UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	§	
	§	
HOUSTON LIGHTING & POWER COMPANY	§	Docket No. 50-466
	§	
(Allens Creek Nuclear Generating Station, Unit No. 1)	§	

Material Facts As To Which There Is No Genuine Issue to Be Heard

1. This contention is based upon instrumentation problems that occurred at older BWRs. Significant design differences exist between the systems cited by Intervenor and the ACNGS Rod Pattern Control System (RPCS) such that past problems will not occur at ACNGS. (Affidavit, pp. 1-2)

2. The RPCS design already incorporates changes which aleviate the source of past problems; the most significant changes are listed below:

(a) The RPCS is a dual-channeled, hardwired system that cannot be bypassed.

(b) Redundant sensors, in the form dual magnetic reed switches installed on a probe in the control rod hydraulic drive, are used to determine rod position.

(c) Any failure of any component interrupts the permissive signals necessary to produce rod movement.

(Affidavit, p. 8)

3. The RPCS system prevents unacceptable rod patterns, including limited input substitutions, when operated within the detailed technical specifications. (Affidavit, pp. 4-7)

4. The reliability of the RPCS will be demonstrated by the start-up and pre-operational test programs of the lead BWR/6 plant. ACNGS will demonstrate specific system reliability through testing of the RPCS in accordance with Regulatory Guide 1.68, "Initial Startup Test Programs for Water-Cooled Reactor Power Plants." (Affidavit, p. 8)

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DEPOSITION OF:
JOHN F. DOHERTY

a factual basis is Mr. Webb's book?

A. Yes.

Q. I didn't want to overlook anything.

A. Yes.

Q. Okay.

A. I'm prepared to stay quite late, if that's your wish.

Q. Let me see how many more we have.

A. Probably quite a lot.

MR. RIDDLE: Off the record.

(WHEREUPON, there was a discussion held off the record.)

MR. RIDDLE: Let's take a break.

(Short Recess)

Q. (By Mr. Riddle) All right. Let's discuss your contention on rod pattern control system which is your number 17.

Do you know for a fact that Dresden III has an RPCS system identical to that designed for ANO2?

A. Do you want to give her anything?

Q. She has them already.

A. In reply to your question, I don't believe it does.

Q. Are they substantially similar?

A. I can't tell that for certain. There are some differences, I'm pretty certain.

Q. Are these differences pertinent to this contention?

A. I'm not all together certain there are circuitry differences as I understand them, and they've been made way since Dresden was constructed in '70.

Q. Well, what was inoperable at Dresden that you allege will be equally inoperable at Allens Creek?

A. The rod worth minimizer was inoperable throughout the power decent by volition of the operator.

Q. Do you believe that Allens Creek will have a rod worth minimizer?

A. No. There's nothing labeled about that.

Q. Well, then of what relevance is the inoperability of the rod worth minimizer? Allens Creek is not going to have a rod worth minimizer?

A. Allens Creek will have a system of

control rod worth which will have substantial similarity, I guess is the term for it, which will have a similarity to this.

All of these reactor systems require some way of controlling the insertion of the control rods; the amount each are removed -- it's the removal that's important of the rods. There will be a type of control for that.

Q. You allege that Allens Creek will have a system substantially similar to the rod minimizer --

A. It will be bypassable.

Q. How will you bypass the similar system at Allens Creek?

A. I never have seen one. I don't know.

Q. Then how do you know it will be bypassable?

A. I've never seen a statement by applicant, Counsel, that it would be impossible to bypass the rod worth or the rod pattern control system of ACNGS.

Q. What do you mean by "impossible"? Beyond the ingenuity of man?

A. No. Beyond the ingenuity of the control room operators.

Q. Why would a control room operator have

any interest in bypassing a system?

A. It's a pretty slow and tedious process to ascend. It requires a good deal of concetration.

Q. Where did you learn this fact that the option of Allens Creek is slow and tedious?

A. In a letter from Alvin Epler which is out of the room at the moment, I believe. Perhaps it's here. He's cited a number of the problems, and that's one of them according to him. He's a former member of the ACRS.

Q. Mr. Epler has commented on the ACNGS --

A. Mr. Epler has commented on BWR control systems similar to -- well, for BWR's.

Q. Are all BWR control systems identical?

A. No. This is a new one as we've cited

Q. And Mr. Epler commented on this new one?

A. I'll check that. I'm not certain there's any experience with this system that is proposed. He does not speak of the RPCS directly, but he speaks of BWR's.

Q. So you're just extrapolating at best on your conclusions that the reactor operators at ACNGS will have a reason to try to bypass the system which is equivalent to the rod worth

minimizer?

A. Well, they will have reason to bypass the system certainly for some rods if they have a stuck rod, because it will be hazardous not to bypass under those conditions.

Q. Is your contention limited to the stuck rod considerations?

A. No. This contention is not limited to stuck rod situations.

Q. Well, then, taking for granted your assertions that operators will want to bypass it for stuck rod conditions, how will they bring this desire into fruition? How will they bypass this system?

A. Apparently, there is a way to simply remove the control. I do not know what button is pushed.

Q. Why do you glean the fact that it is possible to do so?

A. From the fact that it's never been stated that it's not -- that it is impossible.

Q. And that's the sole basis for your assertion?

A. At the moment that's the sole basis for the assertion that it's possible.

Q. You have not stumbled across a statement to the contrary?

A. That's correct. I've never come across the statement that it's impossible.

Q. What's your definition of "impossibilities" so that if you encountered such a statement you would afford it any credulity?

A. Well, it's hard to formulate a definition of "impossible "for this situation in a moment.

Q. Let me pose for you a possibility: We're talking about integrated circuits. I guess the hardest situation to overcome in an integrated circuit is hardware where you don't have movable connections soldered in place, if you will, so you have to go in and rewire the terminal and the whole complex to alter it's characteristics. Does that meet your definition of "impossible"?

A. Yes, it does.

Q. Let me return to Dresden briefly to make sure I understand the relevance of that reference.

If I understood what you said correctly, what was inoperable at Dresden was rendered inoperable voluntarily or purposely?

A. Yes. My understanding is that that's true.

Q. You do not now have a basis for asserting that that same system will exist or that the similar system which might exist will be similarly vulnerable to purposeful overrides; is that correct?

A. I think I answered that somewhat earlier.

Q. All right. Very well. Would you tell me whether or not Quad Cities units 1 and 2 have an RPCS system similar to that Allens Creek?

A. I'm almost certain they are not identical. They may be, but I'm not certain at the moment.

Q. You don't have a definitive basis for making a comparison for the same reasons that you didn't in Dresden?

A. I don't know the Quad Cities system. Some of these may have been -- some of these are modified.

Q. What was inoperable at Quad Cities which would similar at Allens Creek?

A. I believe the same problem occurred at Dresden and Quad Cities.

Q. This is the same thing over again?

A. Yes.

Q. How about Millstone? Do they have an identical system, and what was inoperable there?

A. I believe that they had a rod worth minimizer system in Millstone.

Q. All right. So we're still in the Dresden mode then; correct?

A. Yes.

Q. Brunswick-2?

A. Same.

Q. So of all of these four references you make, it all centers on the purposeful override of the rod worth minimizer?

A. Well, all of those can be -- were overriden by the operators.

Q. And it was the rod worth minimizer in each case?

A. I believe so.

Q. So that is the portion of the system that is in focus in this contention, the ability to manually override the rod worth minimizer or its equivalence?

A. I don't have a copy of the contention with me, but it sounds to me that that's the problem.

Q. You may want to take a look at it.

A. Thank you. Well, in the case of Brunswick, there was a failed circuit which bypassed -- caused bypass of the system.

Q. Caused bypass of the rod worth minimizer system again?

A. Yes. I believe that's right. It was not voluntary. Therefore, I was concerned about similar events here.

Q. All right. In other words, there was a circuitry failure which impaired the automatic control functions of the rod worth minimizer?

A. Yes. Apparently it went undetected for quite sometime.

Q. So it was possible then to operate contrary to what the properly functioning rod worth minimizer would allow?

A. Yes.

Q. Okay. Is there any other amplifications you want to make on those references?

A. I think that's all.

Q. Okay. Were any of the reportable occurrences in BWR's in 1977 which you reference here which were reported in the instumentation and control area concerned with the RPCS system,

to your knowledge?

A. No. Not to my knowledge.

Q. What is an average power range monitor?

A. All right. The average power range monitor is essentially a computing device which takes input from the local power range monitors and converts it into a meaningful figure; perhaps, converts it to six displayed numbers which indicates the neutron flux in the core. It's an averager.

Q. What's it's relationship to RPCS?

A. Its unreliability would tend to create a more serious accident when the rod worth minimizer or -- what do you call it? The RPCS is inoperative or bypassed.

Q. Why would that be so if it's just an indicator of core conditions?

A. Well, that's almost the answer. If it fails to give a correct analysis of the core conditions, then the operator might well proceed --

Q. Excuse me. I understood that RPCS was an automatic system; that it was independent of operator action?

A. Well --

Q. Are you telling me that the RPCS --

A. If it's bypassed it's not.

Q. All right. So APRM plays a role only if it is bypassed?

A. Or inoperative.

Q. All right. Or inoperative?

A. I guess that's right.

Q. What is surplus neutron flux?

A. It's the same thing as reactivity increase.

Q. Is APRM measuring reactivity --

A. It would indicate -- yes, it would provide an indication of that

Q. How would it indicate reactivity?

A. It would indicate rapidly increased fissioning in a locale of the core. Maybe not well, but it would.

Q. All right.

A. There's a good chance of it.

Q. I thought it was an averager?

A. As an averager, it would -- it might be averaging a high enough number that it might be visible to the operators that one part of the core was fissioning much more than others, and more than they thought was desirable.

Q. All right. Am I correct in assuming

that this is again just a prelude to a scenario which envisions the bypassing or failure of the rod worth minimizer equivalent resulting in an unanalyzed serious accident?

A. I think you said that right.

Q. All right. It will not necessarily cause the accident, but it will contribute to its severity; is that a correct summary?

A. No. It could cause an accident.

Q. How will it cause the rod pattern control system to malfunction?

A. Now, let's get this all in line. If the rod pattern control system is not used, there is danger of reactivity insertion due to removal of core rods or of control rods.

Q. All right. This contention says to me, in the first case, that it is possible to have an override or malfunction in the RPCS system giving rise to an unanalyzed reactivity accident?

A. All right.

Q. That's the basic hypothesis. The question is: What can cause the RPCS to so malfunction? I believe we've identified operator action and failed circuits.

We then started a discussion on a PDA's.

And it's my understanding that they don't contribute to the failure to the ACRS, but can exacerbate the results of a failed RPCS system; correct?

A. Yes.

Q. All right. You make reference to power range instumentation or failures of power range instumentation.

Are any of the reportable occurrences in BWR's in 1976 and '77 referenced in your contention involving power range instumentation also concerned with the RPCS system?

A. I don't believe so.

Q. All right.

A. I don't believe anything was said about the RPCS system in those statistics at all. I'm not certain.

Q. What is the relevance of those statistics?

A. The statistics were provided on the APRM only, I guess. I don't think there are any statistics on RPCS.

Q. You say here that power range instumentation contributed to 30 reportable occurrences in BWR's in '77 and 17 in 1976?

A. Yes.

Q. And those were extracted from the Nuclear Safety Tabulations?

A. Yes.

Q. And my question is, simply stated, so what? What does that have to do with the --

A. Those figures were put in to establish the unreliability of the APRM system.

Q. All right.

A. The APRM systems were mentioned to indicate how the ECIS failures or bypasses might be more serious.

Q. All right. Okay. Let's go to your contention number 46 which I call short reactor period.

Do you have anything that needs to be duplicated from that last one?

A. One item.

Q. I want to ask you a few preliminary questions on the actual physical events. Would you describe for me how a rod can be uncoupled from its drive?

A. Well, there have been several reported ways. I will attempt to find them.

Say again. I'm sorry. I don't have the