon, at 11:03 a.m., the interview concluded.)

C E R T I F I C A T E

This is to certify that the attached proceedings before the U. S. Nuclear Regulatory Commission in the matter of:

Interview of: JOHN "GUS" WILLIAMS
DEAN GUSTAFSON
GLENN MCCARLEY

Place: Vogtle Nuclear Generating Plant, Waynesboro, GA

Date: March 29, 1990

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

Rose Arnold

ROSE ARNOLD
Official Reporter

Ann Riley & Associates

05-118-90

Situation Chart

1000 ≈	MSG #1 Received - SAE @ 0940
1010	SEOC OPERATIONAL
1030	Barnwell EOC Activated
1035	MSG #2 - Downgrade to ALERT
1040	Decision Made Not to Notify Other State Agencies.
1054	MSG #3 - On-Site pwr restored @ 0956. Core temp stable @ 98°F
1055	Notified FEMA IV of Emergency
1105	MSG #4 - No change to MSG #3.
1112	Aiken Co reported that WBBQ was broadcasting evacuation of area around VEGP.
1115	Notified GEMA EOC of WBBQ Broadcast
1140	MSG #5. No change in ECL. Restoring offsite electrical power. Using onsite emergency power.

1204 MSG #6- No Change in ECL. Off-site power restored.

1231 MSG #7- No change from MSG #6

1231 NRC (B Trojanowski) called to insure SC was aware of VEGP accident & to ask if SC needed any additional info & if coordination w/plant was OK. Reply given that BRH(DHEC) & EPD are in contact with appropriate plant elements.

1253 GA PWR News Releases 1 & 2 (0950 CST & 1030 CST) received.

1306 MSG #8- No change from #6 & #7

1317 G. Bockhold (VEGP) said plant is safe and after coordination w/3 counties, will terminate emergency.

1347 MSG # 9- Termination @ 1347

1350 FEMA IV Notified of termination

Date 20 MAR [illegible]

SC

OPERATIONAL JOURNAL

05 [illegible] 118 [illegible]

Page 1 of ____

OPS DESK

Message No.	Time	To	From	Text of Message	Action
	10 [illegible]		/	[illegible] #1 - SAE [illegible] VEGP [illegible] OPS DESK [illegible] SEOC OPERATIONAL	
1	10 14	GO	SEOC	notified Ann Sims of SAE @ VEGP	
2	10 19	DHR	SEOC	notified H. Shealy @ BRH of SAE @ VEGP	
3	10 20	OTAG	SEOC	Director notified BG Tutan's secretary of SAE @ VEGP	
	10 25			Ann Sims, Gov's rep, arrived @ SEOC	
4	10 32	SCWP	SEOC	State WP off [illegible]. SEOC in operation	
	10 35	SEOC	VEGP	Msg #2 received. Downgrade to ALERT.	
	10 38			BRH rep arrived. ([illegible] O'Kelley)	
5	10 38	DHR	SEOC	BRH (H. Shealy) notified of downgrade.	
	10 40			Decision made not to notify other State agencies based upon downgrade to ALERT	
	10 43			Other BRH rep's ([illegible] Thresh & [illegible]) arrived @ SEOC.	
	10 47			Briefing by O'Kelley. Everything is stable. On gen power. Estimate 4 hrs to repair offsite power problem.	

EPD-36 FORM, NOV 86

Date 30 MAR

OPERATIONAL JOURNAL

Page 2 of

OPS DESK

Message No.	Time	To	From	Text of Message	Action
	[illegible]	SECC	VEGP	MSG # 3 received. [illegible]	
6	10 55	FEMA	SECC	Notified John Heard of SAE & [illegible] and current ALERT status.	
	11 00	GTAG	SECC	Director notified BG Tuten of downgraded condition @ 1045.	
	11 06	SECC	VEGP	MSG #4 coming over ENN. No change from MSG # 3.	
7	11 12	SECC	AIKEN	B. Manning notified SECC that WBAG was announcing evacuation around VEGP.	
	11 15	GEMA	SECC	Notified Bob Miles, GEMA Ops Off, of WBBQ broadcasts concerning evacuation.	
	11 43	SECC	VEGP	MSG # 5 – No change in ECL. Restored offsite power. Currently using [illegible]	
	12 04	SECC	VEGP	MSG # 6 – Offsite power has been restored. Still @ ALERT	
	12 31	SECC	VEGP	MSG # 7 – No change from MSG #6	
8	12 31	SECC	NRC	B. Tomaszewski wanted to know what [illegible] of VEGP accident & whether [illegible] any [illegible]	
				plant was OK. Reply was that [illegible] were in contact w/appropriate plant elements.	
	12 53			GP news releases 1 & 2 at 0950 & 1030 (CST) respectively received.	
	13 06	SECC	VEGP	MSG # 8 – No change from MSG # 6 & 7	

EPD-36 FORM, NOV 86

Date 22 NOV

OPERATIONAL JOURNAL

Page 2 of ____

COS DESK

Message No.	Time	To	From	Text of Message	Actic

EPD-I6 FORM, NOV 86

AIKEN Co. OT-AK-90

Date 3-20-90 **OPERATIONAL JOURNAL** Page 1 of 1

Message No.	Time	To	From	Text of Message	Action
1	[illegible]	Aiken [illegible]	SEOC	[illegible]	[illegible]
2	1025	Aiken EOC	SEOC	Confirming [illegible] (first msg #2)	Confirmed
3	1050	Aiken EOC	SEOC	Confirming msg #3 received	Confirmed
4	1112	Aiken EOC	SEOC	Confirming msg #4 Received	Confirmed
5	1114	Aiken EOC	SEOC	Confirming msg #5 Received	Confirmed
6	1141	Aiken EOC	SEOC	Confirming msg #6 Received	Confirmed
7	1230	Aiken EOC	SEOC	Confirming msg [illegible] Received	Confirmed
8	[illegible]	Aiken EOC	SEOC	Confirming msg #8 Received	Confirmed
9	1347	Aiken EOC	SEOC	Confirming msg #9 Termination received	Confirmed

EPD-35 FORM, NOV 86

Allendale County

Date 3/26

OPERATIONAL JOURNAL

MESSAGE NO.	TIME	TO	FROM	TEXT OF MESSAGE	ACTION
1	10:15	Allendale	EOC Riggs	Relayed Msg. to Mr. Len Hankins concerning Vogel FNF	
2	10:22	Allendale	Riggs	Check #10 re Weather made announcements.	
3.	10:25	Riggs	Allendale Len Hankins	Len said Plant is declaring Alert at this time.	
4.	10:37	Allendale	EOC Riggs	Relayed Msg # 2 to Mr. Len Hankins	
5.	10:44	Allendale	EOC Riggs	Checked with Len to see if EOC is open. EOC is not open	
				and he is trying to contact J.W. Wall to come	
				open EOC.	
6.	10:53	Allendale	EOC Riggs	Called to confirm Allendale's receipt of msg # 3	
7.	11:12	Allendale	EOC Riggs	Called to confirm Allendale's receipt of Msg # 4	
8.	11:41	Allendale	EOC Riggs	Called to confirm Allendale's receipt of Msg # 5	
9.	12:12	[illegible]	EOC [illegible]	[illegible]	
10.	12:32	Allendale	SEOC/Sox	" " " " " # 7	
11	13:49	Allendale	SEOC/Sox	Relay Termination Msg # 9	

DAILY WELL

Date 20 Mar 90

OPERATIONAL JOURNAL

Barnwell Action Desk - Clithero
VOGTLE SAE at 20/0940

Page 1 of ____

Message No.	Time	To	From	Text of Message	Action
1	20/1010	Barnwell 259-7013	SEOC REC	Court Hse Secty - Jay Hair in Cola [SAE Notific] His Msg # 1 - Nobody here to respond	[illegible] County Supv
2	20/1012	Barnwell Dispatch 259-1727	SEOC REC	Bobby Morris - Ch. Dispatch has msg # 1 County Supv Notified - Siren not activated	
3	20/1020	7?? -8010 SEOC	Bobby Morris Barn Dispatch	Just recd Msg # 2 - SEA downgraded to ALERT County Supv [illegible] EOC	
4	1025 1032 1037	Barnwell EOC	SEOC REC	(Busy Tone)	
5	1040	" Reinhart	"	County Supv: Ms. Reinhart activated EOC at 1015 with Jim Bradley, Public Supv; EMT; Secty	EOC Open 1030 She notified Jay Hair [illegible]
6	1054	" Reinhart	"	Confirmed Msg # 3 - ALERT Status Continues Plant Cond I improving	He [illegible]
7	1113	" Reinhart	"	Confirmed Msg # 4 Has heard nothing on local Radio	
8	1142	" Reinhart	"	Confirmed Msg # 5 - No change Resident called for info - heard that they were evacuating in Georgia	
9	1150	SEOC Clithero	Ms Reinhart Barnwell EOC	Station WBAW - Many calls about "evacuation" - gave them info on Msgs 3 & 5	
10	1213	Barnwell EOC Reinhart	SEOC [illegible]	Confirmed Msg. # 6	
11	1230	"	"	Confirmed Msg. # 7	
12	1310	"	SEOC Clithero	Confirmed Msg # 8	
13	1350	"	"	Confirmed Msg # 9 Termination at 1347	

EPD-35 FORM, NOV 86

05119 90

MWO COVER SHEET

MWO# 19001684 DATE: 03/31/90 SYSTEM: 2403 FOREMAN: WO

OUTAGE REQUIRED: CLEARANCE: N/A

YES NO X PARTS REQUIRED: NO

STATUS: 6D C RCN: ICOP

PRIORITY CODE:	1	4			
	PRIORITY	MODE RESTR	PLANT	STATUS	RESTRAINT

CONTROL FIELD:	*	*				
	CATE-GORY	COMMIT	OUTAGE	SPEC REQ	SPEC REQ	PROB TYPE

STATUS	COMMENTS

** COPY ** COPY ** COPY ** COPY ** COPY ** COPY **COPY ** COPY ** COPY ** COPY
NUCLEAR PLANT MAINTENANCE WORK ORDER (1 OF 2)

1.CONTROL NO. 19001684 00 2.DATE 03/31/90 3.UNIT 1 4.SYSTEM 2403
5.MPL/TAG NO. 12403G4001 DIESEL GENERATOR 5A.REPAIR TAG _____
MPL/TAG(S) ASSOCIATED WITH SPECIAL INDICATORS
6.PROB/ TO VERIFY TIMING OF TWO TRIPS DURING LOSP, THE FOLLOWING STEPS
WORK (SEE ATTACHED COPY) NEED TO BE PERFORMED.
REQ. _____

CONT.
N

7.INITIATOR HASSAN DIANATI 8.SUPRV HASSAN DIANATI LOC 1DGB1-
9.MWO CLASS S EQP CLASS 015 10.UNIT STAT 11.FIRE PROTECT N
12.DCR N 13.NCR/DR N 14.TYPE MAINT P 15.DURATION 6.0

16.CRAFT	MECH(EST/ACT)	ELEC(EST/ACT)	I&C(EST/ACT)	CONT(EST/ACT)	HP/OT(EST/ACT)
CREW	0	0	2	0	0
HRS.			12.0		
EXP.	0	0		0	0
SCHED BEG	__/__/__	__/__/__		__/__/__	__/__/__
SCHED END	__/__/__	__/__/__		__/__/__	__/__/__
RESP FOREMAN					

17.CLR N 18.WELD PERM N RWP PERM N
19.QC HOLD PTS Y 20.PROC
QC REVIEWED BY TIM D COODY 03/31/90 21.PRI 14 22.LCO 1903521
23.WORK *
INST.
*REQUIRES RELEASE FOR WORK BY K STOKES OR P. KOCHERY. JPR 3/31/90

CONT. ****SEE CONTINUATION PAGE****
Y

---------- 24.INITIATE REVIEW ---------- 25.SPEC REV REQ N
OPS JMK DATE 03/31/90 MNT DATE __/__/__ ---- 26.MWO RELEASE FOR WORK ------
HP HFA DATE 03/31/90 ENG KEH DATE 03/31/90 SIG. DATE __/__/__
27.ACT
WORK
PERFRMED

CONT.
N
HIST SUM
28.MTRL REQD
29.PERSON PERFORMING WORK(NAME) DATE 30.MAINTENANCE FOREMAN DATE
__/__/__ __/__/__
31.INSPECTION PERFORMED BY DATE __/__/__
32.METHOD OF F.T.
33.PROCEDURE # 34.PERFORMED BY 35.DATE __/__/__
36.PROVES OPERABILITY 37.METHOD USED TO PROVE OPERABILITY
38.SATISFY./UNSATISFY 39.IF UNSAT .CORR. ACTION
40.UNIT STATUS AT TIME OF FAILURE 41.TYPE FAIL 42.MODE OF FAIL
43.CAUSE OF FAILURE 44.DETECT BY 45.EFFECT ON SYS
46.EFF ON PLANT 47.MWO STAT 6D 48.CAUSE 49.CORR ACT.
50.NEW MWO 51.OPER. ACCEPT BY DATE __/__/__
52.OSOS APPROVAL DATE __/__/__
53.SPEC REV COMP DATE __/__/__ 54.MEET.# DATE __/__/__
55.CLOSE OUT APPROVAL BY QC

CONTROL NO. 19001684 00

WORK INSTRUCTIONS: **CAUTION** ALL PERSONNEL INVOLVED IN THE TESTING MUST READ AND UNDERSTAND THE ATTACHED CAUTION STAEMENT. DURING THE EN GINE START AND SUBSEQUENT TESTING IF ANY TRIPS OCCUR OTHER THAN PLANNED TRIPS OR OBSERVE OTHER SIGNIFICANT MALFUNCTION. STOP THE TEST AND NOTIFY IIT TEAM. TEST WILL NOT CONTINUE WITHOUT THE CONCURRENCE FROM IIT TEAM MEMBER. ANY PROTION OF THE TESTING THAT COULD IMPACT THE RELIABILITY AND SAFETY OF THE D/G SYSTEMS MUST BE EVALUATED BY GA POWER COMPANY PRIOR TO TESTING. IF A TEST NEEDS TO BE STOPPED, ENSURE ALL EQUIPMENT IS PLACED IN A SAFE POSITION.

NOTE:

TURN ALL 3 VIDEO CAMERAS AND RECORDERS TO RECORD THE ANNUNCIATORS AND OTHER ENGINE & GENERATOR PARAMETERS AS IN UV TEST.

WORK INSTRUCTIONS:

A. ALL DG STARTS MAY BE PRECEEDED BY TURBOCHARGER PRELUDE.
B. STARTS MAY BE INITIATED FROM CONTROL ROOM OR LOCALLY (MANUAL OR AUTOMATIC) AS DIRECTED BY STYEM ENGINEER.
C. DG STOPS MAY BE INITIATE FROM CONTROL ROOM OR LOCALLY (MANUAL OR AUTOMATIC) AS DIRECTED BY SYSTEM ENGINEER.

1. CONNECT CHART RECORDER IN DG1A ENGINE CONTROL PANEL 1-2403-P5-DG2 AS FOLLOWS:
   A. ONE CHANNEL ACROSS AIR START SOLENOIDS AT TERMINALS E5(+) AND E4(-). 0-250VDC F.5.
   B. ONE CHANNEL ACROSS DG BREAKER TRIP PRESSURE SWITCH PS-9B1 AT TERMINAL L51 AND L52 -125 -0 + 125 VDC F5
2. WITH ORIGINAL SENSORS INSTALLED, START DG1A
3. STOP DG1A.
4. DISCONNECT TWO JACKET WATER HIGH TEMPERTURE SENSORS.
5. START DG1A, DIESEL TRIP EXPECTED TIME DG START TO PS-9B1 ACTUATION.
6. RECONNECT JACKET WATER HIGH TEMPERATURE SENSOR LINES.
7. DISCONNECT LOW PRESSURE JACKET WATER SENSOR.
8. START DG1A. TRIP EXPECTED. TIME DG START TO PS-9B1 ACTUATION.
9. RECONNECT LOW PRESSURE JACKET WATER SENSOR LINE.

AFTER RECONNECTING THE LINES FOLLOWING THE TEST PERFORM LEAK DETECTION BY SNOOP LEAK DETECTOR AND FIX ANY LEAKES DE-TECTED.