what we -- was in our licensing basis for criteria, we also had data on the safety-related loads that are supplied by the diesel generator, such as motor-rated valves, an important one, we receive specified times to actuate the cycle to the safe position. And we have -- during our test we time those actuations to make sure they meet the criteria. What we found in each case that there was margin, the criteria is such that they were acceptable.

And the model that Bob described that MPR prepared that was done for testing at the site and benchmarked the model and use that model to predict the full accident conditions on the system, what would be the results. So we took that full accident condition, looked at the results we got in the margins that we had in the equipment, and found it was acceptable. And we have a calculation that details that evaluation out for us at the site, and I can give you the specific numbers on the weekly call.

MR. PASSEHL: Okay

MS. LIPA: The question I wanted to follow up, so your plan for resolution is analysis and no hardware changes?

MR. POWERS: That's right.

MR. GROBE: Will that include a ~~division~~ revision to the F.S.A.R.?

MR. POWERS: Yes, we need to.

MR. SCHRAUDER: The F.S.A.R., the statement will not describe accurately the cause for the frequency drop also, and that needs to be corrected.

MR. PASSEHL: Then would you translate that into in your procedures for the diesel to allow for these fluctuations?

MR. POWERS: When we revise our F.S.A.R. we will have to go through the formal process to do that. Through the process that will revise then licensing basis and the acceptance criteria and procedures involved.

MR. SCHRAUDER: There probably will be no procedure change. This was the same period of time, just what happens to it when it does start,

so I would not anticipate a procedural change as a result of that.

MR. POWERS: And I guess a fine point on that study was that the surveillance instruction, the acceptance criteria did not include these particular parameters. In other words, they weren't tech spec transfers that were part of the surveillance. However, they were noted as being outside the licensing basis and had conformance needed to resolve.

MR. GARDNER: Did you conduct tests and analysis on both details and compare them to each other to see if they are the same type, I believe, in manufacturer, and roughly the same age to see if they are responding in the same manner, or was there a difference between the two?

MR. POWERS: I believe the answer to that is yes, but I don't have specifics on whether there was any -- what difference there would be.

MR. GARDNER: And whether or not the data that you are obtaining, it fairly well correlates to other utilities that have similar diesels of

the same vintage and type?

MR. POWERS: We didn't do the same vintage and type. However, we know our Beaver Valley unit has an exception from the voltage criteria in terms of the dip is somewhat below 75 percent criteria, and that is written in the license basis, so it was recognized at that site earlier on, so it's not unusual from our standing in the industry to have the sort of circumstances as long as technically it's addressed and it's acceptable

MR. GARDNER: I guess I was on the frequency more than the voltage.

MR. POWERS: I'd have to check on that one.

MR. GARDNER: Just curious.

MR. FARBER: Did you examine or try to determine whether there was a relatively straight forward hardware modification that would resolve this and ensure that the diesels don't have this unacceptable dip rather than pursue merely analytical --

MR. POWERS: Yeah. That's a good point. One of the things we are looking at for the longer

term is an electronic governor. An electronic governor may give us a faster engine response and minimize the dips. We are also looking at potential for the breaker closure time, and permissives on diesel generator. Output breaker closure currently closes very early on in the start-up sequence before the engine has reached full rated conditions, both in the voltage and frequency, and as a result that's changed during transient to keep above the limits. So we put an -- we put a permissive on that breaker on frequency, for example, I think the breaker closes in at about 57 rather than 60, so if we put a permissive, it could help resolve as well.

So there is a couple of things we can do in the longer term. The electronic governor is something we are very interested in. We have done that modification at Beaver Valley. It upgrades units to the latest technology, and something I'd like to do in the future for the engines.

MR. GROBE: There is two potential licensing

basis provisions you have identified so far, one for boron precipitation and one on the diesel under frequency and under voltage. Do you anticipated either of those requiring agency review?

MR. SCHRAUDER: I would not anticipate that we would necessarily need to have the boron precipitation one completed by restart. That system will be demonstrated to be able to do that. In the longer term we may want to change the secondary method to the modification that we put in, but we would still meet the license basis in that. This other one may or may not require, you know, licensing action, I'd have to go through the 5059 process. You'd have to determine whether, in fact, it required a license amendment. My sense is that it probably will not.

MR. GROBE: Just be sensitive to the fact that that takes a little bit of time.

MR. SCHRAUDER: Yes, sir.

The other issue identified on the system remaining that we talked about already is

the room temperature was questioned, it may exceed maximum analyzed value. The new analysis demonstrating past operability has been performed, it is in the review cycle to be approved, demonstrated the maximum temperature that the room would see, the equipment of the room would have tolerated that temperature.

However, this is -- as we said before, we are installing additional ventilation in that room, and that modification will provide us with more margin on that issue.

And next is the high pressure injection system that -- we talked about this at several of our meetings. The issue here again is sump debris could potentially result in pump damage during the recirculation phase, but unless you want more information on that, we have pretty well covered that issue. We need to reach resolution on that. We have in this case declared that system inoperable. We have -- I believe last week we submitted an LER on this issue.

The other issue that's been left

open to resolve on this yet is the motor for the pump exceeds its nameplate rating during certain accident conditions. It does not -- we are doing evaluations now, and it does not look like it's going to, in any case, exceed its service factor, which is an acceptable range for the motor to be operated in. We expect that this motor question will be answered effectively, and the motor will, in fact, continue to perform and provide some kind of function.

MR. GROBE: Has the tech spec provision for the HPI pumps, has that been submitted?

MR. POWERS: Not yet. The license amendment request? Not yet, Jack. We had a meeting on that this morning between Lou Myers and our licensing analytical staff, and it's heading towards our station review board today and for the off-site review board following that. So we would expect that would be probably the latter part of this week, early next week.

MR. SCHRAUDER: Depends on availability right now of the off-site review committee. They

have drafts of it to review, we need to get them the final copy and then have a meeting with them.

MR. PASSEHL: You are referring to in your second bullet, is that --

MR. SCHRAUDER: Yes

MR. FARBER: I believe when I was last at the site I saw a list of topics that were under consideration or had had LERs issued. One of those related to HPI, and that was survivability of the HPI pumps for a certain class of small break LOCA. This is not listed on here. Can you tell me where that stands?

MR. SCHRAUDER: That is the issue, Marty, the small break LOCA is functioning off of, or are you talking about the minimum reserve?

MR. FARBER: That was the topic under consideration for LER; I don't see it on the list.

MR. SCHRAUDER: That's right, and -- that's right. I believe it is resolved, and it did not result in operability of the system, so what I went through and tried to pull out on the issue, what has not been resolved yet. That was an open

CR, and therefore it would have showed up on the list. I'd have to confirm --

MR. BYRD: That issue has not been resolved at this point. That current LER, the issue you are seeing is the issue of minimum ~~resert~~ recirc, when we have gone to the isolated ~~resert~~ recirc and that is currently still being resolved, and we are looking at a couple of different possibilities, potentially minimum ~~resert~~ recirc operating from the sump, or some other alternative that is very much -- I think the reason this is very much tied into this first issue of the -- where we are kind of looking at HPI pumps as an issue, how we deal with the HPI pump when rating from the sump. So it's rolled into the first bullet. The team that is working on that is all the same team for the minimum ~~resert~~ recirc issue.

MR. FARBER: Thank you.

MR. SCHRAUDER: The final issue is inconsistencies between surveillance test criteria and technical specification requirements. The tech spec surveillance test for HPI is -- flow is

based on a LOCA analyses, so it protects from the flow for LOCA.

What we found is the actual flow in this case, the flow that we have demonstrated supports the LOCA analyses. It's an issue of tech spec that actually had a more restrictive flow in it than the -- the LOCA analysis flow would be. The actual flow as exhibited in the field is expected to meet both the design and tech spec flow.

MR. BYRD: If I could add, the tech spec flow was not -- was actually -- was appropriate and at the point in which the tech spec is designed, our tech spec is designed in a single point, and when one of our engineers looked at this and actually turned this into a system curve, the tech spec point, and they noticed that at the very low flow, the very low flow, the tech spec and analysis curve would cross each other, so that was really the issue here. So at the point where we actually measured the tech spec point, our analysis flow was less than our tech spec flow.

So that was the point I wanted to make.

MR. SCHRAUDER: But the actual flow --

MR. BYRD: The actual flow meets both, so we don't have a -- the issue is the two curves would cross over very low flow if you were to take the tech spec point and try to expand the rate into a system curve.

MS. LIPA: Do you anticipate a tech spec change will be necessary?

MR. BYRD I don't believe so right now for that. We are -- I'd have to -- I don't believe so. I'd have to -- that's still under consideration.

MR. GARDNER: Were you ready to go to another page? Because the instrument uncertainty issue at the very bottom, is that another instance where you have done preliminary results from an uncertainty issue or have you a basis for saying that you're pretty sure the uncertainties will be no problem?

MR. BYRD: In this case we actually have completed the calculation, and the issue

uncertainty calculation has been performed and reviewed. Neither have been signed off yet. This is another calculation which actually did have instrument uncertainty in it. However, when we went through -- and I'm not an I & C person -- we did a different methodology, and the results, which is apparently improved, and the results were slightly different, though again it was not a significant difference between what we had prior to this and what we have now.

MR. GARDNER: Thank you.

MR. SCHRAUDER: The next system is ECCS-HVAC, or the cooling systems. The remaining issue on this really is a design issue that is not one that came out of latent issue reviews. In our reviews we found a past -- at the time what that was called operable justification on the HVAC or ECCS that allowed, under certain conditions, to take one of the coolers out of service and the system would still be operable.

When we went to the separation from the latent criteria and heat up of the ultimate

heat ~~sync~~ sink, it was found that this operability determination looks like it was still used, at least one or two times after that, so it was a flawed operability determination and could impact, depending on whether the system was out longer than its allowed outage time, in a situation could result in an LER as a tech spec violation. And this is -- a past operability will be issued on this and not a current that will pull an operability issue out of the records.

MR. FARBER: I'm a little confused. Are you saying that this operability determination was actually flawed, or that its application was superseded by changes that you have made in the plant, and it should have been reflected back --

MR. SCHRAUDER: Right, at the time it was used. It wasn't valid later in life, so the use of it was flawed, it was flawed for the current design basis, however you want to look at that. But, in fact, it was acceptable when it was written for what was considered to be the license basis at the time.

When we revised it to the changed -- the ultimate heat temperature, it would not have been operable in that case.

MR. FARBER: So this is more of a configuration control type issue rather than a flawed operability determination.

MR. SCHRAUDER: Well, yes, but it's still relying on operability determination without effective controls configuration management. You could look at it. We didn't want to draw the line on what's a design issue and what's not a design issue. The operability determination was based on expected design that was not accurate.

And then the last system really is the electrical distribution system or whatever is on the -- as we talked in the past in some of our meetings, we are doing a complete reanalysis of the system using the electrical analysis program.

And that analysis is not complete yet, so there is a potential in the electrical distribution system that that analysis could show some lack of margin in the electrical distribution

system, we just don't have the final analysis on that.

They are expecting very shortly, like today or the next couple of days, to be able to start running those analyses. The model is pretty much set now and ready to go, so now we will be loading all different scenarios and models into that to see what the analysis shows.

If this is one that could result in impact, you know, on the systems down the line, motor operated valves and the like, has some slim potential of some additional modifications to the plant, some impact on operability. We anticipate that in the final analysis this one will probably demonstrate that the electrical distribution system probably will function. It may not have as much margin as the previous design, may not have shown as much margin as you'd like, but we are not anticipating huge ramifications or modifications to come out of this. But we can't say that with any degree of certainty yet because the analysis is not complete

MR. GROBE: Two questions, last time I touched this issue, I understood the calculations were going to be completed in the second week -- near the second week in June.

Is that still an accurate date?

MR. POWERS: That's right, that is on track, the second week in June is what we are targeting for operability determination for mode change, Jack, and we are on track for that with the current schedule Bob described.

MR. GROBE: The other question really goes to the issues we just mentioned, Bob. What is the basis for your belief that it's going to be operable and -- may be degraded but it's operable. What do you -- what foundation do you have for that belief?

MR. POWERS: One of the major considerations I described earlier was the motor-operated valves in the plant. And in this case the input to the motor-operated valves is voltage supplies by the AC distribution systems. In our motor-operated valve program, in many cases the input voltage was

assumed to be in a low range of 80 percent as a conservative measure and starting from that point then we feel there is margin built into those calculations, capability calculations to accept some voltage drop-off in this system, and -- but that's what we're looking at most carefully, engineering is pulling out all of the design information from the programs. So as soon as the results are available they will be able to give us a thumbs up or not thumbs up on the valve's performance.

MR. GARDNER: So that includes degraded voltage first and second level, et cetera?

MR. POWERS: Right. Yes, it goes down to 480 volts distribution, and it's carrying -- it's largely looking at off-site voltage, and it has the degraded off-site voltages factored into it. And then it carries down to the distribution system and takes the bus voltage and 480 voltage and looks at the service loads, whether valves or pumps, various motors, fans and their operability.

MR. GARDNER: So this has wide-ranging --

potentially wide-ranging ramifications that would cross a lot of areas, including fire protection and a lot of other areas where coordination and breaker sizing and capacity, everything would have to be reviewed?

MR. POWERS: Right, that's right. And Bob says those transients are being analyzed. In fact, that is -- and I will talk to this in a bit more detail later, but what the electrical engineering team has been working on closely with operations representatives at the site is the various equipment and when it operates and which modes of the plant looking for what is the limiting worst case conditions, and then looking at how the system would perform under that condition and what the voltage is supplied to various components, so -- and we have also been evaluating all the input that goes into the program, so you can imagine in the plant the many, many different components, going and collecting the data and validating the data for motor power, what the actual motor power that is drawn by the

various motors throughout the plant, and getting that accurately modeled into the system.

What I will point out and what was done at the plant, we were using the original instruction analysis software that the plant was built to over the years, and one of the issues that came up, that small changes were made to the plant, and they were each individually assessed and documented against the original calculations.

However, a collective reanalysis needed to be performed, and this had been identified several years back. The desire was to do a reanalysis to upgrade the software and process. As we got into, in last year's engineering reviews we found there was more questions raised that we wanted to factor into the reanalysis to make sure we answered all the various questions that had come up in the past year. So it's a pretty extensive reanalysis effort. We should be seeing the results of that starting this week.

MR. SCHRAUDER: That completes the

discussion of the systems covered under the latent issue reviews and safety function validation.

The next topic --

MR. GROBE: Let me make sure I understand -- there is really two questions here, I want to understand correctly. One is the operability of the electrical distribution system, and that primarily we have to go with breaker fusion coordination. The second is the operability of the service components; is that correct?

MR. POWERS: That's right, that's right.

MR. GROBE: And it's your review looking at how you did the calculations for sizing valves and whatnot that you have had an unusual amount of design margin in the low voltage for those valves, so that we don't expect this to be an issue regarding the valves. Do you have a view on a breaker fuse coordination issue?

MR. POWERS: That still remains to be run, Jack. I talked to the analyst yesterday on that, they're working through the model, and I don't have an -- I don't have a real view on that as yet

until I get their results out and see what the load flow is, and they will get a better sense on whether the protective free line design is satisfactory.

MR. GROBE: Yeah, probably. Do you have generic information on this? This is not the first plant that's had these kinds of problems.

MR. GARDNER: No. In fact, we have previously looked at degraded voltage settings and these type of valuations in the past, even at Davis-Besse. Unfortunately, in our reviews we didn't have the time to go down through the 480, 120-volt level, and so we stopped somewhere between 4160 and 480, so we couldn't very well be -- the results will find issues that weren't previously identified

MR. GROBE: We have not had generic communications with any supporting agency.

MR. GARDNER: We have had all sorts of information about degraded voltage, about the concern of having adequate voltage all the way down to -- particularly to the 120-volt relays,

and whether or not the relays are adequate based on the numbers, you have to perform the function. So we have had lots of communications, there has been lots of actions certain utilities have had to take in response to the findings in this area.

MR. GROBE: Thanks.

MS. LIPA: Before we go onto the next section, this is a good time for a break, but I wanted to make sure there weren't any questions from here or headquarters on Bob Schrauder's topics. Anybody else, anything from headquarters?

(No response.)

MR. SCHRAUDER: The next section is topic area issues and continuing with the design reviews.

MS. LIPA: So we will have another shot at Bob Schrauder. Well, I still think it would be a good time for a ten-minute break. We will be back at 2:30.

(Whereupon, a recess was had, after which the ~~hearing~~ meeting was resumed as

follows:)

MR. GROBE: It's 2:30, and we're ready to continue. Go ahead.

MR. SCHRAUDER: Thank you, Christine. The next area that also involved design reviews, if you will, are topical area reviews. The purpose of these reviews, they were cross-cutting generic issues that had the potential to affect multiple systems.

Listed here are the five that we did. And we have gone through the results of those topical analyses with you at the previous public meeting. I was not anticipating going through all of them again. What I have done on the next page is, the last time that we met, updated on this, we had not completed and signed off on the Appendix R topical review. So I have listed in here in the same format that we presented in the past those actions that we need to do to support restart that came out after collective significance reviews in the Appendix R world.

As you know, one of the outstanding issues that we have on our fire protection inspection is this analysis that -- to rebaseline Appendix R transient analyses, and that work we have given you had the schedule on when we anticipate that transient analysis, and that was identified in the transient analysis needed to be completed

MR. GROBE: Can I go back to the last item? I'm still having difficulty understanding what you designated as topical areas. I understand that you have indicated that the instrument uncertainty question was a significant condition adverse to quality and you scheduled a root cause assessment for that and extent of condition review. But why isn't that a cross-cutting generic issue that could affect multiple systems?

MR. POWERS: Well, that was specific. We looked at it as a specific issue. It was a significant root CR that we needed to evaluate what the policy was at the site over the years for ~~spec tech~~ tech spec and non-tech spec significant

instruments and ensure the setpoint policies were acceptable to us.

So we are working that through a specific issue. When we talk about topical area reviews, these merged from the latent issue reviews inspection results. It was a collection of CRs. In many cases these would include, say, 30 CRs, sometimes more all around one of these specific issues.

And as you recall, when we went through, after going through the latent issue reviews, inspection results we prepared a collective significance assessment report that took all the various CRs that had been issued, the questions that were asked, and we put this through areas, looking for numbers of questions, number of discrepancies because we looked at lots and lots of issues, and Marty's got his copy in his hand there, he's well familiar with it.

And so we looked at how many discrepancies for the number of attributes checked, and those were the areas where there were

significant numbers of distribution, which means every number of questions, CRs asked. So what goes together? These are the ones that --

MR. GROBE: I understand what you're saying, Jim, that during your latent issues reviews you identified a number of CRs that affected seismic qualification, station flooding and so on, and you called those out individually as cross-cutting engineering concerns.

MR. POWERS: Right.

MR. GROBE: And this one, if I understand correctly, was -- had a specific issue regarding instrument uncertainty, and when you started pulling the piece of yarn, the sweater unraveled and it became a broader issue that you are doing analysis on, it became kind of a cross-cutting issue. So I think I now understand how the two issues got on two different lists. My question now is, how many other non-topical areas do we have that are cross-cutting concerns that are engineering concerns that can affect multiple systems?

MR. POWERS: Well, two of them come to mind, and we are talking about today, one is the electrical distribution system, as we work through the reanalysis of that. And the other one was the air-operating valve program, because they can be in various systems and have the operating valves, and I will go over that in a bit more detail, so they are asking several programmatic issues that have come up that do cross-cut in various systems.

MR. GROBE: Are there any others?

MR. POWERS: Not that come to mind.

MR. GROBE: Could you just, once you get back, and not in a meeting context, but once you get back, think about it, could you? If there is any additional ones could I get a call and make sure I understand the breadth of this?

MR. POWERS: Okay.

MR. GROBE: Thank you.

MR. SCHRAUDER: Again, the next slide was just intended to show what came out of the collective significance review, Appendix R. The biggest one, again, was the rebaselining of the

transient analysis, and then any procedure revisions that might result from that reanalysis will be incorporated prior to restart.

Another one goes to begin the electrical distribution system, the analysis for the emergency diesel generator, Component cooling water system, and service water system for Appendix R scenarios. The adequacy of calculations performed in response to requests for assistance, what that was, and I did kind of just briefly touch on that in one of our meetings. We found a handful, 6 to 12 responses to what was at the time a request for additional information on some of the Appendix R questions that came up, and rather than a formal calculation document, they were simply assessed and responded to in the request for system mode.

What we determined was those really needed to be more formal in their response and from a calculation backing for the ~~F.M.A.R.~~ FSAR, so we did two things -- we are doing two things on that.

First, we are going to evaluate the

technical adequacy of the response that was given and then convert them into formal design packaging that can be incorporated in ~~F.M.A.R.~~ FSAR So the one piece of that is to confirm the technical adequacy was flagged as was required to be done prior to restart.

And then a complete procedure upgrade. We have a procedure upgrade project under way on our series control room station, first for those safe shutdown procedures, and that project we said needed to be completed prior to restart. And then of course there were procedural changes as a result of the framatome procedure upgrade. Then we need to retrain the operators in those procedures prior to restarting the unit.

And other things that we identified that do need to be done, but not necessarily prior to restart, is to revise, based on these analyses and stuff that actually goes in, and do the revisions necessary to the fire hazard analysis report.

So these are the things that came

out of the Appendix R.

MR. GROBE: When do you expect the analyses and calculation validations to be done?

MR. SCHRAUDER: I believe that date is -- we said we would have to be done, Jack, and ready for it to come back the first week or so of July.

MR. POWERS: We are expecting an analysis report by the end of this month on one or two incorporated, additional two weeks to get ready, first week of July.

MR. GROBE: Thank you.

MR. SCHRAUDER: So what did we learn from the topical area reviews? We believe that they did confirm, or they did confirm the fundamental adequacies of programs. We didn't find any systemic or programmatic flaws with how we set those individual programs up, and they were adequate to support operation.

Again, that is not to say we didn't find discrepancies or issues in each of the areas that required remediation prior to restart. We did, and we went through those, and where it was

warranted we did extent of conditions for those issues that came out of those reviews.

We have appropriately dispositioned those outcoming issues as either restart or enhancements that can be done post restart.

And unless there is some specific questions on the -- Marty, I know you have copies of the reviews, if you have completed your reviews or not, but that's where we are at in the topical reviews. Again, each had some issues and each are being resolved and they are all entered into the corrective action program and being tracked there as either required for restart or post restart.

MR. FARBER: I've got a question that's a little broader than what we have been dealing with. A lot of the work that's being done, especially in the area of calculations are calculations that you have sent off to be done by outside agencies which have to have owner acceptance review. I'm also aware that Kevin Coin's inspection found a problem with the work that was done by a vendor for the sump mode, and

my question is, has that caused you to examine your owner acceptance reviews and ensure that they are sufficiently robust to guarantee adequacy in the calc that you have?

MR. POWERS: The answer to that, Marty, is yes. To us that was a significant concern that Kevin brought to our attention. There is a couple of aspects to it. At the time that the calculation was prepared by one of our suppliers, we had a -- the owner's acceptance process was to review calculations. But subsequent to that we revised our calculation process. We have a much more complete checklist now that is provided to the engineers, and what attributes to check in the calculation.

So in the interim there has been some improvements in the program itself on how calculations are checked. Also, we are looking very closely at the modifications that we have performed at the site during the course of this outage where we have had them rolled up into a final package, the package is near complete, and

the final package has all the reviews and programmatic requirements and documents, what's been done in the field that provides the basis for it, as well as -- and formalizes that package.

The review process that we are doing for that are being looked at very carefully for two of our other modifications that were performed by a supplier. To ensure that we did very rigorous review, we are also engaging our engineering assessment, more specifically in the area of calculations, because the significant point from Kevin's findings was fidelity of the configuration that was assessed in the calculation.

That was issued in the final design package, there was a difference there that should not have existed, and so we are looking specifically now at the configuration that is described in the topical, does it match rigorously the modification package. There is a number of things that we are doing to look into detail there.

MR. FARBER: Are you taking a backward look at calculations that were approved prior to your implementation of the improvements?

MR. POWERS: Yeah. And we have looked at -- in fact, our engineering assessment board looked at calculations during one of the past assessments we have recently done, and engineering restart readiness assessments were done by corporate level composite EAP.

One of the things that they looked at was quality of calculations, and the general finding was that they were improving. And so we are looking at the specific one, although we are doing extent of conditions, we are looking at specific circumstances around this.

One more extent of condition, you don't see a large extent of condition problems and owner acceptance, yet, in fact, I've got to tell you, I sat in an office yesterday evening with design engineers, engineering manager's office with some of the engineers voicing dissatisfaction with the performance of the -- some of the

contractors who were performing calculations for them, unrelated, but, you know, the individual engineer had a copy of the calculation all marked up and red with comments all the way through it, and all the changes in the numbers at the beginning carries through an analysis, you know, the ownership there is quite hot.

Now, what we need to do is ensure that kind of ownership is consistent, because there is a large amount of work that is coming to finalization here at the site as we finish up some of the major projects we have done. So we want to ensure that we are checking carefully all the technical products that come to us to make sure we have got that ownership, so I hope that answers your question.

MR. FARBER: Thank you.

MR. SCHRAUDER: I hope that answers your question from yesterday too. Jack asked us the same question yesterday.

MR. GROBE: I have another question on the -- how many significant conditions adverse to

quality or root causes in the engineering analyses and calculation area exist, wherein the root cause or extent of condition has not been completed?

MR. POWERS: I would -- well, I don't have a specific number for you, Jack. We have had about -- I would want to characterize as many as 26 in root cause CRs, particularly in the design area. Of those, I think virtually all have been gone through the process of investigation, the initiation of corrective actions, and we have got a real gauntlet that these run, so once they're prepared, they go through the supervisor of management review before the corrective action review board for comments. We also have condition report and lists and root causes. We have CRs, and specifically manned individuals to look at them, and ultimately once they've cleared all their hurdles, they go to SMT for acceptance and vice-president's signature.

So there is a number of them that are moving through that process, and I can't give you a number about how many are currently

outstanding. I would say in the ballpark of eight to ten as an estimate.

MR. GROBE: But the root causes have all been completed. What you are saying is they are somewhere in the process of being reviewed and approved?

MR. POWERS: Yep, that is correct. And with the exception of the one we just talked about and the emergency sump, we are currently doing that root cause right now for our internal suppliers for their internal corrective action, which they have given us copies of.

MR. GROBE: Jim, could you give me a list of the CRs that were characterized as SR in the design area and what is the status on those?

MR. POWERS: All the significant CRs on design?

MR. GROBE: Yes.

MR. SCHRAUDER: The next slide we have just summarizes what we say about the design. The safety functions have been confirmed for a number of the systems. We have ongoing activities which

we expect to conclude in a confirmation of an operability and operability of performance, their safety functions, and there are going to be, I'd say, one or two for these exclude the impact of electrical distribution, but we will have one or two systems, as we have described here, that will have been declared tech spec inoperable as a result of our reviews.

And, again, even on a couple of those, even though we would show they were tech spec inoperable, we believe they would have performed their safety function, may have just been later down the road that they achieved that function.

With that, unless there are additional questions, I will turn it over to Jim Powers.

MR. POWERS: Thanks, Bob. What I'd like to cover this afternoon is the remaining design issues, and we have touched on these in the course of the discussion, but I will provide what further information I can on them.

What we are doing with the remaining design issues is assure that safety issues are resolved, the tech spec operability is met, and the systems' structures and components will perform their safety function.

MR. GROBE: Before you go on, I was thinking about what you just said, Bob, and I appreciate at this point that you have reviewed, but not have concluded when you finish all your analyses that there were non-functional systems, but --

MR. SCHRAUDER: HPI we know is going to be an exception to that.

MR. GROBE: So HPI was non-functional?

MR. SCHRAUDER: Right. RCS will be inoperable, but would have performed its function. Steam and feed water rupture control system will be inoperable. That's the one that would have functioned, it would have been within a second or two later than currently analyzed.

MR. GROBE: Okay. The point I was going to make is that many of these analyses are in various stages of being completed, and internally they are

far enough along that you feel comfortable that they are not far enough along that we can evaluate them.

Part of the corrective action team inspection scope was a number of these issues, and I believe that team will be back for one week later this month, and then maybe one or two weeks sometime during the summer. Once you finish all the analyses and we can get a better sample of engineering corrective actions to look at, so I understand and accept your statements and your conclusions, but we don't have a capability yet to provide assessment of that.

MR. SCHRAUDER: I understand that, Jack

MR. POWERS: What I'd like to reiterate when we talk about some of the remaining design issues I'm going to discuss is the volume of design information that was reviewed over the course of the last year at the site. Our latent issues reviews and system health readiness reviews were structured after some of the developments and insights that were gained at several other sites

and went through recovery processes as well as were staffed with people who had participated in those recoveries and have gone through design process reviews.

So we felt we had a very thorough investigation performed, and as Bob described, we have several issues that are tough to resolve, several systems that with operability that is in question, with the vast majority of the design basis was found to pass the scrutiny and be adequate to support operability.

The four topics I'd like to touch on this afternoon are high pressure injection pumps and the particulates from the sump, and I will go over that briefly for those who weren't sitting in on the recent public meetings discussions in that regard.

The electrical distribution system, I will just touch on that, and our air-operated valve program and emergency diesel generator loading. So as you can see, we discussed many of those, and these are what we consider our

remaining top issues, each of which is resolvable.

The high pressure injection pump on Slide 26 for those of you in the audience who have the slide package in front of you, you can see a photograph of the pump. The pump is contained within a cylindrical enclosure, and the pressure boundary is a multi-stage pump that's within there. And the issue is that at the end of the pump facing at the end, we can see in the photograph there is a hydrostatic bearing that supports a rotating shaft, and there is water that comes from one of the internal stages and powers that hydrostatic bearing.

And it -- the water, since it comes from the pump, may contain any debris such as grit that may be coming in the latter stages of accident function of the pump from the emergency sump, and there is -- can be grit and other fine debris during that time, and it can potentially cause damage to that bearing. And we say potentially, because we have got a number of equipment experts evaluating this pump for us, and

it's not clear that the pump would be damaged, but we do have a concern about it.

We describe two options that we are currently pursuing and evaluating to resolve the issue, one of which is to modify and test the existing pumps to ensure their operability with any debris in the pump. And the second option would be to install new pumps and motors, and we have gone out into the industry and found two suitable pumps and motors that we can modify and install in the plant in replacement of these pumps.

Currently we are evaluating those two options to determine what the right thing is to do for the plant, and we will be making a decision as we move forward in time over the next several weeks based on results from testing at the site, as well as continued engineering developments with the replacement pump option.

We will come to a decision and, of course, inform you at that time of what that course will be. We believe either option will

provide satisfactory pumps for the application at the site.

MR. FARBER: Jim, I'm curious how would you propose to test the numbers for the capability to pass debris?

MR. POWERS: The testing program is -- consists of several different aspects, Marty. In a laboratory setting we plan to test small screens that would be modifying the multiples to put into the filter, the flow going to the bearings and demonstrate that as we pump a mixture of debris that we'd expect that there would be containment through there in the test facility, that the screens would be self-cleaning, would not clog.

So we'd demonstrate that by testing the results. Our concerns will be wearing in the pump that -- of the rotating element's run-on, we would be testing those in a test mock-up with debris to determine wear rates on the wear rings, and how much wear we expect during the emission time of the pump.

Once we have done those two tests,

we will be taking the resultant wear and preparing wear rings to put in the pump in the plant and actually test it with that amount of wear to demonstrate it works.

And so we believe with a combination of laboratory testing and actual testing in the plant that we will be able to demonstrate each of the technical issues satisfactorily, that the pump will work.

And the other thing we are looking at to do is open up on wear rings, for example, and the functioning of the hydrostatic bearing. One of the issues that our technical staff has is whether the rotation and resultant vibration of the pump could be affected. We expect to do the test in the near term, within the next several weeks at the site with an existing pump that will be installed, and as you see, that should answer quite a bit of questions in terms of the analysis that's been done going to characterize the roto demand characteristics of the pump versus the actual field performance of the pump. We have a

surveillance test we do, we will run the pumps through a regime that will demonstrate how susceptible they are to clearance opening up and stability, what is the natural frequency of the pump relative to its operating speed.

And the analyses that we have done have indicated that it's relatively close, that's why the engineers have a concern of this, but we believe that the field testing with a number of factors that will affect that type of analysis of the pumps, sometimes the analysis is not as accurate as it can be without demonstration of benchmark of actual performance in the actual equipment.

And Bob Coward is with us from MPR today, and Bob is actually heading up the team at MPR that is looking at this option, so, Bob, is there anything else that --

MR. COWARD: I think you did it pretty well, Jim, unless there is any other specific questions we can answer. I think Jim explained it fairly well, and that is through a combination of, you

know, laboratory testing, as well as some testing in the plant with additional analyses. We are pretty confident we will show the pumps will be acceptable when you get down to relatively minor modifications that need to be made to install the strainers.

MR. POWERS: And we will present to you the details on those analyses and tests later, and your staff can review on extent of condition standpoint.

We also looked at our low pressure injection pumps, Bob had mentioned earlier they have cyclone separators in the injection flow that goes to the mechanical seals, so this -- in this case we were not talking hydrostatic bearing, but mechanical screens on the pump. The screens have a close running tolerance for debris getting into -- between the seal and rotating shaft is minimized, and, in fact, they're fairly hardened against debris getting into it, but there is a concern with the amount of debris that could -- cooling water could be blocked, the seal may not

perform well, and leakage may come from the pump.

And so, as I mentioned earlier, we are ordering a replacement cyclone separator, which is a small component readily available for the ~~LMI~~ LPI pumps, and that is currently being prepared for delivery to the site.

We are also reviewing our containment spray pumps which is a similar mechanical steel. They do not have a cyclone separator, they were initially specified to be capable of pumping quarter-inch diameter debris in the original specifications for the equipment, and based on what we learned on the LPI pumps, we are looking at those mechanical seals as well on those pumps to assure that we feel that they are sound for the application.

So extent of condition, all the pumps that are taking pumpages from the emergency sump were being reviewed.

The next topic I'd like to discuss is the electrical distribution system. In the earlier discussions, Jack, one of the things you

had brought up was past generic communication and our response on the electrical distribution concern at Davis-Besse.

The site received those generic letter correspondence and answered them. Many of us who were involved at that time, it's something we will be going back to evaluate, but the analysis of record at the time was based on the electrical load management system, which was used in the original design construction of the plant. And that design basis analysis was used to answer those questions on relaying and coordination and voltage.

What we are dealing with today is an update of the analysis, making sure all of the loads have been integrated into the analyses, and we get an up-to-date run, and I think we need to await the results of that run and find out the status of the system.

So the resolution of the issue was to revalidate input analysis. We have got a team looking very carefully to make sure all the