Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title: In the matter of
Interview of
Carl Bergstrom

Docket Number: 2-94-036

Location: Crystal River, Florida

Date: November 29, 1995

Work Order No.: NRC-429 Pages 1-96

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2-94-036

EXHIBIT 12

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Mr Davis

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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OFFICE OF INVESTIGATIONS

INTERVIEW

IN THE MATTER OF:

INTERVIEW OF

CARL BERGSTROM

Docket No. 2-94-036

Wednesday, November 29, 1995

Crystal River Plant
Administration Building
15760 W. Power Line Street
Crystal River, Florida

The above-entitled interview was conducted at 8:10 a.m.

BEFORE:

JAMES DOCKERY	Senior Investigator
JIM VORSE	Senior Investigator
CURT RAPP	Reactor Engineer

Reviewed this transcript on 12-20-95, Carl W Bergstrom

APPEARANCES:

On Behalf of the Nuclear Regulatory Commission

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On Behalf of the Interviewee, Carl Bergstrom

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P-R-O-C-E-E-D-I-N-G-S

MR. DOCKERY: For the record today's date is November 29th, 1995. The time is approximately 8:10 a.m.

My name is James D. Dockery. I'm a Senior Investigator with the NRC Office of Investigations.

During this proceeding, which is being recorded for transcription, the NRC Office of Investigations will conduct an interview of Mr. Carl Bergstrom. This interview pertains to OI Investigation number 2-94-036. Location of the interview is the Administration building of the Crystal River Nuclear Plant.

We have others in attendance at this interview today and I'm going to ask them to identify themselves, starting with Mr. Rapp.

MR. RAPP: My name is Curt Rapp, R-A-P-P, and I'm a Reactor Engineer with Region II NRC in Atlanta, Georgia.

MR. VORSE: My name is Jim Vorse. I'm an Investigator with the NRC Office of Investigations, Region II, Atlanta.

MR. STENGER: Dan Stenger, attorney with Winston & Strawn in Washington, D.C.

MR. WEINBERG: Sandy Weinberg, Zuckerman, Spaeder in Tampa. And as we've stated before in the other interviews both Mr. Stenger and I represent Florida Power.

THE WITNESS: I'm Carl Bergstrom from Florida Power Corporation and my title is the Manager of Nuclear Ops. Support.

MR. DOCKERY: Mr. Bergstrom, would you raise your right hand please, sir?

WHEREUPON,

CARL BERGSTROM,

having first been duly sworn by the Investigator, was examined and testified as follows:

MR. DOCKERY: Thank you.

DIRECT EXAMINATION

MR. DOCKERY: You've already stated your full name for us. Would you, for identification purposes, state your date of birth and Social Security number?

THE WITNESS: My date of birth is [redacted] 7C My Social Security number is [redacted]

MR. DOCKERY: Mr. Bergstrom, prior to going on the record here today Mr. Vorse and I identified ourselves as Investigators with the NRC Office of Investigations. You understand who we are, is that correct?

THE WITNESS: Yes, I do.

MR. DOCKERY: And also I provided you with a copy of Section 1001 of Title 18 of the United States Code and you read that and acknowledged that you understood its applicability here today?

7C portions

THE WITNESS: Yes, I did.

MR. DOCKERY: Okay, thank you.

Mr. Bergstrom, the events that were -- we want to discuss with you here today took place primarily in 1994. Could you tell us what your position was at that time?

THE WITNESS: The entire year of 1994, I started the year as a shift supervisor of one of the operating shifts and maintained that until we entered into the refuel outage. At that time I fulfilled the role, but my title remained as a shift supervisor, I fulfilled the role as a production coordinator for operations and coordinated the activities for the outage. Upon the completion of the refuel outage I maintained my title as a shift supervisor until September the 1st. At September the 1st then I changed to manager of nuclear operations support. I maintain my job position of coordinating skills but now out of the refueling outage I now coordinate the activities of operations day to day.

MR. DOCKERY: What was the approximate dates of the -- that outage -- just roughly?

THE WITNESS: The outage was complete approximately the first part of June.

MR. WEINBERG: Of '94?

THE WITNESS: Yes.

MR. DOCKERY: Mr. Bergstrom, directing your

attention or recollection to July of 1994, we've -- you've had an opportunity to interview -- or to review the notes from an interview that was done of you by the -- a corporate investigator. It discusses your recollection of a possible July 22, 1994, evolution conducted by Bruce Willms. Do you recall that?

THE WITNESS: Yes, I do recall the activity I asked Bruce Willms to perform on the control board for me. I don't have the exact date, but July is a pretty good time frame of when it was done.

MR. DOCKERY: You say you asked him to perform something?

THE WITNESS: That's correct. Yes, I did.

MR. DOCKERY: Can you just describe that for us?

THE WITNESS: The plant was adjusting concentration of boron in the RCS and part of that adjustment of the concentration is to adjust it in the makeup tank as well. To be able to adjust the concentration in the makeup tank we had to do what's called a bleed to the RC bleed tank to lower the level in the makeup tank to be able to replenish the volume in the makeup tank with a different concentration.

Because this was an ongoing evolution I requested Bruce Willms to do some additional data collection while we were lowering the level in the makeup tank as the

routine. We were -- we collected data off the level and pressure off of MU-14-LIR, which is the level strip chart recorder on the main control board. We plotted those against the OP-103 curve as it related to pressure and level in the tank. What we were trying to achieve by plotting it was to confirm or deny that the plotted points would parallel the approved operating curve for the makeup tank.

MR. DOCKERY: Was -- was your concern at that time -- did it involve the hydrogen level or --

THE WITNESS: My only -- my -- the reason I was driving to collect the data, because that was not normal, is that there was -- because I was in a point of transition of being the coordinator for the outage and then assuming my new duties as a manager, I wanted to get a up-to-date status of where we stood with some controversial issues, one of them being the makeup tank curve.

MR. DOCKERY: That's what we have come to refer to as Curve 8, for simplicity's sake?

THE WITNESS: Okay. The controversy that lied (sic) with the makeup tank curve is during the performance of the outage surveillance testing we indicated that we gas-bound one of the makeup pumps and we were trying to figure out how we got the gas entrained into the makeup

pump. It meant that the prerequisite conditions for establishing the makeup pump flow test could have been in error and the operators were concerned that if they continued to operate by maintaining a high hydrogen concentration or high concen -- hydrogen pressure in the makeup tank that it would cause them to go into a unacceptable region for operating with the makeup tank and result into the gas-binding and the inoperability of the HPI pumps, makeup pumps.

The -- they had corresponded back and forth with Engineering to resolve the issue. They had no resolution. They had no deadline date for resolution. The point of contacts were unclear. We had no game plan that I was able to determine as being the manager. I was trying to at least bring myself up to date on where we stood with this and what kind of position management needed to help achieve an end goal of this controversy.

This -- Earlier correspondence had said that the curve was correct and that we weren't -- we would not see the indications that we did, and this was a confirming action on our point to say that the curves did not run parallel. Or, in other words, would challenge the operability curve of the makeup tank.

MR. DOCKERY: In more or less layman's terms, because that's what I am, what did the data you directed

Mr. Willms to collect -- what conclusions did you reach from that data?

THE WITNESS: Based on our data that we collected and plotted points from a high level in the makeup tank at a pressure -- a higher pressure to a lower level in the makeup tank, we were able to achieve that the plotted points did not run parallel to the makeup tank curve. In other words, we theorized that the point that if we had continued to lower the level in the makeup tank we would have indeed have challenged the operating curve of the makeup tank.

MR. DOCKERY: Well, would it be fair to say that that curve was somehow inaccurate or invalid?

THE WITNESS: That was the basis of a follow-up meeting to the data collection that we have was to say that the engineering letters that I had seen from the operators who had been following up on the issue, the -- their letters indicated that the curve was correct based on Design Engineering in St. Pete. They continued to pursue it because they felt that they weren't.

The results indicated to me also that I was now falling more on their side, saying that it appears that way to me as well. We -- we are not engineers. We can only go based on the level of knowledge as we were trained. And what was called a P1-V1 over T1 calculation

did not prove that the curve was correct. And we were told that we didn't understand the entire process behind it. There were references made to gasses coming out of solution. Other references of things that we couldn't deal with, and that was the purpose of holding the meeting so that we could clear that up.

MR. DOCKERY: What was the outcome of that meeting?

MR. WEINBERG: Can we establish just when the meeting was?

MR. DOCKERY: Sure.

MR. WEINBERG: When do you think?

THE WITNESS: I bought my -- I -- for the purposes of organizing myself and my daily activities, I maintain a day planner. It does nothing more than collect information of meetings that I have gone to and action items that I was pursuing on daily. I have those and I have 1994 in front of me, and July 19th, this is my entry: It says specifically, Pat Hinman, H-I-N-M-A-N, Steve Roe, R-O-E, Mark Van Sicklen, Bruce Willms. These were all in attendance along with myself, disagree that the makeup tank will empty. The curves don't prove that the gas binding of the makeup pumps will result. This is the result.

You asked where did we go from there? Pat,

meaning Pat Hinman, will re-perform the P1-V1 calculation by returning to St. Pete Engineering for calculations (he believes the curves to be conservative). A word pneumatic -- oh, okay. It says, all brainstorms making MUV-64 as a pneumatically operated valve from the main control board. And possible simulator performance.

So, to answer your question from my log entries here, because my memory is not that great, the action item was to re-perform the calculation P1-V1 for the makeup tank by sending it back to St. Pete Engineering. And at the same time we were pursing a long range goal of reactivating the controls for MUV-64 so that we could take contingent actions from the main control board on the lowering level of the makeup tank. And we were also saying that we want to run this on the simulator. And if the simulator will prove that we're also seeing this instead of continuing to take data off of the operating plant.

MR. WEINBERG: Well, we'll make a copy of this if that's okay?

THE WITNESS: That's fine.

MR. DOCKERY: While we have that here and have it out. The notes of your interview by the company investigator indicate a possible, and I'm quoting, "possible July 22, 1994 evolution".

Can you -- would you check your notes and see if you have anything on or about July 22 that would indicate --

THE WITNESS: No.

MR. DOCKERY: Okay.

MR. WEINBERG: It must have been -- what shou -- it must have been before July 19th?

THE WITNESS: I -- I don't routinely go to a different page to write on notes unless the page has been filled and then I will sometimes flip to a previous page to find a spot to write on. But as you look at the pages there, the pages are not filled on the day of the 19th.

MR. WEINBERG: Think it would be 18th?

THE WITNESS: No. You see that's -- that's a different question now. All right. If you look -- okay. To answer your question specifically, do I think that my date is correct in my date planner? As well as I know, it is. It leads me to believe it is because I look at follow-up days, I don't have any writing on the pages, so there was certainly enough room. And on -- if you look on the 22nd of July, there's absolutely no writing there whatsoever. But I -- and I indicate that I was on vacation that day, so I wasn't even at the plant. I took off on the 20th and from that point on I was gone.

So I'd say yes, it is on the 19th. The notes

that we provided you on earlier conversations indicate possibly the 22nd. I'd say based on what I have in the day planner it was probably on the 19th and not the 22nd.

MR DOCKERY: To the best that you can recall, and it's been over a year, but do you think that the meeting of the 19th, would that have been conducted the same date that Mr. Willms conducted the evolution or would it have been sometime after Mr. Willms collected that data?

THE WITNESS: I -- I really can't recall it. It would not be unreasonable to expect to have the people come up on the same day that we ran it. My gut feeling is that it was probably not performed on the same day.

MR. RAPP: If you want to know the dates, we can go back to the shift logs and --

MR. WEINBERG: I was going to say, I've got them in the car. And I've got the logs of that day. I just don't know off the top of my head remember what day it was. Sometime in July, I think it's in the middle of July.

THE WITNESS: Do you want an answer on why there's a log entry on the 18th --

MR. WEINBERG: Well, there is a makeup tank log on the 18th --

THE WITNESS: Right. I think if you flip

through here you'll find just about every single day. You flip anywhere in here you'll find hydrogen to the makeup tank. The reason being is it's not a record of the daily events, but what it does it emphasizes that it was a point of action for that day. Every single day hydrogen to the makeup tank was an issue to keep hydrogen pressure up so that we met the concentration requirements of the RCS. So, there's many references to hydrogen in the makeup tank but not -- not what you're asking.

MR. DOCKERY: Well, this is a significant issue.

THE WITNESS: Absolutely, every single day.

MR. DOCKERY: At that time, Mr. Bergstrom --

MR. WEINBERG: Well, when you say, this, this thing, hydrogen, or this thing, the curve?

MR. DOCKERY: I have trouble separating them.

THE WITNESS: Okay. I -- all right. The issue of hydrogen in the makeup tank was a daily issue. The issue of the makeup tank curve was not an elevated issue at that point. In fact, that was the reason that I requested the meeting is that it had been falling on the back burner, so to speak, and that I didn't see any activity and that I felt that I needed to get answers for the supervisors that were now working for me on what was the status of the issue, how we -- Because we had been kicking this back and forth with Engineering for some

time. And the shift supervisors even questioned, where do we go with this?

MR. RAPP: Let me -- let me interrupt here for one second. Did -- did Operations make it clear to Engineering the significance of this curve, the safety significance of this curve?

THE WITNESS: Yes, yes we did.

MR. RAPP: And what was Engineering's response?

THE WITNESS: I don't know. I was not involved with that. My involvement came about this time frame when I started returning -- I can only guess what the response was. I had two focal points for this issue at the time and that was Mark Van Sicklen and Bruce Willms. They were my two focal points. And the reason we had selected them to be the focal point to follow up on this issue is that one or possibly both of them had performed SP-630 and had seen the indications of voiding of the makeup pumps and they had taken a vested interest in trying to resolve the issue over why -- why we had gotten the voiding in the makeup pumps. So they were pursuing that.

MR. RAPP: Okay. So Engineering understood that there was a substantial safety issue involved here with this curve?

THE WITNESS: Yes, it was. Yes, they did.

MR. RAPP: And yet they placed it as a low

priority item in their overall processing of work?

THE WITNESS: I would characterize what we had was conditionally operable based on further reviews. In other, words we were not dealing with something that was clearly inoperable, it was something that was operable. We questioned the results that we were seeing. We did not re-perform the SP-630 at that time because it's done during the refueling outage.

We saw some indications of problems during it and we questioned if the ECCS system, Emergency Core Cooling System, was to be used for a LOCA would we have the same indications or would we be challenging the operability of those pumps. We felt it was not an issue that we wanted to drop. We wanted to run to an end. We also felt the pressure put on us daily to maintain the pressure high which technically will move the operating point on that curve closer to the operating limit curve.

MR. RAPP: Where was this pressure coming from to maintain high pressure -- to maintain the elevated hydrogen concentration?

THE WITNESS: The pressure that I dealt with on a daily basis was coming from the chemistry results for hydrogen concentration in the RCS. The only way that you got the hydrogen concentration into the RCS was to keep a pressure or a gas bubble in the makeup tank.

We were trying to meet the guidelines of EPRI ~~EPRI~~'s standard of 25 cc's per kg. And daily the managers meeting would have a plot of where our hydrogen concentration would be in the RCS, and if they had seen a lowering trend in the hydrogen concentration the first response would be is, are you keeping your pressure up high enough in the makeup tank so that you can get a corresponding increase of hydrogen in the RCS?

MR. RAPP: Would this -- would they just come to your office and bring this up to your attention or --

THE WITNESS: No, at that time the managers were meeting in the tech support center at ten o'clock in the morning. Managers meaning that you'd have the Operations manager there. You'd have the Plant Manager. You'd have the shift managers. And you'd have Chemistry manager there. So when a decreasing trend of the chemistry parameter would be indicated on the plan of the day the question would come out as why are we seeing a lowering pressure? And that would be going back to Operations and say, make sure that your people are keeping the pressure up high enough.

MR. RAPP: And who in that Operations management chain was directing that?

THE WITNESS: Whoever went to the managers meeting would end up returning that information back to

the shift supervisors.

MR. RAPP: But who typically would that have been?

THE WITNESS: It was shared responsibility between Greg Halnon and myself. Primarily Greg Halnon was the manager of Ops and he would go to the meeting, but whenever his schedule didn't permit him to go to the meetings, then I would fill in.

MR. RAPP: Okay.

THE WITNESS: The majority of the time it was Greg and then I -- I was also exposed to that pressure from the managers' meeting.

MR. DOCKERY: Mr. Bergstrom, let me interrupt just a second. Who did you report to? Who was your supervisor at that time?

THE WITNESS: At that time it was Greg Halnon and it still remains that way.

MR. RAPP: Okay. And so Greg Halnon is your supervisor, but at certain points in time you're acting in his behalf or in his place at this meeting?

THE WITNESS: Right. We documented the -- the sharing of the command role for operations and signature authority and so forth to fill in for Greg.

MR. RAPP: So that you -- earlier you spoke of pressure, where was that pressure coming from? Was it

coming from someone above Greg Halnon?

THE WITNESS: It -- it was a shared pressure imposed on -- we were all assuming the pressure for trying to meet the ~~EPRI~~ EPRI ~~WOG 12-20-95~~ guidelines. I feel it was shared by management, and I don't want to single out anybody in the management meetings. It was a conclusion that came out and we did not -- that was one of the messages we did not want to go back to the individuals in the bargaining unit and say, it was Greg that wanted to do it. It was -- it was a management decision to try to meet the ~~EPRI~~ EPRI ~~WOG 12-20-95~~ guidelines at that time to keep the hydrogen concentration up.

MR. DOCKERY: Who conducted the morning meeting each day?

THE WITNESS: It was either held by the Nuclear shift manager or the plant manager and whoever was filling the plant manager's position.

MR. DOCKERY: And would you identify by name each --

THE WITNESS: Typically right now the plant manager at that time and now is Bruce Hickle. Shared responsibility, just like when Greg is not here, I fill in for Greg -- shared for when Bruce was not here it would have been Ron Davis.

MR. RAPP: Are you aware of where this

management decision came from to go to this increased hydrogen concentration?

THE WITNESS: Management decision was -- as it was communicated to me was it was a ~~EPRI's~~ EPRI's Cob 12-20-95 standard that we wanted to achieve and that was for achieving the proper chemistry parameters in the RCS.

MR. RAPP: Okay, but --

MR. WEINBERG: You mean what individual --

MR. RAPP: What individual --

MR. WEINBERG: -- at the company -- was there any individual that you know at the company that sort of spearheaded the effort to maintain these standards?

THE WITNESS: I -- I didn't question that.

MR. WEINBERG: Are you an engineer?

THE WITNESS: No, I'm not.

MR. RAPP: You're not a degreed engineer.

Did -- when you presented this data to Engineering on July 19th and they told you that basically you didn't understand all of these intricacies involved here. On an intuitive level or gut level how did you respond to that or how did you feel about Engineering's statements?

THE WITNESS: One of the action items from this meeting was that -- we seemed to have a friction between Engineering and Operations at the time, that no one was

yielding. The operators were strong in their opinion of what was going to happen and engineering was strong in their opinion. We all -- both agreed that we would go back and validate the data that we had collected. We would validate our concerns and so forth.

But what we were dealing with here is that one person was talking in an engineering language and the other one was talking in an operator language. So one of the action items from the meeting was to find someone that could communicate clearly in both levels. And we, at that time, appointed one of the operational technical assistants who is a -- has an engineering background, Walt Neuman, to be our focal point.

Another problem with any kind of -- a technical problem in the plant is when you're dealing with people that are on rotating shift work. When you have a question, not all the times are you going to be able to communicate with that individual. And it's hard to -- especially on this complex issue to send a letter, a memo, a note or even leave voice mail. I don't believe -- we did have voice mail then, but to leave voice mail, you know, the operators don't have a voice mail box. So because of that we needed also a person that we could focus in on to communicate the issues of where we stood with the status and so forth. We needed that person. We

felt the best person at that time to interface or mediate between the two groups was this operations technical assistant, Walt Neuman, who has an engineering background.

At that point Walt was going to have to leave that meeting -- he wasn't even at the meeting. He was going to have to go on a collection phase of all the information to try to receive everything he could and try to make sense of it and so forth. And from that point on Walt did collect the information.

We also set a -- a deadline date for when we wanted an answer. This was another problem that I felt looking at it that we did not set a realistic deadline. We just said we want you to correct the problem, but we never told him that we want an answer before such and such a date. So we set a realis -- to the best of my recollection the date that we used at that time was November the 15th.

MR. WEINBERG: Was that a date that was acceptable to Van Sicklen and Willms?

THE WITNESS: It was -- yeah, I felt everybody that went away from that meeting was satisfied with the November 15th, as long as we were communicating where we stood with it. We weren't going to wait until November the 1st to start acting on it. We wanted to start working on it now, but November the 15th we needed some wrap up

date.

MR. RAPP: What -- if November 15th was the date that everybody -- and I take that to mean Engineering as well, correct?

THE WITNESS: Yes.

MR. RAPP: Agreed to --

THE WITNESS: Remember, we said that the action item was going to be the recalculation of the P1-V1 calculation?

MR. RAPP: Uh-huh.

THE WITNESS: So when I say a deadline date, we wanted that calculation done and back to us by then. They said that there was not a problem with the curve. We said, yes, we see a problem with the curve based on the collection of data.

MR. RAPP: Then what was the purpose of the September 2nd letter from Engineering saying this curve was safe and conservative and there was no further engineering need to evaluate it.

MR. DOCKERY: We need to establish that Mr. Bergstrom is familiar with that letter and that -- Sandy, do you have a copy of that we could pull up?

MR. WEINBERG: Yeah.

MR. DOCKERY: I'd feel better if he had a chance to look at it and review it.

THE WITNESS: (Examining document.) I'm familiar with that letter, yes. I have a -- I was sent a copy of the letter.

MR. VORSE: When, Mr. Bergstrom?

MR. WEINBERG: He's shown on it as having gotten a copy.

THE WITNESS: Yeah. I was sent a copy of the -- I did not retain a copy of this letter, to be honest with you. The first time I became aware of this letter was when we prepared to sit down with you last week, all right, and that was the time that I read the letter and so forth. I recall that time.

MR. RAPP: Were you the one or were you the individual that gave this September 2nd letter to Mr. Fields' shift on September 3rd or whatever date, prior to the 5th?

THE WITNESS: I don't recall. I -- honestly, I can't answer you and say I honestly didn't. I don't recall. Like I said, I didn't -- I wasn't aware -- I didn't remember this letter until we sat down last week on the 22nd and reviewed the paperwork that we had. I certainly know that on the September time frame there was not a resolution to it at that point.

MR. DOCKERY: But let's try and get to it this way. I mean, I can understand your recollection might be

hazy, but having reviewed it, the letter, again, do you recall at all what your reaction to it was at the time you first received it?

THE WITNESS: To me it was a preliminary letter, it was not a completion of reaching the goal of the P1-V1 calculation. It was just one more piece of information that needed to go to the focal point, which was Walt Neuman, to digest exactly where we stood with it. There were things that were discussed in this letter that were long range goals.

MR. DOCKERY: Okay. Let me direct your attention to the first paragraph and what I see is a pretty -- a somewhat unequivocal statement. The middle of that paragraph, referring to Curve 8, I will quote, "Engineering believes this curve is accurate and reasonably conservative to protect the high pressure injection pumps from hydrogen gas intrusion in the worst case large break LOCA." Do you agree with that statement?

THE WITNESS: No.

MR. DOCKERY: Did you agree with it at the time?

THE WITNESS: No.

MR. DOCKERY: Curve 8 as it existed at that time -- I -- it's my understanding has been revised. Is there a different curve in effect today?

THE WITNESS: Yes.

MR. DOCKERY: Who was wrong?

THE WITNESS: I don't lay the blame. I don't know. So, just looking at the curves now you can see that we're operating completely different then when we did before.

MR. DOCKERY: Which means?

THE WITNESS: There was -- which changes, we've now provided a conservative in there along with a -- in other words, a dotted-line curve along with a solid-line curve now. All right. We didn't have that before. We changed the characteristics of as you view the curve where you are. We've clearly stated our expectations of where we expect you to operate on this curve when that curve came out, the new Curve 8. Things have changed from where we were at before.

MR. RAPP: Was that -- Is the previous Curve 8 indicated as a operating band or an operating range?

THE WITNESS: I think we have a copy of it. I don't believe that there was a -- there was nothing labeled unacceptable region. I believe there was a right-hand region that said acceptable, and there was a solid line there.

MR. RAPP: What was the instruction to the operators, to the operating crews regarding where to operate on Curve 8?

THE WITNESS: I can -- I can give you an answer based on my position as a shift supervisor and how I conducted operations on my shift previous to the refueling outage. Previous to the refueling outage there was an acceptable region as labeled and there was another point of the region that we didn't operate in. All right. We did not purposely go over into that region. Those are my personal standards and I expressed my personal standards to the people that worked on my shift.

MR. RAPP: So anywhere between the solid line and to the right of that was the acceptable range as far as your shift was concerned?

THE WITNESS: Well, that curve is drawn out above the high level alarms and the low level alarms. All right. So I can't say yes to your question, but if you -- if the question was rephrased to say to the right of that curve as long as you stay within the high level alarms and the low level alarms, I agree with it, yes. Understanding that you may achieve -- you may get a high level alarm, and there's actions that you can take to respond to the high level alarm as driven by the annunciator response. All right. So it's not an immediate -- it is an immediate concern, however, it doesn't -- it gives me time to be able to respond to the alarm and to take actions for it.

But to answer your question, no, I wouldn't purposely go above the high or low level alarms so I don't have everything to the right of that curve to be able to operate in.

MR. RAPP: Okay. I was specifically talking about hydrogen pressure, not necessarily level. But --

THE WITNESS: Well, it's a -- it's a two-axis curve, so you're dealing with both at issue.

MR. RAPP: Right. You said that the level alarms were not immediate action alarms but you'd had time to respond in there. What about the overpressure alarm or the high pressure alarm, was that an immediate attention or immediate action --

THE WITNESS: It's annunciator response for the operator to immediately perform that. And if you look at the annunciator response, there are automatic actions, immediate actions, operator actions involved with that, and so forth. It is -- we don't acknowledge an alarm and sit on the alarm. It was not one of those alarms. You took an action when you received that alarm.

MR. RAPP: How are your alarms designated at Crystal River in the control room?

THE WITNESS: There's many different levels of alarms, from a level one all the way down to a level four alarm where a level four alarm doesn't even illuminate a

window. A level one alarm could be backlit red (phonetic), which is in, you know, a higher annunciator alarm. Typically it would be something like a reactor protection system alarm, a reactor trip alarm, a safety system pump trip alarm or something like that, backlit red.

MR. RAPP: What was the high pressure alarm what level was it?

THE WITNESS: I don't recall.

MR. RAPP: Well, did it alarm on the annunciator panel or --

THE WITNESS: Yes, it was not -- it was clearly not a level four, it was something either level one or three. And I don't believe it was a level one, but I -- my memory is not that good. I have printed copies of the annunciator responses right in front of me on the control board.

MR. RAPP: But it was a lower level alarm, it was not one that required a -- one that indicated immediate attention was required?

MR. WEINBERG: He already said that it did require immediate attention.

THE WITNESS: Right. I'm not saying it's --

MR. RAPP: Well, he said the ARP, the annunciator response procedure. I'm talking about the

alarm indications themselves.

THE WITNESS: All alarm indications regardless of whatever level they are require an immediate response.

MR. RAPP: Okay. How would you characterize immediate response?

THE WITNESS: Are you asking me in a typical time frame how long does it take for me to go over and press the button to acknowledge the alarm?

MR. RAPP: Well, let me phrase it this way. You received an alarm, what are the actions that the operator takes?

THE WITNESS: You receive alarm. You acknowledge the alarm. You call out the alarm. You have someone verify that the alarm came in behind you, one of the two supervisors in the room. If it is not an anticipated alarm or an alarm that is usual, you'll pull the annunciator response. Each -- each alarm has its own unique annunciator response sheet. On that annunciator response sheet it characterizes the label of the alarm and it tells you what operator response is required for the alarm. And it tells you what device gives you the alarm.

MR. RAPP: Okay. Now you said something about an expected or anticipated alarm. What's the difference in the response for an expected or anticipated alarm versus one that's otherwise received?

THE WITNESS: If -- for instance I'm starting a pump and that pump has a low discharge pressure alarm, all right. And if the alarm circuitry doesn't allow for a time delay it would not be unusual to receive a low discharge pressure upon starting the pump as the pump is running up to speed. All right. When that alarm comes in it says low discharge pressure. The operator would call out the alarm and say anticipated. All right. That would be an anticipated alarm.

If I'm undergoing heater drain alignment on the feed water condensate heaters out there at the time and I have a nuisance alarm coming in and out, in and out, as that alarm continues to go and the operator recognizes why that alarm is there and that actions are being taken that's causing the alarm, he can explain it, but he would also call out the alarm and call it as an anticipated alarm.

MR. RAPP: Is that just a common practice that you folks do here at Crystal River or is it that type of response proceduralized?

THE WITNESS: It's proceduralized. At that time it was in AI-500 conduct of operations. And it was a operating standard for all shifts.

MR. RAPP: When an AI-500, again, I may be challenging your -- your familiarity with AI-500, but --

MR. WEINBERG: And you say as it was back then, is that what you're asking?

MR. RAPP: Back then, yes, as it was back then.

In AI-500, that particular section that allows -- allows that type of response to an expected or anticipated alarm, does it define or does it give the conditions under which you can use this allowance --

THE WITNESS: Yes, it does.

MR. RAPP: -- under what kind of plant condition?

THE WITNESS: It does.

MR. RAPP: What kind of plant conditions are those?

THE WITNESS: I characterized one with starting a pump. Another characteristic would be if you're performing a test and you anticipate getting an alarm, as written in the procedure it says, you will receive the following alarm, that would be characterized as being an anticipated alarm. Call it out as being anticipated.

MR. RAPP: But those are the only two conditions that you're aware of for which that -- where you're performing an evolution and the cause of the alarm or you're performing a test and the procedure specifically states to expect this alarm?

THE WITNESS: Right. By my memory, yeah, that's

about it.

MR. RAPP: So, when --

MR. STENGER: It --

MR. RAPP: I'm sorry.

MR. STENGER: If I can just interrupt. When you say that are you referring to the test procedure for running that test or some other procedure?

THE WITNESS: A te -- Generally a surveillance procedure will give you a heads up that the actions that you're about to perform will provide alarm. And it'll even give you the information to say, this alarm and this alarm point, the title of it and so forth. And it's a verification technique to insure that you got the expected response.

MR. RAPP: When you directed Mr. Willms to perform this bleed operation sometime prior to July 19th --

MR. WEINBERG: Can I -- I understood -- I just want to make sure that it -- make it clear that the direction wasn't to perform the bleed, that the direction was as a result of the evolution that had to be done, which was a bleed to plot information.

THE WITNESS: I was -- I was going to let you finish and then I was going to correct your question.

MR. WEINBERG: Okay.

THE WITNESS: But, yes --
MR. WEINBERG: Did I get it right?
THE WITNESS: Yeah, and I'll explain --
MR. WEINBERG: I don't understand what you just said but I --
THE WITNESS: I'll explain that but go ahead with your question and then I'll explain why --
MR. RAPP: Okay.
THE WITNESS: -- what the subtle difference is.
MR. RAPP: To perform this bleed operation as part of a routine evolution, better?
THE WITNESS: I didn't direct -- I think that the point of contention here is that we didn't direct Bruce -- I did not direct Bruce Willms to specifically perform the evolution to achieve the data collection. That evolution was being performed as part of the normal operation of the plant. I was capitalizing on the fact that we were performing an evolution that would provide me the data collection for what I was trying to understand.
MR. RAPP: Okay. I'll grant that for now. The question is is did you by the indications you were observing cross over Curve 8 at any point during that evolution?
THE WITNESS: No. And my -- and my plot indicated that on MU-14-LIR strip chart recorder gives me

level and pressure, that I did not conduct my evolution to the left of the curve. But it also did prove that where my starting point was as I plotted my points, they did not fall in parallel to that Curve 8 bend.

MR. RAPP: Did you receive the high level or, excuse me, the high pressure alarm during that evolution?

THE WITNESS: I don't recall. If I did it would have been at the onset of establishing the initial conditions.

MR. RAPP: What do you mean by establishing the initial conditions?

THE WITNFSS: The first electing point before I started lowering the level, as part of the -- stop for a minute and let's go ahead and give me my first plotting point on the curve. All right. Now go about doing what you were going to do. And then as he did that we plotted some points.

So I would say -- I don't remember that we started in alarm where I was having to clutter my data collection with actions required to mitigate an alarm. I -- my recollection of the events was that we were in the operating bands. I had no other actions required for it was simply going to be lowering the level in the makeup tank to prepare to add water to it. Let's capitalize on this event and -- and take some collection points as we go

down in the level.

MR. RAPP: Okay. Following the SV-630 evolution where you provided Engineering with data that said the response does not match Curve 8.

THE WITNESS: Yes.

MR. RAPP: How did Engineering respond back to that particular data set from PR-149, I believe it is?

THE WITNESS: They felt that our data collection was flawed but they couldn't explain why it was flawed.

MR. RAPP: And what was Engineering's answer to alleviate this problem in the future?

THE WITNESS: That was the reason for having the meeting of July the 19th. Engineering's answer was that they couldn't explain it either but they would be -- they would go back one more time to Design Engineering and have them do the P1-V1 calculation again, based on the fact that what was on paper didn't represent what was happening in real life.

MR. RAPP: Are you aware of a memorandum that -- or not necessarily a memorandum but a -- what's referred to as a Speed Letter was sent from Engineering to the Operations staff that said, MU makeup level recorder, was it 41 --

THE WITNESS: Fourteen.

MR. RAPP: Fourteen, excuse me. Was inaccurate

and that the plant should be operated by the computer point?

THE WITNESS: I was aware of a Speed Letter but I don't know where it fell in the time line of what we're discussing here. It did not fall on the day that we were collecting our data. When I used MU-14-LIR I had all the confidence of what I was driving by, was what -- what the operators drive by on a daily basis. And that was a good instrument and I was to use that instrument to be able to place the makeup tank in the correct condition for operability.

MR. RAPP: Are the --

THE WITNESS: I do remember a Speed Letter. A Speed Letter did come out later on based on the fact as saying that REDAS data points don't match up with MU-14-LIR and that they were -- they showed the fact that we would be closer to the curve and we should operate with those as well.

MR. RAPP: Are the operators in the control room generally aware of how much instrumentation error is present in their indications?

THE WITNESS: No, they aren't.

MR. RAPP: So this -- this level recorder could have been off by two or three pounds as far as -- as far as error goes?

THE WITNESS: Yes.

MR. RAPP: But the operators would not have been aware of that?

THE WITNESS: That's correct. We expect the instruments that we're driving by on the control board to be within tolerance and calibrated. If not, they're to consider to be out of service and not used.

MR. RAPP: Is there a calibration frequency for this level recorder?

THE WITNESS: I don't know. That would -- you'd have to ask the Engineering staff or the instrument and controls people that. Again, we're making the assumption that when we're operating the control board my indications on the control board are operable within tolerance and calibrated.

MR. RAPP: What was wrong with what Dave Fields did on -- on the 5th?

THE WITNESS: You're asking me to make my own personal opinion or --

MR. RAPP: You're --

THE WITNESS: -- a view of management?

MR. RAPP: -- you're a previous licensed SRO shift supervisor. Yeah, I want your opinion.

THE WITNESS: All right.

MR. DOCKERY: I'd be interested in both.

THE WITNESS: Okay, I'll give you both and you'll see a difference in them.

MR. DOCKERY: Fine.

THE WITNESS: Okay. First of all I represent management. All right. Management's expectations are is that we expect you to operate the plant in a safe, legal condition. I felt that we had -- as management, we have written procedures that tell you when you can and cannot perform these evolutions that go over the boundaries of what is now to be characterized as a test. We are to operate these systems within normal limit set points. And that the operating curve was a indication of where we should be operating with the makeup tank.

There are many curves that go anywhere from setting absolute limits tc curves that provide a cross-reference indication of where you anticipate the parameters to be. A curve showing two parameters being able to plot the parameters on the axis you should be able to cross-reference where you anticipate to be. All right. So just because it was in an operating procedure doesn't necessarily mean that it was a limiting curve. This is management now.

All right. I felt that it was inappropriate for Dave Fields' shift, and I hold the shift accountable, not -- Dave is the responsible and accountable person for

leading that shift, along with Mr. Weiss. I hold that entire shift that was operating these parameters accountable for raising their hand to say this is not appropriate, we shouldn't be doing this.

And I -- I think -- my view is what they did was wrong. And they should not have purposely gone to the other side of the operating curve. You don't intentionally, to prove your point, force yourself into the operating curve.

And the reason I -- Justification for that is that we offered simulator performances. We offered to go back to pen and paper and re-calculate these curves and so forth in lieu of driving the plant to prove our point. And that was our corrective actions on July 19th when we said this is our game plan, this is where we want to go with this. It was not our intent for them to prove their point by actually placing the plant in that condition. Now, that's management's view.

You had a question?

MR. DOCKERY: Oh, I thought we'd gotten into Carl Bergstrom's --

THE WITNESS: No, we're not there.

MR. DOCKERY: Okay, then continue.

THE WITNESS: Okay. Now, this is Carl Bergstrom now. I represent management and I -- I uphold

management's philosophy. However, I was a shift supervisor at that time, during that time. I was in a point of transition at that point. I assumed my responsibilities September the 1st. All right. So, during that transition time getting my handhold on where we stood as a shift supervisor -- I'm still thinking as a shift supervisor at that point. I have -- I have a high level limit and a low level limit for that makeup tank. Those are bases for operating that system.

I don't have enough knowledge to know what it took to get there. I know the basi -- with my training I understand what the basis is for those levels, but the actual calculations, I have to take a lot of that on faith. All right. I'm -- I have the faith that the design engineer sat there and said as long as you're operating within these levels of the makeup tank, that's fine. But along with that faith shared now is that I don't have the knowledge to say, well, I know they put 55 inches in there but I'm sure I can go down to 45 inches in it. That -- I know that that is not a place that I need to be operating at. I need to be operating within those limits. All right.

Also, again, I'm now shift supervisor, Carl Bergstrom. All right. I have an operating curve there. It's not a dotted line there to say that this is where you

should operate or where you shouldn't. To me that was the same thing as a representation of a digital limit. A digital limit meaning 86 inches as being a high level. All right. Because we're dealing with two different parameters and those parameters are changing, that plotted point on that change is now from 86 inches to whatever, as based on the other parameter.

My feelings were is that you don't operate on the unlabeled to the left of that curve. That curve was made there to say, you stay everything on the right of that curve, everything will be fine. And that was the basis for our calculation for how everything operates and all that.

That was my philosophy that I passed along to all of my shift members to say, we're dealing with some stressful times right now maintaining a hydrogen concentration high in the makeup tank. All right. We're going to maintain the concentration as high as practical in the makeup tank to achieve the end result of increasing the hydrogen concentration in the RCS. But I am not going to force anybody to operate to the left of the curve in that unlabeled portion of the curve. All right.

MR. VORSE: By the left side you mean the unacceptable side?

THE WITNESS: It was not labeled that way. All

right. I inferred -- personally I inferred it to be unacceptable. All right. But see, there is a semantical point and I know that we're dealing with semantics at this point to try to determine if -- to what level was it unacceptable. Does it mean that the guy as soon he hits there is immediately doing something or is it like an anticipated alarm saying, I know why I'm there, give me a few minutes and I'll get back over there, you know. This is -- this is the semantical point of view that we took. And --

MR. RAPP: What would be the difference in the view point that, yeah, this is an expected alarm because of the evolution I'm performing, and I'll address it in a few minutes, as opposed to what was done on September 5th where they were conducting an evolution, knew that the alarm had come in because of the evolution that was in progress and said basically the same thing, we'll take care of it when the evolution is completed?

THE WITNESS: The difference would be is you can -- in light of today and how we operate and what should have been clear to them at the time was that you could probably do that with further reviews. All right. We're not engineers we can't review the -- the basis for all of this stuff, but there are people that we could send it through. It would be the same thing as -- I don't operate

that system that way, you know, whatever that "X" system is out there, but I want -- I think I can operate it another way. Let's go ahead and write a procedure for it. Once we've written it for the writer's guide let's send it through the engineering review and whoever else has to deal with this. Let's do some technical reviews and some qualified reviews. And so in my opinion those reviews were not in place to do what they were doing to go on the other side of the curve.

Now I'm not saying that -- there are times that you can go on the other side of the curve, but you've got to have justification for why you do it. We go -- a lot of our documents, we will do a -- what's called a deviation. We set standards in a procedure and say this is what you're going to have. If you go fall outside of those, then you have to go for a deviation to have the further reviews. That wasn't in place in this.

MR. RAPP: What format are the operating procedures presented in at Crystal River?

THE WITNESS: You mean like a book --

MR. RAPP: Hard copy.

THE WITNESS: -- or something?

MR. RAPP: Hard copy. Well, like the EOPs are a two-column format procedure.

THE WITNESS: Yes.

MR. RAPP: You have action, you know, or anticipated response and then correct --

THE WITNESS: Right.

THE WITNESS: -- contingency action. Are the --

THE WITNESS: Details, right.

MR. RAPP: -- operating procedures written in that -- that manner?

THE WITNESS: No, they're written in a narrative form. We should have a copy here for you but it's -- it's not written in the detail. The details are the procedures themselves. You will perform this and then part of that step tells you actions required to do it.

MR. RAPP: Okay. So, take for example, adding hydrogen to the makeup tank. Then there would be a procedure that says to add hydrogen to the makeup tank here's all the steps that you do?

THE WITNESS: A single action with each step and when you're dealing with the safety related system a check-off indicated by initial and date to indicate that you've performed that step. So there's a logical order that you follow.

MR. RAPP: Is a makeup tank a safety related system?

THE WITNESS: Yes.

MR. RAPP: So there would be a check-off by each

step in OP-402?

THE WITNESS: Yes.

MR. RAPP: Okay. In OP-402 the process for adding hydrogen to the makeup tank gives specific steps in there?

THE WITNESS: Yes.

MR. RAPP: And then there's another part of the procedure that tells you how to raise or lower level in the makeup tank --

THE WITNESS: Yes

MR. RAPP: -- correct?

THE WITNESS: Yes, that's correct.

MR. RAPP: Are those two sections -- I'll say it this way. Are they interactive with each other? Do they -- can you perform two sections at the same time? Would that be --

THE WITNESS: Yes.

MR. RAPP: Or better yet can you perform two -- the sections separately and apart from each other?

THE WITNESS: You can -- you can perform each section separately, yes.

MR. RAPP: Is that the way it's normally handled through OP-402 or other procedures?

THE WITNESS: Yes.

MR. RAPP: Okay. In the section for adding

hydrogen to the makeup tank it says in there, don't exceed the limit given by Curve 8 OP-103B?

THE WITNESS: Yes.

MR. RAPP: Does it also say that same thing in the section for changing makeup tank level?

THE WITNESS: I don't recall what it said back in July or September time frame. It did not say that -- but what you got to understand now is our operating procedures have a driving section in the front of the procedure that sets limits and precautions and set points.

MR. RAPP: Okay. Was Curve 8 --

THE WITNESS: All right. Which those are -- those are carried throughout. Those are understood values that occur throughout the evolution of the procedure.

MR. RAPP: Was Curve 8 mentioned in the precautions limitation section of OP-402?

THE WITNESS: I don't recall. It should have been. It's the basis --

MR. STENGER: We're asking --

THE WITNESS: Yeah, I don't know.

MR. STENGER: We're asking a lot of detailed questions about a procedure that nobody seems to have in front of them.

MR. RAPP: We could --

MR. STENGER: Would it be useful to get the

procedure?

MR. RAPP: We can get a copy of it, yes. Let's see if we can get it. Would it be beneficial to get you a copy of the procedure?

THE WITNESS: Oh, absolutely, yes.

MR. DOCKERY: We'll go off the record.

(Whereupon, a short recess ensued at 9:11 a.m., after which the proceedings resumed at 9:21 a.m. as follows:)

MR. DOCKERY: Back on the record. We have located some documentation that will help Mr. Bergstrom in his testimony.

And, Mr. Bergstrom, I remind you that you continue to be under oath here and ask that you acknowledge that verbally please?

THE WITNESS: I understand I'm still under oath.

MR. RAPP: Okay. Let me clarify one thing before we continue on here. What type of license do you hold and what's the status of that license?

THE WITNESS: I carry a Senior Reactor Operator License. I've had it for years and -- but it is in an inactive status based on the fact that I have done -- not done my time-on shift. For my license to be reactivated it would require just 40 hours of on-shift time in parallel with an active license to reactivate my license.

MR. RAPP: All right. Going back to the earlier question then, you have in front of you a copy of OP-402 that was in effect during the September 5th time frame. In the precautions limitations section is there anything referencing Curve 8 of OP-103B?

THE WITNESS: This is not a complete copy of OP-402. The limit and precaution section of OP-402 starts at number 14, 15, 16, 17 limit precaution, so items one through 13 are not here.

Looking at only 14, 15, 16, and 17, they don't include Curve 8. I can't really give you a complete answer until I can take a look at one through 13.

MR. RAPP: Okay. Maybe we can remedy that when the procedure is located at document control system.

THE WITNESS: All right.

MR. RAPP: Let's -- let's turn then to the section on hydrogen addition in that procedure. Is Curve 8 referenced in that particular section of the procedure?

THE WITNESS: (Examines document.) Yes, it is. In step 4.19.8 it says, establish hydrogen pressure in the makeup tank if desired, otherwise in ~~INA~~ N/A (phonetic). WJB 12-20-95 Substep one says, refer to Curve 8 of OP-103B for the maximum makeup tank overpressure.

MR. RAPP: Okay. So when -- when Mr. Fields' crew added hydrogen to the makeup tank and stayed within

that particular requirement were they within the procedural guidance on September 5th?

THE WITNESS: If they exceeded the curve of OP -- Curve 8 of OP-103B for maximum pressure they were outside of the guidance of the procedure.

MR. RAPP: During the hydrogen add?

THE WITNESS: Yes.

MR. RAPP: Okay. Turn to the section then on system bleed.

THE WITNESS: (Complies.)

MR. RAPP: Is Curve 8 of OP-103B referenced in that section?

THE WITNESS: The system bleed section -- I'm looking at four steps, 4.4.1 through 4.4.4, Curve 8 is not mentioned.

MR. RAPP: Do the limitations in the hydrogen addition portion of the procedure also apply to the system bleed portion of that procedure?

THE WITNESS: The specific procedural guidance for makeup tank venting and gas addition or hydrogen addition specifically talks about if they are not carried to the section of the system bleed section, I would say they are not. However, I have to judge that on the fact that there is no limit precaution that's in overwriting over the entire procedure. I would expect that when we

get the full document, to find a reference in the limits and precautions, a reference to Curve 8. That reference in the limit and precaution would carry through the entire procedure.

MR. RAPP: Okay. Let's make the assumption that that is not in the precautions and limitations section. What constitutes -- what makes what was done on September 5th a test?

THE WITNESS: The -- the position that the shift was trying to achieve. Were they trying to perform this to operate the plant or they -- were they trying to perform this evolution to prove a point or to prove anything, operability or something is working fine. The distinct -- the difference as I see it is that if I am having to adjust the level in the makeup -- if I'm having to adjust a parameter in the plant, I have certain operating guidance, but if I fall outside of that operating guidance I'm outside of the procedure, and that constitutes a test.

MR. RAPP: Where did Dave Fields fall outside the guidance of OP-402?

THE WITNESS: If he exceeded the maximum makeup tank overpressure by adding gas addition, then he was outside the operating procedure as indicated by the section ~~4.19~~ 4.19. for gas addition.

WJB 12.20.95

MR. RAPP: Okay. It's -- based on the information that was gathered during that September 5th evolution the hydrogen addition did not exceed Curve 8. The only time that Curve 8 was exceeded was during the system bleed. Does that change the response then to -- in that -- in that view?

THE WITNESS: With the assumption that it's not in the limits and precautions.

MR. RAPP: Yes.

THE WITNESS: Yes, it does.

MR. RAPP: And how would that change it?

THE WITNESS: It would change it as the fact it didn't violate the procedure based on the fact that the section for the system bleeding of the makeup tank did not include that. All right. That's the technical view on it, however, I understand that this procedure is written by operators and reviewed by plant staff. I would certainly question as a shift supervisor, saying is this the intent? If I have it in one section and I don't have it in another section, I, as a shift supervisor or licensed operator would question am I missing this step when we generated this procedure to begin with, was it something that was overlooked.

MR. RAPP: What level of review do these procedures go through?

THE WITNESS: They go through technical reviews of the licensed operators to review the actual actions required in the labeling and -- and the -- to perform the procedure. And then they go through a qualified review where we base it against our writing standards for procedures. And those qualified reviews include operations and whatever is indicated on the procedure revision change, which would generally also include engineering.

MR. RAPP: Okay. And as part of that procedural review process is there a document that's generated that says that this procedure conforms to Crystal River plant design or plant operating characteristics?

THE WITNESS: When this revision 75 came out for the procedure, which is what I'm looking at here, when that revision to the revision 74 that was out there there should be a procedure revision report PRR package, which would include the levels of reviews and who signed the reviews.

MR. RAPP: Are you -- are you aware or familiar with what's called ~~5059~~ 50.59 reviews?

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THE WITNESS: Yes.

MR. RAPP: Are those done on operating procedures?

THE WITNESS: Yes.

MR. RAPP: And what does a 5059 review entail?

THE WITNESS: It ensures that we're -- evaluation for the safe operation of the plant is consistent and that it meets also the guidance of the FSAR.

MR. RAPP: So by this procedure being approved it went through the 5059 process which said basically this procedure -- that the operators use this procedure as written you will not violate design basis limits or put the plant in a situation that is potentially un-analyzed?

THE WITNESS: That's correct. And it also goes through a plant review committee --

MR. RAPP: Okay.

THE WITNESS: -- for the final reviews.

MR. RAPP: Okay. So then what constitutes a test?

MR. WEINBERG: I think he already answered that question.

MR. RAPP: Okay. Let me put it this way. Is the --

MR. WEINBERG: Are you talking about in his opinion or from a legal standing? He's not a lawyer so --

MR. RAPP: I under --

MR. WEINBERG: -- from a legal point of view or --

MR. RAPP: No, no.

MR. WEINBERG: He explained to you what he -- in his mind what a test was is if somebody goes in and does something not for the operation of the plant but to prove a point. That was his layman's description of what he thought a test was.

MR. RAPP: Okay. Let me ask this. Do Crystal River procedures then define what a test is or an experiment?

THE WITNESS: At the time, no. Since then we've expanded our position on what we constitute data collecting, testing, and troubleshooting. There is a troubleshooting procedure, which is a maintenance procedure MP-531.

MR. RAPP: Okay. Do Crystal River procedures define what a authorized or unauthorized evolution is?

THE WITNESS: Without having AI-500 in front of me I'd say no.

MR. RAPP: Are you aware of some mechanism that could have been used to determine whether additional reviews, i.e. technical reviews or 5059 reviews were needed prior to doing the evolution on September 5th?

THE WITNESS: If the operation of the system outside of its original scope of the operating procedure would require 5059 review. All right. A change in the

procedure and a 5059 review to say is what the change in the procedure is it going to be contrary to the 5059.

MR. RAPP: Let me ask it this way then. Are you aware or do you know of any like logical process or -- or mechanistic process that a person can go through that says, if I had this and this and this and this and this, then I need to do a 5059 review, or if I have I have this and this and this and this, then I don't need to do a 5059 review, I can use the procedures I have in hand that they're adequate?

THE WITNESS: Well, we have our procedure change procedure's administrative instructions that give us the boundaries from when a 5059 review needs to be performed or not.

MR. RAPP: Okay. Is that typically available to the --

THE WITNESS: Yes.

MR. RAPP: -- operating crews?

THE WITNESS: Yes, it is.

MR. RAPP: And would they -- would they have been known -- would they have known to look at that procedure?

THE WITNESS: Yes. And the guidance -- like I said, I don't have an AI-500 in front of me. AI-500 also provides me guidance for when I'm outside of my scope of

normal operation.

MR. RAPP: When -- when you first presented this information to Engineering and they said they'd review it --

MR. WEINBERG: You mean from the --

MR. RAPP: From the July --

THE WITNESS: -- July 19th meeting?

MR. RAPP: The July 19th meeting, yes, thank you.

The response I believe you said they told you was they still believed the curve was accurate and conservative. How did they explain the difference in the data?

THE WITNESS: They couldn't explain it. That's why they said they were going to have to go back to St. Pete Engineering to help them resolve why there was a difference, what was seen versus what the curve represented.

MR. RAPP: Okay. After -- when the September 2nd letter came out did Engineering have an explanation as to the difference in the data at that time, the data you presented on July 19th?

THE WITNESS: No.

MR. WEINBERG: But, just for fairness, I mean, you all -- Jim has read in that July 19th letter or the

September 2nd letter those sentences, you know, a number of times, but if you go down a sentence it says that there will be a corrective action. Number 8 is currently in progress to provide technical basis for the BWST swapover point. During this analysis makeup tank overpressure per Curve 8 will be re-evaluated.

So I think in fairness -- what the memo does is repeat the opinion expressed in Ju -- at the July meeting that the curve was accurate but it indicated that there was going be a re-evaluation, which was consistent with -- it seems to me consistent with what Carl was talking about for this November deadline.

MR. RAPP: I understand what you're saying but technical opinion though has to be based on some sort of evaluation or some sort of -- it has to have to have some sort of basis behind it.

MR. WEINBERG: Well, it says, believes the curve is accurate. It -- it --

MR. RAPP: Well, I can believe that the sky is falling, that doesn't necessarily make it true.

MR. WEINBERG: Well, true. And that's sort of what -- I mean, I know I'm not testifying and you're not testifying, but that's sort of what I think Mr. Bergstrom is trying to explain is that that's what we discussed with Engineering on the 19th. You believe this. We believe

that. What are you going to do about it? They said we're going to go back to Design Engineering in St. Pete to get it re-evaluated. And this memo doesn't say anything other than that. It says that it's going to be re-evaluated.

THE WITNESS: Let me characterize it a different way for the testimony. There's no one better that can tell you how your car drives than you do. All right. You don't have to know exactly how that fuel injection system works on your car. All right. You know that you have to maintain certain limits to be able to operate that vehicle to keep it out of the red line and you know certain things that you have to do. All right. But there's no one better to tell you how it operates much the same way as if you took it in to the garage and you said, there's something wrong with this, and I don't know what it is, I just know that there's something wrong. This is a pretty close analogy to what we're dealing with here.

As an operator we -- we saw symptoms of a problem here. We didn't know what was wrong. We're operators. We're trained to understand our indications and how to operate the plant. However, the design of the plant, there was a question there and we had training in heat transfer and fluid flow to understand P1-V1-T1 versus P2-V2-T2 calculations enough to be able to say this is a simple calculation.

They're telling us that it went well beyond that. You can't just use that formula, you have to throw in other variables along with that. We didn't understand those variables. That was our position. We said, explain the variables to us. And even then they said, well, you -- it's really -- they didn't use these words but they sure characterized it this way: It's above your head, you know, give me someone that I can deal with. And that's why we brought Walt Neuman in on this.

MR. RAPP: All I'm trying to set up -- set up here is that Engineering did not come back to you folks and say, here's the explanation why Curve 8 is acceptable and accurate and safe and conservative?

THE WITNESS: Right.

MR. RAPP: Okay.

MR. DOCKERY: Mr. Bergstrom, did -- to your knowledge did Engineering come up with some sort of product by September the 30th, 1994, regarding Curve 8?

THE WITNESS: Not that I recall, no. Again, at that time -- I'm not -- I'm not sure that I would have known it at that point because at that point I had Walt Neuman in place of me, to try to focus in on what the problem was.

MR. DOCKERY: As best you recall when did Curve 8 change? When was it altered or whatever is done to

those things?

THE WITNESS: Not too long after the September time frame, as we got into further the problem report over the issue and so forth. We had an action group together to look at the curve specifically to say maybe it's not as conservative as it needs to be, maybe we need to put another margin of it in there.

MR. DOCKERY: Well, in your opinion did that -- the ultimate alteration of that curve, did it result from the July 19th meeting or from the September 5th evolution?

THE WITNESS: I -- it didn't come from the July 19th meeting. And I'm not --

MR. DOCKERY: Okay.

THE WITNESS: -- I'm not even sure that it came from the September 5th --

MR. DOCKERY: I don't want to ask you to speculate further than that.

THE WITNESS: Okay. It did not come -- the July the 19th meeting was more characterized as a kick-off, let's get back on track, let's focus in on the problem, let's see if we can get a direction on how to fix this.

MR. DOCKERY: I get the sense, especially from your earlier testimony, that this Curve 8 dilemma, for lack of a better term, is something you felt pretty strongly about?

THE WITNESS: (Nods affirmatively.) And the reason I felt strongly -- yes, you're -- that's correct, I felt strongly about it because what we're dealing with here is the basis for emergency core cooling system. These makeup pumps represent a lot of the actions that we want to see take place for emergency core cooling. And that even though I was pulling at straws it seemed as there was a problem there on these HPI pumps, these makeup pumps as characterized when we ran the SP-630. It had my interest to the point where I was given the task as just a point to be a reas -- let's make sure that we do this at our next opportunity, which is the next refuel outage and so forth.

MR. WEINBERG: So who gave you that task?

THE WITNESS: I think the outage manager at the time, which was Hoyt Koon. Greg Halnon ended up assigning me the interpretation contact for SP-630 to get with the in-service inspection engineers to make sure that the surveillance was ready to go to be re-performed during the next refuel outage.

MR. DOCKERY: Do you know on a personal level, and by personal I mean through interaction with Mr. Fields, why he or his -- members of his crew felt so strongly, strongly enough that ultimately they jeopardized their careers?

THE WITNESS: Mark Van Sicklen was deeply involved with the SP-630 and the indications of that. Now, whether he was the one that turned the switch on the control board or he was the one that had to go down to vent the makeup pump, I'm not clear on that. I know Mark Van Sicklen's actions at the time clearly said that there's a problem here, I saw the problem. You can't tell me, I didn't hear it third-hand, I saw something.

MR. DOCKERY: I guess what I'm asking you, if you had any discussions that would -- that you can recall, why were they willing as of September the 5th, three days after the September 2 memo, to take what has come to be -- it's come to seem rather drastic action?

THE WITNESS: I agree with you it was drastic and I don't know why. Only that the time frame that we're dealing with here was a span of time where we didn't have a whole lot of plant staff here, there was not maintenance on-going. It was a lag time. It was Labor Day weekend. We had -- there was opportunity for them to reflect on the letter, to probably get themselves whipped into a frenzy, that they thought that this is one avenue that we can go to prove our point.

MR. DOCKERY: Were you aware that Mr. Fields requested that somebody retrieve the calculation that Curve 8 was based on, and he reviewed it, and he does have

something of an engineering background.

THE WITNESS: Yes.

MR. DOCKERY: I believe he's a degreed engineer. And he claims that he immediately saw that there were some assumptions that he questioned in that calculation. Were you aware of that?

THE WITNESS: No, I wasn't.

MR. DOCKERY: Was anybody at that time during that time frame aware that Curve 8 was a design basis curve as opposed to an operating curve and administrative curve?

THE WITNESS: I wasn't aware of it.

MR. DOCKERY: Would you --

THE WITNESS: And I don't think it was common knowledge that I would have been made aware of it by someone passing that information along to everybody.

MR. DOCKERY: Well, does -- does the fact that it was a design basis curve make it in any way more significant in your mind?

THE WITNESS: It changes it slightly. Instead of an operating limit curve it now says this was the basis on how we designed the system. In other words, this is a bench mark or a starting point for how we expect the system to operate.

MR. DOCKERY: Would you have expected that it

somehow would have been identified as a design basis curve by Engineering?

THE WITNESS: Especially with all the meetings that we'd had, yes. Whether it had been graphically represented on the hard copy of the curve itself in the book, maybe, maybe not, but certainly you would have had someone bring it up and characterize it as such, with all the -- the meetings that we had leading up to this.

MR. RAPP: Are you aware of what makes Curve 6 a design basis limit?

THE WITNESS: No, I'm not.

MR. RAPP: The particular action scenario?

THE WITNESS: Why -- why it is there for the large break LOCA or for a LOCA scenario?

MR. RAPP: Okay. What's your understanding --

THE WITNESS: That's the limit of my knowledge on why. It's there. It's a bench mark. It's a starting point for what I expect the makeup tank not to go empty and thereby transfer the gas that's in the makeup tank to the HPI pumps.

MR. RAPP: Okay. Let me pose this question to you. Engineering has said that in a large break LOCA the HPI pumps are of no safety significance. Would you accept that statement?

THE WITNESS: I don't know. I don't know. I --

I -- there again, I'm an operator, I'm not --

MR. RAPP: Well, I'm asking --

THE WITNESS: -- going to try --

MR. RAPP: -- you I'm asking you as a SRO shift supervisor in that capacity or in that reference.

THE WITNESS: I'm expecting just like a instrument on the control board, that this system is designed to fulfill its function based on the design basis well before it comes to me to operate the system. And that if I operate it the way that the basis of the starting point should be, then I should not fall into pitfalls where the system becomes unavailable. All right. We train with HPI pumps. We've used the HPI pumps on the simulator to -- to mitigate LOCA scenarios to provide cooling for the core. I don't ever remember training on no HPI pumps to say that they're not going to be there. In most all scenarios when you're dealing with a loss of coolant accident the HPI pumps are either entirely there or reduced in some capacity. You still have HPI pumps that are available.

MR. RAPP: Engineering also said that in their opinion or their belief that the reason the difference between the Curve 8 and the plotted response, either from the July evolution or the September 5th evolution, was because the Curve 8 response was based on a set of points

during a LOCA scenario and the data that was taken was based on a normal controlled drain-down of the makeup tank. Would that seem to be a reasonable explanation to you?

THE WITNESS: That's the first time I've hear -- heard that. All right. It did not come out in the July meeting when we asked that specific question. The answer to the meeting then was let's send it back to Engineering. So I have to wonder why, all of a sudden, now they know this when July when we were trying to get a handle on this they didn't know that.

MR. RAPP: Well, let me ask you this then, do the physical properties of the makeup system change between a normal drain-down and a LOCA situation?

MR. DOCKERY: Hold on just a second. Go ahead.

MR. RAPP: Do you want me to restate the question?

THE WITNESS: Yeah, please

MR. RAPP: Do the physical properties of the -- of the makeup tank change between a normal drain-down situation and a LOCA situation where you have high pressure injection?

THE WITNESS: Not that I'm aware of.

MR. RAPP: Okay. So it would be --

MR. STENGER: Are you asking about the system

configuration?

MR. RAPP: I'm asking about the laws of nature and the physical properties that govern the response of the system.

THE WITNESS: Well, the -- my operator knowledge tells me that I no longer rely on the makeup tank to provide my suction head to my HPI pumps. That for mitigation of a LOCA scenario I drive directly off of the BWST, the borated water storage tank. All right. So my suctions from my BWST are going to open. All right. And when you have 46 feet of water in a BWST it's going to override whatever pressure is in the makeup tank. And the fact that you're going to -- you're recirculating back those HPI pumps even while they're running it goes back to the makeup tank to replenish whatever level in the makeup tank.

MR. RAPP: Okay. Did Engineering ever tell you about the limitations on Curve 8?

MR. WEINBERG: What limitations are you talking about?

MR. RAPP: Any limitations.

THE WITNESS: No.

MR. RAPP: Okay. Did Engineering explain to you that the basis for Curve 8 in a swapover to BWST would be that the makeup tank would go empty and there would only

be approximately a 24-inch column of water in the suction piping?

THE WITNESS: That came out with discussions with Mark Van Sicklen and Bruce Willms as they were receiving information back from Engineering. All right. My training prior to this said that the makeup tank would not go empty. All right. And that was Engineering's point. Even though we were seeing it actually go empty on the simulator, it was really not empty, it was dealing with something that was off range of your level instrumentation you were dealing with the level in the suction lines on there.

MR. RAPP: Okay. You mentioned the simulator. You did some simulations?

THE WITNESS: We do our training on the simulator to indicate large break LOCAs, small break LOCAs and so forth both.

MR. RAPP: So that was just observation during requal -- requal training or simulator training?

THE WITNESS: Right. And we -- remember we had said that we were going to look at performances on the simulator as a subsequent action to the July plotting of the data, you know, where they said that you're not considering it the same way we are.

MR. RAPP: Is the simulator you use here a

engineering quality simulator or a training quality simulator?

THE WITNESS: I don't understand the difference.

MR. RAPP: The difference would be the level of detail of modeling.

THE WITNESS: I understand the modeling of our simulator to be -- to match up the plant performance. So I would say based on the way you characterized it an engineering model.

MR. RAPP: So it would --

THE WITNESS: I would expect to see exactly -- the simulator perform exactly as the plant would and that if there were challenges to it, then we would have to go back to the people who had generated the software for the simulator and say, why isn't it.

MR. RAPP: Was there any software -- excuse me -- simulation modeling done of the SP-630 evolution --

THE WITNESS: Not that I --

MR. RAPP: -- to verify --

THE WITNESS: Not that I'm aware of, no.

MR. RAPP: -- or validate?

THE WITNESS: No. Not that -- certainly I can answer that one. We did not validate SP-630 on the simulator.

MR. RAPP: Well, I'm not saying necessarily the

SP-630 test procedure itself, I mean the -- the response that was obtained during the performance of SP-630 in what, March --

THE WITNESS: I wasn't --

MR. RAPP: -- that nature?

THE WITNESS: I wasn't -- right. I don't know I wasn't part of the generation of 630 when it was first generated. And how ISI Engineering determined what the prerequisite conditions were for SP-630, I wasn't involved with that.

MR. RAPP: Again, I may have misstated this. In March, I believe it was, you ran this SP-630 test as part of the refueling outage surveillances and you got a particular response based on this check valve that failed to open.

THE WITNESS: Yes.

MR. RAPP: Okay. Was there any -- was that data taken over to the simulator and the same conditions run on the simulator to validate the simulator response against plant response for those conditions, that you're aware of?

THE WITNESS: I -- not that I'm aware of that I remember.

MR. RAPP: Okay. Go ahead. Do you have something else?

MR. DOCKERY: Yeah, I'm closing in on the end of

this hopefully. I'm sure you hope that too.

Mr. Bergstrom, you -- early in your testimony you mentioned that in discussion with the operators under your supervision you told them, and to use your quote, that you -- "these were stressful times". And you related that to the necessity to -- perceived necessity to keep the hydrogen level at a 25 cc per kilogram amount. Is that correct?

THE WITNESS: That's correct.

MR. DOCKERY: Is there any way to separate your concerns over Curve 8 from the stress of having to operate with 25 cc's per kilogram of hydrogen? And remember, I'm a layman.

THE WITNESS: I understand.

MR. DOCKERY: Were they two separate issues or were they somehow --

THE WITNESS: They were related -- they were related but you have to set priorities for what you try -- what is the driving force here. The driving force being the operation of the plant.

But we had people challenging the way that we drive the plant by let's go ahead and put as much pressure on the makeup tank as we can to get the desired results for hydrogen in the RCS. And we have said that, yes, we would keep the pressure up in the makeup tank. It meant

more of an effort on Operations to do it. In this case it meant operating closer to that curve. But we were willing to do it, but we also felt the stress placed on us as -- the constant attention of having to do that was always in question daily whenever they saw a downward trend of the hydrogen concentration in the RCS.

MR. DOCKERY: Let me make sure I understand then.

THE WITNESS: Right.

MR. DOCKERY: There was -- I understood you to say that there is some inherent stress in operating close to the curve. It is -- did I hear that correctly?

THE WITNESS: That's correct.

MR. DOCKERY: And that stress would be on the operators?

THE WITNESS: Yes.

MR. DOCKERY: And then what I understand you to be saying is there was also -- it was stressful to be constantly looked at, and that would seem to me to be judged regarding whether or not you were maintaining that level of hydrogen and that being looked at by management. Is that a fair --

THE WITNESS: That's correct. That's correct.

MR. VORSE: Mr. Bergstrom, was it Chemistry management looking at this or was it Operations management

looking at this?

THE WITNESS: Chemistry established the trending program that showed, graphically showed hydrogen concentration in the RCS and related it back to the way that we were performing our OP -- pressure in the makeup tank.

MR. VORSE: So my understanding is that Chemistry was -- was constantly, not harassing but --

THE WITNESS: Well, no, they just --

MR. VORSE: -- reminding you --

THE WITNESS: Right.

MR. VORSE: -- reminding you to maintain those levels?

THE WITNESS: Yes. It was more at that level. It was a constant reminder that when I'm seeing a lowering of trend, I would check with Operations and make sure they're keeping the pressure up high enough.

We'd even had short term instructions to say that this is what we want to do and this is the reason why we want to do it, please do it.

But you got to understand that when you're adjusting the levels in the makeup tank, if you're making a power change you're doing that adjustment often. As you're making those adjustments you're having also to adjust the hydrogen, and to adjust the hydrogen means that

you're going to have to send someone out in the field, so you pull him away from that -- it gets to be a nuisance after a while constantly. It would be like someone checking the tire pressure in your car regardless of what the driving conditions are. Make sure that you got it within a certain, you know -- it was a nuisance.

MR. VORSE: Did -- did anyone in Chemistry say that we -- we don't like this but somebody above us is telling us to make this happen?

THE WITNESS: We asked the basis for why is it so important to maintain 25 cc's per kg and the standard that we were trying to achieve was the EPRI guidelines for 25 cc's per kg.

MR. RAPP: Did anyone ever explain to you what the EPRI guidelines --

THE WITNESS: Based on ~~ph~~ pH -- wlb 12-20-95

MR. RAPP: -- were --

THE WITNESS: -- ~~ph~~ pH in the RCS and so forth. wlb 12-20-95

MR. RAPP: Well, what was it to preclude? Obviously you're doing this to preclude something.

MR. WEINBERG: Or to prevent, I mean, do you understand what the H^2 was supposed to do?

THE WITNESS: The H^2 was to drive the ph of the RCS in one direction or another to maintain a ~~ph~~ pH at a certain parameter. All right. wlb 12-20-95

MR. RAPP: What's generally hydrogen added to the RCS for?

THE WITNESS: Scavenging the oxygen within the RCS. But a throw-out of that is the hydroxyl ions that also are given off, which will adjust the ph. All right. That's -- it's the primary reason.

MR. RAPP: Would it -- would it surprise you to know that the EPRI study was based on preventing stress corrosion cracking in reverse U bends?

THE WITNESS: That's fine. No, it wouldn't surprise me, but that's fine.

MR. RAPP: Okay -- what --

THE WITNESS: That's a little bit out of my area.

MR. RAPP: Okay. Do you have reverse U bends in reactor components, primary components, in this plant?

THE WITNESS: I'm not familiar with what a U bend is.

MR. WEINBERG: There's a couple of things, if I could -- could I follow up on one thing?

MR. DOCKERY: (Nods affirmatively.)

MR. WEINBERG: Mr. Dockery asked you questions about stress and particularly as it related to -- I think you said that there was an inherent stress in operating close to the curve. Now, was the stress that related to

that as a result of the understanding by the operators, including yourself, that you were supposed to stay on the right side of the curve and not go on the left side of the curve or the unauthorized side of the curve? Is that the stress?

THE WITNESS: The stress involved with that was the fact that when you operate so closely to the curve at a higher level if the level in the makeup tank were to lower due to -- it's a daily occurrence just -- you're going to have some leakage in the RCS. Not a whole lot, but you're going to have some leakage just over a period of time if you do nothing. And you're just to the right of the curve. I mean, you're clearly in the right region but you're right up against the curve that if you allow the level to drop in the makeup tank what we were seeing was the fact that you would cross over the line if you didn't do something.

So the stress involved was the fact that it was going to need constant attention, to prevent yourself from turning your back to it you would end up in the other side -- the other region of it.

MR. WEINBERG: So what I'm asking is was there a clear understanding as far as you could determine amongst the operating crews that they were supposed to stay on the authorized or right side of curve? Was that an

understanding?

THE WITNESS: That was an understanding, yes.

MR. WEINBERG: And when you were asked these questions earlier about OP-402, you remember those questions you were asked --

THE WITNESS: Yes.

MR. WEINBERG: -- by Mr. Rapp, and whether Curve 8 was actually in the procedure with regard to bleeding and feeding as opposed to H^2. My question is was there any -- as far as you can recall was there any confusion amongst the shift supervisors as to whether or not they were required to stay on the right side of the curve with regard to the, you know, procedures concerning the makeup tank?

THE WITNESS: Not in my view. It was common knowledge that you stayed on the right of the curve.

MR. DOCKERY: Mr. Bergstrom, do you know af -- subsequent to July 19th are you aware of any other data that was gathered by Operation's shifts during normal evolutions or otherwise?

THE WITNESS: No, I was not.

MR. DOCKERY: You then did not direct anybody to gather any data?

THE WITNESS: No. I was not aware of the September 5th incident until after it happened.

MR. DOCKERY: As everybody now knows there was also a September 4th --

THE WITNESS: I became aware of that the day before we were ready to send people to OI, or the enforcement conference in Atlanta.

MR. DOCKERY: Yeah, I don't think -- unless you have something to tell us about that issue, September 4th, I --

THE WITNESS: One of the things that I'm dealing with with your questions here is that I was purposely shielded, maybe is a bad word, but kept from the details of exactly what transpired on September the 5th so that I could focus on the day-to-day operation of it. Greg Halnon understood the details of it. When we went to, for instance, a management review panel to review exactly what had happened I purposely was not brought in on it so that I could maintain a clear perspective on operating the plant and not concentrate onto the problems that we would have. In other words, to relieve Greg long enough that he could concentrate on that and allow me to do Greg's job during that time.

You're asking me -- sometimes on these subsequent to the September -- I don't have all those details. Honestly, I didn't get involved with that because they purposely were trying to get me to manage the operations

during that time while Greg could concentrate on the enforcement conference. And in the case of September the 4th I was -- it was revealed to me when Greg came back in town on September or whenever. Before the enforcement conference I didn't know.

MR. DOCKERY: Is it fair to say that anything that you would know about the September 4th issue would be hearsay?

THE WITNESS: Absolutely.

MR. DOCKERY: Then we don't need to get into it.

MR. WEINBERG: Many times over.

MR. DOCKERY: Yeah, I understand.

Jim, do you have anything?

MR. VORSE: I don't have anything. I think we pretty well covered it.

MR. WEINBERG: I got -- I got one other question if I can ask him since he's here and I think Mr. Bergstrom is in a pretty interesting perspective.

Did you feel like in the summer of 1994 that you were addressing the concerns raised by the operators regarding Curve 8?

THE WITNESS: Actually, no, I was doing it more of a self-centered interest. I was trying to find out -- I'd just gone through in the outage. And my perspective of the outage was to coordinate. Now I was trying to

focus in on some of the details that were left over from the outage so that I could effectively con -- perform my new job, which was going to be the support manager. For me to be able to support them I felt that that was one need for support, it was an outstanding issue out there as well as other issues.

MR. WEINBERG: Fine. And what I'm saying is is that since you were now going into management and you'd be dealing directly with the -- with the shift supervisors and the operators did you feel like that what you were doing was sort of your first effort from a management perspective in addition to your -- to your selfish concerns to address concerns that were -- that were being raised by operators regarding Curve 8?

THE WITNESS: Yes, because it -- I had new tools now I could utilize. I was no longer a shift supervisor, I was more privy to the management meetings and go -- in attending them and so forth. So I could start feeling the driving forces of ~~EPRI~~ EPRI guidelines and so forth. I could feel why -- why did I have to receive all this stuff as a shift supervisor for all these months, now I'm starting to feel, well, why is it trickling down to me?

MR. WEINBERG: Was -- was anyone --

THE WITNESS: I'm sorry to interrupt.

~~THE WITNESS~~: -- was -- did -- I think that they

Mr. Weinberg: cwb 12.20.95

may have asked you this, but let me just ask. Did anybody come to you on the 2nd or the 3rd or the 4th of September now that you were in your new position as OPS manager and say, you know, I've got these concerns with this September 2nd memo and we need to do something now. Did Van Sicklen or Weiss or Fields come to you?

THE WITNESS: No.

MR. WEINBERG: Do you have any -- were you accessible?

THE WITNESS: Answer that. (Examining document.)

September 1st I was a shift supervisor for swing shift, filling in for a vacancy. The 2nd as well. Third, 4th, 5th, I was off and came back to work on the 6th.

MR. WEINBERG: Was --

MR. DOCKERY: Let the record reflect that --

THE WITNESS: I looked in my day planner to come up with that.

MR. WEINBERG: I take it a lot of people were off during that weekend?

THE WITNESS: Labor Day weekend, yeah.

MR. WEINBERG: All right. Was there -- as far as -- in looking at this issue, and you had begun to look at it in June, July, August, was there any emergency that you know of that required the crew on September 4th and

September 5th to do this evolution?

THE WITNESS: No.

MR. WEINBERG: Was there any reason that you can think of why they would not have waited until the end of the Labor Day weekend to raise the issue with you and Mr. Halnon or Mr. Hickle?

THE WITNESS: No. Only that -- I've already said that I thought that -- I can only guess why they wanted to do it on that weekend is that during the week there's very little opportunities to be able to look into an issue further. When you're sitting out there for a three-day weekend there's more of an opportunity to hash it out. Now looking back at this thing now and knowing the details of it it appears to me that they looked on one day and kind of got their act together and then on the second day they actually performed it.

MR. WEINBERG: And from your perspective as a supervisor -- leave your supervisor hat on and take your management hat off, and at that time, early September, 1994, were Mr. Hickle and Mr. Halnon aware of the Curve 8 issue?

THE WITNESS: Absolutely not.

MR. WEINBERG: Were --

THE WITNESS: I mean, no, let me take that back. They were aware of the Curve 8 issue much in the same

manner as I was because I shared my views with Greg Halnon in the July 19 meeting and so forth so that he knew that there was an ongoing thing. It was a collective decision to let's go ahead and get Walt Neuman, because Walt Neuman worked for Greg Halnon, so it wasn't my position to say we'll just grab Walt. It was something that we -- we decided that Walt Neuman was probably the best one for it.

But as far as focusing in on just September 4th, 5th time frame or that weekend time frame, we were not aware that we were prepared to challenge the curve by whatever evolution.

MR. WEINBERG: Well, what I really meant by it was was Mr. Halnon accessible to the operators and the shift supervisors?

THE WITNESS: Daily.

MR. WEINBERG: And was he sympathetic to their concerns?

THE WITNESS: Yes, yes, he was in my opinion.

MR. RAPP: Okay. Would Mr. Halnon have been accessible to Dave Fields on the midnight shift of September 4th, 5th?

THE WITNESS: Not on the weekends, no. I think the last time -- well, let's see, Mr. Fields was on mid shift the last time that Mr. Halnon would have had an opportunity to see him, would have been a week or two

prior to that, because the way our rotation works is that you have -- if he takes mid shift on Saturday morning, so like at the stroke of midnight on Saturday morning he's on shift. So that means he comes in Friday night. He had Thursday and Friday off. He had just completed swing shift on Wednesday afternoon.

And I don't believe that Greg has an opportunity to go up there and interface with the shift supervisors on swing shift. But he makes it a habit of going up there and talking with the mid-shift shift supervisors in the morning. So he can -- he can go up there and see the guy at seven o'clock in the morning, the outgoing shifter and the oncoming shifter, talk to them, because he prepares himself to go to the management meeting. So I think his earliest opportunity to meet with Mr. Fields at that point was not during the weekend but the Tuesday after Labor Day --

MR. WEINBERG: And in --

THE WITNESS: -- because Greg also took the day off.

MR. WEINBERG: And in his absence, that is, in Mr. Halnon's absence that weekend, who would have been the person if there had been some emergency, although you've already said that you didn't think there was. Who would have been the person above Mr. Fields that Mr. Fields

would have talked to on-site? Shift manager?

THE WITNESS: Shift manager is on-site at all times so -- the opportu -- and it's clear to everybody to understand that management is represented -- the higher levels of the plant management is represented by the shift manager. And this is something that we look back on now and question was he aware of it and why wasn't he, you know.

MR. RAPP: Is the shift manager routinely consulted for normal evolutions?

THE WITNESS: No.

MR. RAPP: So if Dave Fields --

THE WITNESS: If he considered it to be a normal evolution --

MR. RAPP: -- evolution --

THE WITNESS: -- that would be one explanation.

MR. RAPP: Then it would not be unusual --

THE WITNESS: Why bother the shift manager, we're going to just operate the plant like we normally do.

MR. RAPP: Do you think Dave Fields' judgement was adequate overall, not just focussing on the 4th or the 5th but I mean in general terms?

THE WITNESS: That would be my personal opinion.

MR. RAPP: Yes, that would be.

THE WITNESS: All right. My personal opinion is

that I felt that Dave Fields was probably driven by someone that was more pushy on this problem than he should have allowed. He should have said, the line is clearly drawn on what we're allowed to do and I feel that we're on the wrong side of that line.

Unfortunately I think he was campaigned heavily by the individual and ended up being responsible for something that maybe he didn't initiate.

MR. DOCKERY: Who is that individual, please?

THE WITNESS: In my, again, my personal opinion is Mark Van Sicklen. Just in dealing with Mark.

One thing I would like to put on the record also is that Bruce Willms probably had more reason for me to have to deal with the July 19 meeting to initiate the data collection for the July 19 meeting than anything. Because we started out this situation where Bruce Willms and Mark Van Sicklen had a vested interest in trying to clear up this problem. And it got to the point where Bruce -- when I questioned him about it he says, I give up, I, you know, I beat my head against the wall. I'm not going to do anything. And I said, well, I can understand but I'm not convinced yet with what you're telling me that I think we ought to. So Bruce had already given up on the thing.

MR. DOCKERY: Why?

THE WITNESS: Because I felt he -- he was

labeled as an operator, you don't understand the engineering principles behind it it's beyond you. And -- and he just -- he wasn't getting the response that he expected to. And I felt, well, maybe we're not giving Bruce Willms enough of the tools to get his answer. So that's why I involved Bruce with it, you know. It was not -- it was not a convenient choice, but because Bruce was on the control board at the time, it was -- Bruce was probably receptive to my request for plotting data because it got him back into again where he wanted to be before.

MR. DOCKERY: All right. Very quickly. Are you describing some degree of animosity between Operations and Engineering?

MR. WEINBERG: Back then, you mean?

MR. DOCKERY: Yes, back then.

THE WITNESS: I hate to characterize it that way because I know that looking back at this thing now as things have happened, people want to label it is that you got your engineering group over here and your operating group there and it's so important that we do work together. And I could see examples of where they were working together on this thing. I don't really want to characterize it that way but there was certainly friction, much in the same way as if I work with you I'm going to have friction from time to time where you're -- you're

committed to one view and I'm committed to another view and -- and -- But you have to recognize when you have that friction and that's the point where you need to bring in a mediator and I thought that's what we were doing in July.

MR. STENGER: One quick thing. We ought to make sure -- let's see if we've got OP-402 and just clear up the one question about the precautions and the --

MR. WEINBERG: Carl will be around. You're not going anywhere today, right?

THE WITNESS: (Nods affirmatively.)

MR. STENGER: You are going somewhere today?

MR. WEINBERG: Well, let's see what we got. Let's take a ten minute break --

MR. DOCKERY: We'll go off the record.

(Whereupon, a short recess ensued at 10:16 a.m., after which the proceedings resume at 10:25 a.m. as follows:)

MR. DOCKERY: Back on the record. And, Mr. Bergstrom, I remind you that you continue to be under oath here.

THE WITNESS: I understand I'm still under oath.

MR. DOCKERY: While we were off the record we collected up some documents. We received a copy of a page from your day planner for September the 19th, 1994 --

THE WITNESS: No, that's July 19th.

MR. DOCKERY: July the 19th, '94. And you discovered some other entries in your day planner that you think might be significant, and if I understand correctly you've agreed to provide us with a copy of those after we go off the record; is that correct?

THE WITNESS: Yes.

MR. DOCKERY: Rather than read them into the record, since we'll have the -- a hard copy of them, would you just characterize what --

THE WITNESS: The char -- earlier questioning asked me what kind of stress was involved or what kind of pressures were involved with the operators to maintain the makeup tank pressure high. This entry was on July the 7th. The page that I'll make a copy does not have a date on there, but just indicating where I've inserted it into my day planner by punching holes in it and so forth it falls into what typically would be a summary of a -- of events that had transpired after someone had been gone for a length of time.

This -- this is not dated, but the entry just talks about how Chemistry is -- is sending REDAS or computer printouts to everybody to document Ops's failure to maintain the pressure high. So, in other words, it was a cautionary to make sure you keep you makeup tank

pressure up high enough, big brother is watching.

MR. RAPP: What do you mean by everybody?

THE WITNESS: Not my comment.

MR. RAPP: But what do you -- what do you suppose or what do you --

THE WITNESS: I suppose that the -- what was intended -- and the way I received that was that if I don't keep the makeup tank pressure up high, then I can expect to get a phone call from someone superior to me to say, why aren't you doing it. All right. Which would be the management meeting was what we discussed earlier. That would be one form of -- or anybody else that would pick up the plan of the day that would be looking at the chemistry trend.

MR. DOCKERY: Mr. Bergstrom, I believe you stated earlier that you don't recall who you received that from, those notes?

THE WITNESS: EJG, and that's ~~Ernie~~ Earnie Gallion. Is another shift supervisor. GJB 12-20-95

MR. DOCKERY: Was there another issue we had to deal with before concluding the interview?

MR. RAPP: Oh, that's correct. We now have that full copy of OP-402 and if you just take a look at the precautions and limitation section there?

THE WITNESS: Okay. I have Rev 75 of OP-402,

which was the Rev that was being used at that time. Looking at the entire limits and precaution, there is not a statement in there that say to maintain makeup tank pressure per Curve 8, or there is no reference to even Curve 8 in the limits and precautions. However, the set point section does include the high pressure alarm will emulate Curve 8 of OP-103B.

MR. RAPP: Okay. When you conduct an evolution are there other evolutions or other processes that generate alarms as you normally follow the procedure?

THE WITNESS: Yes.

MR. RAPP: So it would not be unusual then to receive an alarm while performing a normal evolution per the procedure?

THE WITNESS: Absolutely, that's correct.

MR. RAPP: Is an alarm considered a plant limit?

THE WITNESS: An alarm is considered to be an alarm. In other words, a device to tell you that something has changed and that recognition of the change needs to be made in either an action or a notification or something.

MR. RAPP: Let me rephrase it then. Is an alarm an indication you've exceeded a plant limit?

THE WITNESS: No, it's not, not necessarily. It can be, and I'm sure that that has us dealing with w

assign certain levels of severities to alarms. We discussed level one through four. However, an alarm does not necessarily tell you that you've exceeded a limit.

MR. STENGER: Can I just follow up in that -- on this particular issue is the fact that Curve 8 is referenced in the set point section, does that mean that the Curve 8 limits are the set point for high pressure, or what does that mean?

THE WITNESS: It says emulate, it does not say that it is the set point. It should emulate or follow the Curve 8. All right.

MR. RAPP: Per various levels, then you'd get a sliding pressure alarms.

THE WITNESS: I would expect -- my standard would be that if I received that alarm, is to verify by the operating curve where that was on the alarm. All right. Just simply the alarm doesn't give me the information. I also have to look at that pressure versus where I stand with the level. In other words, the other axis of the curve to look at.

MR. RAPP: What -- what instrument would you use to verify the alarm?

THE WITNESS: The annunciator response and the operating curve, OP-103B, Curve 8.

MR. RAPP: Okay. What instrument is driving

that alarm? Or is that alarm being driven?

THE WITNESS: MU-14-LIR. Right next to -- you asked me -- I don't know what the instrument number is, it's right next to MU-14-LIR, makeup tank pressure.

MR. DOCKERY: Do we have anything else?

MR. RAPP: No. Okay, that's all then.

MR. DOCKERY: Mr. Bergstrom, you've been a very good witness here today. Obviously you were more involved in -- in the issue we're looking at then we anticipated. That's why this has taken so long. Thank you. I want you to have the opportunity if there's anything you'd like to add to your testimony,, anything we didn't ask you that you feel should be addressed, to do so at this time if you feel inclined?

THE WITNESS: You've asked me some personal opinions and that -- those are driven by my personal opinions. I hope I've answered all your questions and been able to distinguish the difference between my personal opinion, my ethics, and those of what I'm to portray as management. I am part of management. I assume the responsibility and accountability just as much as management, so I'm part of that team. I just hope that when this gets hashed out I effectively did that.

I don't have anything to add. I think you've covered everything.

MR. DOCKERY: Okay. Mr. Bergstrom, I want you to understand that the two attorneys who are in attendance here today, as they have characterized, represent Florida Power Company and they don't necessarily represent you. And I want you to understand that you have a very clear right to discuss with us anything you'd like to, outside of their presence. Do you understand that?

THE WITNESS: I understand that and I have nothing to say that we haven't already covered. I hope I didn't run on too much. I know he took what, 20 pages of notes there.

MR. WEINBERG: Yeah, but that's just -- not exactly --

THE WITNESS: All right.

MR. WEINBERG: -- taking notes on other stuff.

THE WITNESS: Okay. All right. No, I -- there's nothing that I -- I have that I would shield from them. And I -- everything I got -- and I don't consider needing a personal attorney or anything like that. That's fine.

MR. DOCKERY: We thank you very much.

MR. WEINBERG: We're done. We just want to have the right to read and review it for this and all the other depositions.

MR. DOCKERY: Oh, yes, we will accommodate that.

MR. WEINBERG: Okay.

MR. DOCKERY: With that we'll go off the record.

(Whereupon, the proceedings were concluded at 10:30 o'clock a.m.)

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