UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING - LA SALLE OPERATING

LICENSE REVIEW

Holiday Inn
Morris, Illinois

April 3, 1981

The subcommittee met at 2:00 o'clock p.m. on April 3, 1981, and recessed to 8:00 o'clock a.m chaired by William Kerr.

ACRS Members Present:

W. KERR, Chairman
D. WARD
P. SHEWMON
J. C. MARK

ACRS Consultants Present:

D. BESSETTE
I. CATTON

NRC Staff Present:

ROGER WALKER
ANTHONY BOURNIA
WILLIAM AXELSON

MR. KERR: The meeting will come to order. This is a meeting of the Advisory Committee on the reactive safeguards, the Subcommittee on the LaSalle plant OL Review.

My name is William Kerr.

There are ACRS members present today, and on my right are David Ward, Paul Shermon and Ferrison Mark.

As a consultant we have Ivan Catton and as designatd federal employee sitting on my left we have Gary Quittschreiber, ably assisted by Dave Bessette.

The purpose of the meeting is to discuss matters relating to the ACRS review of LaSalle for an operating license. The meeting is being conducted in accordance with provisions of the Federal Advisory Committee Act and the Government Sunshine Act. Rules for participation have been announced as part of the notice of the meeting previously published in the Federal Register on March 19 of 1981.

The transcript of the meeting is being kept and will be made available as stated in the Federal Register notice.

Since we are making a transcript I request that each speaker identify himself and use a microphone. We have received no written statements or requests for

time to make oral statements from members of the public.

We will proceed now with the meeting, and I call upon Mr. Bournia of the Nuclear Regulatory Commission. Mr. Bournia.

Is this mike working at this distance from you? Can you hear?

MR. ANTHONY BORNIA: Mr. Chairman, my name is Anthony Bornia. I am the regulatory staff's licensing project manager for the radiological review of the Commonwealth Edison Company application for operator licenses. With me are Roger Walker, the resident inspector of LaSalle for the staff; and to my right is Bill Axelson, who is the lead engineer for the emergency preparedness team that reviewed the emergency preparedness of LaSalle.

We are pleased to meetwith the ACRS sub-committee today to participate in the discussions on the LaSalle facility. I should point out that the findings of the staff are reported in the safety evaluation reports submitted to you on March 5th, 1981, for your review. You should be informed that this is the first boiling water reactor that is going through the process since the TMI incident; and in addition, you should be informed that the LaSalle is scheduled to receive a full power license unlike

the previous NTOL's which received two stage licenses, that is a low power and a full power.

In my following remarks as indicated by the agenda of the meeting I will first briefly summarize the chronology of the safety review and indicate some of the major milestones and, secondly, I will summarize the items which were deferred at the issuance of the safety evaluation report. These were presented in Section 1.9.

In addition, in this area of open issues, I will try to indicate whose ball court is the next action.

First I would like to indicate to you in your handouts on the review graphs you've received some errata sheets to the safety evaluation report. The majority of these items are typographical errors. However, in two items I would like to make some remarks. And the first one has to do with the license condition on page 1.9 -- 1-9 -- of the safety evaluation report. This is relative to item 16.

This should not be license condition. The applicant has responded to our concerns, and we agree with his response.

The other item is page -- on page 2-18. We show an exception to the conclusion. However, as

indicated in the text of the safety evaluation report, the applicant is taking corrective remedial action and we approve of these actions.

VOICE: Excuse me. What is the question on page 2-18, Mr. Bournia?

MR. BOURNIA: It's in the conclusions. We took an -- there is an exception to the conclusion.

Let me put it on the view graph.

VOICE: 2-18? 2-18? Line 29.

MR. BOURNIA: Yes.

VOICE: Line 5. Okay.

MR. BOURNIA: Okay. My first view graph shows the chronology of the review of the LaSalle County station and the applicant initially tendered its application on August 31st, 1976. However, since more information was needed for the initial filing, we rejected the application on October 27th, 1976.

The applicant resubmitted the application on March 31st, 1977, and we accepted the application and the final safety analysis report on May 11, 1977. The videological review and issuance of the safety evaluation as I have indicated earlier was completed on March 5th, 1981 and, as you can see, this process took something like four years.

But in all fairness I should indicate that

a draft safety evaluation report was available prior to the TMI incident. Following the TMI 2 accident, the Commission instituted a pause in licensing activities to assess the impact of the accident. Therefore it has taken us approximately two years to make that assessment on the LaSalle docket.

As you will note in Section 22 of the safety evaluation report, it addresses to all the TMI recommendations pertaining to boiling water reactors. And, finally, the ACRS subcommittee meeting that we are holding today.

In Section 1.9 of the safety evaluation report we list the open items that need to be addressed by the applicant. In order to present them in a logical manner I chose to separate them into two areas. One, the non-TMI related items and, secondly, the TMI related items.

My next view graph shows -- non-TMI issues, there are nine in number. I should point out that since the issuance of the safety evaluation report, we were able to close some issues and therefore, this view graph as the title denotes are the items remaining as of today.

The first item has to do with the small pipe --

MR. KERR: Excuse me, Mr. Bournia, should I be able to use a list on page 1.9 and go through it and mark off --

MR.BOURNIA: Yes, they are in order, and you should be able to do that.

MR. KERR: Let's see. I find something here called masonry walls. Wait. That's a license condition.

MR. BOURNIA: That's right.

MR. KERR: Applicant's response to rules and regulations.

MR. BOURNIA: He has responded to this, and we are able to address this and should be able to enclose a supplement to the safety evaluation report.

MR. KERR: So you can mark that off?

MR. BOURNIA: As an open issue.

MR. KERR: As not open, or outstanding?

MR. BOURNIA: It's not outstanding.

MR. KERR: Small pipe visual inspection is still outstanding?

MR. BOURNIA: That's right.

MR. KERR: Why is that outstanding?

MR. BOURNIA: Pardon me?

MR. KERR: Why is that outstanding?

MR. BOURNIA: Well, let me go through my talk, sir,

and I will let you know.

Okay, the first one has to do with a small pipe visual inspection. This has to do with the preoperational and start-up test program whereby the applicant tests for various piping systems for abnormal, steady state, or transient vibration and for restraint for thermal growth. We thought that this program was for all sizes of pipes. However, in Amendment 54 to the final safety analysis report, the applicant indicated that the program will include only visual examination for branch piping greater than two inches.

Therefore, it's our position that as a minimum the essential safety-related instrument line should be included and we identify them as the reactor pressure vessel indicator instrument lines, the main steam instrumentation lines for monitoring main steam flow, the RCIC instrument lines on the RCIC steam line outside containment, and the control rod drive line inside containment.

MR. KERR: Is the line bigger than two inches or smaller than two inches?

MR. BOURNIA: Smaller.

MR. KERR: You want some lines smaller than two inches, and the applicant has not yet agreed to that?

MR. BOURNIA: We have just recently received a draft memo, and the applicant has agreed to do the inspection on three of the four pipes. However, for main steam instrumentation lines for monitoring main steam flow, they have indicated first in Appendix 15 an analysis has been performed to show that with the break of this line a high flow rate will be indicated. Therefore, the reactor will be shut down and we have analyzed this case and find it to be not detrimental to the reactor; and, secondly, he indicated that he would not like to inspect these pipes because in order to inspect them it would have to be with the steam on, and the radiation in the pipes from the steam would be of such magnitude that it would put the inspecting team in jeopardy.

And therefore we came to a resolution whereby we would inspect these pipes physically and with a team of people from the station and a stress man from the applicant -- with out resident inspector -- and try to hand shake them to see if they were sturdy. And he accepted this procedure. And when this submittal is formal submitted to us, then we can close this item.

MR. KERR: What would a visual inspection be? Do you look at the pipe in operation?

MR. BOURNIA: No, we would have a --

MR. KERR: Now that said visual inspection. What would that have to be?

MR. BOURNIA: During the start-up they would visually inspect these lines.

MR. KERR: Does that mean look at it?

MR. BOURNIA: Yes.

MR. KERR: And if it's vibrating, that's not so good; and if it isn't vibrating, it's okay, it's as simple as that?

MR. BOURNIA: Yes.

MR. KERR: And they say you can't look at it without being exposed to radiation?

MR. BOURNIA: Right.

MR. KERR: From what you tell me, that probably no longer is an open issue.

MR. BOURNIA: I would say that's true.

MR. KERR: What is the right terminology? Open or outstanding?

MR. BOURNIA: It's open, that's our terminology.

MR. KERR: So when the SER says outstanding, it means open.

MR. BOURNIA: Yes.

The second item has to do with dynamics qualification. Let me indicate here that we are well

into our review in this area. The applicant has described the program for qualifying equipment for seismic and the new hydrodynamic loads associated with the Mark 2 Containment Suppression Program. Our seismic qualification review team -- the acronym is SQUIRT -- performed site review and identified the need for additional information.

The applicant has provided the clarifying details sufficient to close out many of these items. However, we still need additional information concerning the results and conclusion of the applicant's fatigue evaluations, the impedence testing program, the reassessment of the verification.

Again, let me point out that based on our review we can conclude that an appropriate program has been defined which will provide adequate assurance that the equipment will function properly once our review is complete.

MR. KERR: I don't understand that last phrase. thatthe equipment will perform properly once your review is complete.

MR. BOURNIA: Yeah, we've asked for additional information to be submitted to us. Our team has gone out and inspected the program that the applicant has in place, and we see that it is a program that

will lead to the right conclusions. But however they have not completed their program completely, and we need the additional information that I have indicated to you before we can conclude that -- that the qualification of the pipes would meet our specifications.

The third item is the environmental qualification. Here again we have reviewed the applicant's environmental qualification submittal and concluded that insufficient information has been provided to determine the status of the equipment qualification program. As a result, the staff and the applicant has recently held a meeting -- in fact this past Tuesday -- to review with the applicant their submittal and for the staff to indicate the deficiencies of each item.

As a result of this meeting, the applicant will resubmit this information in the time frame of June to July and the staff can then conduct its audit review by early July. This is consistent with the applicant's fuel load date of early in the fall. It's something different than what is written in the SER because we had just met and came to these new dates. The SER had indicated earlier dates than I indicated today.

MR. KERR: I thought you said in the fall -- that says July 1.

MR. BOURNIA: That's when the applicant will be submitting the information.

MR. KERR: That's the date of next action.

MR. BOURNIA: Yeah.

The next item is the ballooning and rupture. Computer models to predict clouding rupture temperatures, clouding burst strain and fuel assembly blockage is used by General Electric. However, as a result of our generic review in this area, we have issued a NUREG 0630. We are continuing our generic review for this problem; however, until we can complete our review we require that the emergency core cooling system analysis and the final safety analysis report must be accompanied by supplemental calculations using the materials model in NUREG 0630.

Here again I should point out that we've recently received a draft copy of some of the recent analysis that General Electric has made. This review is not complete yet, and I -- in fact, the information was received just before I left from Washington, and the last that I heard of was that a communication was going to go back to General Electric to try to clarify some of the points that were submitted in the

draft on this.

MR. KERR: Please continue.

MR. BOURNIA: Okay.

The next item is --

MR. KERR: Is that you're near resolution or in motion?

MR. BOURNIA: I would say it's near resolution, but there are still some problems.

One of the indications I got from the review was that there was no conclusion submitted with the draft, and there was some hardships in trying to arrive at some conclusion on our part. So, I think they have gone back to General Electric and tried to get more information.

Compliance with Appendix G. The fabrication of Unit I reactor vessel was ordered on January 1967 and for Unit II was April 1971. The addition and addenda of the ASME code used in the design and fabrication of the vessel preceded the publications date of Appendix G and H.

We have indicated in any safety evaluation for Unit II there wasn't in sufficient number -- sufficient information submitted to us to make an assessment of exemptions required in this area. However, in -- for Unit I, we were able to satisfy

ourselves with Appendix H exemptions. However, for Appendix G we find that we need additional information in two areas, and that area has to pertain with paragraphs 4.A.2.A, and that's having to do with the reference temperature for nil ductility transition temperature for vessel forging material, and for 4.B, having to do with sharp EV notch, the results for certain belt line well seams.

Again we've been in correspondence with the applicant and as we have indicated here we're expecting to review this additional information by April 15th.

MR. SHEWMON:What sort of information is it you've asked for?

MR. BOURNIA: As we indicated, the -- some of the information required by Appendix G was not obtained and as a result we need some confirmation, either by analysis or by data that they can show that it's relative, the same material that we can come to the conclusion that we can give an exemption to the --

MR. SHEWMON: With the analyses of other wells that they did at that time or would they scrape material off the actual pressure vessel?

MR. BOURNIA: I think it's -- it's not scraped off the vessel. It's other wells that we're looking

for. And also we're asking them to go into the literature to see if they can find any information that can glean information for them to conclude that this exemption --

MR. SHEWMON: There were no sharp EV notch tests made on the weld material at that time, or there weren't enough, which --

MR. BOURNIA: You're asking some questions that I'm not well versed on.

MR. SHEWMON: Well, we'll both see each other a week from now again, and I'll ask you again then, and if you want to we can discuss it then.

MR. BOURNIA: Yes, I would rather have it that way to discuss this thing.

Okay. The next criterion is criterion -- I mean the next open item is criterion 51 of the general design criteria. And this criteria requires that under operating, maintenance testing and postulated accident conditions, the ferritic materials of the pressure bond would behave in a nonbrittle manner, and that the probability of rapidly propagating fracture is minimized.

We are reviewing the LaSalle docket using the ASME Code, Section 3 of the summer 1977 agenda. We find that in order for us to complete our review

we require additional information because the final safety evaluation -- final safety analysis report does not provide the information necessary to characterize the fracture toughness for LaSalle. Here again I should indicate that we have been in communication with the applicant and again we should be receiving this additional information by April 15th.

MR. SHEWMON: Do you have a copy here of the letter you did send to them?

MR. BOURNIA: The letter?

MR. SHEWMON: You said we'd written them and asked for additional information.

MR. BOURNIA: I don't have a copy here, no.

MR. SHEWMON: Do you know the nature of this information?

MR. BOURNIA: This has been an ongoing problem in all the NTOL's that have come up.

MR. KERR: Is there a representative of the applicant who can respond to this? Do you have a copy of the letters?

MR. BOURNIA: No, I don't.

MR. KERR: Yes, sir?

MR. DELGEORGE: My name is Lou Delgeorge from Commonwealth Edison. We are prepared to address the specific nature of the concern the staff expressed

on the current status of our response on all of the issues that have been addressed so far. If you like, we can respond now or wait till that point in the agenda where we are requested to respond.

MR. SHEWMON: Is it tomorrow?

MR. DELGEORGE: Scheduled for 3:40 this afternoon.

MR. SHEWMON: Fine. I'll wait.

MR. BOURNIA: Okay.

The next item is having to do with independent inspection of cable routing. The construction of LaSalle was initiated prior to the issuance of Regulatory 1.75, and this has to do with physical independence of electrical systems. As a result, there have been exemptions taken in the design as recommended by this Regulatory Guide. Therefore, we had some difficulties in this area in our review. As a result the applicant had performed an independent audit inspection of more than ten percent of the cables routed, and the staff requested that their findings of this audit be submitted to us and reported to us in order for us to review their results.

We just had recently received this item again, was in the past week or so, be again, as --

when I left Washington, the reviewer was still reviewing the information but it has not reached any conclusion. I don't think there's going to be any problems in this. I think we will be able to conclude that the cables are in conformance with the separation criteria.

The next to the last item are the technical --

MR. KERR: Here's a paragraph that's not quite clear to me on what the applicant is required to do.

MR. BOURNIA: The only thing we are asking is that he has done this independent review and we would like to see the audit report so we can look at it and see whether we can conclude --

MR. KERR: Well, your statement was I thought that they did an audit of ten percent or so of the circuits. The paragraph in here says, "It is our position that each exception be identified and justified." I don't -- that doesn't say ten percent to me, so it's -- is what you are talking about different than what I find in the SER?

MR. BOURNIA: Okay. Let me indicate: The applicant has done a hundred percent inspection. In addition, they've done an independent inspection which was of ten percent or more.

MR. KERR: They've had somebody else do an

independent inspection?

MR. BOURNIA: Yes, yes. And --

MR. KERR: What you want to see is not their hundred -- their results of their hundred percent --

MR. BOURNIA: Right.

MR. KERR: -- but you want to see the additional--

MR. BOURNIA: Yes, this additional independent inspection that they have done.

This is again more or less an audit on our part to see what they've done.

Technical specifications. Essentially, this item is not an open issue per se. Since this is the -- one of the last items that we complete in issuing the operating license.

As you know, these specifications include sections covering operations, surveillance requirements, design features and administrative control. We have interacted with the applicant in this area many times and have prepared a draft of the technical specifications. We are not -- the staff is now reviewing this draft tech specs, and they will be part of the operating license when they -- when we issue it.

Finally, it's the Q list. This is the list that we consider to be safety related and that must be

treated underthe quality assurance program as safety related. In the course of our review we looked at the list the applicant is using. We made some suggestions that include additional items to the list. The applicant is reviewing the information to determine its applicability and as I indicate here, we should be receiving that information by April 15th.

MR. KERR: How do you determine what items go on the Q list?

What items go on the Q list? How do you determine that? Is there a reg for that, for example --

MR. BOURNIA: No, there isn't a reg. I think the way we're indicating whether an item should be Q listed is: Is it safety related? For instance, we're not saying that --

MR. KERR: Now, are you using safety related in the sense in which it was used in recent testimony? We had McGuire, or -- what I'm trying to do is get an idea whether anybody other than you would know what should go on the Q list before -- or does one have to get this list from the NRC in order to know what's on it?

MR. BOURNIA: Well, first the applicant does submit a table in Section 3, which he indicates are safety related. In addition now, we're saying that we

need additional materials on it.

MR. KERR: I understood what you had done. I was trying to find out on what basis you make a decision that something does or does not go on the Q list.

MR. BOURNIA: Okay. This is the -- this is the staff's decision. There is no written direction to --

MR. KERR: Sort of a Delphic Oracle kind of --

MR. BOURNIA: Yeah.

MR. KERR: -- decision.

MR. BOURNIA: Exactly.

(Laughter.)

MR. SHEWMON: And it changes from plant to plant, month to month, man to man, and phase of the moon or what? I think that's what he's trying to get at, or I am.

MR. BOURNIA: I realize what you're trying to get at. But I'm saying we do not have any written reg guides stipulating what these conditions or what those lists should --

MR. SHEWMON: So the answer to my question is it can change with all of those and some other things I didn't list.

MR. BOURNIA: I would say that's correct.

MR. WARD: Could you give us an example of one

item, one system that is in contention that you have added to the key list that wasn't on the applicant's original list?

MR. BOUPNIA: Yes. I think one item is the emergency plan. We are saying that has to be on Q list.

MR. WARD: The emergency plan?

MR. BOURNIA: Yes.

MR. SHEWMON: Could you tell me what the quality assurance emergency plan means?

MR. BOURNIA: Okay. If you require some communication, we wanted to make sure that even though this is in place, that it's working. So we should be able to have some quality assurance to ensure some kind of testing to assure that that communication is available and will be available during an emergency.

MR. SHEWMON: But you make that presumably your supervisor reads the mail that you sign or it gets to him presumably then also then that could go on some NRC list for consideration by others and in the fullness of time some conversions to this list might come.

MR. BOURNIA: I don't want to indicate to you that it's a haphazard way of doing this. The listing is made by the quality assurance branch and it is

projected -- we try to project it on each docket.

Finally, my next view graph has to do with the TMI issues and as you can see there's six in number, and the first one I.C.8 has to do with monitoring selected emergency procedures for NTOL's.

Essentially, our review is complete in this area. We reviewed the drafts of procedures and also observed LaSalle operators participating in simulation of several transients and accidents on the Dresden simulator. And these simulations -- the procedures did not include some LaSalle specific numbers and operator action levels.

These are still being developed and we indicate -- as we indicated on the chart they will be available by April 15, 1981. Therefore, our final self-conclusion on the acceptability of the procedures will be made following our review of this revised procedures.

MR. KERR: What is it that is still out -- the action levels?

MR. BOURNIA: Right, right. LaSalle's specific. I don't think it's a major problem.

As far as the review went with the performance of the operators on the simulators and the -- and actually the procedures, the draft procedures, we didn't

have any major problems with that.

The next item is 2.B.4.2, having to do with containment isolation dependability.

The area of concern here has to do with purge valves. Our branch technical position CSB 6-4, containment purge during plan operation, specifies that these valves should have operability and conditions on the -- operability and conditions on the outset of the LOCA accident. That is if any -- if any valve is being used during operation it must have a capability of performing under the LOCA accident condition.

And the reason why we are looking for an operability of certain valves is, as you have indicated, Dr. Kerr, that you haven't seen in the SER that the applicant has not specified that he will be inerting if you will look under 2-B.7 and 2-B.8, we indicate in the SER that the applicant will be inerting the containment. And therefore he will be using these bypass purge systems during operation. It is our position that these valves satisfy the operability criteria set forth in branch technical position CSB 6.4.

The applicant is presently in the process of obtaining the information and the April 15th, 1981

data is if the applicant can prove that his valves are similar to already approved valves. However, he has committed to perform to qualification tests to provide the operability of the valves that this is not true.

MR. KERR: Is the issue whether these valves are capable of being closed against a LOCA generated load?

MR. BOURNIA: Yes. We're saying since he's inerting the --

MR. KERR: I'm not interested in why you are requiring it at this point. I'm just trying to find what it is that you require.

MR. BOURNIA: Yes, exactly, exactly.

MR. KERR: And he may be able to show that these valves are the same lineage as some other valves in trace of history.

MR. BOURNIA: Exactly.

The next item is 2.F.2, and that has to be the instrumentation for inadequate core cooling. It should indicate here that the applicant belongs to a BWR owners group which is looking into some of the action items -- TMI action items, generically. This group concluded that no additional instrumentation is needed to monitor inadequate core cooling and the

applicant has agreed to this position. We should indicate though that the BWR package does include level indicators to measure above and below the top of the active fuel.

In addition, the owners group developed procedures for operators to utilize in order to recognize the approach to inadequate core cooling. These analyses were performed to substantiate level indicators to show that level indicators are adequate for predicting or for predicting the approach to adequate -- inadequate core cooling.

Our problem here is that we have recently issued Reg guide 1.97 which has to do with instrumentations during and fllowing an accident; and this Reg guide requires in-core thermocouples.

MR. KERR: I'm sorry, what was that?

MR. BOURNIA: In-ccre thermocouples?

MR. KERR: 1.97?

MR. BOURNIA: Yes.

Our recent posi'ion as a result of the issuance of this Reg guide is that we have to get the applicant's commitment to incorporating these in-core thermocouples into their monitoring system prior to June 1983 and secondly that the applicant provide the documentation addressing the inclusion

of thermocouples and the monitoring system in a timely manner and we want this commitment prior to the operating license.

MR. KERR: So in this case the Reg guide is being treated as a regulation?

MR. BOURNIA: For the -- well, the commitment as a regulation, yes.

MR. KERR: Has the applicant committed to Reg guide 1.97?

MR. BOURNIA: No, he hasn't.

MR. SHEWMON: Now you bring up only one point on Reg guide 1.97, as I recall there are several pages of requirements in that Reg guide. You picked out in-core thermocouples as being the most important, or they've complied with all the rest or committed to or what's the position of the rest of the Reg guide?

MR. BOURNIA: Well, the Reg guide doesn't -- indicates that it -- it's not applicable to -- until after June 1983, and it has to input those instrumentations that are stipulated in 0737, NUREG 0737. We are picking out in-core thermocouples because we think it's one. We need the commitment of the applicant in this area.

MR. SHEWMON: Is that because it's easier to

install the other requirements in '84 or '83 than it is the in-core thermocouples or because you think they're more important than anything else?

MR. BOURNIA: I think the importance.

MR. KERR: Is there some justification for this that we can see or has the staff made an analysis to demonstrate this?

MR. BOURNIA: I cannot address to that one, sir.

MR. SHEWMON: Will you be able to next week?

MR. BOURNIA: I'll have to go back to staff and request that.

MR. KERR: In the SER there, also items called Analysis of Hydrogen Control and Rule-Making Decisions on the Grade and Core Accident --

MR. BOURNIA: Those are the two items that have to do with -- and we say those two items, 2.B.7 and 2.B.8 are resolved as a result of the applicant committing to inerting the containment.

MR. KERR: So these I can scrap.

MR. BOURNIA: Yes.

MR. KERR: Thank you.

MR. BOURNIA: The next item is 2.K.3.8 and this has to do with the modification of the ADS logic for diversity for some event. Again, let me indicate

that this item is also being covered by the BWR owners group and our concern here is that the ADS for the BWR is manually actuated and we want the applicant to develop an approach for some diversity in certain events. We are --

MR. KERR: Like using two hands instead of one?

MR. BOURNIA: No, in some instances we might want automatic actuation.

MR. KERR: And the feet.

MR. BOURNIA: Again --

(Laughter.)

MR. BOURNIA: -- I said in some instances we might want automatic actuation of these items.

We have just recently received the report from the BWR on this group and we are in the process of reviewing this information right now.

The next two items have to do with the emergency preparedness and the first item in this area is 3.A.1.2, and this is the upgrade emergency support facility.

MR. KERR: Excuse me. Evaluation of anticipated transients with single failure to verify no fuel failure -- is taken care of in some way?

MR. BOURNIA: Yes, we've taken care of that.

MR. KERR: What does that mean, by the way --

Evaluation of anticipated transients with single failure to verify no fuel failure?

MR. BOURNIA: You catch me blank now, sir.

MR. KERR: You'll think of it.

MR. BOURNIA: Yeah.

Okay. The applicant established, as we saw, a very technical support center. He also has an operation support center and a near-site emergency operation facility and as we saw he's in the process of getting his permanent technical support center. In Amendment 54 to the final safety analysis report we received a detailed description of plans for the permanent technical support center and we have just initiated our review on this information against our recently issued NUREG 0696.

Our requirement for this facility is that it's to be available by October 1st, 1982.

Finally it's 3.82. It's improving emergency preparedness long-term. We have completed our review of the upgraded emergency plans that were submitted in a letter dated January 3rd, 1981. Our evaluation was made by each planning standard specified in 10 CFR Part 50.47, Item B.

As a result of this review we have indicated some concerns that the applicant needs to address.

In addition I should point out that on December 4th, 1980 the applicant, state and the local officials concluded a joint integrated emergency exercise. This exercise was jointly reviewed by the Federal Emergency Management Agency, FEMA, and our people.

Certain aspects of the emergency exercise did not -- were not performed by the applicant and -- and relative to emergencies on the site. However, our inspection enforcement personnel will witness such an exercise prior to fuel load date. We are also expecting the critique report, the FEMA critique report sometime in May. We feel that upon satisfying our concerns that we have indicated earlier the emergency preparedness of LaSalle will meet the requirements of 10 CFR Part 50.47 and will be acceptable.

MR. KERR: I guess I'm not quite certain what you're telling. I see something that says improving emergency preparedness long-term. You seem to be talking about current emergency preparedness situation. And you seem to be saying it's probably in fairly good shape but we need some additional information to be sure?

MR. BOURNIA: Do you want to address to that, Bill?

MR. AXELSON: We reviewed their plan, and there was still some open items that we feel need to be addressed before we can meet and say they meet the code. The bills are addressed on page D-25.

And at that time when these items are resolved their emergency preparedness on the site -- we'll see if it meets the condition of the rule. As far as off-site plans, we have not received any findings from FEMA at this time.

MR. KERR: What is the significance as it appears on that --

MR. AXELSON: Well, long-term means the permanent EOF, basic commitment to a description of their permanent EOF, their permanent meteorological upgraded system, their permanent technical support center; and those other long-term lesson-learned items such as high-range effluent monitors and postactive temperatures.

MR. KERR: Well, is the thing you just referred to before part of the long-term or short-term or the medium-term or what?

MR. AXELSON: These are long-term, I think. They meet a short-term requirement but at that time the short-term requirements were for a low-powered license. But they have to at least commit to and

provide a description for the long-term requirement before they get a full license. That's the staff's position.

MR. KERR: Well, I thought Mr. Bournia told me at the beginning that they were only going to get a full power license so there wasn't going to be a a low power license?

MR. AXELSON: Right.

MR. KERR: So I don't --

MR. AXELSON: They have to provide a description of and a commitment to meet the long-term requirements before they get a full power license. They don't have to implement all the long-term requirements before they get a license. But they have to indicate to us what their conceptual designs are for these various distances and --

MR. KERR: Well, you're telling me now that they have not yet met your requirements. What would you guess as to when they might? If they proceed with all deliberate speed.

MR. AXELSON: Well, I have not received answers to my open items to this, but just looking at -- to see what the applicant has to say.

MR. KERR: I guess they are going to tell me.

MR. AXELSON: Right.

MR. KERR: Thank you.

MR. MARK: Did I understand you to say that in the second to the last item the staff is in the course of reviewing what may in fact be the resolution -- provide the resolution to that?

MR. BOURNIA: Of the emergency support facilities? We received the information and we are in the process.

MR. MARK: So on the slide it might perhaps properly say staff.

MR. BOURNIA: Yes.

MR. KERR: Does that complete your presentation?

MR. BOURNIA: Yes.

MR. KERR: Are there any questions? All right. Thank you, Mr. Bournia.

Next on my schedule is a presentation by Commonwealth Edison.

MR. LOUIS DELGEORGE: I am Louis Delgeorge, and I am the licensing administrator for LaSalle County station for Commonwealth Edison. With me at the speaker's table to my left are Mr. Brent Shelton, the engineering project manager for LaSalle County, Mr. Robert Holyoak, the operating superintendent for LaSalle County station, and Mr. Ben Stevenson, the site and project manager for LaSalle County station, and Mr. Cordell Reed, the vice-president

of nuclear operations for Commonwealth Edison.

Each of the participants at the table with the exception of Mr. Stevenson will be making presentations before the committee this afternoon.

Sir, at your discretion, I might at this point go through the open items, although it's not the next item on the agenda. We might be able to resolve some of the questions that you raised earlier so that we don't have to defer it to the next meeting.

MR. KERR: All right.

MR. DELGEORGE: I'll use Mr. Bournia's slides so that we have some continuity.

We are in agreement with the general positions stated for small pipe visual inspection. The applicant has in place the vibration monitoring program which entails the visual examination of piping within the containment to determine whether or not any vibration exists.

In the event we observe vibration there is a program of analysis by which we determine what vibration would be acceptable based on a limiting stress criteria of ten thousand PSI in the pipe. That criteria limiting vibratory stress to that point where unlimited cycles could be accommodated without a fatigue failure.

The problem that we encountered with the staff was that it was our intent to perform that particular inspection with analytical verification for pipe two inches in diameter and greater only.

Subsequent to the staff's expression of concern relative to small pipe, we have agreed to visually inspect for excessive vibration those particular small pipes, two-inch and under instrumentation lines that the staff has identified with one exception: main steam flow instrumentation lines.

These particular lines are located on the main steam lines and perceptible vibration would not occur without steam passing through the line. In order for us to perform such a visual inspection we have to place a person in the vicinity of the line which is high in the dry well and might make egress from the dry well impossible for the individual in the event there should be some break or event that was not conceived of during -- prior to the start-up program.

We have, however, agreed to perform a walk-down of these lines with the staff in conjunction with a vibration analysis expert. This individual would be an analytical type from our architect engineer. We would determine whether or not the lines were

properly supported and backed at any supports in order to assure the adequacy of the supports on that line which we are not able to perform a visual examination of during the actual test.

MR. SHEWMON: The excitation of the over two-inch lines would be with steam then or without steam?

MR. DELGEORGE: Visual examination -- most of the testing that we plan to do had been intended to be performed prior to operation.

MR. SHEWMON: How do you excite them? As I recall, Mr. Bournia's words were something like shaking them.

MR. DELGEORGE: The lines that were the subject of the test which had already been committed to were typically water-filled lines which could have been observed during hot functional tests where we had no nuclear heat. Where there was no steam produced.

MR. SHEWMON: You and the staff have agreed that the warm water flowing through it was enough excitation to detect the kind of vibration you are talking about.

MR. DELGEORGE: Yes.

MR. SHEWMON: Okay, thank you.

MR. DELGEORGE: The identification of prior to fuel load as the next point of action indicates

that it will be at that point of time or sooner at which we will be able to conduct the visual exam on that main steam line instrumentation because the supports on that line have not as yet been fully installed.

The next item, dynamic qualification. The applicant has undertaken a very significant program of qualification for all mechanical equipment in safety-related equipment in the plant. The reason that this issue remains open is that we have the in support of testing that has been done on equipment, also performed in situ impedence testing to verify the analytical models that we have used to analytically predict the loads and stresses on equipment. The results of that impedence testing are currently being developed and will be provided staff in the May time frame.

We are also performing as a part of the start-up on Lassen County an extensive safety release valve in-plant test program, the results of which will provide us with input on measured response at various instrumentation racks in the plant which can be used then to determine whether or not the assumptions that were made in our analytical qualification of equipment were accurate.

We believe this is a confirmatory issue and doesn't represent an issue relative to the qualification of equipment.

MR. CATTON: Are you going to monitor the pool temperature distribution equipment?

MR. DELGEORGE: Temperature monitoring will be in place and we can discuss that in more detail for you tomorrow when we discuss the containment if you like.

MR. CATTON: Thank you.

MR. DELGEORGE: I might add there is a status on the dynamic qualification program in the agenda item under unresolved safety issues under task A-46 so the package we presented to you will include that write-up.

Environmental qualification. We would agree in general with Mr. Bournia's summary on that item. However, there is a detailed description of our environmental qualification program in the agenda, and youwill get more information at that time. That presentation is also in the booklet that you've been given.

MR. CATTON: Your environmental testing, is that just time and pressure and temperature?

MR. DELGEORGE: We can get into that as a part of

the discussion. Could we make available -- oh, it's the brown book that's there.

On the issue of ballooning and rupture, it is true that we have just recently presented information to the staff. That information concludes that the change in peak clad temperature in consideration of the materials data presented in NUREG 0630 would not affect the calculations, the Appendix K type calculations for LaSalle type fuel, that is the eight by eight fuel that we have in LaSalle County.

There were, in my reading of the report would agree with Mr. Bournia that there is no explicit conclusion that says that LaSalle County doesn't have a problem. However, the fuel arrangement, the fuel type that we have at LaSalle County is covered by the report and we believe that that report is adequate to satisfy this issue. We expect that with future discussions with the staff we'll convince them of that.

MR. KERR: Can you give us conclusions if needed?

MR. DELGEORGE: Compliance with Appendix G.

This issue has presented somewhat of a problem for the applicant in that the staff has increased the information necessary to demonstrate our performance with Appendix G. There was a brief

write-up in your handout under the unresolved issue Topic A-11, in which it is indicated that we do have some drop weight test and longitudinal sharp E test data available for after-vessel material. Belt line material, weld material, and other materials in the reactor vessel. However, we do not put all materials in the reactor vessel, havesuch material -- excuse me, have such test data in that that test data was not required at the time the LaSalle vessel was purchased. However, we have concluded on the basis of the data available after comparisons of the heat-treat flux type, weld procedure type introduced on other materials for which we do not have test data that the results for materials for which we do have data are applicable and for that reason we have concluded that the reactor vessel of -- the LaSalle Unit 1 vessel does satisfy Appendix G.

We are also --

MR. SHEWMON: There was a code requirement on the vessel material but not the weld material at that time, is that right?

MR. DELGEORGE: Sir, I believe, and we have someone here who can address that point.

MR. SHEWMON: I have a great difficulty, you know, if many people were specifying it for bridges across

between Wisconsin and Iowa even civil engineers twenty years ago, I guess I have some trouble for nuclear pressure, that was ten years ago.

MR. DELGEORGE: The distinction is that we did not in every case have sharp E test data as required by the code. There were drop test data from which we could draw a conclusion as a result from sharp data, that energy levels that might be different from that required by the current regulations, that is fifty foot pounds of energy.

As I say, we can provide you with additional information on that subject, and we have concluded that the materials in LaSalle vessels does satisfy Appendix G. It is also worth noting at this point that the integrated performance for the -- for the boiling water reactor is such that we do not expect to see the same level of embrittlement for these materials and for that reason it could be significant to the issue for boiling water reactors, it's less.

On criterion 51 --

MR. KERR: Excuse me, Mr. Shewmon, did you want additional information?

MR. SHEWMON: I'll get it.

MR. KERR: Please continue.

MR. DELGEORGE: On the issue of general design

criteria 51, the staff has interpreted the general design criteria to require an assessment of the 1977 edition of the ASME Boiler and Pressure Vessel Code. That interpretation was conveyed to the applicant in February of this year and has since that time made an attempt to verify conformance with that code for all containment boundary material.

They are in the process of completing that report and expect to submit it to the staff by April 15th. At this point in time we do not expect to see any violation with that specified code.

For independent inspection of cable routing as Mr. Bournia indicated we have as a uniform practice during the construction of LaSalle County implemented a one hundred percent inspection for separation of all cable installed in the plant. The staff did request that we perform an independent over inspection of separation using an agency that was independent of the design and installation of the cable at LaSalle County. That inspection, the over inspection, was completed in the fall of last year and the results recently documented with the staff.

The results indicate that of the seven

hundred cables inspected, only one separation violation was identified which in our opinion represents an isolated occurrence and does not suggest that there is a separation problem. There were some marking deficiencies identified as part of the audit, all of which will be resolved and most of which will not affect the safety operation of the plant. The normal walk-through prior to acceptance for operation on this unit will include a requirement to ensure that marking as required by the final safety analysis report is adequate.

To give you an example of the deficiencies that were observed, each of the cables has a tape tag along its length which indicates the divisions which that cable is associated or to which a safety related cable is a part. The tagging in some cases was illegible from distances that were required by the specification or tape might have curled and for that reason would have to have been replaced.

As you can see -- and I think that's an accurate general representation of the types of deficiencies. They were not considered by us to be of a significant nature.

I agree with Mr. Bournia's assessment on technical specifications.

On the issue of Q list to give you -- to distinguish for you the types of issues we had under discussion, first of all the staff has asked us to identify in the Q list all equipment that is safety grade, and with that request we have no contention. We expect to include on our listing of safety equipment all equipment that is of a safety grade nature, that is either Class 1-E if it's electrical equipment, or the conventional designation of safety related, for example, ECCS systems, safety systems, the reactor protection systems and other systems of that point.

However, we do have a difference of opinion with the staff on items that have been designated as having some effect on safety. The example Mr. Bournia gave in the emergency plan is, we believe, a good one inasmuch as to designate by the title emergency plan all the possible equipment and structures associated with our emergency planning we believe would make that requirement almost unenforceable. Specifically when we look to the staff's guidance in NUREG 0696 in emergency facility design, such things as the safety parameter display system and the emergency support facility are clearly indicated as not being required to satisfy seismic requirements or safety

grade requirements.

For that reason we see an internal disagreement within the staff as to what should or shouldn't be on a safety related list. We do not disagree, however, that our emergency plan itself should be audited on an annual basis as is required by 10 CFR 50. And that is taking place under the auspices of our quality assurance department.

So where things of a programmatic nature are involved, we are in disagreement with the staff that those programmatic things should be included on a Q list.

On item 1-C-D, Mr. Bournia's characterization of the status is accurate. We are providing plant unique information in support of the procedures that we've developed which will satisfy the guidelines that have been developed by the boiling water reactor owners group.

Analyses should be completed within the next few weeks and the results will be transmitted to the staff immediately upon completion. The procedures themselves, that is the method for addressing and responding to accident scenarios we believe has been reviewed by the staff and the staff is in agreement with that procedure development. We are now only

trying to fill in the blanks for plant specific LaSalle numbers which would be used by the operator in response to the event.

Containment isolation dependability. Mr. Bournia, again his assessment was accurate. We are in the process of trying to confirm with our bell supplier that test data that he has in hand will demonstrate the qualification, that is the operability of our bell under accident conditions to close. In the event we are unable to use the data that currently exists we might have to run a plant specific test to demonstrate the operability of our bells.

Now, the bells in question consist of both a large bell, a 26-inch bell, and a small die cast bell. Die cast bells have been qualified during the integrated leak break test which has been performed at LaSalle County to the design accident pressure. And for that reason we are now only trying to demonstrate the qualification of the large bell.

The reason this was not done earlier is that those valves were intended to be locked shut during operation prior to our commitment to inert containment which was made in November of 1980; so it is just since that time that we recognized the

need to demonstrate the operability of the large bell.

We have, however, implemented the curing position accepted by the staff for operating plants having such containment purge valves, our valves will be blocked open at an angle sufficient to allow for closure in a time that would not allow off-site doses in excess of one hundred. The criteria specified by the staff for operating plants has been -- excuse me -- will be met for Commonwealth, for LaSalle County prior to its loading the fuel.

On the issue of instrumentation for inadequate core cooling, would you have a presentation later on the agenda which we will discuss the current level instrumentation and other available instrumentation for assessing inadequate core cooling. That instrumentation we judge to be adequate. That conclusion was also reached by the BWR owners group as acknowledged by Mr. Bournia.

We are prepared to discuss the requirements n stated in Reg Guide 1.97; however, we do take is - with the need for the addition of core exit thermocouples and at this point in time expect that if that is made a requirement for our licensing that we would probably appeal that issue.

The modification of ADS logi . I might make

one clarification: The ADS system is automatic for its normal -- for its normal use. That is, ADS is typically used on signal of high dry well pressure and low water level. The events that the staff has requested that we consider the automation of ADS are those for which we would only have the high dry well pressure since.

The boiling reactor owners group has reviewed that issue and determined that it is not -- although possible, it is not necessary to implement the automation for that particular scenario, and as a result we've made the judgment based on an integrated review with our emergency procedures that it is unnecessary to automate the ADS system on high dry well pressure only.

On the emergency support facility upgrade, we will in accordance with the requirements of NUREG 0696 provide a design description for all our permanent facilities by June 1st of 1981 and we expect them to meet the October 1st, 1982 schedule for final installation.

In the area of long-term emergency preparedness, the NUREG 0737 distinguished between short-term requirements and long-term requirements. Short-term requirements were specifically conformance with Reg

Guide 1.01, NUREG 0610 on the designation of emergency action levels and uniformity in the way we characterize events. We have satisfied that requirement. The long-term requirements are specific to the NUREG 0654, which is the staff's latest reg, and the two criteria that Mr. Axelson was referring to, the meteorology and manning are the two for which we have not completed our implementation of the program since discussions are on-going with the staff as to the specific requirements in question.

However, all other requirements associated with NUREG 0654 we will have met, that's those that were required for licensing of this plant under NUREG 0737.

Unless you have any other questions --

MR. KERR: Any questions?

MR. SHEWMON: You said if I turned to the right page I could find something on the issue of Appendix G, and I finally found a page that has to do with the response to SER open items which is completely blank. Can you suggest another page?

MR. DELGEORGE: Yes, sir, it's in the section associated with unresolved safety issues under the heading of Item A-11.

MR. SHEWMON: Oh, thank you.

MR. CATTON: Halfway through, first third?

MR. DELGEORGE: Towards the end.

MR. KERR: Any other questions? Thank you, Mr. Delgeorge.

That brings us again back to Item 1, I presume.

MR DELGEORGE: With that I'd like to introduce Mr. Holyoak, the plant superintendent, to make the presentation on the subject.

MR. KERR: Have him bear in mind that we visited the site this morning so it will only take him fourteen minutes to describe instead of fifteen.

(Laughter.)

MR. ROBERT HOLYOAK: But I'm going to give you all the good figures on -- you want to put up that -- instead of three slides, I'll hold it down to one slide, and we'll go right through it.

LaSalle County station is a 3,060 acre site, seventy direct miles from downtown Chicago and four miles south of the Illinois River. And as you noticed as you went through, it contains quite a few buildings adjacent to each other.

The facility is supplied by a rail line seven and a half miles long from Ransom, Illinois. And the site is situated on a -- four miles south of

the Illinois River on a flat plain surrounded by typical midwestern farms, as you noted. The nearest major highway is Interstate 80, ten miles north, and a county road, Route 6, is a half-mile south of the site, and a state road, Route 170, is two miles east of the side. No pipelines, gas lines, major telegraph cables pervert the site.

And the surrounding area is sparsely populated with approximately eleven hundred people maximum population 1980, and within five miles and sixteen hundred within the low population zone which extends outward four miles from the station and satisfies the density FR 100 population criteria and personnel radiation exposure guidelines.

There are no schools, hospitals, prisons, beaches or parks within a five-mile radius of the site. Recreation area, which was originally laid out adjacent to the LaSalle cooling lake has been changed by the State of Illinois to a fish rearing pond facility, so there's no transient visitors expected in that area during seasonable periods.

Cooling lake is 2058 acres including the return boom has a filled water level of 700 foot elevation, some 218 feet above the Illinois River, which is also the source of water for the purge

cooling lake. Make-up and blowdown to the river is accom-lished through underground pipelines. The ultimate heat bank is an 83-acre suberrranean excavated pond at the west end of the cooling lake. It connects by a gravity flow through the lake's screenhouse to the plant ECCS equipment in the basement of the plant. There is no flood flow potential for LaSalle plant which sits at an elevation cf 710 feet. Cooling lake has an outflow spillway at elevation 704 with an outflow back to the Illinois River.

The LaSalle unit utilizes a DWR 5 boiling water reactor designed and supplied by General Electric Company. The reactor consists of the reactor pressure vessels containing the core control rods, instrumentation, steam separator and dryer assembly. Jet pumps, control rod drive mechanism. The core contains 754 fuel assemblies and 185 control rods arranged in an upright circulator cylinder configuration. Each dual assembly consists of an eight by eight ray of rods, 62 of which contain fuel and two contain water.

Water will serve as both moderator and coolant. In the design power level the reactor is 3,323 megawatts. The steam power convergent system

will transfer heat energy from the reactor to the turbine generator which will convert it by conventional means to electrical energy. This electrical energy is transmitted off site by four 345 KV transmission lines which is two separate right-of-ways. One right-of-way extends to the east and the other to the north across the Illinois River.

The in-house electrical distribution system is segregated into three divisions per unit --

MR. KERR: Excuse me, there are four 345 KV circuits?

MR. HOLYOAK: Correct. With two right-of-ways -- two per right-of-way. I think if you'll look, one of them is shown going straight north. The other one runs off this slide and runs along the south shore of that lake as you can see.

MR. KERR: Yes, I remember seeing that.

MR. HOLYOAK: With the exception --

The in-house electrical system is segregated into three divisions per unit. One of these systems is dedicated exclusive to the high pressure core spray system. With the exception of a few ventilation systems, such as the service building and the diesel building ventilation system, the remainder of the ventilation systems exhaust through the ventilation

stack which is common to both units. The vent stack reaches a height of 370 feet above plant grade. This stack provides for single point elevated relief of effluent.

A 375-foot tall meteorological tower was put into service at LaSalle County station in 1975. And the meteorological program at LaSalle County station provides information to assess local weather conditions. I hope I got two minutes off it by going a little faster.

MR. KERR: I think you did.

You seem to indicate the recreational area --

MR. HOLYOAK: Originally we had a commitment with the state for a recreational area at the south end of the lake. There's a natural shoreline. You can see it. There's a darkened area on the view graph.

The state eventually said they did not want a point at that location and we committed a fish hatchery which is associated with the University of Illinois.

MR. KERR: Is that the recreational area referred to on page 2.6 of the SER which is expected to have 55,000 visitors a year? So the SER's --

MR. HOLYOAK: We will have some fishing there in

the daytime. No night fishing.

The next speaker, Brent Shelton, who is the project management engineering group, will compare LaSalle County station with some similar BWR.

Brent?

MR. KERR: Were there any questions?

MR. MARK: Is it possible in about three words to explan how one arrived at the number of 185 for the number of control rods? It seems like a most unlikely number.

MR. HOLYOAK: I would defer to General Electric coming up to that interesting number.

MR. MARK: It doesn't divide by anything we'd like to divide by.

(Laughter.)

Never mind, we can do it at the break.

MR. WALKER: Take four times the number -- take one-fourth the number of fuel numbers and that's how you get that number.

MR. KERR: Or you could get that number just by counting.

(Laughter.)

MR. WALKER: The peripheral bundles are controlled by one control.

MR. MARK: There's a rod controlling each clump

of four bundles. Okay, that I can understand.

MR. KERR: Any other questions?

MR. CATTON: Is there going to be in any part of this agenda a discussion of environmental qualifications?

MR. DELGEORGE: Yes, sir, there is.

MR. CATTON: Okay, I'll wait.

MR. KERR: We're ready now for the next presentation. You can proceed.

MR. SHELTON: I would like to briefly compare LaSalle with previous designs. LaSalle County station is a dual unit station with General Electric BWR 5 reactors and GE six flow tandem compound double reheat turbines. The unit rating are 3323 megawatts thermal --

MR. KERR: Excuse me, would you go through that turbine again? Double compound --

MR. SHELTON: Six flow tandemn compound. It's all lined up in a row there, basically four shafts, high pressure and an intermediate pressure in essence on one shaft near the front end and the three separate low pressure turbines. And flow goes through the middle of them.

MR. KERR: Thank you.

MR. SHELTON: You're welcome.

The unit ratings are 3323 megawatts thermal with 1120 megawatt electrical gross and 1078 megawatt

electrical net output.

MR. KERR: I want to give Mr. Mark a chance to ask how you arrived at 3323.

(Laughter)

MR. SHELTON: Okay. As Bob mentioned, the station connects with Commonwealth Edison's transmission network via 4345 KV lines, two running northeastward to Plano and two running eastward to Braywood. One transmission line from each of these transmission stations serves each unit.

The LaSalle BWR 5 are the first units to be licensed in the United States. A comparison with the Hatch 2 plant is shown here to relate LaSalle back to the most recently licensed BWR plant. In passing it may be noted that Zimmer is the same size as Hatch and Wapps is the same size as LaSalle. These two are contemporary BWR 5's. Just pointing out a couple of items out of this table that might be of interest on LaSalle, the recirculation loop inside diameter for LaSalle is 24 inches as opposed to Hatch's 28, which makes for a slightly smaller blowdown area.

We have approximately the same heat flux, although slightly less. The maximum fuel temperature is a little bit less than Hatch, and our fuel channel

thickness is 100 mills as opposed to the eighty for Hatch.

MR. KERR: Fuel channel is the box -- channel box?

MR. SHELTON: Yes, econium boxes.

MR. KERR: What happens to the 3323 on that slide? It came out 3292. Or is that a fluctuation?

MR. SHELTON: One is rated and one is not. That should be 3223. That's an error, it should be 3323, I'm sorry.

MR. KERR: It seems to me that's within measurement error, but I --

MR. SHELTON: Yes.

Turning to the next page as we mentioned LaSalle is a containment and you saw in your tour as a Mark II concrete containment with a liner as opposed to the Mark I steel that was Hatch. The external design pressure from LaSalle which is a little bit different feature is 5 PSI such that we do not need backing relief. The dry wall volume, wet wall volume, suppression pool volume are all greater than Hatch, giving containment hopefully more margin and the dry wall temperature that the plant was designed for was 343.

You have the table in your handout if you would like to review it further. I thought

those were some of the interesting differences.

MR. MARK: What you mean by the external pressure -- five-pound higher pressure on the outside can be withstood?

MR. SHELTON: Yes, that's correct such that there would be no vacuum relief required.

MR. SHEWMON: You have fuel pipe eight by eight which is the same set of numbers for Hatch and LaSalle and yet your pour is six inches higher. Does GE vary the length -- with nominally standard fuel elements in various subassemblies?

MR. SHELTON: Our fuel is a little bit longer, we have at least I believe six inches of natural uranium at the top of the rods to help some of the peak factors.

MR. SHEWMON: But not at the bottom?

MR. SHELTON: Yes, that's correct.

May I go on?

MR. KERR: Oh, please.

MR. SHELTON: Some of the post-construction permit design requirements from the ACRS letter that we've included were as follows:

The main steam lines outside the containment up to the turbine stop valves in all branch lines two and a half inches and over including their supports

and isolation valves were designed to seismic Class I requirements. These lines meet the ANSI B-31-1 typing codes. A main steam line leakage control system was installed and it is an early BWR 6 suction design with output by the standby gas treatment system for processing prior to stack release.

The aqueous items contained in LaSalle are reactor trip -- pump trip -- or recirc pump trip, pardon me -- installed with fast-acting circuit breakers and an alternate rod insertion design completed with procurement underway for equipment to be installed during a normal forthcoming outage.

LOCA analytical improvements in coverage of wide-specter break size was completed by GE's Appendix K with various updates. Vacuum relief valves between primary containment and the reactor building were not needed nor desired as mentioned before and the containment can withstand the five-pound negative pressure.

The dry wall to wet wall vacuum breakers were located on the outside of the plant as opposed to off-site containment, rather as opposed to inside as you may have seen on some of the other plants that are located with isolation valves which allows isolation and maintenance during plant operation.

And only three of the four vacuum breakers are needed to fulfill the vacuum-breaking function between the dry wall and the wet wall.

Combustible gas control, rather combustible gas concentration in the containment for a post-LOCA situation is accomplished two ways. One is with the containment atmospheric monitoring system and a dedicated permanently connected hydrogen recombiner with crossover capability between units 1 and 2; and the other way is via nitrogen purge system.

LaSalle also has an operational vent purge system in parallel with the standby gas treatment system, but with equivalent effluent clean-up capability. This unique system preserves the availability of a fully capable standby gas treatment system for accident situations. Simultaneous LOCA with failure of recirc flow control valves was analyzed by GE to show that a class temperature rise of 145 degrees from the maximum predicted LOCA temperature does not violate the 2100 degree cap limit on peak clad temperature set by the NRC.

This ends some of the construction phase or ends the construction phase ACRS Letter, and just to review briefly some unique features of the LaSalle plant, as you saw when we went to the plant we have a

very rural site. We also as previously mentioned have an operating vent purge capability. We have an integrated flow, heating, ventilating and air conditioning system from less radioactive areas to more radioactive areas then through filters and an effluent treatment to the elevated single point release.

We have compartmentalized reactor building with environemtnally conditioned watertight compartments ECCS equipment. We have divisionalization electrically and physically of the ECCS systems to provide redundancy through separation. An underground tank farm for radioactive waste collection for both treatment and storage is located in the building. The feed water system has two turbine-driven feed pumps and one motor-driven feed pump.

Additionally, LaSalle is one of the first BWR 5 reactors in the United States with these new designed features. The eight by eight fuel with two water rods and U-238 at the end of the fuel rods. The fuel channels are 100 mills.

We have a refined CRD subsystem with rod sequence control system plus a rod block monitor system. We have a recirculation flow control system, a high pressure core brace system to replace the HPCI on previous plants. A solid state reactor

manual control system. We have improved properly direct-acting safety relief valves.

A redesigned refueling floor arrangement and new refueling bridge with, as you saw in your tour, spent fuel storage pools next to one another. The spent fuel storage pool has integral racks that are nonremovable and not mounted on the floor. An isolation status panel in the control room. An early model ESF stack panel display control room. An engineer's safe shutdown panel in the anxiliary electric equipment room.

LaSalle has also kept up with many changing tides. Material process, welding and system changes were made to combat intergranular stress corrosion cracking. The fire at Brown's Ferry resulted in a complete fire hazard analysis, installed fire detection and protection systems were all upgraded. Safe shutdown analysis and some plant changes were also made. Fire barriers, firestops and more fire protection apparatus were installed.

Commonwealth Edison Company master security plan was originated for LaSalle and standardized for all stations with some unique additions. It contains automated control access essentially a locked plant which uses the natural plant strength as a barrier to

intrusion and has an external warning perimter with multiple sensing to alert guard forces.

The CRD system was refined with removal of the CRD return lines. Installation of a pressure equalization station and separation of vent and drain piping for independence. LaSalle County has two SCRAM discharge volumes with integral instrument volume with redundant SCRAM channels to avoid the Brown's Ferry 3 difficulty.

An automated UT bug for inspection of the reactor pressure vessels plus extensive well preparations required to accomplish Section 11 base line sections on a plant that was bought to ASME Section 3 requirements was included. This was an immense effort and costly.

The feed water nozzle cracking problems at other plants resulted in a total change out of the feed water nozzles at LaSalle plus stainless clad removal inside the vessels. The feed water spargers were also changed to a later design. The HPCS plus its diesel generator was prototyped tested at LaSalle to show that flow and response time performance could be met with the large single dedicated load on one diesel generator.

That concludes discussion on some of the

design features of LaSalle and I'd be glad to entertain any questions.

MR. KERR: Any questions?

MR. WARD: On Item C the security requirement presumably -- the natural plant strength is a barrier to intrusion. Presumably you have some estimate of response time required of the guard force as related to the time required to break the barrier. Can you tell me what those times are?

MR. KERR: We need to go into closed session to discuss security.

MR. SHELTON: I could respond to that at any time.

MR. KERR: Well, you should judge whether you can respond to these questions in open session.

MR. SHELTON: I think it probably would be better to have a closed session.

MR. KERR: All right.

MR. MARK: I may not have caught correctly what you said about those vacuum breakers to equalize the pressure between the wet well and the dry well.

MR. SHELTON: Yes.

MR. MARK: I think you said that they passed outside of the containment?

MR. SHELTON: Yes, they are piped externally to

the containment, if you will, from the dry well to the wet well.

MR. MARK: Now that means then that those pipes are part in a sense of the containment boundary.

MR. SHELTON: That is correct.

MR. MARK: Any containment rated at 45 PSI positive and 5 negative?

MR. SHELTON: Yes.

MR. MARK: What about these pipes?

MR. SHELTON: It would be the same value. They are conceded part of the containment.

MR. MARK: Part of the containment boundary and so they are just as pressure capable as the walls themselves?

MR. SHELTON: That is correct. They do not represent a weak link.

MR. MARK: Thank you.

MR. KERR: Are there any other questions? Let's continue.

MR. SHELTON: For that, I'd like to turn the microphone back over to Bob Holyoak.

MR. HOLYOAK: I am going to address organization of management structure, and I'll work from one slide again. I have other slides we go into a great more detail. I will be covering nuclear station organizations

including station manning, quality assurance organization, and the Department of Nuclear Safety, and this discussion is also intended to address agenda items 2A-1, which is concerned with the organization changes recommended in NUREG 0737.

MR. KERR: I hope the organization is not as confusing as this slide.

(Laughter.)

MR. HOLYOAK: In your book I think there are some copies of this slide. I have a feeling they are not much better than the slides.

MR. KERR: Or worse.

This is for the whole company, I guess -- vice-president, the president and the executive vice-president?

MR. HOLYOAK: Right from the chairman on down. LaSalle operation activities are conducted under the on-site supervision of the station superintendent. I report to the division vice-president, nuclear stations, who in turn reports to the vice-president of nuclear operations.

MR. WARD: Excuse me. Since this is to difficult to read, maybe you could in this instance get up and point these out.

MR. HOLYOAK: Yes, sir.

Okay. I am shown down here in the proper relationship I believe and this is my organization, and I have a slide there, and I think we'll go into that. We'll go into that in a minute.

MR. KERR: I conclude you're the station superintendent.

MR. HOLYOAK: Yes, I am, sir, I am the station superintendent, and I have organizations reporting to me.

But before I go into that, let me work backwards and go on up.

I report to a division vice-president of nuclear stations, who in turn reports to the vice-president of nuclear operations who is Cornell Reed, sitting at the end of the table and who will be speaking in a few minutes.

He in turn reports to an executive vice-president. That's Byron Lee, who reports to Mr. O'Connor, chairman, or president. He's chairman and president.

The Department of Nuclear Safety which is the text of my talk reports directly to the chairman and president and this is a new entity since Three Mile Island. And that has an organization, an off-site review group, an on-site review group

which I will get into. The manager of quality assurance, Mr. Schusky, who is sitting in the audience, has an organization reporting to him, was director of quality assurance for operations and for maintenance and has on-site inspection group. We have at this point in my station a quality assurance for operations with the staff of four.

And on the site covering the construction areas is a construction group with I don't know how many -- I believe it's 25 people, I believe. Mr. Schusky reports to the vice-chairman, Mr. Benke, who in turn reports to the president and chairman of the Edison, Mr. O'Connor. And it is fully separate from the operations organization. Perhaps I can get back to the text if I've covered it here. Well, why don't I just put this on the view graph. Let me go through my organization. And you can tell me if I missed anything.

MR. SHEWMON: You're just much clearer.

MR. HOLYOAK: I feel that way too sometimes.

(Laughter.)

Okay. As superintendent I do have a station accountant, and I have an operating organization, an assistant superintendent of operations, Mr. Detrick, and I have an assistant superintendent for administration

and support services which is the technical service of Mr. Bishop, and I have an assistant superintendent from maintenance, Mr. Cloonon. I have a personal administrator and he has a staff man that helps him and he also has a training department which is Mr. McDonald back there, and our trainees reporting to him.

Would you like me to get into more detail on our organization? I can go down to each one.

MR. KERR: Does anybody else want any more detail?

MR. WARD: So that group there is what's on site and that's all that's on site?

MR. HOLYOAK: Yes. But there are four Edison groups on site, the operating group which are reporting tome and this is the organization. There's a construction group reporting to Mr. Burke and a testing group operational analysis, and there's a site quality assurance group for operations and for construction.

MR. WARD: And so afteroperation and construction is complete --

MR. HOLYOAK: Then the only three groups on site would be myself, quality assurance, for operations and then there will be representatives of the testing department for the Edison Company. They report to a different vice-president.

MR. MARK: What about security?

MR. HOLYOAK: Security people report to administrative service assistant superintendent, Mr. Bishop. They report through him to me. And at this point in time I have three security administrators. A senior one and two assistants.

MR. MARK: This includes both the guard forces and the personnel screening or whatever it is you do?

MR. HOLYOAK: Yes, sir. The screening for people coming on site is through the security group on site. We use a contractor which is Burns Security to provide site security for us.

MR. WARD: Won't there also be this site inter-safety group?

MR. HOLYOAK: They are not within my organization.

Did I show that on the other side -- they report separately to Mr. Benke. They will also be on-site after we start up.

MR. KERR: Who has the principal responsibility for safety on site?

MR. HOLYOAK: Beg pardon?

MR. KERR: Who has the principal responsibility for safety for those people on site?

MR. HOLYOAK: Safety -- myself. I am responsible

for the health and safety of the public and the safe operation of the plant in relation to my people also who are on site.

MR. KERR: To who does the physica operations report?

MR. HOLYOAK: They report to the assistant superintendent of administrative services, this gentleman right here, Bob Bishop, administrative and technical services.

MR. KERR: Thank you.

MR. HOLYOAK: If you like I can break these down into more detail.

MR. SHEWMON: I would like you to talk about the training supervisor for a minute. He's responsible for training instrument technicians and operators.

MR. HOLYOAK: Okay, the training supervisor, Mr. McDonald, who is sitting out there, is responsible primarily for operator training -- actually responsible for all training that's on site training.

Now, we do have within the Edison Company, we have other components of training such as Sherwood, which handles instrument training to some degree, electrical maintenance and mechanical maintenance training, and some clerical staff training on occasions, and storage department.

We have just set up a large group out at the Braidwood Station which will handle off-site simulators which I was going to address in my discussion. That is now building up and the LaSalle specific simulator will be starting in '83.

MR. MARK: That's for the off-site, so that's meteorology primarily, isn't it? You said off-site, didn't you?

MR. HOLYOWK: Off-site training related to operator training.

MR. MARK: You said off-site simulators, and I thought that might have to be when a poof goes up, where would it blow?

MR. HOLYOAK: Well, we have that, too, I suspect.

MR. KERR: Mainly it's a simulator which you put off-site.

MR. SHEWMON: It simulates what's on-site, but it's off-site.

MR. KERR: Right.

MR. HOLYOAK: Within the training department, we are training our licensed candidates in all degrees. We are training our operators who are out in the plant -- who operate beyond or prelicensed people.

MR. SHEWMON: How many people do you have in that training program now and how many do you have or

will you have two years from now?

MR. HOLYOAK: I have ten -- do you have a number -- or, I believe that's part of Cordell's presentation.

COMMONWEALTH EDISON STAFF MAN: The number of licensed applicants we have on staff right now is 54 with seven who are going to apply for licenses probably within the month, so we have about 60 or 61 license applications.

MR. DELGEORGE: Mr. Shewmon, was your question how many trainers we have or how many people participate?

MR. SHEWMON: I can count the number of trainers. I was more interested in how many students you will have at any given time.

MR. DELGEORGE: In the operator training courses?

MR. SHEWMON: Yes.

MR. HOLYOAK: We also have equipment attendants, and we also conduct training for new people coming into the station which is orientation. We have system description for everybody in the station, and I think the only people who do not get system description which describes over five weeks -- this station's systems is the clerical department.

MR. SHEWMON: The same training supervisor is the individual who's responsible for the administration of tests or instrumentation control repairmen, also?

MR. HOLYOAK: Tests for that group would be in Shorewood to a certain extent. We have a training program there at Shorewood. We also have specific training for the instrument people where we send them out to San Jose on the GE -- under GE auspices.

MR. SHEWMON: I was more interested in the certification than I was the training.

You know, people can go to school and they can sit in class, but how do you decide whether or not they are qualified to come in and start putting their screwdrivers on your instruments?

MR. HOLYOAK: We have for the top two groups of instruments people the control systems technicians and the A people who work on safety related equipment which you'd be concerned with. We have two tests that they have to go through. Tim, is that about a four-day or four-part test? It's very extensive.

STAFF EMPLOYEE: Yes. It's a program for qualification requirements.

MR. HOLYOAK: We have that in the instrument department and mechanical maintenance at this point.

MR. SHEWMON: So you have different levels of instrumentation control people and the people who work on safety systems must have passed these tests.

MR. HOLYOAK: Yes, that's correct. They must pass

it in order to be -- in order to get their rating, if I may put it that way.

MR. SHEWMON: Now the only people who can work at those at any time on the weekend or at night or whatever are people with that rating.

MR. HOLYOAK: There are some people who have prior ratings before coming to this station but at our station any new people coming in take that test.

MR. SHEWMON: Do they ever have to be relicensed or show that they haven't forgotten at all like ten years later?

MR. HOLYOAK: This is probably unique to Edison in doing this that I know of or that I am aware of. There is no requirement that I know of that requires this. We have not got into requalification testing at this point. We are just too new, really.

MR. SHEWMON: I am interested in your answer because the last time I said it's the foreman who is responsible for it and how the foreman decides it was totally unspecified.

MR. HOLYOAK: Well, evaluation of any man being promoted -- there is a many-faceted thing.

MR. SHEWMON: Thank you.

MR. CATTON: Before you take this away, would you tell me how that column which says training interfaces

with the outside world. It seems to be buried way down

MR. HOLYOAK: Well, I just got a requisition from Mr. McDonald to go down to Gatlinburg to interface with the outside world in a training seminar. Are you talking within the Edison Company then?

MR. CATTON: Well, yes

MR. HOLYOAK: There's a functional line between Mr. McDonald to a gentleman by the name of Gene Fitzpatrick, who works with the division vice-president of nuclear operations who has a training staff. So --

MR. CATTON: So there's a line from training supervisor -- around you to a different boss in the corporate structure?

MR. HOLYOAK: Quite realistically there's a dashed line from each of these people to the corporate downtown GO counterpart such as the manager of operations in the production department or the manager-tactical services or the manager of maintenance. So there is a functional line and they get directions -- of course I am always kept well-informed, otherwise they get my nose out of joint. I am informed on the handling of these people, but how often do you have a meeting, Tim?

STAFF MEMBER: Right now about every two months. Supervisors of all the stations are attending and also

we have a Midwest Training Association meeting.

MR. CATTON: Who decides if a training supervisor is doing a good job, you or the man above you?

MR. HOLYOAK: Both of us. We have an appraisal system in the plant and we do a review on a periodic basis to find out how people are doing, not only on a salaried basis or for salary basis but basically how he is doing and functioning.

So, my assistant superintendent here and myself really decide how GM is doing.

MR. CORDELL REED: You might say there's a very strong central training group and one component of that group would be to determine the effectiveness of training.

And back -- they will be checking at each of the stations.

MR. CATTON: I guess you understand my concern. You have training buried within operations, and I'm concerned about training.

MR. DELGEORGE: I think a concrete example of the adequacy of the training we provide are the results of the first licensing exam for reactor operators at LaSalle County at which we had better than an 85 percent pass rate, and I think that's atypical for the industry -- it's higher than you would normally

see in the industry and we are very proud of our training program.

MR. KERR: Well, integrated into the organization is the term you use there.

(Laughter.)

MR. REED: Well, we might defer that.

MR. CATTON: Would it be possible for me to see the outline of your training program, perhaps tomorrow?

MR. HOLYOAK: We have many training programs.

MR. CATTON: Well, I am interested in training for your operators. I don't want to take up any more time right now, but perhaps you could showme that.

MR. HOLYOAK: Yes.

STAFF MEMBER: Well, we can get together after this.

MR. KERR: Just bring what he wants to see.

(Laughter.)

MR. WARD: It's not clear to me where your on-site technical support is in that organization.

MR. HOLYOAK: Now we are going to expand it out a little bit to answer your question. This is Mr. Bishop, who reports to myself, if you remember the prior chart. This assistant superintendent, who is the administrative and support services as a technical staff. He has an office supervisor. He is in charge of all that area,

quality control, rad-chem, radiology and chemistry supervisor, and the security administrator.

MR. WARD: The technical staff consists of how many engineers?

MR. HOLYOAK: At this point --

STAFF MEMBER: Thirty-three on the staff today.

MR. HOLYOAK: Thank you, Bob. We picked up one today.

MR. WARD: How do they interact with the technical people, and I guess what would be your engineering division, and also in the nuclear or corporate nuclear safety division.

MR. HOLYOAK: At this point in time you have to recognize we have our organization; yet we are starting up a station for primary concern and later on preoperational testing looking for correcting problems that come up. In a normal operation we have our normal operating staff that when we do come on line we would have everybody in place in particular.

We relate to an engineering group -- today we relate to Brent Shelton and his engineering group downtown, and we will be relating to a similar group once we get our license and go on line.

And it's a day-to-day operation to provide a modification package to correct something we find

we would like to have done to make the plant work better or if necessary to make the plant run, and we would pass that to our organization and put it all together, and we have a procedure to do that and send that down to the engineering organization and have it appraised that way. It's very direct.

MR. WARD: And with the corporate nuclear safety --

MR. HOLYOAK: The corporate nuclear safety sits to one side if I can put it that way much like the quality assusrance and it's an audit group, a support group to us and they would interface very directly as we visualize it. It's a new group, obviously, so we still have to work out how it all works within our organization.

But our resources are their resources in a sense that they would properly ask us for support information to check some area of their concern.

MR. REED: We have our director of nuclear safety here if you would like to have some more detail on their function. Would you like to hear a little bit more about their functions?

MR. WARD: I don't think that's necessary.

MR. KERR: What sort of communication do you have within the organization like you've had some experience with BWR's before, so if somebody has a

problem in the station how do you find out about it?

MR. HOLYOAK: How do I find out?

MR. KERR: Do you have a good grapevine?

MR. HOLYOAK: We have an informal grapevine, and we have formal superintendents meetings and we have a communication network on the prior --

MR. KERR: I am less interested in charts than I am in how the thing works.

MR. HOLYOAK: Each one of my assistants is interrelated with the assistants in the other stations in a comparable job. They meet formally and discuss things informally, as I do with the superintendents. I also get pretty direct feedback from Mr. Palmer who is the division vice-president for nuclear operations.

MR. KERR: Have you ever called up anybody on the phone?

MR. HOLYOAK: Yes, I've talked to Jim Zimmer and people like that.

MR. DELGEORGE: We also participated in a notepad system. Our program includes and has included for some time an off-site review function which integrates any information that may be accumulated from all of our operating plants as well as operating plants, boiling water or as well as pressurized water reactor

throughout the country and these operating assessments are distributed to that off-site review group to the station and communicated to the internal station organization to assure that they are aware of any situation that may affect our plant from outside the plant.

MR. CATTON: Who within that structure makes the notepad system?

MR. DELGEORGE: The notepad system is coordinated through the Director of Nuclear Safety and the off-site review group and the information is monitored daily and communicated directly to the station as a result of that monitoring.

MR. CATTON: Is it on-site?

MR. DELGEORGE: The notepad system is monitored in our general office.

MR. HOLYOAK: At this time I understand it's on-site at several of the stations, but it's not at the LaSalle Station.

MR. CATTON: Do you plan to have that at LaSalle?

MR. HOLYOAK: I have to defer to that.

MR. CATTON: That would be really nice.

MR. REED: We have a formal operating experience assessment operated out of the Department of Nuclear Safety. The notepad typewriter communicator is located

downtown. When there is an event we communicate to the station either by cipher system or computer system or telecopier or telephone. But the Department of Nuclear Safety has a formal feedback system for assuring that things are addressed.

MR. HOLYOAK: There are many other multi layers of communications, the licensing administrator sends out affirmation concerning licensing on all stations. Mr. Schuste's group sends out resumes of problems occurring in other stations.

MR. KERR: Mr. Holyoak, according to my reading on the agenda, we are about twenty minutes behind time.

The next item is a schedule for five minutes. Do we really need to spend five minutes on scheduling?

Or can we just go along with it?

MR. HOLYOAK: I would like to defer to Mr. Cordell.

MR. REED: No, we do not need to spend five minutes. I just said that the licensing is going along real well, andindeed it is. I don't have to tell you our schedule of the readings which we expect next week. I think the important thing to try to get over to you is to remind you that there is no petition for hearings on the LaSalle docket. Therefore, after a decision by

the NRC staff we may get to the issue of the license, and as you know we are asking for full-term operating license.

The anticipated fuel load date of LaSalle is September of this year. And we expect to have all of our industrial security and separation between Unit I and Unit II completed by that time. With regard to operator training, LaSalle expects to have 62 licensed candidates available for a walk-through portion of the licensing exam, and these walk-throughs are currently scheduled for next August. The licensed candidates can be broken down as follows: We have 35 senior reactor operator licenses applicants -- 26 reactor operators, and one senior reactor license -- for fuel load foremen. 55 of these candidates have already taken the written portion of the exam and seven will be ready for the examination by August.

Of the 55 who have taken the written examination 17 have passed, two have failed, and 36 who took the exam in October of last year have not received their results yet. The two who have failed will be ready to take -- retake the exam in August. Based on our current pass-fail statistics, we anticipate no problems in having enough qualified personnel to support the plant start-up.

At the present time the preoperational test program is slightly over 80 percent complete. Testing has in general been started, and in many cases completed on all major systems required for Unit I fuel level. We currently see no difficulty in completing preoperational test programs by mid-August.

As I said, the fuel load -- scheduled for September 1981 and start-up test program which based upon historical precedent will require from six to nine months to complete and will result in the availability of Unit I for regular commercial service in the first half of 1982.

MR. KERR: Thank you. Any questions.

Is it normal operating procedure to operate for October?

MR. HOLYOAK: Would you like us to comment on that?

(Laughter.)

MR. HOLYOAK: In fairness to the branch, I believe they have a manpower crunch to do testing and the radar test. I think one of the gentlemen who was going to participate in the test retired and that has created some problems.

And we expect the testing graded by May, I believe.

MR. SHEWMON: How many pages are you talking about? How long a test is it?

MR. HOLYOAK: Tests are usually a two-day set of tests. After taking an RO, it will take up to depending on the person of course up to six to eight hours to write it if you take the SRO it will take six to eight hours?

MR. KERR: He's trying to get some idea of the grading.

MR. SHEWMON: Is it multiple choice?

MR. HOLYOAK: No, it's essay, depends on the gentleman writing. Writing eight hours, you can write a lot of pages.

It's a big test.

MR. STEVENSON: Like 30 to 40 pages.

MR. SHEWMON: Thank you.

MR. KERR: Any other questions?

I declare a ten-minute recess.

(At which time the Committee recessed for ten minutes.)

MR. KERR: (banging gavel)

Before we pursue the next scheduled item on the agenda, I think Mr. Shewmon has a request about the nuclear safety group.

MR. SHEWMON: Go ahead, Mr. Ward.

MR. KERR: Well, it's not really Mr. Shewmon.

MR. WARD: Mr. Reed, you offered to have someone tell us about the function of the nuclear safety -- corporate nuclear safety organization, and I think we would like to hear a few minutes about that.

MR. REED: Okay, he's not here, but I've been very close to this.

The nuclear safety group -- well, first the director of nuclear safety was appointed as a result of a senior advisory panel that we at Commonwealth Edison hired to review our operations. This panel had recommended that we have a person with direct access to the chairman of the company who would do an overall review of the safety of the plant to integrate the design and the operations.

Dick Bjorkberg was the person appointed last year to perform this function and report to our chairman administratively and to me functionally. Under Dick Bjorkberg two separate groups, one is an off-site review group, and that is a function we've

always had in our company to review tact fact changes and changes in procedures, and they must approve after an on-site review has been taken care of.

And in addition to this function, there will be a nuclear safety group at each of our stations operating as well when the station is under construction and at LaSalle this group would consist of between three and five people. The difference in how many people it will take will depend upon how many people we have downtown. In Dick's corporate staff, for instance. There may be a health physicist downtown who will have responsibility for several stations. The three to five people at each station will not only check to see that the station is following the approved procedures, but to make subjective judgments as to the quality of those procedures. They will check on quality assurance department and all aspects of station design.

Operating experience assessment is one of their major functions and will be coordinated with INFAC and INPOL as well as operating assessment from the NRC. They are looking at things like if the gas monitor fails frequently and the station is not monitoring fast enough to see a trend, we may look to

them to get that taken care of. They are to act within the organization and if they cannot be satisfied in that vein, then they have direct access to the chairman. And he is in the process of staffing this group now and we are very proud of the group.

MR. CATTON: Is there anybody in that group who sort of takes a look at or tries to establish a figure of merit and how well the operator is performing in a safety sense?

MR. CORDELL REED: That's part of their charge.

MR. CATTON: Are you hiring somebody with the kind of qualifications that would be necessary to do that?

MR. REED: Wel, we have senior reactor operators in that group. The person that will be the downtown person in charge of the groups at each station.

MR. CATTON: I am referring under your nuclear safety group. Is there anybody under your nuclear safety director?

MR. KERR: I thought I said that one of the members of the group.

MR. REED: Oh, yes. The person that's in charge of the nuclear safety group at LaSalle is Joe -- let me ask Joe. Did you get an SRO -- sure, Joe?

JOE: I had an SRO.

MR. REED: Joe Bowers was the lead engineer at Dresden, and he had an SRO at Dresden, and we are going to try at each station to assure ourselves that we have an experiences operating man.

MR. WARD: Well, the corporate -- I think you said that the notepad information interaction with the INFAC through the notepad at least partially through the corporate director of nuclear safety, will he tend to communicate with the plant? I know this is not all set up, but how do you envision that? Will he intend to communicate with the plant superintendent or with his on-site nuclear safety staff at each of the plants?

MR. REED: Well, that group has the sole responsibility for notepad and INCEP. When something comes in it depends on the nature of the information. Most ofthe time he will communicatewith this on-site group. If there's something of a more immediate nature he will interface with the superintendent. Since there are many things that come through a notepad, they do the initial sorting and sifting and make an initial judgment, for instance, applicability to our stations. For those they think that are applicable then through a formal system they assign an action and the date for response and that action is assigned to the station

superintendent. And that system is in operation and has been operating for about a year now.

MR. WARD: Can I ask a question about operator training now?

MR. KERR: I don't want to stop your question, but there is going to be a presentation on operators.

MR. WARD: Well, a question of the staff: Does the organization that has been described today, do you believe it meets the staff's requirements, particularly as described in the NUREG as requested?

MR. BOURNIA: I think there is two areas we're looking to the organization from the TMI issue, and we found that the organization meets the requirements.

MR. KERR: May we then proceed with the agenda which I think brings us to TMI review issue?

MR. DELGEORGE: We had, as we indicated, integrated our response to Item 2.A.1 on the agenda into the discussion of organization, and unless you have any specific questions your last comment asks the staff whether they thought our organization -- we can give you a brief summary of the specific changes that have been made in the organization, which would really be a recap of what we already discussed, or we can go to agenda Item 2.A.2.

MR. KERR: Let's go to 2.A.2.

MR. HOLYOAK: There are three different sections on the operating training program, and I'll start with training for mitigation of core damage.

In accordance with NUREG 0737, Commonwealth Edison submitted a topical outline or training program on September 15th, 1980. This program fulfills the requirements of the March 28th, 1980, NRC staff directive as well as the recommendations of the Institute of Nuclear Power Operation, document entitled "Training Guidelines for Reorganizing and Mitigating the Consequences of Severe Core Damage," and that was dated June 30, 1980.

The table shown presents a summary of that outline and the number of hours spent on each topic in the LaSalle training program -- in the LaSalle training program. Due to delays in plant construction, many of our operators receive the portions of this training more than once which would increase the number of hours listed.

As you can see, the program is comprehensive and includes 251 hours of actual construction, of which 221 hours have already been completed. Because training offered under one topic may be applicable to two or more topics, the sum of the number of hours per topic exceeds the actual classroom hours spent.

The extra column identifies instances where extra credit has been taken. The table primarily includes only operator training. The training for instrument training personnel and rad-chem personnel will include training for the high radiation sampling equipment which has to be installed. This training will consist of one week hands-on training provided by the system supplier plus two additional days of specialized training for the instrument maintenance people provided by equipment vendors. This plan will have instructors attending this training and tending to the future training needs of equipment.

In recent discussions with other training organizations, we discovered we are significantly ahead in the field of developing this training program. This is evident by the fact that even General Electric will not be offering training on this topic until May. We will be auditing GE's training program and others as they become available in order to keep our program as up-to-date as possible.

A specific area where we have the clear lead in the field is in the implementation of the new BWR simplimatic emergency operating procedures. These procedures were developed from the BWR owners group emergency procedure guidelines and represent a significant

change of philosophy in emergency procedure development and use. Previous emergency procedures were based on specific equipment failures or events such as a feed water pump drip or main turbine generator drip. These procedures were written according to some pre-determined set of possible initiating events and prescribed actions based on a set of expected plant responses to these events.

If the event was not initiated as previously determined, more than one event occurred simultaneously, the operator was left with little meaningful guidance. The new procedures take all these variables into account and give the operator guidance and maintaining the plant in a safe configuration without regard to the initiating of policy or for the number of equipment failures.

There are five new emergency procedures and two contingency plans which provide all the necessary operator guidance for keeping the core covered and the containment intact. We have demonstrated the use of these procedures to the NRC satisfaction on both the mars simulator and our own control room.

MR. KERR: Could you go back to the sentence the operator knew what to do in spite of the number of things or independently of the number of equipment failures or something?

MR. HOLYOAK: The new procedures take all these variables into account and give the operator guidance to maintain the plant in a safe configuration without regard to the initiating powers or the number of equipment failures.

MR. KERR: I don't think the word should be quite without regard because I would assume the procedure would take into account -- would give a significant amount of regard to the equipment.

MR. HOLYOAK: These procedures are simple enough. Jim?

MR.McDONALD: Like there are changes in philosophy and it may be correct to say that no matter what has taken place the procedure will still provide the operator with good advice and good functional direction and where to go previous to these types of procedures if a set of situations, if the person who wrote the procedure visualized -- it was not the case -- then procedure then became rather useless. But now they try the right procedures without regard to what could cause the situation. They try to anticipate all possible situations to get the operator in that position and then give me guidance based upon that not one specific event but any specific initiating event.

MR. KERR: I guess it's probably not a good idea for me to try to decide emergency procedures here, but I would think in order to know what to do in an emergency, you have to get some idea of what the emergency is and what equipment is available to you in order to do something about it.

So, I assume you don't have one cure that cures all diseases.

MR. MC DONOUGH: Now, that's true, sir. What we try to do is try to give the operator a complete spectrum and do not rule out any possibility of any failing situation based upon some initial set of circumstances.

MR. WARD: I guess there's a point that procedures react only to the symptoms which are actually observed and don't jump to conclusions about what the cause is.

MR. MC DONALD: Yes. I think taking an example for the best approach like low water level. The operator should be concerned about the core being uncovered. That should be of utmost concern, but he's got to worry about other things and keeping the containment intact. But for the initial part of that action he takes his concern is the water level going down and the procedure better give him some equipment that he could start to initiate to reverse the trend,

because no matter what the initial cause of the lowered level was, that's the philosophy behind it. Like water level decreasing and the water pressure increasing, et cetera, et cetera, instead of the turbine trip. The turbine didn't actually trip, due to some preset circumstance.

MR. KERR: It could be that the water level might be going down because there isn't any way to get water into the vessel and if there isn't any way to get it in he's got to know I think, and I presume that this will be covered in the procedure. He has to know what it is he has in which he can mitigate a different set of circumstances.

MR. DELGEORGE: Doctor, I think we can say that there is specific consideration made of the status of equipment made to maintain a safe operation of the plant, and the procedures are focused now on symptoms as opposed to specific events so the operator doesn't have to interpret the symptoms first to conclude that he has a specific event before he goes to a procedure to respond.

He now responds to the symptoms directly based on the equipment that's available, and there was a vast amount of experience from operating people on the boiling water reactors for the development of

these procedures so he could facilitate the response of the operator.

And you can see from this designation the procedures that have been made available. They are focused on symptomatic concerns, level control, containment control, level restoration, so it's a broader area of focus that integrates the availability of the various safety systems.

MR. KERR: If you look at this total picture, which it seems to me emphasizes simultaneously two efforts, one is to write more clearly and complete procedures for a respective situation, so an operator will be covered on whatever arises and the second is to try to train operators better so that they will understand a plant and be able to think things through that nobody has ever heard of before.

And I guess the implication is to be able to ad hoc when procedure judgment doesn't exist. So, as you think through -- a very real situation, do you find any conflict between those two objectives? If you see the objectives in the way I have described them.

MR. DELGEORGE: I'll allow the operating people to make a comment if they like, but I think Commonwealth Edison having both boiling water reactors and pressurized

water reactors in some boiling water reactors they still have a vent base procedures, we believe that there has been significant improvements made in the existing vent based procedures currently on our operating boiling water reactors.

And there also has been a significant improvement in what might be called vent base procedures which are being used at most of the pressurized water reactors across the country. So we would agree that you can distinguish between these two approaches to improving operator response. The approach that has been taken by the BW R owners group and which we have implemented on LaSalle County is an attempt to establish a different route at achieving some improvement at emergency procedure and it's not to say that it's the only acceptable approach, but we think it's more than an adequate approach.

And from the experience we have gained so far, our people believe it's an improvement in that their understanding of the response of the plant has been improved by a focus on symptoms that they need to respond to as opposed to specific deficiencies that are identified by enunciators on the control.

MR. MARK: Could I ask in connection with these procedures the water level is going down and so for

the response let me pretend as a suggestion start on Pump A -- not to give a real example. Now, say Pump A doesn't start. Is there something in the procedures to tell them what they should then do?

MR. MC DONALD: It gives them the entire spectrum of possible ways to get the water into the vessel. That's why it's so prudent in my mind to go with the old ones because the old ones anticipated a pump failure. Now you're in a position of a water going down and what if that pump did fail. If you think it did and you're in this procedure where you think Pump A failed and now Pump A didn't fail, so is the procedure valid or not?

But this doesn't take the situation or a system and gives the operator all the possibilities they may be faced with no matter what fails. Pump A, B and C fail and normally if Pump A fails the vent procedure would say if Pump A fails start Pump B. But what if Pump B fails and what if Pump C fails? And what if all three of them fail? This procedure tries to deal and I believe does deal effectively with that situation where almost everything has failed and it still gives him some alternative methods.

MR. MARK: That covers the point I had, thank you.

MR. KERR: Can you --

MR. HOLYOAK: Just in closing we are providing one week in training on these initial procedures and will be following this up with several hours on refresher training and in summary we believe we have satisfied the criteria for training on the mitigation of the core or core failure.

The next topic is the use of simulators in training programs, and I don't have a slide for that, John. LaSalle treating program currently includes three major simulator training programs, all of which utilize the GE simulator located near Morris, Illinois. The first of these programs is a standard GE 12-week operator certification training which all our license candidates must attend prior to applying for a license.

The second program is a three-day refresher training course which has been developed specifically for LaSalle. It utilizes the LaSalle procedures and technical specifications and implements many of LaSalle's specific casualties. The LaSalle casualties that cannot be duplicated on the Morris simulator are discussed with the instructor using LaSalle lesson plans.

This training program includes multiple failure casualties, degraded core cooling capability,

degraded electrical distribution and stuck open relief valve casualties. All our license candidates receive training annually.

The third program is a six-day program which was specifically designed to train our station control room.

MR. CATTON: Can your simular handle it if you were to break that pipe that's right below the SCRAM discharge valve, if that pipe were to break; following a SCRAM you have a small break and you're dumping your water outside, couldyour simulator handle that?

MR. HOLYOKE: Well --

MR. MC DONALD: That wouldn't be considered lost effluent.

MR. CATTON: It's a small break.

MR. KERR: Well, can a simulator handle that, and I think the answer is no, isn't that right, Mr. Holyoak?

MR. HOLYOAK: Right.

MR. CATTON: Getting back to some of the questions that were being asked here, what is the symptom that your operator would recognize or would he?

MR. KERR: Do you understand what he's postulating?

MR. HOLYOAK: Well, loss of level in the reactor and everything else would be asymptomatic.

MR. DELGEORGE: There would be alarms that didn't say the two-inch drain line on the discharge broke. That alarm wouldn't come on, but there would be symptomatic alarms that would suggest to him the nature of the problem, and allow him to respond.

Area radiation monitor would indicate to him where in the reactor building the break was and the status of the reactor would be displayed so he could respond and properly control the reactor.

MR. CATTON: He'd somehow have to tie that radiation into the loss of coolant, wouldn't he?

MR. HOLYOAK: Well, he'd get an alarm from his pump for one thing.

MR.MC DONALD: I think an evaluation of what the system is -- well, there would be an evaluation of a hydraulic system that would tell us what happened to it. It would be a long time before the SCRAM would take effect.

We don't train for that specific instance. But I think the operators are trained well enough to recognize something like that and be able to take the proper action.

MR. STEVENSON: With the simulator it does not have the ability to simulate a small break down to a specific line as you describe. But --

MR. CATTON: The reason I was interested in that break was because I don't know what you would do, you just slowly pump all your water out.

MR. WALKER: Well, at the point where level became low enough to give the reactor operator the low level alarm in the control room, that is where they would enter the emergency procedure for level recovery and restoration and that's it.

He would start his list of ECCS pumps and there's a list of several high pressure pumps and several low pressure pumps and if that doesn't work -- I'm saying his entry level under his emergency condition would be the same as if therewere a break inside in that level would fall down.

MR. CATTON: Can you isolate that break? I'm just not satisfied that they would know what to do about it, but I'm satisfied they would know.

MR. KERR: Why don't you continue, Mr. Holyoak?

MR. HOLYOAK: The third program is a six-day program which is specifically designed to strain our station control room engineers, and this intended program places heavy emphasis on the role of a station control room engineer on accident analysis and overall plant safety, and this stresses the importance on keeping the big picture in mind and not getting

pulled into little problem areas while using all the indications available to analyze what is happening before directing any major recovery action. All our SCREES and shift technical advisers have attended this training as well as a few of our shift supervisors.

MR. SHEWMON: Would you tell me the difference in the station control room engineer and a shift technical adviser?

MR. HOLYOAK: A shift technical adviser is a graduate engineer who's been trained to respond to specific emergencies. He's not necessarily licensed. In the Commonwealth Edison Company, a station control room engineer is a graduate engineer who holds a senior reactor operator's license and is an integral part of the shift -- a given shift.

Does that answer your question?

MR. KERR: A SCREE can be an STA, but an STA can't necessarily be a SCREE, is that correct?

MR. HOLYOAK: That's correct, but from an accident condition either one can work from the regulations.

MR. SHEWMON: It may both be the same individual sometimes.

MR. HOLYOAK: Well --

MR. DELGEORGE: During the normal operation of the

plant the SCREE, the station control room engineer, will serve as the senior reactor operator in the control room. Also on shift are two other senior reactor operators, the shift supervisor and the shift foreman.

In the event that an abnormal situation occurs in the plant within ten minutes there would be a shift change in which the SCREE, a technical graduate with training beyond that normally offered to operator candidates, would serve in an advisory capacity to the shift supervisor to satisfy the role in the NUREG of an FTA.

MR. SHEWMON: That's ten minutes because that -- but you think it would take him to decide whether something is serious or is that ten minutes for somebody to come from somewhere else.

MR. DELGEORGE: It's a time that was agreed upon as reasonable to provide for the turnover. The individual would remain in the control room and seve in the same capacity until relieved so there wouldn't be a degradation in the shift's capacity to respond to an event. But it is the time period that we have committed to provide for another SRO to come to the control room to support the shift.

MR. KERR: Well, the ten minutes -- the availability

of staff, the staff would want to be available within ten minutes of something which occurs. The reason they have ten minutes is because this man needs to meditate for about ten minutes to transform himself from a SCREE to an STA.

(Laughter.)

MR. WARD: I'm glad you explained that as you did.

MR. DELGEORGE: Because from what I read I didn't understand what you proposed, but the idea is that in this ten-minute period, the SCREE gives out this SRO and replaces that by the fellow coming from the washroom or downstairs?

MR. SHEWMON: That means there's always another SRO on site who in that ten minutes can get to the control room.

MR. DELGEROGE: That is correct. The staff's minimum manning requirements is for only two senior reactor operators for a plant like ours. We will have with the SCREE three senior reactors operators on each shift.

MR. KERR: In the SER, the staff has in its discussion of the SCREE or STA which, by the way I must say I like, in fact if I understood the evolution of the STA, it arose out of the feeling that the STA must be

better trained and it was learned they couldn't do that immediately so they had -- it seems to me Commonwealth is going back to the original idea. But there's something in here that says -- if I interpret correctly -- that the SRO is going to have to come back to the control room at least once every two hours to ensure that he's aware of the overall plant status and any evolutions and stuff like that.

Is this going to be in the technical specifications?

MR. BOURNIA: We indicated that it should be part of the license conditioning.

MR. KERR: So the licensee is going to be checked. He has to see it every two hours. Are you really going to do that?

MR. BOURNIA: Well, it's a procedure that they have to follow.

MR. KERR: Well, procedures are expected, and people get citations for not following procedures. But I really think you ought to give that some thought.

MR. REED: We're happy for that. We certainly hope this is not going to invest itself as a text or anything, because I suspect after we get experience with this set-up, that that requirements will probably

not be needed. We think it won't be necessary.

MR. WARD: Are you having or do you anticipate having problems filling your staff and your requirements for SCREES with graduate degrees.

MR. HOLYOAK: At this time I have six people in training, and I have -- well, I have six station control room engineers as designated and the two shift engineers also in training capacity and I believe there are two more people on the line who are coming up. So, to answer your question directly, no.

MR. KERR: Also with the SCR on page 22-3, under STA function, second paragraph, almost last line, exercise a comment and supervisory function. What is a command function in a civilian nuclear power station?

MR. HOLYOAK: Is that question directed at us?

MR. KERR: Well, you didn't write the SER.

MR. BOURNIA: He's acting as a shift supervisor, so to speak at that time.

MR. KERR: I understand the supervision, but it's the command I'm concerned with.

MR. BOURNIA: He is commanding the reactor operator.

MR. KERR: Oh, I see. Go ahead. I just think that the nomenclature here is not very meaningful.

I just wonder why you use it.

I find it in a number of publications now. I don't believe it has much significance. You didn't write this, I don't suspect.

MR. SHEWMON: You would prefer an administrative response better.

MR. KERR: The word has significant military meaning. If we're going to have to try to describe something that has meaning, I think you ought to have words that use words that have meaning insofar as one can do so.

MR. HOLYOAK: Before addressing Edison's future plans for simulator use, it should be pointed out that we also have an on-site simulator that we have never really taken credit for. This simulator is a full-size operational mock-up of our feed water system control panel. We have used this simulator for training operators, instruments of maintenance and technical staff personnel.

It functions exactly as the actual control system and from the instructor's counsel we can introduce an almost infinite number of casualties for the trainees to address. It has not only provided our operators and maintenance personnel with valuable experience in operating this important system, but it

has allowed our technical staff and engineering people to work out any bugs in the system prior to start-up. Commonwealth Edison has already -- using simulators it has been since 1968 in our training programs and is in the process of upgrading this commitment. A new central training facility is presently under construction that will house a site specific control room simulator for LaSalle County Station.

Completion of the simulator is scheduled for early 1983 and will meet or exceed AMSE standards. All of the control panels associated with Unit 1 and all shared panels will be installed. All switches and instruments will be functional with only a few exceptions.

The plant process computer console will be simulated and all the computer programs required for operator training will be available and responsive to the simulated plant conditions. The instructor will have the capability of failing any switch, light, alarm, recorder or potentiometer in any position. The capability will be provided to preprogram major plant transients that will involve multiple failures and extend through many hours such as Brown's Ferry fires and the BWR version of the TMI incident.

The length of any specific simulator training program has not yet been determined, but it's expected that we'll provide considerably more hours on the simulator than presently offered. The staff's analysis of all operating department jobs is nearing completion, and this analysis will provide input to our future training programs.

Commonwealth Edison has been using simulators for operators training for many hours, and we're convinced that this is one of the best methods of training operators. We're committed to providing the best simulator training available.

MR. KERR: I take it you consider simulators important and worthwhile?

MR. HOLYOAK: I went through the Dresden simulator very early in its operation and when you can synchronize a unit five or six times in one night where you have one opportunity in your lifetime sometimes, I think it is very worthwhile.

MR. KERR: I believe you said that you would train operators to deal with the situation you mentioned, which I think is very good, but it also would be nice if you could train them to deal with accidents by having them happen, but I don't know how you can describe them. I think anything like a

TMI accidenthappening again is very unlikely. Do you have anybody in your organization who can spend some significant amount of time to try to think what the next accident might be like, one that has not yet occurred.

MR. REED: At the current time, Commonwealth Edison is conducting a very, very extensive probablistic risk assessment in conjunction with Indian Point and in this process we think that we are or will determine some of those accidents that have a high potential for occurring.

After we complete the Zion TRA which we are essentially complete with now, we'll conduct one on LaSalle. And I think that's going to be the principal tool to determine the what ifs and affect the training.

MR. KERR: Thank you.

MR. CATTON: I'd like to pursue a little bit more how well do your simulators follow the physics of your various processes. How real is the back-up software?

MR. MC DONALD: We are trying to make it so that no one -- the operator or the person using the computer console will be able to tell the difference.

MR. CATTON: Yes. But I also heard it's going to be going through accidents -- you're going to think about the accident, you're going to go through it,

that's different.

MR. HOLYOAK: The information we derive from our store-up program.

MR. CATTON: That won't do it. That's not what we're interested in. We're interested in abnormal situations like you indicated earlier, like the TMI type that had not yet happened. That means you have to have good representation of physics in the simulator so if your operator steers you in the wrong direction you're going to be following that course of events and that's something strange that you thought of.

MR. KERR: To put it another way, you're suggesting that the simulator ought really to simulate the reactor and not a specific series of events.

MR. CATTON: Yes. They ought to know that if they think up a sequence it may not follow.

MR. REED: We do not have engineering simulators. I think that's what you are relating to. These are training simulators, although we have worked pretty extensively with the EPRI's RETRAN program -- has some limitations. But we have done extensive work and right now we have notebooks -- we have various transients that we have converted to RETRAN for each of our operating stations, and we know the limitations of that, but it does give us some guidance.

MR. KERR: If I understand what you are saying, that I personally agree with you, I don't think a training simulator is ever going to do the things you're talking about. It ought to be used by your engineering types, maybe to look for accidents. I wouldn't be surprised if you don't put that into some use at some reasonable time.

MR. CATTON: On the other hand you don't want to put in the response to action.

MR. SHELTON: Even the Dresden simulator, maybe Howard can make a comment on this, is somewhere in the middle and we didn't take a set of input conditions and directly program an output, like say for example valve characteristics were looked at, instrument characteristics.

There were a lot of the pieces inputted. So when you go to the chain, it does develop this realism and shall we say -- and maybe it's in the middle of full engineering simulator, and one that is just a trainer where you plug in an input and it prints out if you want the FSAR output.

MR. CATTON: Some of the simulators have adjusted their model so the results come out, but what about the FSAR output. Those are not best estimates, they are evaluation models, and they could well operate

in the wrong direction. If you are using RETRAN, that's close to your best estimate. That is a significant improvement for FSAR. Somewhere you're going to get the best estimate as contrasted with the calculation model. That's the only point I'm trying to make.

MR. KERR: Good point. Please continue, Mr. Holyoak.

MR. HOLYOAK: The last section on training is training implemented other than TMI. Two requirements, and even before the TMI incident, the Commonwealth Edison training organization had initiated an in-depth analysis of many of our training programs. Since the accident, this effort has accelerated, and we are now performing an extensive analysis upon which our future training programs will be based. The wisdom of doing this has been recognized by many post-TMI reports, and we believe we are exceeding even the most rigorous recommendations in this area. From the very beginning Commonwealth Edison has made an effort to provide the best possible training. Our training programs were always designed to exceed the minimum accessible standards to make sure of a safe and efficient operation of the plant.

The truth of the matter is we have made very

few changes or improvements in the light of TMI. We already have implemented practices that are now just becoming recommendations in the latest and most comprehensive study of nuclear training, CR 1750, entitled "Analysis Conclusions and Recommendations concerning Operator Training."

Can you put that -- that to back up what we are saying, this is the recommendation from NUREG and this is what we have been doing in the right-hand column: conduct task analysis as a training basis and we've been doing that since February '80, and we've been doing it for several years. And the next item, "Upgrade and Formalize OJT," and these are task and qualification cards, and we've been doing that since '78. "Upgrade SRO Training for development of supervisory skills, all management has attended a problem-solving program and supervisory workshops, and such as management by objectives and communication and listening and performance analysis, and increase operator work force -- "

MR. WARD: Could I ask you a question? Does that mean -- with the NUREG recommendation was to upgrade SRO training.

MR. HOLYOAK: Development of supervisory skills. In other word , we are trying to get our people to go

through problem analysis, decision-making analysis techniques.

MR. WARD: Okay. But you say all management has attended.

MR. HOLYOAK: All management in the station has undertaken training.

MR. WARD: You're calling SRO part of management?

MR. HOLYOAK: Yes, sir. Definitely. All of our shift supervisors are management by definition, that is.

All right. "Increase the Operator Work Force." We have committed to six shifts to provide more training time and reduce overtime pressures.

"Provide Instructor Training." We have used NUS Management Training Service and University of Wisconsin instructor programs.

MR. CATTON: What are the qualifications for instructor?

MR. HOLYOAK: Our instructor for licensed training usually holds certification from a simulator program, and some of them, they will hold SRO's for licensed training.

MR. CATTON: So they have basically come up to the operating side of the house?

MR. HOLYOAK: To a large extent or in some cases

is it three people who hold teaching certificates?

MR. MC DONALD: Yes.

MR. HOLYOAK: Yes, and some of those people. We have a spectrum of trainers, obviously we have people for training like rad-chem technicians.

MR. CATTON: Do you have any engineering-type people in training?

MR. HOLYOAK: Nuclear engineering?

That's a separate program.

MR. KERR: Well, do you have any teaching?

MR. CATTON: Yes, teaching or mechanical engineer.

MR. HOLYOAK: We have a mechanical engineer.

MR. CATTON: Part of your training staff?

MR. HOLYOAK: Yes.

MR. KERR: Did you have any further questions, Mr. Ward?

MR. HOLYOAK: I guess I covered the list primarily.

MR. WARD: I just had a question really related to staffing, but have you -- do you plan to use at the LaSalle shifts or SRO's experienced from your other plant operations?

MR. HOLYOAK: Some of our staff. For instance, I could say myself and two of my three assistants have SRO backgrounds from other stations.

MR. WARD: What about people at the SRO level at

LaSalle? Will any of theirs have had prior experience?

MR. HOLYOAK: Oh, yes, quite a few. I have a chart if I could find it in this pile, if you want to look at that. But it is true.

MR. WARD: That's all right, thank you.

MR. DELGEORGE: There are more than ten that had previously licensed.

MR. HOLYOAK: About that. Let's see. This is a chart, and it shows BWR licenses previously held in the operating department seven, administration one, the passed written LaSalle exam shows who is certified there. That's for the written aspects. Other BWR experiences showing nuclear Navy experience and other light water reactor experience, several people there. Does that sort of answer your question?

MR. WARD: Yes.

MR. BISHOP: It should be pointed out that those don't really overlap.

MR. HOLYOAK: The one that would be with a written exam.

MR. KERR: Do you have any senior reactors that -- any feelings about that you'd be willing to express?

MR. HOLYOAK: I don't think it is automatic that the best senior reactor operator is necessarily a

graduate. I don't think they are mutually exclusive. I've seen very, very good and capable operators who really have had very little formal schooling beyond high school and I have seen very top-notch graduates who make excellent operators. I don't think the academic background necessarily relates to the quality of the capability.

MR. KERR: Do you think it's a good idea to require a degree or degree holder?

MR. HOLYOAK: No. I don't think it's a good idea. I think you will exclude a lot of capable people and I don't think there are very many capable people in this country who can do this kind of work.

MR. REED: Is that also the corporate opinion, too? It's going to be a very severe problem to get graduate engineers, a number of graduate engineers, to hold down shift positions. The proper approach is to get a graduate engineer and put him into the functionwhere he is supervising the plant operations. But to get ten graduate engineers to work Saturday and Sunday and weekends I don't see how it can satisfy anyone.

MR. CATTON: How about the money?

MR. REED: Money is not going to be the thing to do it for us. Money is not the motivating factor.

MR. KERR: Well, you certainly have to take that into account. I think it is important because you have a disgruntled individual on the job who doesn't think he's getting enough money and I would like to see if there's enough correlation between a man's capabilities on SRO and a man's getting a degree like -- you know, maybe you toss out one or two percent, but what I'm asking really is what is the correlation formula? I don't have statistics on it.

MR. HOLYOAK: I would say no. I wouldn't make it a requirement, but at the same time I'd say when you have the man in there you should be providing this type of training programs to sharpen him up.

MR. KERR: I have a degree, and I think that the worst thing that a nuclear power plant could do is put me in a job where anything is radioactive. I don't think I'm advocating everybody with a degree can operate a reactor.

I see a high correlation.

MR. MC DONALD: The document we showed earlier, CR 716, is a 200-page analysis that does address exactly what you brought up. What's said here can be borne out there.

MR. KERR: Well, the training program that you

have described and from what you say it has been improved and I think it's moving in the right direction. What I'd like to ask you, to put the question in a different way: Have you gone -- having gone to a training -- how do you select the people? Do you let the licensing process do your selection for you, or do you have a different selective process?

MR. HOLYOAK: Before a man can get into the stream of becoming an operator when he comes into the station we usually obviously interview the people -- obviously, some people are very heavy in the maintenance area. We aim them in that direction. And a man is aimed at operating and he normally has a pretty good background of physics and chemistry from high school, and we put him through a very general physics test battery to determine whether he is capable of passing a reactor operated license or would make a good operator as much as we can from a psychological standpoint.

MR. KERR: Now, again, I am not altogether convinced that there's a high correlation for passing an operator's exam and being a good operator.

MR. HOLYOAK: I'd agree with that.

MR. KERR: I'm asking you what your selection methods are for determining who you think you are

willing to turn loose on your plant. You have to make that decision.

At present there's a minimum which can pass the license exam, but that does not necessarily mean you want him operating your plant. I mean, is that your ultimate selection.

MR. HOLYOAK: To get the man into the program he has to at least pass a general physics exam, which says that he has cementy -- let's put it that way -- he is capablethat he has a good possibility of being stable enough, of being an operator. It's not a psychological sign exactly, but it's basically one of a physics nature.

From that point on, we have someone who reviews the operator on a six-month basis, and we certainly get feedback from the staff -- the supervisory staff that supervise the man at the existing plant, and the man will be five or six years as equipment attendant out in the plant before he heads for licensing.

And there's a lot of carrying through. We try to winnow the ones who aren't operators, at the same time we have to face up to the fact that the Edison Company has representation as a union -- the operators are in the union and we have to work with

the union and explain very carefully when we pull a person out from an operating position denying him his right to go for a reactor operator's license which has a premium that goes along with it.

So, it's a long, long process, and it's -- I couldn't say it's a clean-cut process in any sense.

MR. KERR: Well, there's a lot to do to deal with that problem, but I have talked to some people who are members of another union, and my impression is that the union does not have a lot to say about who can do the work. I mean, some companies have check pilots and they choose check pilots and a man has to pass a licensing examination.

But I don't think the FAA -- being able to pass FAA requirements is enough. Most organizations to qualify a man to fly a commercial aircraft are quite stringent. Now, I am not a pilot, so I can't speak from experience, but the ones to whom I have talked at least would convince me that they thing that the selection criteria within companies are more stringent than FAA requirements would have to be. And if this is in the face of a fairly strong union -- I may be misreading things, but I would simply say that I am really asking: Do you have a set of criteria or selection processes which are perhaps more stringent

but at least somewhat more independent of the licensing process and can you enforce it?

MR. REED: Let me try to answer that. We don't have a set of criteria as such, but what we have is the opportunity -- a man must present -- the station man, the lowest level,we have an opportunity of denying him promotion to the next step, which is equipment attendant, or after he's been in that step for awhile, we deny him -- I mean we deny him the opportunity to become an equipment operator or license training. But he cannot, at the personal whims of Robert Holyoak oranyone else, it has to be with cause.

And we have documents that that man or woman has -- has to be deficient in some way. By the time a person in Commonwealth Edison reaches the position where they are selected for a reactor candidate, we have to really sift it out -- we have already sifted out a lot of people for obvious reasons. He may horse around or whatever. But we do have a union. Our union is stronger than that of the airline pilots. Just so we can document the cause by which we fail someone out.

But I think your answer is it's not just a criteria that he passes the NRC exam. Probably if he was deficient in some manner he would not have reached that point with us promoting him to the point where he

would have the opportunity of taking that test.

MR. KERR: Well, is there any way given that a man has been a qualified operator for several years to decide that for some reason or other you do not longer consider him qualified?

MR. REED: Right, with cause.

We have had several examples.

MR. KERR: I'm not suggesting if it's only a whim. I'm sure of that.

MR. REED: We have had several examples at our operating stations where we have a demoted man from an operator position. We have had examples where we transferred a man out of nuclear station work to non-nuclear station work. Every fifth week the operating crew goes through a week of training, and at the end of that week of training he must take examinations on certain subjects. If he scores low on those examinations we can either not allow him to go back on shift, give him additional training or he cannot come up each week or each month that he goes through this -- we take him out of operator training.

I must say it has been the last three or four years though that we have really started to tighten up in this area.

MR. KERR: Well, I think it's important you do

because, with all due respect for NRC staff, and I do have an awful lot of respect for people who are operating the plants, and they are in a better position to judge qualified operators than anybody else. If they don't take the initiative in setting very high standards, and it seems to be, they probably aren't going to get the quality of operators that you need.

MR. REED: I agree.

MR. KERR: Where are we now on this?

MR. DELGEORGE: Mr. Kerr, at this point in the agenda as you will recall we had a very fairly extensive discussion on the improvements we made in the control room. The discussion that's included in your booklet provides a discussion in summary form of what you saw in the control room. We can go through that discussion for you here.

MR. KERR: Why don't we say that anybody wasn't satisfied with the presentation can ask questions? That'll save making a formal presentation which I think you're telling me you're going to duplicate what we saw this morning.

MR. DELGEORGE: Well, if there are any questions we can go to agenda Item 2.A.4.B. That would be Habitability Studies.

MR. KERR: Okay, are there questions involved about the coupling between the control panels and operators based on what you saw this morning?

MR. MARK: Just one. I wasn't quite clear as we saw this morning as to the form it's expected to be. Is it retained or is it still in consideration?

MR. DELGEORGE: We are still in the process of evaluating. I believe there's a reference in the SCR to what's called a long-term program. We have completed a design review of the control room and have agreed to make modifications, some of which you saw today.

We have also agreed in certain areas to a longer-term program of backfit. This would include a reassessment of the overall lighting standards in the control room and in some cases relocation of some of the valve operators and additional enunciator tiles in the enunciator panels.

And those commitments have already been formally made.

The staff has also in progress a broader long-term review of control room design.

(6:00 o'clock p.m.)

And we expectas a function of the staff's future request to provide additional information. But

for all practical purposes the majority of the modifications that we now know of that will be made to the plant will be made prior to fuel load and most of them you have already seen. There are a few more that will be completed prior to the start of the second fuel cycle and these include the more extensive relocation of instruments to provide a closer coordination between controls and instrumentation.

MR. MARK: Thank you.

MR. CATTON: Do you have a consulting firm that's helping you with this?

MR. DELGEORGE: Mike, can you identify the consultant that's helping us on this? We have internally human factors engineer who works on our corporate engineering staff and in addition we have contracted with an outside consultant to independently assess our control room and, Mike, would you tell us.

MIKE: We had general physics and resources development.

MR. DELGEORGE: We also are conducting a design review of the control rooms. As I told you earlier, we had a task force identified from our corporate offices as well as the LaSalle site. That included experienced operators. And we surveyed the operating staff at LaSalle County for input on the most effective

changes that could be made in the control. We think at the acknowledgment of staff we have conducted a very comprehensive review and made some significant changes in our control room.

MR. CATTON: Have you done anything like maybe taking some of the procedures and run drills?

MR. DELGEORGE: Yes, we did.

MR. WARD: I have a question. The color concepts you use, I think what I learned this morning was that on the control board you were using the green and blue lights as indication of a normal setup, but on the CRT you didn't necessarily carry through that same color scheme as I recall -- blue indicated that a pipeline had flow-through, or that a cable had -- green meant that it didn't.

Do you see that, perhaps, as a --

MR. DELGEORGE: I'm going to defer that to Steve Shewmon.

MR. SHEWMON: That question was brought up and the NRC did their audit.

MR. KERR: Mr. Shewmon, would you mind using the mike?

MR. SHEWMON: Okay, thank you. That question was brought up when the NRC did their audit of the control room and it was concluded that at the present

time the CRT is used as a diagnostic tool versus an operational -- a control interface, so it's still with the old in-board concept, and Dr. Silverman studied that situation and decided there wouldn't be any problem of transfer of trading because he called it a different psychological set. That's what the operator is on, and he concluded that there wereno problems.

And Mr. Ward, how do you feel about that?

MR. SHEWMON: I agree with them, that there won't be any problems on it.

MR. KERR: I'll translate all that to say that they recognize the problem, but for the time-being, they have chosen to ignore it.

(Laughter.)

MR. SHEWMON: I'd say we don't recognize it as a problem, but as an inconsistency.

MR. KERR: Well, that's better.

(Laughter.)

MR. KERR: Habitability study, all right?

MR. SHELTON: In addition to the human factor engineering that's been incorporated in the control room, the protection of the control room personnel from radiation chlorine and ammonia which were postulated to be present in the LaSalle vicinity were considered

in the overall design of the control room envelope in order to ensure habitability for personnel and integrity of the safety-related control equipment and components inside the control room under all plant operating conditions including the design and basis accident. The HVAC system serving this room is designed as follows: We have two one hundred percent capacity redundant safety-related HVAC equipment trains as shown in Figure 1. Outside air intake for each of the HVAC equipment train is independent, separated and missile-protected. Each intake is provided with redundant radiation monitors, chlorine, ammonia and ionization detectors. Radiation signals automatically routes the outside make-up air through the emergency filter unit which is capable of removing 99.9 percent of all particulate matter and 99 percent of all radioactive and non-radioactive forms of iodide. Detection --

MR. WARD: Excuse me, is that 99 percent of all elemental iodide? How effective is it for organics?

MR. SHELTON: The basis for that is methyl iodide. Detection of noxious gases, chlorine, ammonia and smoke, automatically isolates the outside air intakes and places the HVAC system in a hundred percent recirculation whereby all return air is routed through a normal

bypass charcoal absorber. Capability of purging the control room with one hundred percent outside air if ever necessary is provided.

Capability of maintaining control room environmental conditions of approximately 73 dry volt and forty percent relative humidity and an eighth of an inch water gauge positive pressure with respect to the adjacent areas to preclude the infiltration of unfiltered air.

MR. CATTON: Do you have an oxygen supply somewhere?

MR. KERR: I think his question is: Do you have a capability to complete a sealing off of outside air.

MR. SHELTON: That's the purpose of the filter make-up unit used. If you have some choices in the system, if the situation were such that you had to supply air to maintain the positive pressure, if you will, in the control room, you would take the make-up air through the filter unit, the emergency filter unit.

MR. KERR: You've got to get some outside air.

MR. SHELTON: Yes, you've got to have some make-up for positive filtration.

MR. KERR: Is there anything unusual about your habitability system? It's reasonably conventional, and

I don't mean --

MR. SHELTON: Well, by current day nuclear power plant standards, it's fairly conventional except we'd like to leave you with a point that it is -- that it contains two 100 redundant trains as opposed to two half systems or three fifty percent systems or something like that. Two one hundred percent systems.

But I think other than that, it would be fairly typical.

MR. WARD: How often would you test measure the efficiency of particulate filters in the carbon vent.

MR. SHELTON: That I don't know. I'd have to defer to perhaps Bob Bishop back there from our operating department.

Mr. Bishop, will you come to the mike, please? Because we're being recorded here, and we can't hear you from the back of the room, and I think this reporter is having trouble with people from the back of the room.

Did you understand the question, sir?

MR. BISHOP: I think the question is: How often do you have to -- how often will you measure -- that's in our technical specifications, and I believe it's area every eighteen months every refueling time.

Or when you expect there has been a problem. Where you have welding fumes or whatever.

MR. WARD: Yes, thank you.

MR. KERR: Thank you.

That's perhaps enough on the control room. Let's go on. Is there anything unusual about the local environment? Do you get corn silks or corn pollen in there?

(Laughter.)

MR. SHELTON: No. Frankly, I don't think there's anything unusual. In fact, as you saw coming out there, we are in a very rural location, and you have the river and you have the highway, which is a good distance away. No problems with the truck accidents or stuff like that.

MR. KERR: Okay. Inadequate core cooling instrumentation

MR. SHELTON: This post-TMI item, 2.F.2, has as its objective the addition of instrumentation or controls to provide easy-to-interpret indication of inadequate core cooling. Specifically, the added instrumentation must provide indication that inadequate core cooling exists from any cause and must not erroneously indicate an inadequate core cooling condition because of an unrelated phenomena.

Indication of approaching inadequate core cooling with advance warning and full-range level indication to the bottom of the core was specified and provided. Design analysis should cover considerations of instruments, accuracy, merits of various instruments to monitor other parameters indicating of inadequate core cooling as well as human factors related to operator training and use of data.

Commonwealth Edison is a participant with the BWR owners group which evaluated the adequacy of presently installed BWR water level instrumentation including that used in the BWR 5's at LaSalle. The GE transient evaluation audit level responses in core coverage conditions reported to the NRC in 24708-A and its predecessor 2407-A as supplemented in October 1980 has been entered on the LaSalle docket.

A response to question 31.287 which also responded to I Bulletin 7921 treated instrument accuracy --

MR. KERR: It would be helpful to me if you could give me the essence for these things because we don't have them quite -- what was that question, what did it ask?

MR. SHELTON: We were basically discussing instrument accuracy, and we attempted in that response to that question to discuss the accuracy and the fact that it's

covered several zones. And it's basically a dissertation on the water level instrumentation.

MR. KERR: And the bulletin has it in the same question?

MR. SHELTON: Yes.

In Appendix L in the FSAR, we again provided a discussion of level instrumentation. Considerations of other in core measurements, such as flux or working fluid temperatures did not reveal any workable method for ready and unambiguous core cooling indications.

Based on the above, Commonwealth Edison endorsed the BWR owners position that the LaSalle BWR 5 needs no additional instrumentation to give an unambiguous, easy-to-interpret indication of core cooling. The provision of the fuel zone level measuring instrument with total core coverage is considered to be adequate for post-accident inadequate core cooling management.

The existing narrow range BWR level instruments are adequate to provide, easy-to-interpret indications of approaching inadequate core cooling whether during normal operation or during transients.

MR. KERR: How do you determine approaching inadequate core?

MR. SHELTON: In this sense it would be a level

drop towards the top of active fuels. It could be of a concern.

MR. KERR: Does it have to be for example any particular drop because staff seems to be asking that. To be able to measure -- what is it to be approached to -- do you just interpret that the water level has dropped? Is that what it means to you?

MR. SHELTON: For me it would be a time judgment.

MR. KERR: Does that mean you might be able to measure the rate at which the water level has dropped?

MR. SHELTON: Yes. And you should be able to do this with the chart that we have, unless you get a massive approach into that.

MR. KERR: The chart you would have to gather would be showing the levels.

MR. SHELTON: Yes, that's right, you could watch the rate.

MR. CATTON: Your position is that you don't need to measure the steam temperature at the top of the core?

MR. SHELTON: Basically, yes.

MR. CATTON: Now, do you want to make some judgments with respect to how much core degradation you have? How would you determine this level?

MR. SHELTON: With radiation sampling of the core and of the gases -- gas space or water space.

MR. CATTON: Basically, in your position you do everything you can and after it's all over you're going to look at it. This interim period where level of temperature might give you a good picture of the state of what's going on in the core. You should feel you don't need that.

MR. DELGEORGE: We have a representative here from General Electric, Steve Stark, and he can comment on that.

MR. CATTON: Well, I don't want to get that far, I just wanted to raise the question.

MR. KERR: Well, I want to get into it just as far as you want to get into it.

MR. STEVE STARK: My name is Steve Stark of General Electric Company. Of course --

MR. KERR: Do all of the owners group use GE?

MR. DELGEORGE: I believe it's unanimous.

(Laughter.)

MR. KERR: Just asking.

MR. STARK: My name is Steve Stark. The first objective in the operation of the BWR, of course, is to avoid the approach of inadequate core cooling, and that is to maintain the level well above the core.

If, for some very degraded conditions the water level did drop below the active fuel for an extended period, it is possible that you could get core damage; and I think the further instrumentation that the LaSalle Station is equipped with to observe the occurrence of inadequate core cooling is the existence of hydrogen monitors within containment, gamma monitors, which is within the containment, and let's see, there's also one other listed -- dry well temperature compression.

And using those parameters the operator could adequately determine that inadequate core cooling has occurred and take action to reestablish core cooling.

MR. CATTON: It seems to me where your monitoring levels -- I think as long as you've had no core damage monitoring levels is probably all you would really need.

But as long as you have core damage and you're interested in how much you have and interested in how much your knowing the rate is occurring, I don't think that the level is quite sufficient. Now, Reg Guide 1.97 says, what does it require? Does it require that you monitor the course of the accident or monitor the situation when you're trying to avoid core degradation, or does it just require that you know

what happened when you weren't able to mitigate the accident?

MR. KERR: Is this a rhetorical question?

MR. CATTON: Yes, I'm asking the staff. I mean, you're supposed to monitor the cause of the action and get an idea of when core degradation is occurring how much is going on where you're at, and you have to have those temperatures.

If all you want to know is that gee, I'm in trouble, and I want to avoid filling it up -- that's enough. I think.

MR. KERR: Do you understand Mr. Catton's question? Could you respond to it, sir?

MR. AXELSON: I think one of the things mentioned or your representative mentioned, using these other monitors, it would only help you if you had a leak.

MR. CATTON: They are kind of slow, too, we know that from TMI.

MR. KERR: I think Mr. Catton's question in Reg Guide 1.97 meant that you want to be able to follow the course of the core damage before it develops.

Isn't that what you are asking?

MR. CATTON: Yes.

The rest would follow.

MR. KERR: Let's not wait for an answer. Perhaps you could look at it and respond.

MR. STARK: Maybe I can help somebody.

I believe the Reg Guide shows post-accident instrumentation and its primary objective is to monitor for the core thermocouples the existence of core damage.

There has been some evaluation into just how capable or what the capability would be if -- in determining the degree of core damage and thus far would have not been able to identify any great help that would be contributed by the existence of thermocouples in determining --

MR. KERR: Well, we consider the more knowledge that one has the more better equipped one is to handle the situation given that you have the information of what you're going to do about it.

I feel that the question has been addressed very satisfactorily.

MR. STARK: There's one statement that the staff made that I'd like to add something to: They said that you could only make these containment measurements if there was a leak. Well, of course the only way that you could get into degraded core conditions is if you did have a place where you were losing water level.

So there's an inconsistency there.

Our reg valuations by General Electric.

MR. WARD: That's not symptom-oriented thinking.

(Laughter.)

MR. KERR: Well, I guess there's ten ways you can leak water and not have any indication of it.

MR. STARK: Our evaluations have shown that as long as the core is covered that there will be adequate core cooling.

MR. DELGEORGE: One of the problems that we have at this point is an inability to reach a consensus and what would be unambiguous measures of inadequate core cooling. The staff has in Reg Guide 1.97 prescribed that we do something that is not clear to us would be effective.

MR. KERR: It seems to me that unambiguous term is unfortunate.

MR. CATTON: It also originated following the course of the action.

MR. KERR: A partly ambiguous situation would be worth something. What is it the staff is asking LaSalle to do? How many thermocouples is standard?

MR. BOURNIA: Would you repeat that?

MR. KERR: How many thermocouples and where would they be located?

MR. BOURNIA: We read what's in Reg Guide 1.97. It says four thermocouples per quadrant.

MR. KERR: Sixteen altogether?

MR. BOURNIA: That's what it says.

MR. KERR: Would you settle for one for four?

MR. BOURNIA: One per four is required for the operation.

MR. KERR: So you could still satisfy the single phase criteria and get two per core. Where would they have to be?

MR. BOURNIA: I can't tell you that.

MR. KERR: The Reg Guide must say something. What does it say?

MR. KERR: Let me put it another way: What is it you are asking LaSalle to do?

MR. BOURNIA: If they would be willing to integrate the core coupling by June 1981.

MR. KERR: Well, Reg Guide 1.97 doesn't tell them what to do. Who's going to tell them that? What is it they are committing to? They are committing to something.

MR. BOURNIA: I think that this still -- this option is still for study. We don't have to make that decision until June 1983. However, we want to make sure --

MR. KERR: I've got to make a decision by next

week, if we write a letter.

MR. BOURNIA: We want to assure yourselves that the applicant is going to put some thermocouples on.

MR. KERR: But you're not telling them where you wanted to put them. You're asking them to make a commitment to do something and they say, what do you want me to do; and you say, I'm not sure yet.

MR. BOURNIA: I think by the date that we are indicating we have not come to that conclusion.

MR. KERR: I wouldn't commit to doing something in 1983 without having any idea what I was being asked to do, would you?

MR. KERR: I can't believe what I'm hearing.

MR. CATTON: But there's kind of like a Mexican standoff. GE says no, --

MR. KERR: I'm not talking about GE, I'm talking about the staff here. It seems to me it would be nice if the applicant could be told what it is the staff wanted them to do. And it seems to me that the staff is not prepared to tell them.

MR. BOURNIA: You're right in that respect. I think the only thing we are saying is that we think thermocouples would be required.

MR. KERR: From what I have heard about this discussion, depending upon where you put the in-core

thermocouples, and we've learned how difficult it is to install and operate.

MR. BOURNIA: But the idea is you still have to say that you are going to put them in. Now, how you do it is still in the planning stage.

MR. KERR: What is it that the staff is requiring the applicant to do?

MR. BOURNIA: My answer to your question is: We want to have the applicant insert the thermocouples.

MR. KERR: So how they do it is okay? Then what is the margin?

MR. MARK: Will they be all right if they are offered six inches of natural uranium?

MR. KERR: Or in the middle of the core? Where?

MR. BOURNIA: I cannot answer that.

MR. KERR: If I sound like I'm picking on you, I'm sorry.

MR. MARK: Look, Bill, as long as they get those signals in Bethesda, then they'll know what to do with them.

(Laughter.)

MR. DELGEORGE: From my observation, it seems that the committee has perceived the problem that this applicant has in making a commitment today to install equipment that we are not sure would produce

any useful effect.

MR. KERR: Well, the use of thermocouples might be good, and I'm not sure I know why except that I remember at TMI also they turned out to be very valuable. They were in four or five strategic spots. They might be worth something. At this point, however, if you made a commitment to put some in, I guess the staff wouldn't be able to tell you whether they would accept it or not, because you gentlemen -- well, I don't mean yougentlemen on staff -- but you have not decided yet where you want them.

Is that the situation, gentlemen?

MR. BOURNIA: Well, I'm not well-versed in this area as well as you can see, and I am not going to commit staff to something I might be in error on. I think it should be a topic that should be discussed.

MR. CATTON: Why is thereso much resistance to putting them in? Is it that difficult?

MR. HOLYOAK: It's a function of maintenance down the road.

MR. CATTON: Well, wait a minute. Maintenance of thermocouples --

MR. SHELTON: Let me comment with a couple of reservations. One is because DWR operates in a steam environment and the temperature of the water and the

steam are basically the same. So we have to go to a heated firma couple. And there's two core spray spargers in there, and to put this thermocouple in if I put it under the spray then I am not sure what the thermocouple is telling me. If it's above the spray and, again, I am not sure what sort of heat influence -- what I have seen again, it comes through the core spray.

MR. CATTON: If you -- I think you've got to decide what you want and where you want to put it and then just do it. Now, if it's impossible to put them where you have to put them, that's the question. And I am just getting the feeling that it is very difficult to put thermocouples where you think they ought to be, and therefore the best thing to do is not put them.

MR. SHELTON: I guess we believe they wouldn't give us any meaningful advantage.

MR. CATTON: There I could understand if you have to redesign the whole reactor in order to have thermocouples in there. Maybe you ought to give it a little more thought and not do it. But if it's just a matter of -- I don't know whether I should put them here or there, that to me does not seem to be any justification for not doing it.

MR. KERR: Well, gentlemen, any other questions?

MR. MARK: Is it assumed that the thermocouples -- would they be reading the peak temperature of something or other?

You said they'd be useful? Did you say they might be useful in reading the peak temperature.

MR. CATTON: To be useful, I think you want them with the steam temperature exiting the core and the level with the core. The difficulties of sticking them down inside the core is not worth the increased knowledge you would have.

MR. MARK: But you want the maximum steam temperature, don't you?

MR. CATTON: Yes, you could probably settle for something that's a reasonable average. Whether you can put it in the quadrant or one can make calculations.

MR. KERR: Okay. Let's go to another item here now that we've solved that problem.

Hydrogen control.

MR. DELGEORGE: There is included in the same section our conformance with Reg Guide 1.97. The challenge again, requirements for core exit thermocouples determines the extent in which the current instrumentation on LaSalle satisfies the Reg Guide.

The areas that arguably do not conform are areas that consider the quality requirements for certain components of the instrumentation, and we believe that each of the required parameters is sent -- that we satisfy in most if not all cases, instrument ranges that would be required by Reg Guide 1.97.

You saw in our post-action monitoring panel that we do have significant post-action instrumentation level pressure pump flows. Most of the information that would be required by Reg Guide 1.97 we could demonstrate conformance. However, there is a problem in interpreting what quality standards are required for this instrumentation and the Reg Guide is very specific on backfitting quality standards and I think that to the extent that we have a problem with the staffing it would be in that area.

MR. KERR: Do you look on that as a severe stumbling block at this juncture?

MR. GEORGE: Depending on the position the staff takes, it could very well be a severe stumbling block and I hope we can reach a meeting of the minds on the adequacy of installing the equipment. We have not, however, dealt with the staff to any great extent on justifying the current design.

MR. SHELTON: In proceeding with hydrogen control, in order to assure that the primary containment and integrity is not compromised due to the generation of combustible gases following the postulated system, systems for detecting and controlling the concentration of such gases are provided within the plant. These include hydrogen and oxygen monitoring, hydrogen gas recombiner system and an inerting system and a purging system and adequate material selection.

There are two separate sampling subsystems, each powered by a separate electrical division for both hydrogen and oxygen sample in the dry well and wet well as seen in Figure 1. The gas samples from each subsystem are analyzed in separate gas analyzers located in the reactor building. Each analyzer provides a local measurement and transmits an electrical signal to the control room where a permanent record is provided by seismically qualified pen recorders.

The concentration of combustible gas in the primary containment following a LOCA --

MR. KERR: You must have some hydrogen monitors in your other plants.

MR. DELGEORGE: We have hydrogen monitoring and

oxygen monitoring, but the devices themselves come from a different manufacturer.

MR. KERR: My impression is that there is a considerable amount of uncertainty and malfunction -- did you describe a system that would be more reliable, or do we have any indication?

MR. SHELTON: We hope more reliable, and I might call on Ron Lund from Sargent-Lundy to comment on the LaSalle system which we hope will be an improvement over what we have.

MR. RON LUND: We have a system which has been tested and we'll get them into the environmental qualifications of them. Included in the testing were some of the severe transients under which some of these other systems have been malfunctioning like at higher temperature rates and, in addition, the method of sampling is different.

We have offline type of sample where we draw a sample out of the container and put it through an atmoizer and return the sample to the containment. So, the actual style is different then we feel the design of that system is easily maintained.

MR. KERR: You know something about the reliability of the system you prescribe?

MR. LUND: It's a new system.

MR. KERR: You don't know much about the reliability?

MR. LUND: There are similar sampling systems, not necessarily for hydrogen, that this company has put out and the method of sampling is consistent and fairly reliable, and what is more important it can easily be maintained.

MR. MARK: What is a time lag?

MR. LUND: Two cubic feet per minute sample and with the line size we have, it's going to be on approximately seven to ten seconds.

MR. MARK: At the time of drawing the sample and --

MR. LUND: That's the travel time from the sample location to the analyzer.

MR. MARK: The analyzer itself is instantaneous?

MR. LUND: Yes, it's instantaneous.

MR. KERR: Thank you, sir.

MR. SHELTON: The concentration of combustible gas in the primary containment following a LOCA controlled by the thermal hydrogen recombiner system, the combustible gas control system contains one hydrogen recombiner per unit. The hydrogen recombiner is located in the reactor building outside the primary containment. The recombination process takes place within the recombiner as a result of an extra-thermic

reaction.

The resultant steam is then cooled and condensed and the resulting water and any remaining gases is returned to the containment in a closed loop. Suction is taken from the dry well area and the discharge is returned to the suction pool area above the water level as seen in Figure 1, or rather Figure 2.

MR. MARK: How many cubic feet a minute?

MR. SHELTON: I beg your pardon?

MR. MARK: How many cubic feet per minute or per week?

MR. SHELTON: Up to a hundred and fifty standard cubic feet per minute on the blower.

MR. WARD: Are you going to show us something about the capacity? Are you saying concentration following a LOCA is going to be controlled by a thermal recombiner system? Are you going to show us the rate of hydrogen generation that you're talking about in a LOCA and compare that with the capacity of the recombiners?

MR. KERR: This is a conventional LOCA, right?

MR. SHELTON: Yes.

MR. KERR: Where most of it comes from radioanalytic composition.

MR. SHELTON: Yes.

MR. KERR: Proceed.

MR. SHELTON: The hydrogen recombiner unit is skid-mounted and is an integral package. The skid equipment mounted on it is designed to meet seismic Category I requirements. The hydrogen recombiner system is designed to accommodate the conditions present in the containment following a LOCA, and this hydrogen recombiner is initiated manually from the control room, and once placed in operation the system continues to operate until it's manually shut down. Each recombiner unit has the capability of serving either containment.

Therefore, there is a hundred percent redundancy of all components and controls. The recombiner unit controls include independent control panels located in the auxiliary equipment room and all functions and controls necessary to start the combustible gas system are located in the control room.

Turning now -- in anticipation of future regulation requirements, Edison has committed to inert containment. The containment inerting system is designed to maintain the inerting atmosphere at less than four percent oxygen although large quantities of hydrogen may be generated following a postulated LOCA. The inert containment might not have sufficient

oxygen to support it. In addition, the lack of oxygen will prevent any fires occurring while the containment is inerted while in operation. And I have in here and I'll read through it, but --

MR. KERR: Let me ask you a question: When you inert, how do you know you are inerted?

MR. SHELTON: Sampling the containment atmosphere.

MR. KERR: You read the oxygen?

MR. SHELTON: Yes. Well, I'll not read all the design basis, but basically we have two level system here.

MR. KERR: Don't, please.

MR. SHELTON: To rapidly inert and lower capacity for makeup.

In addition, we have a primary containment purge system which is somewhat unique to our plant and it's basically we want to call it in operational sort of a gas treatment system, so the maintenance in removing and de-inerting the containment so we have a charcoal filter by which we can purge the containment if necessary without using the stand-by gas treatment system and that's a LaSalle Sargent & Lundy unique system. This is the first plant that that's on, and that way we can leave the gas -- stand-by gas treatment system and just use it for emergency.

MR. KERR: Once you have de-inerted and are going down, how do you test to make sure there's enough oxygen to support?

MR. SHELTON: By air samples. We sample the containment before people go into it.

MR. KERR: You sample it with the same sampling system, or do you have a sampling system that draws samples over a wider region.

MR. SHELTON: We have sample points located in various places throughout the containment so there is not just one place. No, we don't just this just to sample without discharge. We take samples at various locations.

MR. KERR: But you'll use that same sampling system to sample the way you send people in, which says you have enough oxygen to send people in?

MR. SCHROEDER: We check with the sampling systems to find out what the oxygen concentration is and once we verify that oxygen concentration according to those samples is sufficient, we send people with self-contained reading apparatus with oxygen detectors and they cover the entire inside of the containment and especially the low and high levels in any area that you might have some pockets of nitrogen verifying that indeed you don't have a nitrogen pocket.

MR. KERR: I was about to suggest sending somebody in with a candle, but I thought we better not.

(Laughter.)

MR. SHELTON: With respect to material selection following a LOCA, the predominant short-term source of hydrogen is a metal water reaction, possible contributions of some zirconium, zinc and aluminum by assuring that all the water that's in primary containment has a neutral Ph. The possible contribution of hydrogen from the zinc or aluminum, the metal water reaction is prevented.

In addition, by careful selection of non-metallic materials allowed in the primary containment, the possible addition of other combustible gases being released by the post-LOCA environment are prevented.

The LaSalle County design attacks the potential hydrogen from many fronts. Prevention is in material selection and inerting selection with redundant safety relation hydrogen and oxygen detection subsystems, control with redundancy-related hydrogen recombiners and a backup filtered containment purge system. This high degree of defense in depth truly assures public safety and confirms the design adequacy of LaSalle County Station in the area of hydrogen control.

MR. KERR: Does that complete your presentation?

MR. SHELTON: Yes.

MR. KERR: Are there any questions? I have a question.

It is now about 6:10 p.m., and I see that our schedule of the morning calls for us to start at 8:30. Would it work a tremendous hardship on anybody if we started at 8:00 a.m.? That would permit us to fit in the station electrical power and emergency support in the morning. If it interferes seriously with anybody's schedule -- many thought they'd finish today and wouldn't have to show up in the morning -- if that is acceptable, I would like to do that and begin in the morning with station and electrical power and go through the rest of the agenda items and schedule by starting at 8:00 in the morning rather than 8:30.

I declare a recess until 8:00 a.m. tomorrow.

(Whereupon, said meeting was recessed until 8:00 a.m. on April 4, 1981.)

This is to certify that the attached proceedings before the

ACRS Subcommittee on La Salle County Station

in the matter of:

Date of Proceeding: April 3, 1981

Docket Number:

Place of Proceeding: Morris, Illinois

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

Jack Artstein

Official Reporter (Typed)

Mary Alice Cotter for Jack Artstein

Official Reporter (Signature)