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BEAVER VALLEY - UNIT 2 BACKFIT APPEAL
MEETING ON STEAM GENERATED WATER
LEVEL CHANNEL INSTRUMENTATION ISSUE

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MEETING ON

STEAM GENERATED WATER LEVEL CHANNEL
INSTRUMENTATION ISSUE

Nuclear Regulatory Commission
Room P-110
Phillips Building
7920 Norfolk Avenue
Bethesda, Maryland

Thursday, May 9, 1985

The meeting convened at 10:30 a.m., Hugh Thompson presiding.

ATTENDEES:

V. NERSES	NRC/NRR/DL/LB # 3
R. W. HOUSTON	NRC/NRR/DSI
B. W. SHERON	NRC/NRR/DSI
R. M. BERNERO	NRC/NRR/DSI
T. G. DUNNING	NRC/NRR/DSI/ICSB
G. W. KNIGHTON	NRC/NRR/DL/LB # 3
JIM TOURTELLOTTE	NRC/OCM
MAX CLAUSEN	NRC/OCM/COMLZ
BRUCE BOGER	NRC/NRR/DHFS/OLB
JERRY MAZETIS	NRC/NRR/DHFS/PSRB
GARY L. BEATTY	DLC Lead Licensing Engineer
RUSS WALLAUER	DLC Backfit Manager
J. C. MESMERINGER	W N.S.
KIRK TROXLER	DLC Licensing Engineer
THOMAS BLACKBURN	W Safety Analysis
BRUCE LORENZ	Westinghouse Licensing
BETH HALL	Westinghouse Licensing
RON FEDIN	Duquesne Light Company
JOHN CAREY	Duquesne Light Company
E. KURTZ	Duquesne Light Company
B. K. SINGH	NRC
HUGH THOMPSON	NRC

P R O C E E D I N G S

MR. THOMPSON: We are here today to address the appeal for the steam generator water level channel instrumentation issue. I think there are some -- a bit of confusion on my part as to what the issue specifically is with respect to the rules and which requirements that we are evaluating.

I think it depends on one scenario, it will follow out one set of regulations, and another tends to follow out another set of issues.

It would be helpful if I asked the staff to identify the Commission's requirements that, as you see them today, particularly as it effects the steam generator water level control issues, does that rule apply to Beaver Valley 2 and does the rule apply to Beaver Valley 1, and do the steam generator level signals serve as both the control and protection function, and is this protection function one that falls within the scope of 10 CFR 50.55 a(h).

So I will turn it over to you and to your staff.

MR. BERNERO: I would like Wayne Houston to give that summary because of my recent return here today.

MR. THOMPSON: Welcome back to Bethesda, by the way.

MR. HOUSTON: There is a provision in the Commission's regulations which you identified in the last

statement and has also been identified in Duquesne's position statement, the tabular form that you had prepared. This is headed "Protection Systems." That particular provision of the regulations did indicate that it was applicable to construction permits issued after January 1, 1971.

The CP for Unit 1 at Beaver Valley was issued the previous year, so it is not applicable to Unit 1 on its face. On the construction permit for Beaver Valley 2, I believe was issued in 1974, so on its face it is applicable to Beaver Valley 2.

The key question here, I think, is, it has been the staff's understanding that the system in question, the instrumentation system in question, serves both a control and a protective function. To my way of thinking, the issue really hinges on the question of whether this is part of the protection system for the reactor plant.

It is the staff's position based upon what was presented in the FSAR that it is. The identification of the absence of the single failure of vulnerability as required by IEEE-279, which is referenced in 55(h), was the point of the contention.

We asked for Duquesne Light to address that single failure vulnerability.

MR. THOMPSON: To clarify my understanding, is

that if it is both a control and a protective systems and IEEE-279 applies, then you would normally have a two out of four channel requirement to comply with IEEE-279 or -- why don't you explain.

If that is not correct, explain to me what the significance of that requirement is as it applies in this case.

MR. HOUSTON: It is my understanding that each of the steam generators at Beaver Valley, Unit 1 and 2, have three channels of steam generator high level instrumentation. One of the three for each steam generators serves a control function. It is appropriately, as I understand it, isolated so that failures in the control system are not fed back into the other channels.

This leaves two channels for the staff, for what the staff believes is a protection function. If a failure occurs in the control channel so that it fails on the low side, this leaves two other channels available for carrying out the protective action. And it does not meet the -- if you then postulate a single failure, it does not meet the IEEE-279 standard.

Perhaps Tom Dunning can amplify that. He is more familiar with the details of the system. If I have misspoken, correct me.

MR. DUNNING: I believe that is essentially

correct. The question though in part related to, does this necessarily dictate the addition of a fourth level channel. And with respect to that question, I would like to say that is in our viewpoint one potential solution to the regulatory conformance aspect.

There are also other potential solutions, but this solution that you mentioned of adding the fourth level channel is one which has been used most commonly in licensing reviews of Westinghouse plants for plants like Shearon Harris and the recent Westinghouse plants that have gone into licensing. They have elected that option to address the regulatory conformance issue.

MR. THOMPSON: What other options have the staff found acceptable or would find acceptable in this case?

MR. DUNNING: Well, there is -- I can give a specific example with respect to Watts Bar. That plant had a little bit different configuration in that they had additional level measurement signals that were available for each of the steam generators.

In that situation, they used additional channels to initiate the actions that would be initiated by the system that was within the scope of the Westinghouse protection system.

Basically they used two additional level channels configured such that if both of these additional channels

sensed high level, they would initiate the safety actions that were initiated by the original two out of three system that was shared with the control functions.

So this was an option that they had because they had additional level channels.

There are also other available options such as just providing a separate nonsafety-related level channel and using that channel for a control function such that the control and protection would not be shared within the existing systems. This is perhaps a third alternative.

More recently we have looked at features that have been incorporated in advanced Westinghouse plant designs with regard to using control signals for protection. These newer designs are microprocessor-based systems. Functionally what they do is they look at all three level measurement signals or four, whatever is available, and they use software circuitry configured such that the signal that they feed to the control system is taken as the median value of all the measurement signals that are available.

Basically what the system does is if a channel fails high or a channel fails low, as far as the measurement signal goes, the system rejects this information and therefore you don't get into a problem of adverse control system interaction problem that leads you to a case where

you need the protection provided by the high level trips.

MR. THOMPSON: So it is clear, the issue that we are concerned about here is steam generator overfill with respect to this particular issue, as we have discussed it so far.

MR. BERNERO: Yes. To answer your question more generally, Tom has been speaking of the -- I will call them control solutions that might be found to the problem. We are dealing with steam generator overfill and there is also the alternative of analyzing that overfill for either the tolerability of the event or at least the temporary tolerability of the event and this is where you get into questions of operator response. Enunciation, detection and manual action could overcome it. Those are theoretical solutions as well.

MR. THOMPSON: So there would be a potential for, under certain analytical scenarios, for Duquesne Light to analyze the operator action and if they responded within a set period of time or had some reasonable assurance that they responded within a set period of time, the Staff has found that acceptable?

MR. BERNERO: Yes. The steam generator overfill is not an instantaneous event. That is a theoretical solution also.

MR. THOMPSON: Okay.

MR. BERNERO: But that is Duquesne Light's option.

MR. HOUSTON: I would like to hear from Duquesne Light.

MR. THOMPSON: I am trying to understand what we have found acceptable. What are the ranges that we have looked at?

I guess there are two things. One, if you meet IEEE-279, there are certain hardware aspects. Then if you do not meet IEEE-279, then there is another alternative approach that we have evaluated, the acceptable analysis and approach that may be acceptable to the staff in the past.

Anything else you think to add to kind of understand where the staff's position is?

MR. BERNERO: The only other thing is the staff does not have a formal cost/benefit analysis because it is not considered a backfit.

MR. THOMPSON: That is complying with the current Standard Review Plan?

MR. BERNERO: Yes.

MR. THOMPSON: Just for the record, what particular section of the Standard Review Plan are we addressing?

MR. DUNNING: That would be chapter, section 7.2.

MR. SHERON: There is also some in chapter 15, 1.1 through 1.4, specifically item Roman numeral II and under specific criterion necessary to meet the requirements of GDC 101526 for incidents of moderate frequency. It would be items, subitems 2 and 3.

MR. HOUSTON: For clarification if I may add, what we are going to now is into the subject area of the basis for the staff's decision up to this point in time that, yes, this is part of their protection system. Because it is tied to the analysis of the feedwater transient.

MR. THOMPSON: Jack, I guess I would like to ask you the same basic kind of questions as you see them and then maybe an explanation as to your position with respect to either the adequacy of your current designs and the acceptability of those and why we should find those acceptable. That is, I think you agree the Commission as a rule as it applied to Beaver Valley 1, does it apply to Beaver Valley 2, are they considered a part of the control and protection system, and do you -- and is the protection function one that falls within the scope of 50.55 a(h).

MR. KURTZ: We do agree that the regulation 50.55(h) does apply to the protection systems. However, we intend to amplify on this specific issue relative to whether this system falls within the guise of protection

systems.

I would also like to point out that this is a backfit under the current NRC regulations, 50.109, in that as used, and I quote the language, as used in this section, backfitting of a production or utilization facility means the addition, elimination or modifications of structures, systems or components of a facility after the construction permit has been issued.

So under the current regulations of title 10, it is in fact a backfit, the backfitting procedures apply.

With that, I would like to have Ron Fedin elaborate on the position of how this system, how we believe that this system does not fit in within the context of a protection system.

MR. FEDIN: The current Beaver Valley Unit 2 steam generator feedwater control and protection system is the standard Westinghouse design system and it is the same design that is now being used in 24 operating nuclear plants. The Beaver Valley Unit 2 design is safe and will maintain an acceptable level of safety as shown by the Beaver Valley Unit 2 FSAR and as demonstrated by the many operating reactor years of the Westinghouse designs currently in use.

The addition of a fourth steam generator water level channel for high steam generator water level control will

not provide a substantial increase in the level of protection for public health and safety as required by 10 CFR 50.109.

Duquesne Light believes this issue is a backfit in accordance with Generic Letter 84-08. In the Beaver Valley Unit 2 PSAR, the Commission approved the Beaver Valley Unit 2 feedwater control and protection systems and indicated that IEEE-279 was adequately considered. No changes to this 1971 regulatory criteria or to the feedwater design have occurred since. However, the staff now finds this same feedwater design not acceptable.

MR. THOMPSON: Let me ask you a question on that. When you look at IEEE-279 and read it today, do you say that it meets IEEE-279 today?

MR. FEDIN: I believe the rest of my statement will address that question.

No changes to this 1971 regulatory criteria or to the feedwater design have occurred. However, the staff now finds this same feedwater design not acceptable.

Clearly the NRC has changed its interpretation of an existing unrevised regulation for which major modifications to Beaver Valley Unit 2 systems and components would be required to meet this new interpretation.

10 CFR 50.55 a(h) provides the regulatory basis for

application of IEEE-279 to the protection systems of nuclear power plants. Part 50.55 a, which became effective on July 12, 1971, applies to all plants which received construction permits after January 1, 1971.

At least 12 other Westinghouse plants, which have received construction permits since 1971, use two out of three logic for the high steam generator water level turbine trip. The staff must have determined that these 12 plants comply with 10 CFR 50.55 a(h) and IEEE-279, since no exemptions to 10 CFR 50.55 a(h) have been required.

Duquesne Light believes adding a fourth steam generator water level channel will result in a negligible increase in public safety. This backfit is being considered by the staff to address a very narrow event.

First, the plant must be operating with the feedwater control system in automatic. The first failure must be a failure in the steam generator water level channel that is providing input to the control systems. It must be fail low; it cannot be fail as-is or fail high.

Second failure must be on the same steam generator in one of the other two remaining channels and the failure must be a fail as-is failure. It cannot be a fail high, cannot be a fail low, cannot be a loss of power or short or open within the circuit.

Thirdly, the operator is not credited with taking any operator action. The operator will receive numerous alarms. He will receive high level alarms, low level alarms and steam feed mismatch alarms.

MR. THOMPSON: How many -- would you go through those alarms for me? How many high level alarms do you have on the steam generator?

MR. FEDIN: He would get low level alarms for the fail low channel. If he took no action as the water level rose, he would get a high level alarm from the third and final channel that is continuing to operate correctly.

MR. THOMPSON: So he would get one alarm?

MR. FEDIN: One high and one low. You would also get steam feed mismatch alarms that would also come in. He would receive these alarms, look at his indications, see that he has got contradictory indications which would lead him to believe that he wasn't sure which one of these was working.

Looking at steam feed flow, he would see that the other two steam generators are still working correctly and he would note that feedwater would be increasing rapidly above the steam flow in the operating steam generator.

The actions that he would need to take to intervene and stop this event are very quick and easy. Taking the feedwater control system out of automatic into manual

stops the feedwater regulation valve from going full open. And once he takes it into manual, he recognizes his responsibility for controlling the feedwater flow on that steam generator and he would manually close the feedwater control valve ending the event.

MR. THOMPSON: What time frame do you see this normally occurring, or have you analyzed that?

MR. FEDIN: Normally operators are very attune to watching the feedwater level. Of all the parameters in the plant, this is the one that they have a lot of training on simulators in the plant. This is the one where they have specific attention controlling because it tends to be a parameter that is a little more difficult to control than some of the others.

So they are very attune to watching this.

On the January 16 event, they actually, out of the many alarms that came in due to the loss of power to the inverter, they picked up the situation and actually took the feedwater control system out of automatic and into manual within the first eight seconds of the event.

MR. THOMPSON: Have you seen the training program lesson plans as they relate to this particular incident?

MR. FEDIN: We have actually gone through the simulator training. This is one event that virtually

every operator that has ever gone through the training experiences, which is the failure of channel.

MR. THOMPSON: But you have that as one of the modules in your program as part of both the lesson plans as well as the simulator training program?

MR. FEDIN: Yes.

Duquesne Light believes the probability of this event occurring as just described, which is two failures -- first failure must be failing low, the second failure must be failing as-is, and third, the operator taking no action -- we believe the probability of this event occurring is quite remote.

Duquesne Light believes that a backfit to address this very specific scenario would only slightly reduce the relatively small probability of steam generator overfill from all causes. However, even if the addition of a fourth steam generator level channel to Beaver Valley 2 was postulated to provide a minimal increase in the protection, it would not be cost beneficial. The addition of a fourth steam generator level channel would result in a cost of over $1 million and may well result in a delay in the startup of the plant.

Duquesne Light believes that if the Commission were to complete its own cost/benefit evaluation, as required by Generic Letter 84-08, it would also find that this backfit

is not cost beneficial.

Beaver Valley Unit 2 FSAR has shown in section 15.1.2 for excess feedwater events that the fuel limits for departure from nucleate boiling are not exceeded at any time, radiological doses are within 10 CFR 20 limits and the reactor coolant system pressure boundary is not breached.

Section 15.1.2 of the FSAR meets the current Standard Review Plan acceptance criteria for increase in heat removal events.

MR. THOMPSON: You are saying this is what our FSAR position was?

MR. FEDIN: Yes. The FSAR shows that the fuel limits for DNB are not exceeded. The reactor coolant system pressure boundary is not breached.

MR. HOUSTON: Is that with or without taking credit for the operating of the steam generator --

MR. FEDIN: That is as it is shown in section 15.1.2 right now.

MR. SHERON: The analysis typically stopped after the minimum DNBR is reached. They don't address the question of what happens with the water continuing to fill the generator. It is not there.

MR. THOMPSON: Our analysis?

MR. SHERON: Theirs.

MR. FEDIN: We use it as a convenient ending point in the analysis. We don't --

MR. BERNERO: You don't speak to secondary system integrity and consequent effects.

MR. KURTZ: We are talking about safety systems addressing the attributes of 10 CFR part A, no DNB fuel.

MR. BERNERO: But you stopped at the DNB.

MR. FEDIN: The Standard Review Plan does not specifically address steam generator overflow.

MR. SHERON: The question here is, have you considered the operator error? Then you would have to, A, address that to show that the consequences of an overfill did not result in a steam line failure and B, that if it did, the radiological consequences wouldn't exceed part 100. That wasn't done.

MR. FEDIN: If we look at the statement that says if we have an overfill event without other faults occurring, we have had the -- we still have the two out of three channels to provide high level.

MR. SHERON: The logic that is used is that the staff gives credit for equipment that is considered safety related. It meets IEEE-279. We don't give credit for equipment that does not safety grade. I think what the question boils down to is, you are taking credit for nonsafety grade equipment.

MR. THOMPSON: Maybe you can explain why you feel comfortable taking credit for nonsafety grade equipment, if that is --

MR. KURTZ: I think we need to refer back here to the Westinghouse. Mr. Blackburn and Mr. Mesmeringer pointed out to us that the fact of having the level trip on the program as an ending point for the program -- is that correct? Could you elaborate on the fact that we do not take credit for this in chapter 15?

MR. BLACKBURN: The function is assumed to occur. It does -- my name is Tom Blackburn with Westinghouse.

The excess feedwater malfunction analysis presented in section 15.1.2 does show feedwater isolation and turbine trip on high stream generator water level. If you look at the transients, you will see that we have identified the point of minimum DNBR as to occur before feedwater isolation and before turbine trip. In addition, it occurs before the high high level signal itself. That is our basis for saying that we have met the fuel limits for acceptance criteria of this transient. We have not defined the high high level signal as ESF in addition.

MR. SHERON: The question is though, if you didn't take credit for it, then we would have to say, is the event considered to be over, because you would have filled the steam lines, you would have pushed water out of

the secondary relief valves. Your valves are probably not designed to relieve water. We don't know if your steam lines are designed to hold the dynamic loads of filling them with water, whether it is water hammer or dead weight or whatever. That is really what the question is.

You have said the event is over because I didn't violate the Commission's criteria. The Commission's criteria says, no fuel failure for this event.

Or, which says, if it did overfill, then you would say, show me that the steam line doesn't fail so that I don't fail fuel or if you say gee, I did take a single failure which is where an operator error, as the review plan says, where the operator fails to act to stop the overfill, then it says you have to show that you don't violate those limits of part 100. This means that we are postulating: the overfill occurs, the operator error is assumed for the Standard Review Plan, and if the operator is assumed, then a generator overfills, you need to demonstrate to us why the steam line doesn't fail and cause a steam line break which results in those consequences which exceed part 100.

MR. KURTZ: I think we have something on that. If Mr. Fedin is allowed to continue with his process. Under the FSAR chapter 15, the event in there, we have addressed that. That is taken care of.

Now we are talking about steam generator overfill. If

Mr. Fedin can continue reading here --

MR. THOMPSON: I have one question before that I thought Tom was going to address. I guess the quality of the instrumentation was that -- you indicated there wasn't a safety grade instrumentation they were relying on but other instrumentation.

MR. KURTZ: We said we weren't relying on it.

MR. THOMPSON: Whether you are relying on it or not, would you please tell me what the quality is? Is this --

MR. KURTZ: Westinghouse quality.

MR. THOMPSON: Maybe Westinghouse can tell us the Westinghouse circle bar W instrumentation.

MR. KURTZ: It is probably no different than any of the safety grade.

MR. MESMERINGER: I would like to amplify the pedigree of the instrument channels that are there. There are three of them. They are fully safety grade; each instrument channel is in a separate process cabinet that is, you know, equipment qualified and fully safety grade in the sense of being class 1E equipment.

One of those channels is shared between the safety grade channel and the control channel. That control channel is isolated from the safety grade channel so that a disturbance in the control system will not feed back

into the protection system. So in a sense, the way the instrumentation was designed, it was designed safety graded.

I hope -- does this answer your question?

MR. THOMPSON: I think it was helpful.

MR. HOUSTON: Westinghouse does intend with this system that it meet the IEEE-279 criteria?

MR. MESMERINGER: No.

MR. HOUSTON: What is your definition of safety grade then?

MR. MESMERINGER: A class 1E, qualified separated, independent from other channels and measure redundancy. But that purpose was not to provide reactor protection. The purpose was to provide turbine protection, equipment protection to prevent carry-over of moisture into the turbine.

MR. THOMPSON: When is the turbine protection method -- does it trip on high vibration or what would be, assuming you did not have the feedwater trip and you continue to overfill, what would be your turbine protection?

MR. CAREY: It would have to be tripped manually. The vibration indicators and alarms, but there would be no automatic action.

MR. THOMPSON: What level of carry-over do you

think would require to give sufficient vibration for the operators to either get the alarm and then be aware of to take any action to trip the turbine?

MR. CAREY: I would say certainly any significant amount of water carry-over would give us a vibration signal of 10 mils.

MR. FEDIN: Section 15.1.2, the Beaver Valley Unit 1 FSAR has been modified to correct an error as described in the March 27 Duquesne Light letter issued to the Commission. The initiation of a turbine trip on high steam generator water level is a control function to provide protection for secondary nonsafety related components. It is not an engineered safeguard feature system actuation.

Summary table 15.0-6 in the FSAR inadvertently listed this function as ESF and will be corrected in the future FSAR amendment to accurately show this function as non-ESF. The text description in 15.1.2, which has not been modified, continues to state that no ESF systems are used to mitigate excess feedwater events.

Section 7.7 of the Standard Review Plan does not require control systems to meet IEEE-279. Therefore, IEEE-279 is not applicable for the high steam generator water level turbine trip.

NRC action to resolve unresolved safety issue A-3,

steam generator tube integrity, was recently issued through Generic Letter 85-02 and NUREG-0844 by the NRC director of licensing. Steam generator overfill was addressed in that NUREG. However, no NRC actions were recommended at this time, but instead as stated in section 4.3.1 of NUREG-0844, the NRC study on steam generator overfill is being performed as part of the unresolved safety issue A-47, control system failures, safety implications of control systems.

Thus, an addition of a fourth steam generator level channel now on Beaver Valley Unit 2 to address control system interaction with steam generator overfill is premature and at best would be considered only an interim change pending resolution of unresolved safety issue A-47.

If the NRC believed that adding a fourth steam generator level channel to this standard design was truly required to maintain a minimum level of safety, then a generic bulletin or order would certainly have been initiated or issued to operating plants with the two out of three feedwater level design rather than awaiting the outcome of unresolved safety issue A-47.

In fact, the Commission continues to allow, we believe, nine plants to operate without any form of high steam generator water level turbine trip function.

Duquesne Light sees no justification for imposition of

an interim solution now when the final resolution of A-47 is scheduled to be available in 1986.

Duquesne Light believes their current generic design provides an acceptable level of safety. Duquesne Light will meet any requirements that evolve from the resolution of A-47 to allay steam generator overfill concerns.

In summary, IEEE-279 is not required for a control function such as the high steam generator water level turbine trip as per Standard Review Plan 7.7.

However, Duquesne Light believes their current standard Westinghouse-designed feedwater control and protection system maintains an acceptable level of safety as demonstrated by the Beaver Valley Unit 2 FSAR and the many operating plants using the standard Westinghouse design systems.

An addition of a fourth steam generator water level channel will not provide a substantial increase in the protection of the public health and safety.

Any generic backfits concerning the control system interactions which the Commission believes is warranted should be implemented through the unresolved safety issues medium and not on a plant specific licensing review just before the unresolved safety issue study is completed.

Resolution of unresolved safety issue A-47 is scheduled for 1986 and should be the forum for closing out control

system interactions and steam generator overfill concerns.

MR. THOMPSON: As I understand your position, you are prepared to say for the pending resolution of A-47, you believe that your system provides an adequate level of safety as designed and that you are prepared to comply with whatever the requirement that comes out of A-47 as would the other nine plus 13 plus how many folks there are --

MR. FEDIN: 33 plants.

MR. THOMPSON: Your brethren of 32.

MR. KURTZ: Certainly.

MR. HOUSTON: May I ask a question?

MR. THOMPSON: Let me -- save yourself.

One of the things in, I guess in an earlier submittal that you talked a bit about operator action and I guess some experience you had on Unit 1 with respect to the operator, you take any credit for the -- I think you did, you didn't say them at the end -- do you not have some additional assurance on operator actions on your training programs and your simulator that this is an evolution that they are well trained on and they would take actions to prevent a steam generator overfill as adding to your level of assurance?

MR. CAREY: That is one of the program malfunctions on the simulator is the failure of a steam generator level channel control. The operators, we feel,

are trained to recognize this type of malfunction very quickly. Certainly we believe that it is more likely that a steam generator overfill would be caused by a malfunction of the steam generator level control itself and not the instrument channels that feed the control system.

The operator certainly has two actions in the event that he suspects he does have a control malfunction. One is to go over and select another channel as an input to the control system. So he doesn't even have his first action but probably not be able to take the level of control into manual but rather to change channels.

We certainly believe that the event that we are trying to protect against here is, we question whether it really requires protection. I believe that is really our point is that, is a protection grade system required to protect against steam generator overfills.

Since the unit when operating is operating at essentially full power, our analysis indicates that we have got 10 minutes for operator action.

MR. THOMPSON: Have you looked at something -- I understand that a more critical period of operator action or a more timely period is probably at some power less, power level less than 100 percent. More like the 25, 30, 40 percent level. Have you looked at the time available

for operator action in that time frame?

MR. CAREY: In that time frame there would be much less time for the operator to act. But at that point in time the operators, when you are going through a transient, the operators are sensitive to the fact that the steam generator levels can possibly get out of hand.

The last thing I need is another steam generator level trip. It is about 50 percent.

MR. THOMPSON: As I remember, most people usually have an operator right at the feedwater panel at that period of time simply because history will tell us that you are able to chock up a rather good -- not you personally but other utilities. I am sure you have only had one or two of those low trips.

How many hours a year would you expect to see your plant operate at this lower power level? I guess we are really talking about the 20 to 40 percent range. You normally, how many hours a year would you expect to operate?

MR. CAREY: During a period of time between when you put the plant on and when you put it on after refueling, we take two to three days to get up to 100 percent power, mainly to follow the Westinghouse fuel division's recommendation with respect to ramp rates have power after an extended outage.

At other times we are operating at 24 hours or less. Assuming that less than one week a year, we figure less than 2 percent of the time we would be operating in that -- at these intermediate power levels.

MR. THOMPSON: Do you normally station additional RO during these evolutions, during the startup? Do you augment your crew?

MR. CAREY: Yes.

MR. THOMPSON: With an additional RO?

MR. CAREY: Yes.

MR. THOMPSON: Somebody that stays by the feedwater panel?

MR. CAREY: That is right. And even then we still have trips, particularly at the very low power. You are in manual.

MR. THOMPSON: If you can finally get the sucker to auto -- forget the "sucker" on that --

(Laughter.)

MR. CAREY: We feel we are home free if we can get it into auto.

MR. HOUSTON: Do I understand then that the simple answer to the question raised earlier as to whether Duquesne Light regards this system as a protection system in the sense of 50.55 a(h), the answer to that question is "no"?

MR. CAREY: The answer to that question, we don't believe that for high steam generator level that a protection grade system is necessary. As far as we are concerned, our steam generator level instrumentation system is a safety grade system.

MR. HOUSTON: 55a(h) does not apply.

MR. CAREY: Not to this particular steam generator overfill.

MR. HOUSTON: In what you read --

MR. THOMPSON: Just tell me, is that --

MR. HOUSTON: It seems to me that is very germane to the issue, as to whether it is or is not part of the protection system. That is the source of the authority.

The second question, you have made periodic frequent reference to a staff requirement of "addition," the addition after fourth steam generator level channel. Has the staff ever proposed to Duquesne Light a requirement that was articulated in that fashion?

MR. FEDIN: I believe that was mentioned in their January 10 letter that came back to us.

MR. HOUSTON: It was mentioned that it was an alternative that you had to resolve the issue. Was it stated as a staff requirement in writing?

MR. CAREY: As I see the alternative, one is to

provide a totally separate channel for control --

MR. BERNERO: This question is directed toward, did the staff try to give you one and only one solution to the issue?

MR. FEDIN: It said it can be met by addition after fourth steam generator --

MR. HOUSTON: That is not a phraseology that one would use to make a staff requirement. That is my point.

MR. FEDIN: They did not ascertain that that was the only way to meet it.

MR. BERNERO: I would hope not.

MR. THOMPSON: As I say, certainly there are various ways to meet different requirements. That was one which we had historically found acceptable.

MR. BERNERO: I would like to recapitulate in my own words what I think I heard your statement say, because I think you made some very important points and Wayne just flagged one of them.

First of all, in your argument, you made the argument that we are dealing with a backfit and not with an implementation of the Standard Review Plan and, therefore, cost/benefit analysis does prevail here. Secondly and very importantly, you said that 50.55 a(h) applies to proper section systems and in this context, the steam generator level system is a class 1E system but not a

protection system and, therefore, the full requirements of IEEE-279 do not apply. That is the single failure aspect in particular.

Then you went on and said that you have, as such, as such systems go, a rather complete system and it takes a highly improbable combination of events to defeat it and even get us into the argument.

You then went on to say that operator action is trustworthy, reliable and can be expected to be prompt because they are trained for it, the operators are there at that panel typically, even in the more sensitive times.

And then last, I take it as an argument over and above all this, that if there is genuine concern about steam generator overfill, there is a generic bin called A-47 for dealing with that issue and, therefore, at worst, if we are to press the issue at all, it should be pressed in A-47. The answer is coming next year and why not wait for it? It is premature to deal with the issue in an individual licensing case.

Do I fairly track your arguments then?

MR. FEDIN: That is correct.

MR. KURTZ: Yes.

MR. THOMPSON: I think I understand the issue.

I would like a five-minute recess while we are here to talk to my operator advisors. Any agreement you guys

reach while I am out of the room, I will not be a party to.

(Recess.)

MR. THOMPSON: I have had an opportunity to consider the discussions here today and they appear to be two major issues. I seem to be able to address one fairly straightforwardly and hopefully it is one which we can understand. That is the hardware issue. That is, I am convinced that there is no undue risk to the public health and safety for the interim period of time it will take to resolve the A-47 issue and apply that to Beaver Valley 2 as it would be applied to Beaver Valley 1, with respect to specifically identifying any hardware changes that might be needed with respect to the facility.

The documentation purposes for this interim issue is a more complicated and more complex thing. Whether or not this particular system comes under 50.55 a(h), whether is it is a backfit, not a backfit, how I document this, how we document, you know, our staff's position is one that there is some debate on. There is a question of whether or not this falls within the rules and regulations. I forgot to bring all my lawyers. The next time I will add lawyers to these meetings so that we can -- I got one back here.

(Laughter.)

MR. TOURTELLOTTE: Don't you want to use me?

MR. THOMPSON: No. I am not sure how I would classify you right now.

(Laughter.)

MR. THOMPSON: For purposes of trying to articulate how this particular issue is addressed with respect to documentation, I can't answer that. For purposes of moving forward and resolving this issue, technically, I am prepared to -- I guess we will obviously, the next step may be an appeal of this issue above me to Mr. Denton and if either party is unsatisfied with the technical issue and with the procedural issue, I would think it can be appealed on either grounds. I think for purposes of your proceeding with the construction, I am satisfied right now that there will be no undue risk.

There is one other issue I should get on the table. I would like to ask Jack -- you -- to specify to me what is the operating history with Westinghouse steam generator overfills?

MR. CAREY: To the best of my knowledge, the only steam generator overfills that have occurred have occurred as a result of steam generator tube ruptures and the --

MR. THOMPSON: For Westinghouse plants?

MR. CAREY: Yes.

MR. THOMPSON: I do believe, there have been

steam generator overfill occurrences in the once-through type steam generators. Maybe anyone else wants to articulate for the record any knowledge whatsoever of a steam generator overfill event from control system failures associated with Westinghouse steam generators?

MR. BERNERO: No.

MR. THOMPSON: Okay. Hopefully I will be able now to document this particular issue as soon as Vic gets me a lawyer that can write better than I can.

Any last minute comments, Bob?

MR. BERNERO: No.

MR. THOMPSON: Jack?

MR. CAREY: No, I don't have any.

MR. THOMPSON: Anyone here in the room want to provide -- yes?

MR. DUNNING: I was not really clear, you made some suggestions that this issue could be appealed further. Do I understand that the licensee's appeal to this issue was turned down or accepted?

MR. THOMPSON: It is, as I would, if I were in their shoes, I think they won. But as I understood it, it is an issue which the staff may appeal this decision to Denton and they may not be accurate in their characterization of this being a backfit or a not backfit issue. That is, the way they apply, the way 50.55 a(h)

applies, I think we are still needing to make sure we understand how it applies because obviously it is our regulations that we have to apply. I did not -- I did not recognize that was going to be one of the major issues that I was going to have to decide or I would have been better prepared for that today.

I assume that, on the one hand you could care less how I resolve that issue to a certain extent. I mean, on the other hand, if you had to install a fourth channel or had to do some other system modification, you may be more interested. However, I will leave that up to you. You certainly may appeal that decision, if you are not satisfied with it, to Harold Denton.

It kind of turns out to be a strange way to appeal a legal interpretation in a backfit arena. I don't know precisely how you may want to appeal it, in some other sense of the word.

Hopefully that will resolve this issue at least as it is resolved as far as the dotting of the I's and crossing of the T's.

Any last minutes words? If not, thank you very much.

(Whereupon, at 11:40 a.m., the meeting was adjourned.)

CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING: BEAVER VALLEY - UNIT 2 BACKFIT APPEAL MEETING ON STEAM GENERATED WATER LEVEL CHANNEL INSTRUMENTATION ISSUE

DOCKET NO.:

PLACE: BETHESDA, MARYLAND

DATE: THURSDAY, MAY 9, 1985

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission.

(sign) Rebecca E. Eyster

(TYPED)
REBECCA E. EYSTER

Official Reporter
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