ENCLOSURE 2

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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CONFERENCE

NRC STAFF - GPU NUCLEAR TMI

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7735 Old Georgetown Road
Room 6507
Bethesda, Maryland

Tuesday, 5 May 1984

The above-entitled meeting was convened at 10:00 a.m.

P R O C E E D I N G S

MR. THOMPSON: We're ready to roll.

Good morning, gentlemen. Welcome to sunny downtown Bethesda.

The subject today is in-service testing of pumps and valves.

We are going to address this subject in the format of the two memos that were attached to the meeting notice April 8, 1982, and May 2, 1984.

To bring us up to speed, let me just recap where we are in ISG and see if everyone agrees.

We issued Amendment 71 in August 1981, and that contained a list of reliefs granted and a list of reliefs not granted, pending additional information from the Licensee.

Then, we received three additional submittals, as identified on the May 2, '84 memo -- September of '81, December of '82, and March of '83.

And this discussion today is addressing the comments that we have on those three memos.

The one topic that I believe we're not going to be addressing is the request to endorse the 1980 version of the ASME code.

Is that correct?

MR. PAGE: I believe so.

MR. THOMPSON: Pending in September is your submittal for you next 120-month program. And at that time, I believe we'll be looking at -- we expect to be looking at the endorsement of the 1980 version of the code.

MR. PAGE: We are working on a previous '74 model, and what it amounts to is this voluntary update, as indicated in the May 2nd memo, which has not received any type of review.

10CFR50 requires such updates -- require Commission approval.

MR. COLITZ: Maybe you could clarify that for us, because the NRC approved that latest edition of the code. If we chose to adopt it -- we basically sent you a letter some time ago indicating that.

MR. PAGE: That's correct. Just because you chose to adopt something doesn't mean that it's automatic. It is subject to the review and approval --

MR. COLITZ: Even though the NRC basically has approved that code?

MR. PAGE: That's correct. It's right here in this 50.55 CFR. It states it very clearly.

MR. COLITZ: You're saying the program we should still be [illegible]ting at the plant is the '74?

MR. PAGE: That's according to the law.

MR. KNIGHT: We haven't heard back since our

December 7th letter notifying you we were going to get the 1980 edition. We haven't heard anything to that effect. We haven't heard anything one way or another.

MR. PAGE: You don't work with 10CFR50?

MR. KNIGHT: 10CFR50 55(a) --

MR. CHERNEY: The paragraph he quoted in the memo specifically indicates if you're going to use an additional addenda other than the one that is mandatorily required for your 120-month interval, that requires Commission approval.

MR. COLITZ: Rick, have all our procedures been changed back to '74? To the '80?

We updated everything to the '80. And our present surveillance program is basically March into the 1980 code.

Is what you're telling me here, if I read you correctly, I should go back and rechange all the procedures back to the '74 code?

MR. CHERNEY: Why don't we leave that as kind of an open issue to get back to. I don't think we should get bogged down on it.

MR. PAGE: I think it's important for you to read this particular paragraph of the 10CFR50, which very clearly states such updates require Commission approval.

MR. SHIPMAN: Could you give us that reference

specifically again?

MR. THOMPSON: It's my understanding that that's what you will be endorsing in the next 120 months' update.

And what we're looking at here is relief requests that are still outstanding. And the reason we're looking at these now, even though they will only theoretically remain valid for a couple of months, is that these are the same relief relief requests that you will need or want for the next 120-month program.

That's correct. I think we all are pretty much in agreement on that.

MR. PAGE: We really don't think it will be a big sticking issue, to be quite honest.

MR. CHERNEY: This is a little bit analogous, I think, to things that come up under -- in the licensing review, a plant going thrcugh a licensing -- when you're talking about additions and addenda of Section 3.

Quite often people will write in and say, "Hey, you've endorsed such-and-such addenda in the latest version of 10CFR. However mandatory Section 3, for our particular component is such-and-such, and we'd like to update this later addendum," which is two or three years later.

Those always have to be approved on a case-by-case base. So, I think it's quite analogous to that.

MR. THOMPSON: This is Bob Bosnak who just came in,

who is a branch chief, Mechanical Engineering Branch.

Bob, we're just covering background. And I think we're ready now to move on to having the Licensee go through each of these items one by one.

What we're intending to do now is to try to cover them rather quickly. When we get into difficulties, we're going to set them aside for later and keep moving on with the goal of having, in the next couple of hours -- trying to get through the entire list.

MR. KNIGHT: First of all, I'd like to introduce our people to be in our part of the program.

Are we ready to do that?

MR. THOMPSON: I think so.

MR. KNIGHT: Starting in the back of the room, this is Joe Bashista, mechanical engineer at the site -- TMI-1 site.

Rick Barley is next to Joe. Rick is our lead mechanical engineer.

Henry Shipman, on his right, is senior operations engineer.

Then, at the end, Joe Colitz is the TMI-1 plant engineering director.

Then, on Joe's left, is Gary Capodanno, systems director in Parsippany, New Jersey.

And to my right is Julian Abramovici, who is the

piping engineer and manager in Parsippany.

My name is Bob Knight. I'm senior licensing engineer, TMI.

So, Joe has the rest of the program for TMI.

MR. COLITZ: In addition to what Bob says, Joe Bashista and Rick are the two people at the plant that have dealt most heavily with the IST program over the past few years. That's one of the main reasons for bringing in the Operations Department -- is all of the tests we wind up committing to in the IST program. Most of the other surveillance program -- it's he and his people that live with the implementation of these procedures.

We made our submittal in March of '83, and we did get the concerns that you people have on some of the relief requests that we requested.

We spent a considerable amount of time in the last two weeks reviewing, revisting all of these relief requests. We felt the best way to go through these is to take them one by one.

We have prepared a presentation, and Julian is going to be the main presenter.

Rather than just hit the issue, we felt it would be good to go into a little more detail on what we have in the way of systems and how they are configured.

And some of the things we do now, they kind of add

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to some of the reasons we have come in for relief requests.

So, Julian, I turn it over to you.

And I agree, I think if we spend more than 10 minutes on any one item, we are probably getting bogged down, we ought to go on to the next and table that one if we plan to get through all 20 of them in a three-hour or so period.

end 1

21b1

I guess the first one I want to clarify, although we don't have a slide on them, your item A-1, where we talked about adding flow measuring instruments before startup from the sixth refueling outage. You basically said something there, it's our understanding that the next refueling outage would be this cycle .5 outage and therefore we consider this proposal as acceptable.

Cycle 6 refueling can be interpretated to be the refueling outage after cycle 6. Then you talk about the refueling outage will be -- the next one will be refueling outage cycle 5. I'm not sure what you meant by that.

MR. PAGE: Can you clarify first which one is which?

MR. COLITZ: We have planned basically on putting that one in at the end of cycle 6, which would be at the end of the cycle 6 refueling outage.

MR. PAGE: You're going into cycle 5?

MR. COLITZ: 5 now.

MR. PAGE: Basically, you're talking about two, two and a half years?

MR. COLITZ: Yes.

MR. PAGE: There's no possibility for the upcoming outage?

MR. COLITZ: It's just a matter of the number of mods that we can continue to do to TMI is horrendous.

21b2

We've already got such a chokka block of mods for the cycle 5 refueling outage on the book. We're trying to manage these things in a reasonable time frame and that's why we're committed to what we did there.

MR. PAGE: Personally, I still feel that's okay.

MR. COLITZ: Okay, Julien, the next one was item A-2. I'll turn it over to you.

MR. ABRAMOVICI: What I would like to do on every item is go through pretty much where the component in question, what the service is, and go through -- you know, functionally, what our backups are and so on, so everybody understands what the component function is.

(Slide.)

Okay, the items in question were Item A2 CA-P1A and CA-P1B are one of the duration sources to the reactor coolant system via the makup tank into the makeup pumps and through the RCS. Additionally, borated water can be provided from the reclaimed boric acid tanks, where we have two pumps available in that system. And additionally, we have the three reactor coolant heat tanks, two of which are at or about reactor coolant boron concentration. There are three pumps in that system, and any tank can be used with any pump.

The accident mitigation borated water source is the borated water storage tank, which via the HPI pumps go to the reactor coolant system.

21b3

Any questions on the alterante path of the boration water for the RCS?

(No response.)

(Slide.)

Now I would like to go through the basis for our exemption of request for deleting this item from the IST program. We have a high degree of redundancy, as shown on the previous slide. We have two boric acid mix pumps. We have two reclaimed boric acid mixed pumps and only one out of four is needed for normal plant operation.

Additionally, the borated water can be provided from the bleed tanks which, again, at least two have borated water in it. The other one usually has demineralized water to make up the changes in PCS water and control.

We do have an operational test that occurs periodically, whenever the pumps are in use.

Per Section 11, the chemical addition pumps are powered from a safety grade, but they are only for convenience. Section 11 recognizes, in paragraph IWP 1200B, that it can be exempted from the code if they are for operating convenience only. Additionally, in our FSAR, in Chapter 14, those pumps are not included in any accident mitigation scenario. And as I mentioned, in the previous slide, the borated water storage tank is the accident mitigating water source and not the boric acid mix tank.

21b4

Any questions?

MR. PAGE: Have you got a copy of your own tech spec 3.2.2?

MR. THOMPSON: They've come in with a mod, a revision, on that. Just in process right now. It hasn't been approved.

MR. BOSNAK: It's an operability unit.

MR. PAGE: In other words, the operability that he's describing right now is under a request, an open request, to the NRC?

MR. COLITZ: The tech spec 3.2.2 there, where it says one of any four of those pumps needs to be required for operation, is the existing tech spec.

MR. PAGE: What I'm trying to straighten out here is, under 3.2.2(a) and (b), the last sentence in each section. And it says one boric acid pumps shall be operable, one reclaimed boric acid pump shall be operable.

MR. ABRAMOVICI: I thought that said "or?"

MR. PAGE: You're saying any one of the four. And i f you don't do IST testing of these pumps, how can even one of four be operable?

MR. ABROMOVICI: We haven't done a probabilistic analysis, but we are fairly confident, since you need only one out of seven, actually, and additionally the borated water storage tank is the source for the accident mitigation.

MR. PAGE: I thought the discussion here was one of four pumps?

MR. ABRAMOVICI: One of four for tech spec. One of seven available, from a plant standpoint, from an operating standpoint. Let me put this slide back up again.

(Slide.)

MR. PAGE: Even if the argument were one of seven, how could you say that one of seven is operable, if they're not all tested? After a long period of time, how do you know if the component is operable indeed?

MR. ABRAMOVICI: Those pumps do get in operational service. They're being used in the service to make up water.

MR. PAGE: Why not say you have six of them on the bare bones edge of falling apart? They'd be running. Would they make an accident run?

MR. ABRAMOVICI: They're not required in an accident mitigation scenario.

MR. PAGE: None of them are, but they're required to be operable. At least one of these four. I don't agree with the argument, personally.

MR. SHIPMAN: What is different about, I believe, what you offered Mr. Thompson was the tech spec change requested is now under review for operability definition. We have an operability definition in our tech spec now. We've been requested to clarify that to make it more current to what is

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acceptable. The definition of operability, by the tech spec change request that has been submitted is not affected by this test. In other words, I can define that pump as being operable outside the realm of this test.

MR. PAGE: How do you do that?

MR. SHIPMAN: By meeting the words that are defined in operability?

MR. PAGE: Could you tell us what those words are?

MR. SHIPMAN: I think the words are, to paraphrase, the pump will perform its intended function -- and this is the old definition, is what I'm giving you, which is what I've got in my head now. It will perform its intended function within the design range when called upon. Something to that effect.

MR. PAGE: Do you have something to verify --

MR. SHIPMAN: I have other things that would verify that that pump would perform its design function within the required range.

MR. PAGE: But it's not IST?

MR. SHIPMAN: It does not necessarily have to be IST, from my point of view.

MR. THOMPSON: Let me see if I understand what you're saying. A pump that is required to be operable does not necessarily have to be part of the IST program? Is that what you're saying? The tech specs call for operability on

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these pumps under certain circumstances. And you're saying that they still don't have to be in the IST program because -- and I don't know what the because is.

MR. CHERNY: I'd like to back up one step further. Why are they required to be operable if they don't take credit for them for any accident scenario? That doesn't make sense to me

MR. SHIPMAN: The issue that we're discussing is the basis for the IST program and how we judge components to be required to be in that program versus the criteria that was established for here is your tech spec and here is what has to be in your tech spec.

MR. CHERNY: You're saying they are two different criteria?

MR. SHIPMAN: I'm saying the development of this two different systems were not concurrent. And therefore, there are idiosyncrasies within the two programs that need to be evaluated on a case by case basis. And judged on their merits, on a case by case basis, as to what the real requirements are, to satisfy the IST program, as defined by the ASME code.

MR. BOSNAK: I think as far as we're concerned, the bottom line is do you need it for accident situations? Do they have to be listed in the tech specs? And if they do, then you get into operational readiness, which is in the regulations, Part 50.55(a) and (g). And if you get into

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operational readiness, you're into the IST Program. So I guess the question we're asking you is do you need these pumps to respond to any of your postulated accidents? And therefore, are they required to be tech specs?

MR. CHERNY: The answer to those two questions apparently are different. No, they don't need them for accident mitigation. Yes, they have to be in the tech specs. And that doesn't make sense to me.

MR. BOSNAK: No, and that's what I don't understand.

MR. PAGE: If I could break in for a second, could I read -- this is a little bit long here. I have the tech spec bases here. It talks about different ways to add boron to the reactor coolant system. It says the primary method is to pump concentrated boric acid solution into the makeup tank, using either the 10 gpm boric acid pumps or the reclaimed boric pumps. Using only one of the two boric acid pumps, the required volume can be injected in less than 13 hours.

An alternate method is to inject from the borated water storage tank -- those sound like accident scenarios to me. I wouldn't imagine that just being normal run of events. But it sounds to me like the discussion is right down the center of some sort of scenario, where you have to -- and then they're talking about with the single failure, even with the rod stuff. One step control assembly.

21b9

MR. COLITZ: Again, in going back to our accident analysis, people -- and I think he had it up there, in the presentation, that none of the Chapter 14 accident analyses, failure scenarios, take credit for these pumps, okay? Basically, the BWST with the high pressure injection and low pressure injection pumps. That's the source we take credit for. We do agree that the boric acid, and the reclaimed boric acid pumps, are in the tech specs and requires one of four to be operable. Normally, we use those for normal makeup to the makeup system during plant operations.

MR. BOSNAK: We probably need to bring other people into this discussion at some future time.

MR. CHERNY: We'll have to get our systems people to look in.

MR. COLITZ: The other thing, also, if you are going to test those pumps, you're looking like -- we know we're injecting into the reactor coolant system makeup tank during normal operations, as part of boron control. If you're going to test those right again, it's into plant modifications which we have a very hard time justifying adding additional plant modification --

MR. BOSNAK: What's the plant modification that you need?

MR. COLITZ: You probably need to have recirc line with flow instrumentation.

21b10

MR. PAGE: Why would you need flow instrumentation on the recirc line?

MR. COLITZ: One other point that I guess I would like to -- I was maybe going to save it for the end, when we have a wrap up, but I'll bring it out now because I think it flows through all of these. It is, if you look at any one of these tests as a separate test, a lot of them whether they are required or not required are nice to do things if you look at them separately.

One of them -- my main concerns, as you go through these, we are to the point now where we have the operations department in a constant surveillance mode. And if we really want ops to surveilwe better make sure what they are surveilling is required and really are the most important items. Because I think, in some cases, we have them doing surveillance. You can't really meet the whole intent, so you kind of come up with something that gets close to proving what you want to prove.

And I think we have them out there doing a lot of testing. A lot of it is during heatups, when you're also doing ES testing. They're trying to control the plant. I think we're following taking them at a point where I'm concerned that we have them focusing so much on surveillance right now they're forgetting about the overall heatup, some of the important RSA, reactor protection system tests that

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take place during these things.

You look at that on a case by case basis. That doesn't become a very good argument when you look at the total scope here, and this is just one area we're looking at additional surveillance. It's going on in every other area. There's a real safety concern there that I think we need to weigh, on do we have them concentrating and working on really important surveillance or these nice to have type things that are adding to their overall responsibility in running a plant.

MR. THOMPSON: Joe, is that like saying you've got seven pumps there and you only need one of them possibly and that you've got enough that you really don't need to surveil any of them because probabilistically surely one of the seven is going to be operable. Is that sort of a layman's summary?

MR. COLITZ: That's true. And we have meetings daily. As soon as we find an indication with a problem with a pump, we correct the maintenance department. There's a pm program in all of these pumps, so it's not like that pump is sitting down there for years without any attention and all of a sudden it craps out and we may not even worry about that then because we know there are six more.

So there's other additional arguments and programs at the plant. I think in all of these pumps a certain degree

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of special attention because they're tech spec pumps and they are in the pm program.

MR. PAGE: I think we understand the one out of seven argument, which I don't think is really included in your tech specs because it should say one out of seven, if that's the situation. But it doesn't even tell you how you show one. No one really discusses what do you do if you don't do IST. There's something that you said -- I forgot your name back there, but there's some sort of testing operational running, or whatever.

MR. SHIPMAN: The normal activities that you do, if you look at just the boric acid mix tank for a moment. The boric acid mix tank we use as a source tank to mix the boric acid to make up the different other tanks. Thereby those tanks and the pumps on the tank and the mixer and the heaters, everything in that system is periodically, routinely used to perform routine operations.

If you look at the reclaimed boric acid tanks, there are requirements -- management requirements -- to sample the tank. To sample the tank, we always put the tank on recirc, which tests the pump. And the components in that recirc path.

MR. CHERNY: You said tested. It turns them on but you don't record pressures, blow rates, and all those good stuff, do you?

MR. SHIPMAN: That's correct. We wouldn't, in those routine evolutions. We would not be looking for discharge pressure, per se, other than the operator would start the pump, assure he has got discharge pressure, he would not be comparing it to what he would routinely see there to make sure that the pump is operating to his satisfaction, that when the tank has been recirced, we have assured ourselves that the tank, in fact, is on recirc.

end2

It's not a very documented evolution, which I think your point was.

MR. BARLEY: These are positive displacement pumps.

MR. THOMPSON: I see about four points that you're making here.

One is, to do this IST, would require plant modifications.

You indicate a potential problem with overdoing the IST, too many things to test.

The point is that you do use these pumps -- all seven of them -- frequently and do a subjective check during regular use.

And the fourth point is that you've got many redundancies, in other words seven pumps, of which you might only need one, and also claim that it's not needed for accident scenarios, which we didn't really get any agreement on.

Is that about the five points that are being made?

MR. CAPODANNO: Yes.

MR. BARLEY: The other basic point I think ought to be made on here is the design flowpath through the system is to inject boric acid into the reactor.

To do the Section 11 work required sort of testing, and that system requires you get boric acid into the reactor

-- which has associated reactivity effects and is a plant-controlling test.

MR. PAGE: You're saying the way it's built now?

MR. BARLEY: Yes, the way the system is built now.

That's one of the major reasons that we have a problem doing that test, because of the resultant effect on the reactivity in the reactor in doing that test.

MR. PAGE: And these components here are only attached to safety-grade power source for convenience only?

If you need one out of seven, how can that be convenience?

If you have to have one, I can't consider that a convenience-type connection.

MR. SHIPMAN: I think the point is the one out of the seven that is required -- correct me if I am wrong, Julian -- I thought that was the borated water storage tank and is associated with the valving and pumps that get into the reactor coolant system. And those are in IST program.

MR. ABRAMOVICI: The low-pressure injection, high-pressure injection have built-in spray. They all take suction from the borated water storage tank. That is the water source, and that has a tech spec limit on the boron concentration and the boron.

MR. [illegible]: It seems to me a tremendous inconsistency between the story you're giving and what your tech specs seem

to reflect, why these components need to be operating.

MR. ABRAMOVICI: One point I would like to make -- and correct me if I'm wrong -- is I think the tech specs were written at a time when in-service testing for Section 11 didn't even exist or it wasn't about to come into existence.

MR. PAGE: My understanding was that was the early spec before Section 11 was created, that they put that stuff in the tech specs, which they felt were needed for safety reasons.

Correct me if I'm wrong. That has been my understanding of the early tech specs. They didn't have a Section 11 to put in there.

MR. BARLEY: What Julian was referring to was the tech spec on the boric acid pumps, the one out of four tech spec. The 3.3.2 tech spec predates the issuance of any version of Section 11.

MR. SHIPMAN: From the aspect of inconsistencies, I think those inconsistencies need to be addressed -- no question about it -- on a case-by-case basis, so that we all understand the basis for the tech spec and the basis for the IST program.

MR. BOSNAK: I think that's the way -- we're going to recommend we resolve the inconsistencies and change the tech specs. Therefore, there would be a basis for removing this from the IST program.

But we do have to consult with the tech specs people and our systems people to confirm all that.

I think that's the way we can proceed on this one.

MR. CHERNY: I think we're going to need to check with the systems people.

We might as well go on to the next item.

MR. PAGE: Right.

MR. ABRAMOVICI: May I proceed?

(Slide.)

The next items for discussion -- the next three items that will be coming up for discussion have to deal with Event V from WASH-1400.

I would like to at least give a GPU interpretation of what Event V is and a common evaluation for the following three items.

Again, our interpretation is Event V deals with two active valves in series in a high-pressure system failing and allowing the low pressure of the system outside the reactor building to be pressurized to reactor coolant pressure, therefore causing a LOCA outside the reactor building.

Event V was analyzed for TMI by Franklin Research Institute Center for NRC and was submitted October 24th, 1980.

And the above analysis did not include any of the

following valves: the RC-V4 and 23, DH-VI and DH-V2, MU-V107A through D, 94, 95, and 86 A and B.

It's worth mentioning that that evaluation -- as a result of that we did make modifications to the plant for other valves.

MR. PAGE: You restricted your discussion to the Event V, pressure isolation valves only, the ones you received an order on?

MR. ABROMOVICI: You will receive an order on one of them.

MR. PAGE: My understanding is, on the operating plants -- and you guys are probably familiar with what happens on the new plants -- all these valves will definitely be in there in your tech spec right off the bat, not just the Event V group but the entire group of high-pressure, low-pressure interface valves to the reactor coolant system.

MR. CHERNY: We have been asked, during the IST reviews, to go back and pick up the Event V pressure isolation valves and make sure that they are in the program and they can be tested.

We can see they're not Event V valves. That's not really a problem.

MR. ABRAMOVICI: I'm going to go through each and every one on a separate -- this was a common slide for all.

(Slide.)

The item B1 deals with RC-V4 and 23 on a pressurized spray line from decay heat system. This is not normally used during operation. It is isolated and outside the reactor building.

end 3

There is a locked, closed valve.

(Slide.)

Our bases for exemption requests are as follows. During normal power operation at pressure the valves are inactive. Any time the pressure is greater than 400 psig, both of those valves are closed and do not serve any function other than isolation.

They are active during boron precipitation mode, however at that point the system pressure is less than the 400 psig and the entire system including inside and outside reactor building is adequate for that pressure.

The second argument is that the valves' leakage through those valves will be identified as part of the RCS leak rate calculation, which is performed of course in accordance with the tech specs. A leakage which would exceed the tech spec limit is found within the relief valve upstream of the subject valve.

(Slide.)

This might -- I'll put this back up again: DH-V67 has more than adequate capacity to take care of any tech spec limit. The leakage from DH-V67 goes to the reactor coolant drain tank and it is part of the identified leakage.

MR. PAGE: Could we stop on just that argument here. I think we can cover a couple of basic concerns there.

First of all, you are testing in series, testing more than one barrier at the same time.

MR. ABRAMOVICI: As part of the leakage count that is correct.

MR. PAGE: One behind the other. So if you are missing one of two valves, say the valve is disassembled in the line, how did you know that that was -- how would you know the valve wasn't there?

MR. ABRAMOVICI: In other than normal routine maintenance plant control, you would not know that the valve is there but if one valve is not there the other valve would leak gradually, increasing to some limit, and it would be picked up as part of the tech spec surveillance for leakage.

MR. PAGE: You are saying even if you had a single barrier and you had already suffered a gross failure of one valve, which subjects you by the way to single failure in your second valve, that is the whole point of what we are trying to get here is that we need two barriers.

MR. ABRAMOVICI: I think we are getting to the third point, but we do have a backup check valve inside containment and if both valves would fail, you know, open, total failure, there is a very high probability that the break would be inside the reactor building.

MR. PAGE: We understand that. We are trying to prevent those too. This is the PRVs that are not -- these, but it is obvious these blowdowns would be inside the containment. That was the concern I believe we were directed

to handle in our normal review as opposed to sending an order.

I believe the ones that penetrate the containment you could get an order on, which I believe was put in your tech spec.

MR. BARLEY: Yes.

MR. CHERNY: Is valve DH-V69 a low pressure design valve?

MR. ABRAMOVICI: That is a low pressure design valve. I think high pressure - low pressure is here.

MR. CHERNY: What is the capacity of DH-V67?

MR. ABRAMOVICI: 36 gpm, 36 or 37 gpm.

MR. PAGE: The reason we normally don't let people take credit for the relief system is that we are really not concerned about the leakage in terms of leakage, but rather as a precursor to a gross failure of the check valve. It is the only think we have to determine a check valve condition. For an MOV you have many other tests that can give you information about the motor operated valve to assess whether the internals are beginning to have problems.

Check valves we found so many disassembled in lines for no apparent knowledge, no one knew about them. That is the reason. I don't know if you are familiar with why we use leakage.

You know, it is not really the leakage itself but rather that it is a precursor to some sort of gross problem

inside the valve.

The values that we pick for leakage of course are somewhat arbitrary and we are working on this right now, but to date, I don't think we have accepted credit for the relief systems because if you did have a gross failure, that relief system would be useless instantly.

MR. ABRAMOVICI: That is true.

MR. PAGE: You would be so overwhelmed so quickly --

MR. ABRAMOVICI: Yes. If you had total failure, yes, the relief valve would not take --

MR. PAGE: That is what we are really trying to determine by this testing. That is where we are coming from. We realize it is not perfect. It is far from perfect. We wish there were better ways to do it, but that is about the only handle we have on check valves, leak testing or reverse low testing, however you want to determine that.

MR. CHERNY: You are emphasizing check valves an awful lot. We require that the gate valves be checked too.

MR. PAGE: I am saying the check valves are far more of a concern. I think we have experienced so many that were disassembled and they haven't been tested for years.

There was never anything wrong with them -- that is what I meant. We have less to look at in check valves.

MR. CHERNY: What is involved in being able to leak test these two valves?

MR. ABRAMOVICI: I think to test those valves require a major quantification, providing test actions, pumps and so on.

MR. COLITZ: When we got the order to test CF-V4A, DH-V5A, DH-V22, I think we spent close to a hundred thousand dollars modifying the plant with connections, flow-ending site glasses collection drums. I don't have the specifics of those test right now to enable us to do those tests.

Again, they are done during heatup, which is a controlling mode of the plant.

We also have still running those tests a safety concern. Any time you have individuals collecting or standing by to collect any leakage on an individual valve at temperatures above 180 degrees or something, we get into real safety concerns with our people.

So I guess you know to test these valves we would probably have to have similar type connectors, drain lines and so forth, where somebody could collect or monitor the leakage past a specific valve.

MR. CAPODANNO: I think there is one other significant difference here. The ones that Joe just mentioned just be virtue of the piping arrangement, were fairly easy to check. We have isolated lines connected to vessels that could be pressurized to do a back leak check.

You will note from the diagram that is being

displayed, it is not that simple with this since this line discharges into the vapor space of the pressurizer.

So it may quite likely be even more complex in the one modification we did make.

MR. BARLEY: You can take that up to any significant pressure requires the reactor coolant system be relatively warm to get away from the MPD concerns in the reactor vessel. to get it up to any significant pressure that would seat the valve and do a valve relief check on it, so again you are controlling the plant to pressurize the entire reactor coolant system, to test this check valve for leakage.

You would be forced then to deal if you have any leakage with the test connection you would be forced to deal with high temperature, radioactive water, which produces personnel safety concerns.

Side 2 BU

MR. CAPODANNO: I think the one thing we want to emphasize again is the fact that this line is normally closed. I think the previous slide said this thing is just not open at pressures above 400 pounds.

MR. CHERNY:How much of a problem would it be to do some other tests, other than leak testing to verify that both valves are in a closed position?

Obviously if the valves are always closed and if while you were shutdown, they verified they were closed, that wouldn't be such a bad test for this particular configuration.

It is not like a case for example of decay heat removal system isolation valves where you are operating those things right until you isolate the system and go up to power. These things, as you say, are basically always closed.

MR. BARLEY: We do stroke time, the RC-V4 the valve is open and closed.

MR. CHERNY: That is done on a quarterly basis?

MR. ABRAMOVICI: That has got to be cold shutdown. It has got to be below 400 psig before you can open the valves.

MR. CHERNY: I am a little bit hung up on how we are going to resolve this before we continue. We are going to require that they be individually tested. Now it is a question of mutually agreeing what those tests are going to be.

We have no relief from our management to do other than make sure those are individually tested, so what I am trying to find is maybe we can find some other tests that can be done if heat testing is a big problem.

MR. COLITZ: What is the requirement for these?

MR. CHERNY: Taking credit for two barriers between the high and low pressure system, that is the basis for the testing.

MR. COLITZ: You are saying it is a code requirement or NRC management requirement or what?

MR. CHERNY: NRC management requirement.

And as Joel was trying to say, if it was a new plant, those would be tech spec valves. They'd be on the list. No plant gets a licence anymore without committing to individual leak test valves of that type.

MR. BOSNAK: The order went down just to separate the event V configuration.

MR. CHERNY: Event V they thought had to be handled in a little bit quicker fashion because of the outside containment concern. That is why that was done that way.

The older plants, the management decision was made at that time to pick up the rest of them as part of the normalized heat review.

MR. PAGE: Additionally, on the new plants there is a 1 gpm requirement on the leak rate which is very tight.

MR. CHERNY: We are not saying anything about the leak rate, though. Whatver was in your Event " order is an acceptable leak rate. That is really not an issue here.

It is the issue of getting the tests done in the first place.

MR. BOSNAK: Perhaps you would have a way of verifying that you have got some barriers. You may want to think about it.

MR. CHERNY: When you stroke that RC-V4, is there any pressure at all?

MR. BARLEY: :We do that at low pressure.

MR. CHERNY: Zero psi, is that what you are saying?

MR. SHIPMAN: I don't think it is quite zero. I think we take credit for that valve once we go on decay heat removal and continue the cooldown when we open RC-V4 to spray down. We do it to pressurize, I think we take credit for that opening because we time that opening and that would be at some pressure less than 400 pounds.

MR. CHERNY: I was wondering if you could do something there to verify that the check valve was closed and seated?

MR. SHIPMAN: At that time the check valves would be open.

MR. CHERNY: It is going to have to ultimately reclose again sooner or later if it works right.

That is something you are going to have to look at, I guess.

End 4.

I guess what we're saying at this point is this is an action item for them -- requiring leak testing or some alternate individual valve test to verify that they are in a closed position.

MR. PAGE: Do you gentlemen understand what this means?

MR. CHERNY: They're going to have to come back with a commitment or a counterproposal that satisfies the requirement.

MR. THOMPSON: You mean after lunch?

MR. CHERNY: You set the schedule.

MR. THOMPSON: Can you come up with something? Can you caucus and come up with something and figure out something while we're here?

MR. CAPODANNO: I think there's a problem with trying to do that, that usually decisions made in a hurry turn out to be less than the optimum decisions.

I don't know, maybe somebody else can volunteer, but I think our primary experience has been in a situation where we have been able to pressurize across a valve. This one was a little bit unique because it's open to the pressurizer itself.

For that reason, I think we prefer to work up something and get back to you with a final response to your question here about what you require.

MR. THOMPSON: Does it seem reasonable, what Staff is asking, that you come up with some method to check this -- what is it, cold shutdown?

MR. CHERNY: I guess it has to be, from what they were saying.

MR. BASHISTA: What acceptance criteria?

MR. CHERNY: The basic concern is to make sure the disc are in place. The only way we know to do that for 99 percent of the cases is with leak testing.

That doesn't mean somebody with a particular configuration can't come up with an anternate idea.

So, I'm not saying leak testing is the only way. That's the only way we know of that everyone seems to be able to do. And the criteria -- the leakage criteria has been recommended by a whole bunch of different kinds of experts. And that's kind of a lengthy story to go into here.

If you have another way of doing it, without actually running a leak test, we'd certainly be willing to look at it because, as Joel was trying to say, the real concern is not leakage. It's just to make sure that the disc is there in a reasonably sturdy configuration, not severely degraded.

MR. SHIPMAN: Is valve inspection at an interval that it would be realistic -- being considered?

MR. PAGE: Valve inspection wouldn't prove the

valve was closed. It would prove that it had the capability to go open and to go closed.

But we've had them open and stay open before although the valve was apparently in good condition. However, if you leak-tested it, you'd find that it wasn't.

MR. SHIPMAN: When you say cold shutdown, any meaningful test to see that it's in its closed position would require pressure in the pressurizer.

If that pressure was steam pressure, it would be an elevated temperature, even if you only have 80 pounds. And we're talking about 300-and-some degrees of steam water.

MR. CHERNY: I don't want to get too carried away on every cold shutdown. There was something in your -- I guess I didn't bring that along. There was some kind of a frequency of testing in the Event V order which escapes me at the moment. But I don't think it was every cold shutdown.

MR. SHIPMAN: It was every nine months.

MR. CHERNY: What we were really thinking of is something consistent with that.

I can't find it at the moment, but whatever that was.

The new plants have to test them after each disturbance.

MR. SHIPMAN: Do we have some experience with these new plants that have tested them?

MR. CHERNY: We can give you some names.

The only thing you won't find for this particular configuration is I don't think you will find that there's any new B&W plants.

We looked the other day, and we couldn't find, on the Westinghouse or ACE plant, this exact configuration anywhere.

So, if you're looking for experience and just that configuration, you may not find it.

But we can give you some other new plant names if you want to talk to them. It would be the majority of the PWRs licensed since the TMI-2 accident, starting with North Anna 2, Sequoyah, McGuire, those kinds of plants, Farley 2.

MR. BARLEY: Are there any old plants -- operating plants -- that are living under the nuclear rules?

MR. CHERNY: We have been notoriously slow at getting lengthy SERs out on IST. But I guess Farley 1 comes to mind. That one wasn't too long ago -- although we're under discussions with them at the moment, primarily about the leak-rate thing, not so much the valve list.

I'm trying to think of another old plant.

What do we do about PRVs on Perry Island?

MR. PAGE: I don't think we have the argument about the list.

MR. CHERNY: How about Calvert Cliffs?

Calvert Cliffs is another one that's an old one.

MR. THOMPSON: Can you summarize?

MR. CHERNY: We're on V-1, the first two valves.

MR. THOMPSON: Can you summarize the status of our discussion here?

It would take major plant revisions to be able to leak-test the way we're talking about at pressure, plus the additional concern with personal safety if you do that and you do have a leakage.

The next stage of the discussion went to, well, we need to primarily verify that they are closed. And this could be done at cold shutdown.

Is that right?

MR. CHERNY: The same frequency that they had in their Event V order, which I think is less frequent than that, but I'm not sure of what it is.

MR. THOMPSON: Some frequency.

And then you say choose any way you want to do that.

The only way we know how to do it is to leak test.

MR. CHERNY: Yes. Right.

Now, we've had people talk to us, just conceptually, about air or gas testing, radiography.

MR. PAGE: Pressure monitoring.

MR. CHERNY: That's another one.

MR. PAGE: Be aware though that we have looked at some pressure monitoring schemes, and the only ones that seem to be reasonable -- and there are very few of those -- are ones that are done at one distinct time, not continuous.

All the ones I've evaluated that are continuous will -- you will always have an alarm, or you will never have an alarm.

MR. SHIPMAN: Was radiography determined to be acceptable?

MR. CHERNY: No one has tried it. They just talked about it conceptually. We don't know.

MR. PAGE: To my knowledge, there's only one plant -- did that on 8303, I believe, to prove those check valves. It was either ultrasonics or radiography, I'm not sure which one.

MR. CHERNY: I think that was radiography on that one.

I don't know what the region was that reviewed that, but the utility thought it was acceptable.

MR. THOMPSON: What about leak testing at low pressures?

MR. CHERNY: That's what most people do when they do leak testing, they do it at lower pressure and they extrapolate to what the leak rate would be at high pressure.

That's what they do on Event V.

MR. THOMPSON: Okay.

MR. CHERNY: Do we want to move on to the next two valves? Is that what we want to do?

That's their action item, I guess is the way we're going to leave that for now.

(Slide.)

MR. ABRAMOVICI: The next series of valves are in the high-pressure injection system. They are the MU-V107A, B, C, and D; MU-V95, 94, 86A and 86B.

There is a low modification that really doesn't affect the discussion from the slide that we have just received.

The discharge MU-V222 comes downstream, rather than upstream. It really does not affect the discussion; it's just for correctness. I don't know if it came out very clear, but this valve is MU-V220, not 270 -- this valve right here. It's a new valve. We are going to put the HPI cross-connects in. I think it came out as 220, but I'm not sure what it came out on the handouts.

MR. PAGE: It's supposed to be 220?

MR. ABRAMOVICI: It is 220.

MR. PAGE: Okay. I see what you're talking about.

MR. ABRAMOVICI: Okay. Curing normal power operation, flow is through the MU-V17, MU-V18, and to the

B loop, the HPI lines, MU-V16A, B, and C -- C and D are normally closed.

On the HPI initiation, the 16 is open, 18 closes, and the flow goes through these four loops.

(Slide.)

Our basis for exception of those valves from the IST program is that we have four valves in series. We have the loop check valve, which is right next to the reactor coolant piping, which is depending on the loop MU-V94 and 95, 86 and 86B.

This is another correction on your handout. That should be second loop check valve, which are the MU-V107A, B, C, and D.

During normal power operation, the motor-operated valves are closed, the MU-V16A, B, C, and D. And then, outside reactor building, at the discharge of the pump, the MU-V73A, B, and C.

(Slide.)

The 73s are here. The high-pressure to low-pressure is a the pump.

MR. PAGE: You said there was one more correction there on the other page?

(Slide.)

MR. ABRAMOVICI: On this page, the second line of the exemption should be second loop check, rather than

containment isolation valve.

MR. COLITZ: I guess our major comment there was with three check valves and a motor-operated valve that's normally closed between the high-pressure and the low-pressure system. We couldn't justify adding modifications to the plant to go test.

MR. ABRAMOVICI: Okay.

(Slide.)

The next item, again, which is sort of part of the Event VRDH-V --

MR. PAGE: Hold off. I think we're back to the same argument we had before, is that they are not two dedicated barriers.

You're saying those are four valves in a line, one of the four will be good -- period.

MR. COLITZ: Yes.

MR. PAGE: I don't think we can even consider an argument like that without some sort of PRA inputs to be evaluated by someone, an analyst.

I don't know if that's such a good assumption really.

MR. CHERNY: Could you repeat once more what is the normal flow path.

MR. AGRAMOVICI: The normal flow path is through this -- through the MU-V17, MU-V18, 219, 222, and 94, into

the B cold leg.

MR. CHERNY: When the plant is in normal operation, is one of those three pumps that see there always running?

MR. SHIPMAN: B.

MR. CHERNY: B is normally running?

MR. SHIPMAN: That's correct.

MR. CHERNY: Okay.

So, am I correct -- I'll just ask it.

If V-73A and C were not closed, would you be able to sense that somehow by backflow through those other two pumps?

MR. SHIPMAN: We presently do that, a test to verify that those other discharge check valves are closed.

MR. CHERNY: How do you mean you do a test?

MR. SHIPMAN: Correct me if I am wrong -- it's part of the IST program now, to verify that that check valve is closed.

MR. CHERNY: 73A and C?

MR. SHIPMAN: Yes. Well, we go through all three pumps in the test program to verify that they are closed.

MR. CHERNY: How do you go about doing that?

MR. SHIPMAN: The current proposed test method looks for a pressure increase on the upstream side of the

check valve on the outer pump.

MR. CHERNY: So, there's a pressure minder here somewhere that's not drawn in?

MR. SHIPMAN: Yes. Those are simplified drawings that should not be used for system design.

MR. PAGE: So, you have pressure monitors on the upstream of all the pumps?

MR. CHERNY: Between the pump and the check valve.

MR. SHIPMAN: Yes.

MR. CHERNY: So, they are already verifying that barrier. That's what it sounds like.

Okay. I guess the next question is --

MR. PAGE: The pressure monitoring is continuous?

end 5

MR. BASHISTA: Each quarter test.

MR. CHERNY: If you had any backflow through the valves in loop A, C or D during normal operation, I guess you wouldn't know it; is that correct?

MR. BARLEY: 16 valves are going to be shut.

MR. CHERNY: I understand that.

MR. ABRAMOVICI: That would be the ones you identify leak rate conditions on that.

MR. SHIPMAN: The idea, from my understanding is, we're looking for the pressure boundary. If the pressure boundary wasn't there we would certainly see it.

MR. CHERNY: Yes, except that you -- that's an interesting concept here. They are periodically checking one barrier quarterly. That seems very clear. But they have three other valves in series that are being checked.

Let's say that a little differently. They have three other -- your reactor coolant inventory check would only measure a total leakage, wouldn't it? You couldn't really tell from that whether you were getting a combination of leakages from A, C or D. You'd just get a total, wouldn't you? Is that right?

MR. SHIPMAN: We would understand that we would have a problem and then we would go look for that problem and identify it. To say that we wouldn't understand which leg it's coming from, I think is a wrong assumption.

There are methods that normal maintenance

troubleshooting methods that would occur that would identify where that leakage is coming from. The easiest technique would just be a temperature on the line.

MR. CHERNY: Would it be inappropriate to give them credit? So what if they aren't individually leak testing any one of these three, they're leak testing three as one. And they only need one more barrier.

MR. PAGE: That's right, they're verifying one barrier. It sounds like it might be useful. What about the 73 valves?

MR.CHERNY: They're doing those already.

MR. PAGE: You're saying you're leak testing them. I thought you didn't want them.

MR. BARLEY: There are individual checks on the HPI injection line, injection valves.

MR. CHERNY: It seems to me if they're measuring quarterly the pressure build up, they're periodically checking the backstroke of those valves to see whether this is in place. Maybe they ought to get credit for that without doing anything else.

MR. PAGE: You're saying they're testing three in series, all the time periodically.

MR. CHERNY: Three sets of three.

MR. PAGE: What's the criteria you use to determine if they're leaking?

MR. CHERNY: They have the reactor coolant inventory check is what they're doing. What's the first screening criteria, 1 gpm unidentified?

MR. COLITZ: Shut down.

MR. CHERNY: If they have more than one gpm than they have to take action to track it down. Is that how it works? From there you wouldn't shut down, but you'd try to identify where it was coming from, right?

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MR. SHIPMAN: If we would see the check spec limit

MR. CHERNY: In a reasonably short time?

MR. SHIPMAN: A very reasonably short time.

MR. THOMPSON: Then I think if you determine what loop it was coming from you could go up to 10 theoretically probably before you have shutdown.

MR. SHIPMAN: The theory is, you cannot have any leakage through a pressure boundary. Zero leakage through a pressure boundary.

One gallon per minute unidentified leakage, ten gallons per minute unidentified leakage, 30 gallons per minute, what we call losses, recoverable losses.

MR. CHERNY: But no leakage from a pressure boundary.

MR. SHIPMAN: A pressure boundary is defined by a tech spec.

MR. CHERNY: Does that include valve disks? Are those pressure boundaries? I'm not sure that they are.

MR. BARLEY: That was intended to refer to piping cracks.

MR. CHERNY: I think it was, too.

MR. PAGE: So when the water comes back through, where does it go to?

MR.CHERNY: He doesn't have anything drawn on here. They have to go to their inventory. I guess they hadn't thought about this path.

MR.PAGE: If they -- say that one of these barriers was not there, where would you pick it up?

MR.SHIPMAN: More than likely the makeup tank.

(Discussion off the record.)

MR. PAGE: As you leak through those three valves on a continuous basis, and you're picking up your losses at the drain tank, what's the flow path, what's the reverse direction flow path?

MR. ABRAMOVICI: Reverse direction would eventually wind up in the makeup tank.

MR. PAGE: Wouldn't that also be testing the 73 valves?

MR. ABRAMOVICI: You have to have leakage back through 73 to get back.

MR. PAGE: You're testing all four at one time, not

three.

MR. ABRAMOVICI: The 73 are testing, are tested.

MR. PAGE: I'm saying the tests they're trying to take credit for the three barriers, also include the 73 valves.

MR. ABRAMOVICI: In addition to, yes.

MR. PAGE: So that's testing all the barriers simultaneously, so you're really only showing one barrier on that kind of test, even though you're testing the 73 separately. The 73 may be the one that protecting you.

That's why I was concerned. I didn't see the flow path going back for this balance.

MR. ABRAMOVICI: There's a makeup tank in here that feeds all three pumps. Or it comes from the PW, as if it's on the accident scenario.

MR. BARLEY: Excuse me, are you saying that stroking the 16s to verify that those are at the lowest position and the pressure monitoring test is done separately, and the 73 check valves is not sufficient to establish the barriers?

MR. PAGE: From the description I've been able to establish here, it appears to me the 95s, the 107s, the 60s and the [illegible] indeed all tested at exactly the same time and series [illegible] though you test the 73s separately --

MR. THERNY: He's trying to say they test 16s

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separately.

MR. BARLEY: We do stroke down 16s.

MR. CHERNY: How often do you do that?

MR. SHIPMAN: We do that quarterly, part of the ES testing.

MR. BASHISTA: They're timed each quarter.

MR. CHERNY: Yes. Do you stroke time them just from what, indications in the control room or something?

MR. SHIPMAN: That's right. It satisfies the surveillance testing for ES equipment availability.

MR. CHERNY: I'm just not convinced it tells you that the disk is necessarily there, but the valve is indicated as closed in the control room

MR. SHIPMAN: We also have flow indicators on those valves, one those lines that indicate in the control room. If the valve disks were not shown there we would see flow in designs.

MR. PAGE: I don't see how that's possible.

MR. CHERNY: Were those indicators located?

MR. SHIPMAN: I think they're upstream of the 16. They're on each individual line.

MR. BARLEY: They're immediately upstream of the 16s. There's four of them, one on each.

MR.CHERNY: They're sort of where he drew that one?

MR. CAPODANNO: Three more in the center location.

MR. SHIPMAN: One other aspect of this that might add some realism to the concern is that we have operators in the plant that routinely surveil these systems. And we have shift tour readings and operators roving the plant.

These systems are normally somewhere around 100 degrees. If there was any significant barrier problem, I would think there would be sufficient flow back from the system that's hot, the operator would notice that he has a very hot pipe.

MR. BOSNAK: What is your routine surveil that you say you routinely surveil? What do they do?

MR. SHIPMAN: We have aux operators who shiftly take management directed readings on equipment to assure that the equipment is functioning properly. If you can think in terms of a preventive maintenance program as like as operators preventive maintenance program. He's out there looking at the equipment to make sure it's functioning properly.

MR. BOSNAK: What does he do?

MR.SHIPMAN: He actually takes discharge pressure readings, flows, temperatures. He listens for normal noise.

MR. BOSNAK: I was trying to get a feel for it.

MR. SHIPMAN: It's that type of program.

MR. BARLEY: Let me propose the logic here that

convinces me that I don't have less than two barriers. Test the 73 valves independently on a quarter basis. Pressure valve stroke time is 16 valves, if the MEV 16 disks were not there, the makeup pump pressure would be injecting flow from the HPI valves during normal operation, or during the quarterly makeup pump tests, when we test run the other pumps.

MR. CHERNY: How sensitive are these flow elements we're talking about? How are they calibrated?

MR. SHIPMAN: We use those flow instruments for ES injection modes to verify that the pump is performing in its ES mode properly. Although I can't tell you what interval they're calibrated, or what they're accuracy is, it's consistent --

MR. CHERNY: I guess what I'm wondering is, what is the lowest flow they would detect?

MR. SHIPMAN: Operationally I have got to be able to show that I've got enough flow paths for those valves to assure that on ES, the minimum recirc for those pumps go close. The minimum recirc is 40 gallons per minute per pump. The operator is directed to make sure that he's got at least that much flow. And to be conservative we use the number of 80. Because there's two pumps, 80 gallons per minute minimum flow.

So operationally, those indicators are certainly

able to see that.

MR. PAGE: That's a lot of leakage though.

MR. SHIPMAN: This is flow into the system, not leakage.

MR. PAGE: We were just talking about the ability of the instruments that we're referring to.

MR. SHIPMAN: I'm not sure the instrument would read backflow, if that's what you're --

MR. PAGE: We're talking about overflow.

MR. ABRAMOVICI: Those are what, zero --

MR. PAGE: What the delta P between the makeup pumps and the RC disks?

MR. SHIPMAN: Maybe 50 pounds. Maybe more than that. Discharge pressure of the pump is like 2750, and the RCS is at 2155. The delta P across those valves I'm not sure. It's not high, but we have a throttle valve --

MR. CHERNY: Is it true that there is always one makeup pump running?

MR. COLITZ: Yes.

MR. SHIPMAN: Yes, sir.

MR. CHERNY: Never shut one of them off?

MR. BARLEY: They're supplying sealed water to the RC pumps.

MR. CHERNY: Let me ask the question differently. At what time do you normally shut them off? What point in

shutdown?

MR. SHIPMAN: We're required to have seal injection anytime the RCS is above 190 degrees Fahrenheit, and 100 pounds. That's to assure that you don't have -- that's a reactor coolant pump limit, so you don't backflow unfiltered reactor coolant system back to the seal cases.

MR. CHERNY: Under what conditions were you going to be thinking about that?

MR. PAGE: They're going to be stroking them quarterly. They're at the completion of the quarterly stroke to verify that this element is picking up nothing.

MR. CHERNY: Aren't they doing that now?

MR. PAGE: I don't know if they are. I wouldn't think so.

MR. COLITZ: The point is, when you stroke them valves quarterly you basically have the valves down here with the makeup pump to feed that line shut. Because if you stroke that valve, you would automatically inject through the -- in other words, when the V pump is running, if you want to cycle these two valves, enclose these two, okay. So you don't inject into the system.

I suggest we go on because we have a lot to cover here.

MR. CHERNY: I think there's enough of a story here to take this one to RSP also.

MR. THOMPSON: That's going to be a Staff action to see that story is acceptable.

end 6.

MR. CHERNY: For this particular group of valves.

MR. BARLEY: For what it's worth, we have disassembled and inspected all eight HPI check valves we're talking about here in the recent refueling action. And they were in operable condition.

MR. PAGE: No maintenance required?

MR. BARLEY: We did some modification to the seat rings, to add some locking measurement in there, to make sure that the seat rings would not come loose.

We also added a kicker pin to keep the disc from moving up in --

MR. PAGE: And locking up inside the housing?

MR. BARLEY: Yes.

MR. CHERNY: Okay, we can move on.

(Slide.)

MR. ABRAMOVICI: The next two valves in question are DH-V1 and DH-V2. The drop line in the D hot leg loop suction to the decay heat system during normal operations, during decay heat normal operations. Then the line, this line, also has a leak valve, DH-V37 and DH-V3. It's the outside containment isolation.

(Slide.)

Similarly, here the valves are inactive at pressure during high pressure operation at greater than 400, these valves are closed. They have an interlock and cannot be opened above 400 psig. They are active during boron precipitation

control at low pressure. Again, at less than 400 psig.

Here any leakage, through those two valves, we expect will be gradual and the reactant coolant RC leak rate, they will pick it up. Again, on DH-V37, the relief valve, the relief capacities were within the maximum tech spec limit. The relief capacity for this one, I think, is 37 gpm. One was 36 and one was 37.

Additionally, the DH-V1 and DH-V2 were recently opened and inspected and they were found to be in good condition.

MR. PAGE: What was the reason for the inspection?

MR. ABRAMOVICI: In DH-V1 --

MR. BARLEY: There was a bonnet gasket leak that we had several years ago. We opened up to inspect the condition of the valve from the leak sealing compound, removed the leak sealing compound, and replaced the bonnet seal.

MR. PAGE: Using Fermanite leak sealant?

MR. BARLEY: Yes, as a leak sealing compound.

MR. ABRAMOVICI: Again, high pressure to low pressure boundary is inside the reactor building.

(Slide.)

There is a closed valve outside containment, DH-V3. Any questions?

MR. PAGE: Where is the high pressure, low pressure

break here? Okay, I see it.

MR. CHERNY: I think we have the same problem with that one that we had on the first couple. We need some kind of individual tests.

MR. PAGE: We're doing the test of two valves in series.

MR. COLITZ: The only way you test those two is to make plant modifications. And even to do DH-V2 you'd have to tie in there with a hydro-pump in addition to that. We looked at that.

MR. PAGE: You have a vent between the valves here.

MR. COLITZ: You know --

MR BARLEY: Again, you have to pressurize the reactor coolant system to test the DH-V1. A big problem with a lot of these valves is the necessity to pressurize the reactor coolant side to do any sort of leak test.

MR. PAGE: I'm aware of that. Everybody has that same problem.

MR. CHERNY: Let me ask, just a clarification-type question. If you are below 400 psi, this is the interlock set point, can you individually open and close V1 and V2, or do they only open and close as a pair?

MR. SHIPMAN: Individually. And that is, in fact, how we do it, open them individually. That's how the

system is brought on.

MR. CHERNY: There isn't any quick and easy way of pressurizing on the RCS as opposed to DH-V1 and seeing whether leaving V2 completely open and closing V1 and see if you're getting leakage through the relief valve. And then closing -- then doing the same thing with the reverse and see if you're getting a leakage, just to see if they're opening and closing. Is that feasible?

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MR. SHIPMAN: I think that's, in fact, what we're really doing when we bring that system on. We run that system coincident with reactor coolant pumps, which requires us to bring the system on at around above 320 pounds, above 310 pounds, something like that, so you can run the reactor coolant pumps coincident with decay heat removal. And as you open those valves, you open them one at a time and then, if I open -- for instance -- DH-V1 and DH-V2 is not there, at the wrong pressure there is that relief valve and we would see that loss of reactor coolant from the system.

MR. PAGE: What's the setting on the relief valve?

MR. ABRAMOVICI: Which one?

MR. PAGE: 37.

MR. ABRAMOVICI: 520. One is 495 and one is 520.

MR. ABRAMOVICI: DH-V37 is 495?

MR. SHIPMAN: 495, yes. That's the number I believe

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it is.

MR. CHERNY: Now in order to get anything, to use that as a leak check path, you would have to do something about altering that valve somehow, because with that set point you wouldn't see anything, unless it was a real bad leak.

MR. SHIPMAN: Or unless the set point for that valve was wrong.

MR. CHERNY: Yes.

MR. SHIPMAN: I don't think I've got a document here in front of me that's a controls document that tells me what that relief valve set point is.

MR. BARLEY: It's around 500 or 520 pounds.

MR. CHERNY: Without spending a whole lot of time on that, we're going to require some individual tests on those two valves. And I guess they'll have to take another look at it and come back to us, unless -- you know -- unless management overrules us. But that's what we've been told to insist on.

MR. BARLEY: When you talk about single failures on these pressure barriers, are you talking about single active failures, single passive failures?

MR. PAGE: It could be either one, in this case. You could have an active failure, inadvertant opening of an MOV. You could have a passive failure, of a disc falling off

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an MOV or breaking in an MOV. Or you could have the check valve just fall off and drop into the bottom. And we've seen a lot of that. Those we've seen quite a few of.

That's also a passive failure.

MR. CHERNY: Gate valves have a way of telling you they're closed all the way when they're not always closed all the way. At least that's what been happening with gate valves. We've seen a number of those in the recent past, too.

MR. SHIPMAN: Is it a slightly open valve, or is it just not there? Is the disc not there?

MR. PAGE: You can have one 15 percent open and when you lose your check valve, which is the other barrier, your relief system cannot handle it.

MR. CHERNY: In this case here, you lose one of your barriers?

MR. PAGE: In this particular case, you'd lose one of the barriers.

MR. SHIPMAN: Wouldn't you pick that up by the normal testing we do on the valves already? I believe we do stroke test those valves, time them. If there was something wrong with the disc, and if no other way, wouldn't I see a timing change?

MR. PAGE: You would expect to. I wouldn't know that that would be a sure thing. I see what you're talking

about. I think sometimes we scoot over into the realm of very small possibilities. But they are there.

MR. SHIPMAN: You know, from my perspective, the reasonable judgment would be that I could tell whether the discs were there or not and that it was stroking reasonably well and that the valve was reasonable closed. And if it weren't reasonably closed, operationally, it would impact and I would find it.

MR. PAGE: I'm not so sure it would. You might have a torque switch go off early.

MR. CHERNY: That's kind of what I was thinking too.

MR. SHIPMAN: That is a real world type of a problem. But again, I would think that a failure like that would either be noticeable by the valve timing, would be noticeable by the system operation.

MR. PAGE: But it only requires an increase in the test frequency. It doesn't assure you that anything is indeed fixed. Say you had a broken piece of a disc fall into the bottom of the MOV when the MOV disc tried to come down, it wouldn't seat itself. Say the torque switch goes off. But in fact, it's up at a 20 percent open position. If you repeated the test, it probably would be very repeatable and you'd say oh well, we just have a new stroke time.

It could be that the packing is tighter now then it

was the last time. I can see a story like that coming about.

MR. SHIPMAN: The judgment that resets the reference value for the stroke timing of the valve is not a judgment that is taken lightly. I don't think we just inadvertantly change the stroke time by any significant new reference value without, in some cases, very lengthy discussion of why, what possibly could it be, and perhaps even some investigation. It's not -- the code does not allow you to just change the stroke time of the valve because it's repeatable.

MR. PAGE: I guess my own personal experience is seeing people treat that quite differently, how deep that analysis is. So we don't know how deep your analysis is.

MR. CHERNY: I don't see any way that stroke timing --

MR. SHIPMAN: It's documented, also.

MR. CHERNY: The closest configuration I can think of exactly like this, is a whole bunch of these kind of things in the PWRs that have been going through licensing in the last couple of years. The only thing that we have said there is they still have to be individually leak tested but it's only necessary to do them after some major valve maintenance or at a refueling outage.

So we would be willing to think about something like that here, but it still has to be individually tested.

MR. BOSNAK: Before you leave this one, would you describe the high pressure/low pressure interface here?

(Slide.)

MR. ABRAMOVICI: I guess the logical high pressure/low pressure interface should have been on the valves.

MR. BOSNAK: That's not the case?

MR. ABRAMOVICI: It's physically not the case. There is a piece of pipe that is high pressure. I have not been able to find out why that was done. But for all intents and purposes, if we move it, it really doesn't change the argument. It makes it better because they got more high pressure.

MR. THOMPSON: So what I'm hearing you say is you feel there is enough checks through -- what are these now, if we could summarize them -- the inventory leakage? What else do you have, as a way of checking?

MR. SHIPMAN: Stroking of the valve, which is already in the program.

MR. THOMPSON: Stroking and -- what about the shiftly check for temperature?

MR. COLITZ: There are some quarterly checks to be made.

MR. SHIPMAN: All these valves are in the reactor building and would not be normally looked at, on a very routine basis. When I was talking about the inspection of the

makeup pumps, those are routiney inspected on a shiftly basis because these components are in the reactor building. We're not entering the reactor building on a shiftly basis.

MR. THOMPSON: So the two things that you have, that give confidence to the operability of these valves -- that is that they will remain closed -- is the leakage calculations and the stroking, was it quarterly?

MR. SHIPMAN: Yes, I'm sorry. It is not quarterly. We've been shutdown too long. It's less than 400 pounds.

MR. BARLEY: You couldn't stroke those in operation.

MR. PAGE: I'm sorry. I thought I put it in my notes that you did it quarterly.

MR. COLITZ: I think we did it on the 16. We said 16 were quarterly.

MR. THOMPSON: Are these having any disassembly and inspection at any time?

MR. PAGE: One valve each ten years, ISI requirement?

MR. SHIPMAN: We have inspected these.

MR. PAGE: That's one of four, by the way, not one of two. We're really discussing two valves, but the discussion was expanded to include the DH-V5 valves, I believe, right?

MR. CHERNY: Why did you do that? We're on DH-V1 and 2 only, right, hopefully?

MR. PAGE: I'm sorry. I slipped one.

I slipped one paragraph down.

MR. CHERNY: You take part one of the two each ten years, is that right? Was one of these recently disassembled?

MR. SHIPMAN: Both have recently been disassembled.

MR. CHERNY: What kind of shape were they in?

MR. BARLEY: They were in good shape, as far as operability is concerned.

end7

MR. ABRAMOVICI: Shall I move on?

. PAGE: Yes.

MR. CHERNY: They have the action on that one.

MR. THOMPSON: Right.

(Slide.)

MR. ABRAMOVICI: The next sets of valves are the CF-V5B and V4B, CF-V4A, the core flood system normal power operation -- it's inactive. Core flood valves 1A and 1B are normally closed.

They would only come to play in a large break or LOCA accident.

(Slide.)

The reason for exemption for stroke-testing of this valve is as follows:

We do do a part-stroke test once per cycle -- fueling cycle. And I think the procedure has been submitted to you for review.

The second item is the test is really impractical. We could not do a fuil-flow test at reactor pressure because of pressure considerations on the CF-Vls and 1A and 1B.

Additionally, we would put, we feel, unnecessary cycles on the core flood injection nozzle.

The third point is similar valve design is tested to CF-Vs, 5A and 5B tech specs. And we put a modification for those on stroke testing during refueling outage.

MR. PAGE: How big of a flood stroke is that?

MR. ABRAMOVICI: We open the 1A and 1B, open and close.

MR. SHIPMAN: We are required to verify that the core flood tank's flowpath from the tank to the reactor coolant system is not blocked. We have core-flood-type pressure, approximately 50 pounds above RCS pressure. We open isolation valve and watch the pressurizer level RCS inventory to increase.

That shows that flowpath is available.

MR. CHERNY: Do that once per cycle?

MR. SHIPMAN: It's a refueling interal surveillance is the technical specification.

MR. ABRAMOVICI: The tanks are what, 60 normally? About 600 psig. The reactor is at 2100, 2155 during normal operation.

MR. CHERNY: I think you lost me with those last numbers.

The core flood tank is at 600?

MR. BARLEY: During the test.

MR. CHERNY: Reactor is at what pressure?

MR. ABRAMOVICI: 2155.

MR. SHIPMAN: Not during the test. And 600 pounds I am not sure is quite what's required by the procedure. I think it's between 500 and 600 pounds. It's about a

50-pound DP. The RCS would be about 50 pounds less than that.

MR. CHERNY: Okay.

MR. PAGE: These are pretty big valves; right?

MR. SHIPMAN: About a 10-inch line.

MR. ABRAMOVICI: 10- to 14-inch.

MR. SHIPMAN: 14.

MR. PAGE: You don't have any idea what size -- that psig stroke you do at refueling, what terms of percent?

MR. SHIPMAN: I don't have that information.

MR. ABRAMOVICI: I don't think Joe does either. I think it would be very hard to really get a number, in terms of stroking the valve time.

MR. BARLEY: That interflow and increase in level.

MR. ABRAMOVICI: Shall I move on?

MR. PAGE: It appears we have a very small part stroke. This is the one I accidentally talked about a minute ago, was that you have brought in the C5 -- or the V5 discussion with the V4 discussion.

And disassembly is of one of four valves, each 10 years, which I presume one would never get disassembled. Or at least from this point on it would never be disassembled. So, you have less than 40 years to go.

MR. SHIPMAN: I'm not sure I follow that.

MR. PAGE: If you have a 40-year plant life and

you do one valve out of four every 10 years, won't there be one valve that would never be disassembled in the life of the plant?

I would assume -- I personally feel that disassembly is not often enough.

MR. SHIPMAN: I think part of the other logic is that the CF5 valve sees a much, much higher flow during a separate test, a different test than what I was just referring to, where we actually put low-pressure injection design flow rate past the 5 valve, which is around 3000 gallons per minute.

Correct me if I am wrong.

The logic we were trying to establish was --

MR. PAGE: More severe environment -- more severe service condition?

MR. SHIPMAN: More severe. It's a similar valve.

MR. PAGE: You say similar? It would be identical? Same design, same manufacturer?

MR. BASHISTA: Same catalogue number.

MR. CHERNY: To put the whole thing in perspective, the CF -- V5A and B, at full flow tested.

MR. PAGE: I'm not sure that is full flow.

MR. SHIPMAN: If you look at it strictly from the design flow rate from the cord flood tanks, it may not be design flow rate. The flow coming from that core flood tank

is probably a very, very large number.

MR. PAGE: Core flood is probably the one that dominates, right, in that situation?

MR. CHERNY: The rest of the story is 5A and 5B are already being periodically leak tested. And 4B and 4B are going to be leak tested somehow.

MR. PAGE: Now we're talking about full stroke.

You say decay leak flow, 3000?

MR. SHIPMAN: Approximately.

MR. CHERNY: That's through each loop?

MR. SHIPMAN: Yes. Each loop is tested separately.

MR. THOMPSON: Where does that leave us now?

MR. CHERNY: We had a session with Jim Knight on one like this not very long ago. His position on that was they ought to disassemble one valve each refueling outage.

MR. PAGE: One per refueling outage. Then the others had to be disassembled if a serious problem were found with the one, you know, at a sampling frequency.

Does that sound reasonable to you?

MR. SHIPMAN: Is their setup similar to ours?

MR. PAGE: This right here is common even to Westinghouse -- I think this particular one we're looking at here.

MR. SHIPMAN: Do they defuel in order to do that

inspection?

MR. PAGE: No.

Maybe the elevations may be a problem for you.

MR. SHIPMAN: Depending on the total perspective of what we're looking at, in order to do that inspection, you must disable one decay heat removal system, which takes away one of my means of decay heat removal during that inspection.

MR. PAGE: But you've already had a refueling outage.

(Discussion off the record.)

end 8 (Recess.)

MR. THOMPSON: What's our statement?

MR. CHERNY: Our statement is, it is our position that one of those four valves should be disassembled each refueling outage.

We understand the decay heat problem. We will check with our systems people and see if that bothers them.

MR. PAGE: We would like to write it up that way. We will put them down for concurrence to make sure they are well aware of that, to see if they have the problem.

MR. SHIPMAN: I think you have already issued us a bulletin about loss of decay heat while shut down. It looks very carefully at disabling of the decay heat removal system.

MR. CHERNY: Does it limit you how long you can be without one train or anything like that?

MR. SHIPMAN? There is an awful lot of information in it. I am not sure that there were any limits. But the concern was that you would consciously do something that would limit your availability of decay heat removal and the information led you down the path to make sure that administratively the Licensee, if they disabled the decay heat removal system, they would do it consciously with an evaluation of what their decay heat removal capabilities were at the time and your decay heat generation at that particular time.

For instance, our decay heat generation is so low

that ambient losses takes care of it.

However, right at a refuel outage, your decay heat generation is significantly higher and would pose a much more -- more of a problem if you lost decay heat removal.

MR. CHERNY: When you say something was issued to you, what kind of thing are you talking about that was issued?

MR. SHIPMAN: I can't give you --

MR. PAGE: You said it was a bulletin?

MR. CAPODANNO: I think it was an information notice.

MR. SHIPMAN: It is a notice.

MR. CHERNY: It was in something sent to everybody not just you guys.

MR. SHIPMAN: Yes, it is an information notice that went through several incidents at several plants where they lost total decay heat removability, and that was a concern. The concern was being distributed to the utilities and our response to that was I think requested if not required.

Bob, are you familiar with it?

MR. KNIGHT: You mean the last round of questions we just got.

MR. SHIPMAN: Yes.

MR. KNIGHT: We haven't gotten to that.

MR. BLITZ: Do you want us to comment on your

position or do you want to save that for this afternoon?

MR. CHERNY: You can comment on it, I guess. I thought you already had.

MR. COLITZ: On the disassembly of one of four valves, each refuelling outage, there is no way we are going to commit to that. We have disassembled many valves in this last long outage that we have had that we haven't looked at for nine or 10 years. We have gone into a fair number of valves and found them like new.

MR. PAGE: I hate to stop you right in the middle of your sentence -- would you be willing to issue -- did you take pictures and everything and have your maintenance reports?

MR. COLITZ: I am sure we probably do.

We are going to be talking about some of them --

MR. PAGE: Would you be willing to generate a report based on that? It looked like you did a lot of disassemblies that might provide support of actual in situ -- those valves have been there for awhile. In other words, it is not looking at some general valve thing from the industry but these particular valves and the service they are seeing and to me that is a lot stronger support for longer intervals.

Seems like you already have a lot of the information.

MR. CHERNY: Have you disassembled these valves?

MR. SHIPMAN: CFV4's?

MR. CHERNY: And 5's.

MR. SHIPMAN: 5's, definitely. We have been into 5B -- 4B, excuse me.

MR. BARLEY: I don't remember which one.

MR. SHIPMAN: 4B we were in.

MR. PAGE: That's one of the four.

MR. SHIPMAN: That I can say definitely. We were in that. I think 4A we were in. I do not believe we have been into the 5 valves yet.

MR. COLITZ: We would have to go back to the maintenance records.

MR. PAGE: That would provide a lot more support for that kind of request I think personally myself.

MR. CHERNY: Okay. If you would like to provide additional comments based on those recent inspections, that would be useful.

MR. COLITZ: There is a lot of ALARA principles.

MR. CHERNY: We understand that. That is why we said one valve instead of all of them.

Once every 10 years is an infrequent test.

MR. COLITZ: Okay.

MR. ABRAMOVICI: Okay.

(Slide.)

The next set of valves is DH V14A and DH V14B. They are in the suction line from the BWST, when we are in the low pressure injection mode, when we take suction from

the boiling water storage tanks, they go through the pumps, through the coolers, through the heat exchangers and into the reactor vessel through DH V22 and CF V5A and 5B.

(Slide.)

Here I think you did not really ask -- we are not asking for an exemption request. What we are saying when the valve is tested with suction from BWST, we have 3000 gpm approximate and we are in discussion with the valve manufacturer. That translates to 73 percent open.

We have reverified that with a different branch of Walworth. They came up with a different number. The number was 71 percent.

The problem of taking the actual equation for the percent open, they consider that proprietary. I have asked them -- we will ask them for a letter saying that for 3000 gpm the valve is 71 percent or 73 percent open. If that is adequate, we will provide that.

MR. PAGE: Based on flow rate alone?

MR. ABRAMOVICI: Based on flow rate, they have equation for the valve. If we give them for the flow rate they will tell us what the percent is.

MR. PAGE: Isn't that related to some sort of flow coefficient for that particular valve And it also requires knowledge of the pressures on either side of the valve?

MR. ABRAMOVICI: No.

MR. PAGE: There is a certain pressure drop.

MR. ABRAMOVICI: But the manufacturer knows what the pressure drop will be.

MR. PAGE: For the full open position? Without delta p, you have to assume a position of the disc. Otherwise your flow coefficient, C_V value will change. In other words, the C_V is a fixed value for the valve in one position, in the full open position. The only way you can know it's full open is to know the delta p of the valve and so much line is associated between the pressure gauges and the flow rate.

I don't understand how you can do without delta p's.

My second question was, did we skip an item?

MR. CHERNY: No. These are all items that we agree with.

MR. PAGE: I don't see how you can do it without delta p's.

MR. CHERNY: Let's back up a little bit. You gave all the appropriate information to the valve manufacturer. He did the calculation. This is the answer?

MR. ABRAMOVICI: Right.

MR. CHERNY: He doesn't want to give you all the details because it is proprietary but he will give you a letter.

MR. ABRAMOVICI: If you desire it, he will give you a letter saying for 3000 gpm the valve is X percent open,

71 percent, 73 percent --

MR. CHERNY: Do you want a letter?

MR. PAGE: I don't see whether a letter is going to help us any other than to address the valve manufacturer directly, but really we are dealing with the utility rather than a valve manufacturer.

MR. ABRAMOVICI: The letter will be addressed to us.

MR. PAGE: I understand that. You are familiar with the calculations, I presume.

Do you know how it is possible to make sure a calculation, not knowing the delta p? I don't. That is the reason I am asking.

MR. ABRAMOVICI: There is a CV versus flow, the manufacturer has -- apparently there is a combination of curves per discussion with them. I did not personally talk to them.

I think one point maybe is worth mentioning. Again, we are testing at 3000 gpm, so 3000 gpm is going through the valve approximately during the test. Whether that is 71 percent or 73 percent or 69 percent or 75 percent, I am not sure.

MR. PAGE: What percent of your accident flow rate is the 3000?

MR. ABRAMOVICI: I think that should be 100 percent.

MR. PAGE: It can't be 100 percent.

MR. SHIPMAN: It can't be 100 percent because you have 18 gallon going to the building spray, so I'd say about 60, a little less than 60 percent.

MR. PAGE: The maximum flow through that line would be 5000?

MR. SHIPMAN: Close to 4800.

MR. PAGE: If you could get the letter from the valve manufacturer and support it additionally with a comparison with the maximum flow rate ever required through that valve, I think that would probably give a lot more support in terms of your testing at 3000. The max ever required through the valve would be this many thousand.

I think that is a better angle although the other would help coming from the valve manufacturer, a letter from him on the design.

End 9.

(Discussion off the record.)

MR. ABRAMOVICI: Maybe it's worth clarifying something here. The 3000 gpm is full flow for the LPI system. It's not full flow through the check valves because the building spray takes suction off the same.

(Slide.)

MR. PAGE: You're saying your one pump is at 3,000, that's all?

MR. BARLEY: The LPI pump puts out 3,000. The building spray pump, which operates in combination with it, I think puts out 1500 gallons per minute for a total of 4500 gallons per minute.

MR. PAGE: You're not showing the building spray?

MR. CHERNY: He's drawing it up there.

MR. BARLEY: You can test the 3000. You can test the 3000 gallons per minute by initiating decay heat removal systems while you can't really add 1500 gallons per minute building spray. So the test really is not practical.

MR. PAGE: You say you have to run your building spray pumps at the same time.

MR. BARLEY: To prove the full flow through the 14 valve, the accident flow rate, which is your interpretation of what is being proved. The only way to get that combined flow is to run both of the systems. It's just impractical to do that.

MR. PAGE: How much recirc can you get on your building spray pumps? Would it be possible to run both those tests on recirc, though -- where's your recirc to?

MR. BARLEY: It goes back to the borated water storage tank.

MR. PAGE: I inquired about the possibility of running the building spray pumps in recirc mode, at the same time as running the 3000 gpm, so it would give you closer to 4000 on the test.

MR. ABRAMOVICI: Wasn't there something in our procedure that prohibited us from testing together?

MR. SHIPMAN: We would have to look at it in detail. If you are flowing at 3,000 gallons per minute, to the RCS. Right off the top of my head, it seems to me, you could still be on recirc with the building spray. However, the benefit of that test versus the risk that that is not an accident set up, and that there may be a consideration that may not -- that I'm not thinking of right now.

In other words, if we have the accident, in order to get the design flow, the reactor coolant system has to be at zero. And the reactor building has to be at 30 pounds and the flow has to be from the BWST, and one path going to a depressurized reactor coolant system, in one case; and to a pressurized reactor building.

I don't know to what degree you have got to take

this criteria for the test.

MR. PAGE: I think you try to make as much of a full stroke as you can get. The arrangement may seem strange, but it maybe doesn't sound strange to us maybe because we haven't done it, but I don't see anything dangerous about it. Basically we are dealing with a word called impracticality, not inconvenience. I think that's the basic difference we get into sometimes. It may be inconvenient, but we don't see anything impractical or unsafe for the plant, or I don't see anything. There could be.

Other people do similar things to get as much -- even though we'll still not get a full stroke, you'll get us closer to a full stroke.

MR. SHIPMAN: There's one other point we could add to this, and that is we've also looked at DH-V14.

MR. PAGE: You mean internal inspection?

MR. SHIPMAN: We've had that valve apart recently, within the last year or two.

MR. PAGE: I thought you were trying to -- that would help in terms of how often disassembly should take place for full stroke. I thought we were trying to come up with a way of only accepting a large part stroke, in lieu of that.

MR. SHIPMAN: I think that's what our initial position was, is that we're putting 3,000 gallons through it and that that provides reasonable assurance that the valve

would full stroke, were it called upon to do it in the accident. The practicality of the test, I didn't think we were talking about.

MR. ABRAMOVICI: I can give you, probably, some ballpark numbers for what the valve would have to be for full stroke. At 3,000 gpm the valve is 60 degrees from the centerline open. At 3725, which would be approximately 3800, we'll be 66 degrees open. The valve is 15 degrees as closed.

MR. PAGE: What have you got, 90 degree travel?

MR. ABRAMOVICI: 82 degrees is full open, so you go from 15 to 82.

MR. PAGE: I think that would substantially make the test better, personally. I don't know if you have a problem with actually performing the test.

MR. BARLEY: That's what we have to look at.

MR. ABRAMOVICI: The point I was trying to make, it only opens the valve another six degrees to get the additional. And I think if it opened 60 degrees it would probably open 66.

MR. PAGE: I thought we were talking 73 percent?

MR. ABRAMOVICI: 73 percent open, this is 60 degree.

MR. PAGE: Okay, the valve 15 degrees is closed. 82 percent is full open -- 82 degrees is full open. We translate the 60 degree open, to percent.

MR. CAPODANNO: Let me ask you a question in regard

to these check valves and testing. We have just identified that with the decay heat running the valve will open a certain amount, according to the available information from the manufacturer. And that could be confirmed in more detail via the manufacturer. Another thing that can go along with that is, given that the valve is that much open -- X percent, 71 or thereabouts -- one could also do some additional analysis that said if that valve never moved past 71 percent, its impact on system resistance would be something -- let's say negligible, in terms of total flow in the system.

Would a combination of something like that satisfy you that that valve opening that 71 percent meets its design function?

MR. PAGE: The reason it appears we're beating this poor horse to death is I truly don't believe that the manufacturer can make that statement and it be true without knowing a delta P. That's the reason --

MR. CAPODANNO: I was giving you that that the manufacturer would be able to satisfy anybody --

MR. PAGE: I really don't think it's possible. He has to know the delta P because the flow coefficient changes with the position of the disc. Basically, it's a configuration of flow through some restriction. And depending on where that disc is, your c sub V really is different. So you

have to know delta P to assure. So when we found out delta P was not part of that discussion, he may put out such a letter and it would help us support things, but I truly don't believe that that could possibly be true.

MR. BOSNAK: Is that something you can clear up easily with a call? Who is this, Walworth?

MR. ABRAMOVICI: Walworth.

MR. BOSNAK: You could get him on and see what his basis is. And maybe it is based on a delta P for flow of test conditions. I don't know.

MR. CHERNY: What are the parameters that you set him, for him to come up with the answer?

MR. ABRAMOVICI: Flow only.

MR. CAPODANNO: I was going back to your question. Let's assume we go to the vendor and say this check valve, this system, this inlet pressure, this flow is what we need in order to feed the vessel. The guy comes back and he says okay, I know how to work that out, and here's your answer. At that inlet pressure and that flow rate, this check valve is 71 percent open.

MR. PAGE: He's assuming the check valve is performing its job correctly. He's making that assumption. We're trying to determine that it's operating --

MR. CAPODANNO: I'm looking at variable orifice. If he knows how to calculate percent open, based on those

conditions, and the system is running on a different set of conditions, clearly the valve is not open the amount he said it was.

MR. PAGE: But your philosophy is a little off, in that he is assuming first that the valve is performing as intended, as designed, that there's nothing wrong with the valve. We're looking to see if there's anything wrong.

bus2

In addition to exercising --

MR. CAPODANNO: I'm saying if it didn't open the way he predicted, then something in the system would have to be different, pump discharge pressure, flow rate would have to be different.

MR. PAGE: You're dealing with flow rates and discharge pressure. It doesn't appear to me pressures are a part of this argument. And that's what threw me. You can't do it on flow rate alone.

MR. CAPODANNO: Understand that. All I'm saying is let's say we can get past that hurdle. Everybody would be convinced that indeed one could predict that the valve was opening 71 percent with the system discharge pressures on the pumps, as it should be. And with the flow from the pumps as it should be. Then can I go the next step and say, all right, if I never assume it goes any further open than that, simply and analytically demonstrate that the additional gpm going from 3,000 to 4,500 has very minimal impact.

MR. PAGE: Right. That's a good argument, but I think the problem is the initial part of the argument, without the delta Ps.

MR. CAPODANNO: Okay.

MR. PAGE: I think you're right. I would follow it, but it's just that first section.

MR. CHERNY: What is it you want them to provide?

MR. PAGE: We were going to get a letter from the manufacturer.

MR. CHERNY: What's it going to say?

MR. PAGE: For some given conditions, that I guess you guys can provide, under tests, the valve will be X percent open or will provide X percent of this flow rate.

MR. CHERNY: And it's going to have things like pressures, and so on, in the letter? Is that what you're saying?

MR. PAGE: I don't see how it cannot be in there, really. Basically, c sub V is a description of a flow path.

MR. COLITZ: One thing we haven't brought up. In a lot of these, you've asked for a copy of the reference procedure, which was sent to you people. So we haven't really been discussing that.

MR. PAGE: Yes, I've looked through some of those. It indicates here, in this note, that we would be getting the calculations here at the meeting.

MR. KNIGHT: I thought we would. That's why I wrote it in t he note. I wasn't really aware of the situation that is discussed.

MR. ABRAMOVICI: The next item --

(Slide.)

-- next the valves in the B-2 category are the MS V9A and 9B which are the steam supplied to the turbine driven emergency feed pump. During normal operation that line is not used, only during quarterly testing of emergency feedwater that line would be used. And again, in emergency feedwater initiation, and you need the emergency feed pump turbine, that line would be used.

(Slide.)

Our reason for asking exemption request is the emergency feedwater is tested quarterly with the emergency feed pump on recirc and to successfully pass the recirc test we require 48 percent of design steam flow to the turbine.

MR. PAGE: Okay, so you're backing into it the other way around.

MR. ABRAMOVICI: Right.

MR. PAGE: Do you have a time requirement on how long it takes it to come to speed?

MR. ABRAMOVICI: I have that information.

MR. PAGE: I'm sure it's in here somewhere. I was going through these pretty quick.

101b10

MR. ABRAMOVICI: There is a time for the turbine to come up to full speed.

end10

llpbl

For TMI we started the turbine driven pump requires 18 seconds to reach full flow. Restart report 2.1.7.4.

MR. PAGE: That's tech spec number? Is this a tech spec requirement to maintain that starting time?

MR. ABRAMOVICI: I don't think so. Gary?

MR. CAPODANNO: I don't believe it is.

MR. PAGE: Would you be willing to use that for IST purposes to assure that those valves are coming open? I don't know is that presents another technical problem or not. It's somewhat sort of acceptance criteria in terms of full open.

Would you be willing to maintain that 18 seconds for your IST also?

MR. CHERNY: Why is that necessary?

MR. ABRAMOVICI: The only problem I see with that, it may not be a valve problem, may be a pump.

MR. PAGE: It could be a valve instead of something else. If you fix whatever the something else was, and the valve was working right. You'd want to fix whatever it was, anyway, if it didn't make 18 seconds.

So whether it be the valve or something in the turbine or some sort of throttle valve you may have associated with that. It's kind of a strobe time as to how fast that thing comes up to speed. The valve is going open 48 percent -- no, 80 percent.

11pb2

MR. CHERNY: It can't be that it doesn't go 48 percent open.

MR. PAGE: You mean doesn't go 80 percent open? At 70 percent open you could still get up to full speed. It would just take you a longer time.

MR. CHERNY: Not really true.

MR. PAGE: I think so. Some cut off in there, probably between 50 and 80. But I don't know how far back it goes, depends on the line size, I'm sure.

MR. CHERNY: You're disagreeing with this sentence then. You're saying they could do it with less and still get a successful test.

MR. ABRAMOVICI: To achieve the given horsepower required for the recirc flow, we need 48 percent steam flow based on the pump data.

MR. PAGE: Couldn't you also get 48 percent steam flow at 70 percent open? We're talking about flow rates and pressure drops.

MR. ABRAMOVICI: We're going back to the same argument as we had before.

MR. PAGE: Well, we're always talking about two. We leave the third one out. And we've got flow coefficient.

I think you would still get up to speed. It would just take you longer, wouldn't it?

ilpb3

MR. ABRAMOVICI: If you don't have the required flow, you would not be able to --

MR. CAPODANNO: You can accelerate the speed. But the total equation on horsepower is flow times head over constant, approximately 4,000.

MR. PAGE: But you'd be getting your pressure drop, in this case, across -- a partially restricted flow through a valve. For some reason we're saying -- we're philosophizing here. Wouldn't that tend to give you a pressure drop and make it slower and slower to get up to speed?

MR. CHERNY: Doesn't it depend on the flow going through there? If you have a short flow, you're not going to show enough stuff in there to get that pump up to speed.

MR. PAGE: You can get a restricting orifice and still show the same amount of flow rate through it. You just have a greater pressure drop.

MR. CHERNY: Think of a simpler case, like a safety valve that's only 50 percent of rated lift. It ain't going to flow 100 percent flow. It can't, and it won't.

Okay? That's why I'm confused by your example.

MR. THOMPSON: Does it matter if you're going to get up to speed within that time frame that --

MR. PAGE: That's what I'm trying to do, keep it within the time frame.

MR. THOMPSON: -- then you're going to show your

llpb4

valves open enough to give it what you need. And what I think you are saying is, would they be prepared to tech spec that. And my question would be --

MR. PAGE: Would it be fair to stick yourself with the 18 seconds, or 20 seconds, something would give you a little margin for instruments or something like that. To stick with this 18 seconds is pretty close, but really in terms of the check valve, although we all agree it could be something else. But even if you found something else, you'd probably want that fixed also.

I assume the aux feed pump is very important.

MR. CHERNY: I'm still having trouble figuring out if it's necessary though. It's neat to do, but I don't know if it's necessary. That's what bothers me.

MR. THOMPSON: I certainly would question whether it needs to be a tech spec. It's in the procedures, right? It's in your procedures.

MR. COLITZ: No.

MR. CHERNY: Either agree with the sentence or you don't. If you don't agree with it, say so.

MR. PAGE: I thought I disagreed with it. I said if they come up with 18 seconds, okay.

MR. CHERNY: No, you're not understanding my question. The sentence says, successful test requires 48 percent of design steam flow. True or false?

11pb5

MR.PAGE: They said this was also part of the successful test.

MR. CHERNY: I didn't hear that said that way.

MR. PAGE: The 18 seconds is part of the successful test.

MR. CHERNY: Is that absolutely true?

MR. SHIPMAN: That's not true. The statements that were made during restart hearings, I believe, were statements of the fact that in here under these conditions, here's how long it takes for these emergency feed pumps to deliver feedwater flow into the steam generator.

For one thing, I'm not sure, doing the IST on recirc has those same assumptions in it. So I'm not sure the timing's going to be the same. But certainly, when we call that emergency feed pump to start and it doesn't start --

MR. PAGE: That's one kind of test. That's go or no go, period. How long it takes to come up to speed is another part of the test.

MR. SHIPMAN: And we presently do not measure how long it takes to come up to speed, because generally, that occurs --

MR. PAGE: I think we're getting back in the same old argument.

MR. CHERNY: The only thing that's confusing me

11pb6

is that we don't ordinarily stroke time shut valves. That's the only thing I'm confused about.

MR. PAGE: I'm not stroke timing the check valve. We're talking about percent open.

MR. CHERNY: I realize that.

MR. PAGE: Percent open tells you how fast that thing is going to come up to speed. There may be a certain percent open. And once it's there, it will make no difference. It will come up to speed at the same rate anyway.

But if you start restricting that channel, it will take longer and longer time to come up to speed.

MR. CHERNY: Okay. I guess I'm having trouble with what you just said about the safety valve example.

MR. PAGE: I'm not so sure we can relate this to safety valve.

MR. CHERNY: It ain't never going to flow to full capacity, no matter how long you do it.

MR. BOSNAK: If you know what you've got when you start you can tell what you have later on, if you've got a degradation.

MR. PAGE: That's what I was trying to get at.

MR. CHERNY: You think it might hang up and open in stages, or something like that?

MR. BOSNAK: If you're looking for degradation, if you know what you have when you're starting, and you have

11pb7

a certain percent open --

MR. PAGE: You have a reference value.

MR. BOSNAK: You have a reference value. Is there any problem with that, having a reference value?

MR. COLITZ: We'd have to go back. I have no understanding on what basis the 18 seconds was laid forward --

MR. BOSNAK: Whatever time you wish to pick. That will tell them, you know, with the valve stroke, this amount that you are getting this response. Then you stroke the valve again at some later time and you don't get that response --

MR. PAGE: You might be indicating a problem with the valve. It could easily be.

MR. SHIPMAN: The test is to provide reasonable assurance that the check valve will deliver steam.

MR. PAGE: The steam required under the worst condition.

MR. SHIPMAN: We don't do that test. We can't do that test because we can't flow water to the steam generator. We're doing this test on recirc.

And we do believe, and I personally believe, that the confidence of that test is very high. That when I run that pump on recirc that the check valve will deliver the steam required to do that test.

MR. BOSNAK: That's what you're looking for.

MR. SHIPMAN: I don't know what the time limit should be for the pump to come up to speed. I'm not sure I fully understand your issue. But certainly, when we run that test, we expect the pump to come up to speed. And not for it to take five minutes to come up to speed.

MR. PAGE: Then you have some acceptance criteria associated with how long.

MR. SHIPMAN: It's not specified in the procedures, sir. We certainly have some reasonable assurance that the steam was delivered to that feed pump turbine as it was designed. It is not a full stroke test of the check valve, but it does provide reasonable assurance that the check valve cycles properly.

MR. CHERNY: What's the steam source for that?

MR. SHIPMAN: Beginning of three, it could be from the auxiliary boiler to 100-pound boiler. It can be from main steam.

MR. ABRAMOVICI: You have to have main steam to use that line, right?

MR. SHIPMAN: For this test there's main steam.

MR. ABRAMOVICI: For this test there's got to be main steam. So the plant must be running, otherwise you can't do the test.

MR. BARLEY: The problem here with this test is you have to be hot at main steam to get full flow, you need

emergency feedwater. And you need full flow cold water into the hot steam generator, which normally cycles emergency feed levels.

That's the practicality of the test.

MR. CHERNY: So the steam source for the turbine is always available at the same pressure and temperature and all that, right?

MR. SHIPMAN: Plus or minus.

MR. CHERNY: Reasonably close.

MR. BARLEY: When you say always available --

MR. CHERNY: We're talking now, just when you can run this test.

MR. SHIPMAN: To check that check valve.

MR. PAGE: You can always use your aux boiler to get that steam. He says the steam source is always available.

MR. BARLEY: But these valves are not flow path, that's the problem.

MR. CHERNY: That's what I was trying to get. Within some reasonably short tolerance they always have the same --

MR. ABRAMOVICI: You can test emergency feed pumps without -- with aux steam, but you can't check those valves.

MR. BARLEY: Main steam valves you can only check when you're hot.

llpb10

MR. CHERNY: Right.

MR. PAGE: Can you think of some other acceptance criteria, other than just the fact that it will reach its speed?

MR. SHIPMAN: I would leave that to the technical end of our organization. But the reasonable assurance that that turbine would deliver feedwater, we were discussing the aux boiler steam supplies. There are various sources of steam. There is various tests we do on the feedwater pumps already. There is various operational things that we do routinely to verify that that is available.

MR. PAGE: Is there some restriction on the pump as to what is the minimum required steam to get it to speed? Surely that should be right in the specifications. Can you provide us just that part then? Because that way I'll know how much steam flow is the minimum required to get to speed.

MR. SHIPMAN: On recirc?

MR. PAGE: Yes, on recirc. At that flow rate. Because then the time element goes away. Maybe it won't be important.

But I was picturing in my mind that it would be if you did have a valve problem that you could see it very easily, and how long.

MR. SHIPMAN: From my experience, I would think you'd have a no go. The valve would either give you enough

llpbll

steam to put it on restart, or it would not. There would not be a decreased time.

MR. PAGE: So you think the check valves, when you go into the open position is either go or no go?

MR. SHIPMAN: In this particular case, for the reasonable assurance that you want, the check valve in consideration of the full stroke. We're not going to get the full stroke unless we are required to pump water to the steam generator on main steam for the design condition which you are assuming for this component.

If we back off from that design condition, it will require very different amounts of steam to run that pump. And my feeling is that the amount of steam to run that pump on recirc is probably minimal compared to what the steam is required to run it in the design event that we are supposed to be considering.

But it provides satisfactory system performance that the component will be available when it's required.

MR. PAGE: I think we have a breakdown of philosophy here.

MR. SHIPMAN: Well, the reasonableness of the issue is, I think, the main point of interest. Certainly, if we can pump water to the steam generator --

MR. PAGE: Would you put the same argument forth for diesel generator cooling water check valves which have

been operating for many, many years cooling a diesel for monthly tests. And yet when they were disassembled it was found all of them were disassembled in the Dresden and Quad City situation they had been testing those monthly under less than full flow.

Your argument is that less than full flow is adequate to show that a component is there and available to do its job. On a check valve, you're saying part stroke --

MR. SHIPMAN: What I'm saying is you cannot set up the design accident condition to run the test to prove a component will operate during that accident.

MR. PAGE: That's one part of the argument. The other part of the argument is a part stroke is adequate to show that component is there, available, and will perform its job as designed.

I'm saying the Dresden/Quad Cities tends to take the exact opposite situation there. Valves that have been going through testing on a monthly basis had part stroke.

MR. SHIPMAN: What was the conclusion of Dresden?

MR. PAGE: The conclusion was they had all the valves disassembled in the line and didn't know about it for many years. Which means that debris can act in just any old fashion it wants to.

In one case it finally decided to restrict flow. The diesel started heating up, even under reduced loading

condition. Had they been running those tests at full load, I think they would have found out much sooner.

MR. SHIPMAN: So I don't understand.

MR. PAGE: Your philosophy was saying, part stroke is adequate to show that the component will do its whole job. That's exactly what you're saying, and I totally disagree.

MR. SHIPMAN: Your side of the argument is we should set up a design accident condition?

MR. PAGE: I'm saying you should set up something that verifies at least there's no change from your reference condition.

MR. SHIPMAN: And the code requirements, define what those requirements are.

MR. PAGE: You shall full stroke the valve. That's what the requirement is.

MR. SHIPMAN: So ideally in my position, if we put a handle on the valve and opened it, you know we put an external handle on the valve, opened it, and closed it --

MR. PAGE: That would be great.

MR. SHIPMAN: That would be great for me, I agree.

MR. PAGE: As a matter of fact there's some valves you can do that to.

MR. SHIPMAN: We have some. They're not in this program.

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MR. PAGE: There are some you can put an MPT tap into run something inside of it and actually latch onto the swing mechanism and take it for a full stroke, then MPT it back closed. That is somewhat cheap modifications, rather than actually building all sorts of fancy recirc lines. There are people that do things like that to get a full stroke.

MR. BOSNAK: We have reached 1:00. I think it's time we take a break.

MR. CHERNY: How much more do we have?

MR. COLITZ: We have covered about seven of 20 items.

MR. CHERNY: I think having the ADs at 2:30 is a waste of time. We'd be lucky just to get through the items today, the first time through them, assuming we continue at this kind of speed.

MR. THOMPSON: We have to do that before we can do anything.

MR. CHERNY: I don't think there's anything the ADs can do yet.

MR. PAGE: Before we leave these items, are these items in the same calculation as the other? This came from a different manufacturer.

MR. ABRAMOVICI: I'm not sure. I'd have to check.

MR. CHERNY: As I understand your concern, you don't agree with the 80 percent. That's your main concern.

llpbl5

You think it's not proper.

MR. PAGE: I'm saying you have to assume the position of the valve to make that statement, not using pressure differentials. Same thing that we had here.

MR. CHERNY: Okay. But if you knew the 80 percent.

MR. PAGE: That would be fine.

MR. CHERNY: You would have no problem.

MR. PAGE: If they had some way to reassure that every time they did this test it was still 80 percent.

MR. CHERNY: You want this quasi stroke time thing because you don't agree with the 80 percent is your real concern.

MR. PAGE: They may have 80 percent now, but I'm saying as time goes on it may go down to 60 percent. What you're saying is the turbine is coming up to speed much slower. What in fact is there is not a turbine problem, is in fact a valve problem.

MR. CHERNY: The thing is to get the thing up to speed. It all requires some flow rate.

MR. PAGE: That's right. We don't know what that flow rate is.

MR. CHERNY: Maybe we don't, but somebody could find out.

MR. PAGE: That's what I asked a little while ago, if that could be incorporated to try to do away with

11pb16

any sort of time consideration. You know, could we look at that number. Maybe that number --

MR. CHERNY: Then somebody could do maybe some sort of boundary calculation. Maybe you could go down, as you say, to 60 percent.

MR. PAGE: I would say the turbine manufacturer probably could tell you that what the minimum was. The trouble is, I think we have that recirc situation. To bring it up to full speed on recirc may be some minimal flow, may be 10, 15, 20 percent.

MR. CHERNY: Whatever it is.

MR. SHIPMAN: But the code allows you some reasonable judgment based on the available testing capabilities you have, doesn't it?

MR. PAGE: The code does? Where?

MR. SHIPMAN: The three items.

MR. BARLEY: The code says, you know, the code says -- all the code says is you're not required to do testing if it would be unsafe.

MR. PAGE: Could you tell me what paragraph that's in? I don't remember reading that? Not that we disagree with the statement, I just don't know where it's in the code.

MR. BARLEY: I'm sorry. Maybe it's the Staff position I'm referring to.

MR. PAGE: All right.

11pb17

MR. CHERNY: I don't think we want them to run a test that's going to put thermal stresses on steam generators. I don't think we want them to do that.

There may be some other way out of this dilemma, but that isn't it. I don't really think I fully understand how we're leaving this item at this point, except for making a lot of remarks. What do you think they ought to do?

MR. PAGE: My feeling was that using that time to come up to speed is a back door way of verifying that the check valve also is operating correctly. Maybe not.

MR. CHERNY: Does anybody know what that number is that you're talking about? That correct number to use for coming up to speed.

MR. PAGE: I haven't heard it today.

MR. CHERNY: I'm not sure they know what it is either. I mean in terms of what you're talking about.

MR. BOSNAK: Why can't you select a value of your own choosing. You don't even have to get to the manufacturer, assuming everything is correct today.

MR. CHERNY: In order to back out a number for time up to speed though, don't you still have to do some kind of assumption in your calculation? They would say 18 seconds corresponds to 80 percent. But what is that based on? I don't understand that. We've got to have a relationship somewhere.

11.

You want them to set a criteria -- what's it based on? What should they use to base it on?

MR. PAGE: Like Bob says, you'd pick a reference value. That's what you start with. You can only allow a certain amount of degradation.

MR. CHERNY: I understand that.

But let's say a number changes. You're still not going to know from what you just did that that thing opens 80 percent.

MR. PAGE: You're assuming it opened 80 percent the first test.

That's what Bob was saying, to assume it's okay when you start.

MR. CHERNY: All that's going to do, that's just a screening criteria to check future degradation. But it still doesn't tell you that even now --

MR. PAGE: The only way you're going to know that it doesn't now is to take it apart or get inside the valve and actually move it through there because they can't run water into --

MR. CHERNY: I understand that.

Have they taken this valve apart?

MR. SHIPMAN: Not to my knowledge.

MR. CHERNY: This one has not been. That's a definite statement.

MR. BOSNAK: Again, assume you're getting performance today, it will tell you whether you're getting a degradation in the future. And that's what we're looking for.

MR. CHERNY: I can't say that gives me an overly warm feel here, because it's been in service 10 years.

MR. SHIPMAN: Dresden wouldn't support that.

My understanding is that his example from Dresden wouldn't support that.

MR. BOSNAK: It would, in that -- assuming you were okay now. If you aren't, you already have some blockage. Then, it wouldn't. But making the assumption, you're all right now. Then, if you had a disc come off and it changed your characteristics, then it would.

MR. PAGE: Or even if you had debris somehow in that line -- God knows where it comes from; it seems like it gets into some lines -- should it lodge in a valve, you might really see differences in that stuff.

MR. CHERNY: No one knows how many GPM puts out on recirc. Is that what I heard before?

MR. SHIPMAN: We have a recirc office. We do know what that number is.

MR. BOSNAK: Is this a critical pump?

MR. CAPODANNO: Yes. It's on the order of 180.

MR. CHERNY: 180 gpm?

And what's the accident flowrate supposed to be?

MR. CAPODANNO: 350.

MR. BARLEY: This pump was rated at 920 gallons per minute. Accident flowrate requires something like 350.

MR. BOSNAK: You don't have to worry about the accident condition necessarily. You can have the pump throttle way back or however you have it on recirc. If your turbine comes up to whatever speed that you've got, at least you know that there is enough steam to do that.

And if you've got blockage, then it won't -- enough blockage. That's what you're talking about, something gross that's happening with the check valve.

MR. SHIPMAN: And the test we do right now does that.

MR. CHERNY: They put about half the flow rates there for accidents, it sounds like, for recirc right now.

MR. SHIPMAN: We do the highest high on that pump by getting it at that rate of speed and verifying that the discharge pressures were what they were previously.

MR. CHERNY: Under accident conditions, they would have to have the same speed, more flow. They would have to go through that.

MR. BOSNAK: Can you tell -- I guess the main thing is can you discern whether or not you've got something that is blocking the steam flow to the turbine?

MR. SHIPMAN: Yes.

MR. BOSNAK: That's the key.

MR. SHIPMAN: But to what degree can you tell that?

MR. BOSNAK: You're never going to have something that will discern what will happen under accident conditions, I don't think. You're looking to see whether you've got the dissociation of the valve disc. That's the key.

MR. SHIPMAN: I think I agree with that.

At full stroke is not the key to determining the availability of that system.

MR. BOSNAK: It may not be.

Can you differentiate between a disc that's in place and one that is not, that has left the stem?

Is the test that you are doing now sufficient to differentiate that particular condition?

And if we get a positive answer to that, I think that would be the end.

MR. CHERNY: How do you think we just left that item? I'm not totally clear.

MR. BOSNAK: If we can get a positive answer on that -- I'm asking.

MR. CAPODANNO: I think the answer is it can't be positive.

You know, there's a pressure control valve in the system, which is downstream of these check valves. And it's

going to react to try and maintain adequate steam flow to the turbine.

So, you could confirm, by turbine operability, speed-up time, that there wasn't some restriction upstream.

But if I was to postulate, say that the disc came out of the valve and somehow got aligned nicely along the center line of the valve so it made virtually no obstruction to steam flow, the pressure control valve would still regulate flow to the turbine drive. It's not inconceivable that the turbine would run perfectly normally and I might, at this disc, dislocated, might not be able to discern it.

MR. BOSNAK: That sounds like maybe the only condition. But other than that --

MR. PAGE: What if it had a restriction of flow?

MR. CAPODANNO: It's more likely that if a disc came off its hinge pin it's going to restrict flow.

MR. BOSNAK: The regulator will call for more steam. But if there's no more steam available --

MR. CAPODANNO: If it can't get past the obstruction; right.

MR. PAGE: Then, it would definitely affect the start time, how long it took to get up to speed.

MR. CAPODANNO: So, I think, realistically, that degraded valve would, more likely, have a negative impact on turbine performance.

MR. BOSNAK: Yes.

So, is there a turbine parameter that you could measure that would help assure that? That's all we're asking.

MR. COLITZ: We would have to take a look at that, put something meaningful into the test.

MR. CAPODANNO: We're a little concerned about too many variables.

If I end up having to track the turbine performance itself, how quickly does it come up to speed? Was it pumping as an indication of this performance?

I've also got to go back and look at this regulating valve and try to figure exactly where it is and what its position may tell me about the condition of this check valve.

I've got a juggling act going on.

I'm trying to draw a conclusion from a dynamic situation. If there's any kind of variability in the steam flow, which I'm sure there would be, it's not exactly static. The control valve is going to modulate somewhat. And it becomes just ever more difficult to understand what the turbine performance on the control valve position is telling you about the condition of the check valve.

MR. BOSNAK: I guess all you can do is take another look at it. If you feel that it's going to be complicating

the whole situation, then let us know and we'll go with what we have here -- if you've taken an honest look at the situation that you have.

MR. CAPODANNO: My reaction would be that the thing words because the flowpath is open. Whether it's open exactly theoretically the way it should be or not, I could obviously not guarantee that 100 percent.

It also tells me the converse -- is that if the check valve is so poorly degraded that the disc has come off, I'm likely not to get any turbine operation. It's going to be so poorly degraded that it's going to be extremely obvious.

MR. PAGE: At Dresden, they did get operation at the start, because they were restricting the water flow. But it didn' stop the water flow, it just restricted it.

MR. CAPODANNO: I'm saying the restriction should reflect itself somehow in performance.

MR. PAGE: What we're looking for is some performance that you can see that you feel good about.

MR. CAPODANNO: I'm just cautioning you against the fact that you can't go in, say that the valve is not 50 percent over and is 42-1/2.

MR. PAGE: You couldn't do that. There could be some indication you might make a gross judgment on. "Say, I think I've got a valve problem," you know.

I don't know how you control valve acts.

But if that system is as variable as you say, I think you've got a problem.

MR. CHERNY: What do you do with these valves during normal operation? Are they normally closed -- these gate valves?

MR. CAPODANNO: No; they are open.

MR. CHERNY: Those are left hpen, between the steam generators and the check valves?

MR. SHIPMAN: Before I answer that question, let me interject -- you indicated previously that if we have actual, valid inspection information that shows -- that documents what we saw the valve in an as-down condition after opening up after X amount of service, that that may add some credibility to a different interval of inspection.

I thought I also heard earlier that physical inspection of the valve is not adequate to include full stroke.

MR. PAGE: You have to use it sometimes if there's no other way.

MR. CHERNY: I thought s heard you say you didn't have that kind of data on these though?

MR. SHIPMAN: I don't.

But I think from my perspective, without making any -- other than just conversation, I think that historically there is data that will show valves of this service. And I

feel we could develop that data as we go along, also.

But I think there is some method or some interval of physical inspection, and combined with our normal test of the turbine, builds a very strong case that a hypothetical degradation that you have been considering --

MR. PAGE: You're talking about data from just around the industry?

MR. SHIPMAN: Our own data that we have developed by inspecting our valves and inspection of this valve in particular. If I would open this value, this valve has seen quite a bit of service -- if I were to open that valve right now and it were to look brand new inside, that would indicate to me that it's reasonable to assume that the next 10 years of service, with identical frequency of tests, you wouldn't expect much different.

Is that unreasonable?

MR. PAGE: I'm drying on some earlier information that I remember on HPSI and RCSI -- turbine valves, check valves.

I don't know if you guys have a system that's subsequent to that type of problem, where the system was perturbating so much it was literally heating the valves to death. That's a pretty severe enfironment, you know, turbine supplies.

MR. SHIPMAN: But that environment wouldn't have

changed from our previous operational years. Okay?

So, whatever that mode of vibration --

MR. CHERNY: You're saying it's got 10 years or something and the valves are new?

MR. BOSNAK: It depends on the valve design and the service. If you've got 10 years of service, you'd expect to have the same condition --

MR. PAGE: If you address it that way, it's best to include everything you know about the valve, everything in a nutshell. Even pictures sometimes are helpful. If you shoot a picture while they open the thing up, this is what the internals look like. We have similar reports like that; and they tell you the history of it, in terms of when it was put in, what kind of service it has seen, what kind of repairs have been required to the valve over time.

MR. BOSNAK: Let's go off the record here and talk about logistics.

(Discussion off the record.)

(Whereupon, at 1:15 p.m., the hearing was recessed, to reconvene at 2:15 p.m. this same day.)

AFTERNOON SESSION

(2:15 p.m.)

MR. ABRAMOVICI: We're starting with BS-V52.

(Slide.)

Let me point out a little typo, which should be BS-V54A.

MR. COLITZ: The first letter we got was all garbled there. You sent us a rewrite.

BS-V21 was the next one in there, the revised letter.

MR. ABRAMOVICI: All right.

(Slide.)

Okay. The valves in question are the check valve, BS-V21A and 21B. These valves were in the line supplying sodium diosulfate.

Since then, sodium diosulfate tank has been deleted from the system. The line has been kept -- and kept the flanges.

And therefore, the valves no longer serve a function.

MR. PAGE: What do they do now?

MR. ABRAMOVICI: Nothing.

MR. PAGE: There's no flow, no nothing?

MR. ABRAMOVICI: No.

The line has been cut and kept inside the

auxiliary building, with the flange. Those valves, I think, are lopped closed.

MR. COLITZ: All three valves you're looking at there are lopped closed.

MR. PAGE: So, basically, the system is just totally a piece of pipe sitting there. There's absolutely no requirement on the system anymore.

MR. ABRAMOVICI: That's correct.

(Slide.)

Again, just to make it complete, it's deleted from the building spray; common line from the tank has been cut and capped.

(Slide.)

Now, we can go to BS-V52.

This is the BS -- 52A -- came out as 44A.

The purpose of this line, as far as the building spray system, is to provide sodium hydroxide to the LPI system and the building spray for fission control and post-accident cooling.

During normal operation this line is isolated only during accident.

BS-V2s are open and would allow sodium hydroxide to the LPI.

MR. PAGE: The point of discussion is the full stroke on the 52 valves?

MR. ABRAMOVICI: Yes.

(Slide.)

We feel, by testing these valves, we would introduce or increase the potential for sodium intrusion into the reactor coolant and increase the sodium 24 activity levels.

Secondly, we inspected those valves this year, and they appeared in as-new condition.

MR. COLITZ: Inspected both valves?

MR. ABRAMOVICI: Both valves.

Any questions?

MR. PAGE: You said you wanted a part stroke each refueling; is that what you said originally? Maybe you changed that.

MR. ABRAMOVICI: I think in our submittal we said part stroke because of the sodium intrusion potential and so on, the difficulty of flushing out the lines.

MR. PAGE: So, you're withdrawing that proposal for part stroke?

MR. ABRAMOVICI: Yes.

MR. CHERNY: The proposal on that is what? Just to disassemble every 10 years; is that what you're saying?

MR. ABRAMOVICI: That what we supplied in the original.

MR. PAGE: Would you be amenable to all the roles

we have been discussing here which you have inspected to generate a single report based on what you found in this inspection? I don't know if you took pictures or not, but just whatever you did find in terms of the history of the valves, what kind of maintenance, something to try to support longer intervals between inspections or whatever we're talking about here, put that under a single cover, something like that.

MR. COLITZ: I think for these two valves and other valves, if we need to give you that kind of history to support our longer length of time versus -- on every refueling-type thing, we're going to probably have to do that.

MR. ABRAMOVICI: If we did not inspect a particular valve that's on the list, but it's a similar design -- I should say identical design has been inspected, would you want that, also?

MR. PAGE: Identical design and identical loading conditions.

MR. CHERNY: It's a combination of the design and the environment.

MR. ABRAMOVICI: If we test the one for 3000 gpm and this service would be 2000 gpm, I think it would be using the same --

MR. CHERNY: It's hard to say.

MR. PAGE: Stating it the way you stated it, it's

hard to make an exact --

MR. ABRAMOVICI: Using 14-inch Walworth Model X that we looked at in a 3000 gpm service, with the same type of fluid.

MR. PAGE: I hate to make it sound like you're all in a Catch-22 or anything. But what it amounts to is some valves suffer problems even from maintenance. So, the loading condition is probably the primary thing.

We've seen ones that suffered bad maintenance before, and their loading condition wasn't all that terrible. So, it's a combination of a little bit of all those things.

I think we had two sets of two earlier that we kind of grouped into one set of four valves. We felt that was about as close as you could get in that particular scenario.

Some of them aren't quite that close as far as how similar they really are.

I think maintenance -- there are other things that degrade valves.

MR. ABRAMOVICI: I was just asking if you want that information. We have it available.

MR. PAGE: Of course, the more information you have, it strengthens that case -- definitely strengthens.

MR. ABRAMOVICI: Slide.

The next item on the fluid block valves -- this is

a typical representation of fluid block connections to the valve, getting fluid block.

During the accident, the primary boundary between the reactor building environment would be the piping. The second boundary would be the disc in the valve. And then, you would have to go back to the check valve -- there will be a third boundary -- to get a release on a breakthrough to the auxiliary building.

And again -- I'll go through the next slide -- this is pretty much a pictorial representation of how fluid block is connected to the valves.

And those are the valves in question.

(Slide.)

We believe all these valves do not serve a safety function. And -- their safety function is to remain closed.

And we have submitted a request through the tech spec Change Request 113 to delete those valves from our tech spec.

MR. COLITZ: Delete the whole fluid block system?

MR. ABRAMOVICI: Right.

MR. PAGE: On what basis?

MR. COLITZ: It serves no function. We have never been able to take credit for it. So, we asked basically to have it deleted from the tech specs.

MR. PAGE: Do you know what the status is on that now?

MR. CHERNY: I'm going to have to check that out.

MR. THOMPSON: I'm going to have to check it out.

MR. ABRAMOVICI: As I indicated before, significant numbers of failures would have to occur for this system to be needed.

And again, it's not taken credit for in any of the accident analysis performed. And the valves are leak-tightness tested for Appendix J as Type C.

The reason I included that was, in your letter, that information was requested.

MR. PAGE: A lot of that hinges on whether the system should or should not remain included.

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MR.CHERNY: We'll have to check on that review or not doing that review.

MR. PAGE: Containment Systems Branch.

MR. COLITZ: I don't know what you could do for maybe get a feel for where that tech spec change is, but I think it would be prudent to get that maybe for you to at least act upon so we don't all agree that we have got to go do this, write test procedures, start doing this and find out a week later that the tech spec change has been approved and we delete the whole system.

MR. THOMPSON: We will do that. We will do that tech spec change concurrently.

MR. PAGE: That could be handled easier because if you have got one in like that, you could shoot that in on a single relief request saying based on that record we want to delete this from the IST program, which can be handled easier from relief request.

Do you want to handle it? Do you want to handle it separately? We could discuss this one now, should it not be deleted is what it amounts to.

MR. CHERNY: Let's not get into that now.

(Slide.)

MR. ABRAMOVICI: The next set of valves are the pump discharge check valves MU-V 73, A, B and C and MU-V 17, A,B,C and D stroke testing.

(Slide.)

Again here we are not asking for an exemption request. We are full-stroke stroking the valves, each refueling outage additionally for correctness. As far as was stated in the letter, the MUV-73 A,B,C are stroked whenever the particular pump is in operation and it is at least quarterly.

MR. PAGE: Basically, even though I felt that you had it, you didn't include it as part of the writeup.

MR. ABRAMOVICI: That is why it is written up.

MR. COLITZ: It is only the 73s though that get part stroked, the 107's don't.

MR. PAGE: The 107's don't get part stroked?

MR. ABRAMOVICI: Just full stroked.

(Slide.)

I apologize for the MU-V14. There should be the motor showing the other way. It is not physically installed this way.

The MU-V14's are the suction stop check valves from the BWST to the makeup in the HPI system. This is a little bit of a missing portion on the schematic for the HPI.

(Slide.)

Again, we do not require relief request on this one. We full stroke every refueling outage.

MR. PAGE: You said there is no part stroke here?

MR. ABRAMOVICI: Full stroke, no part stroke.

(Slide.)

Same slide back up again. This deals with stroke testing both MU-V95, 94, 86B and 86A and we have added to the list MU-V220 because at time of submittal I guess originally HPI cross connects were not in.

(Slide.)

Flows through all those valves is verified at each refuelling outage and we will be trying to develop a correlation between the main flow instruments, the one that I showed circled --

(Slide.)

-- on here, which is typical of all the lines in each cavitating Venturi flow instrument on those lines.

MR. PAGE: Are these the flow instruments I indicated in my writeups?

MR. ABRAMOVICI: Yes.

MR. PAGE: 385, 386, 384. What my question was on there, do you have any details of what your startup test plans are based on what your readings are?

Are you going to assure that the flow elements stay within a certain acceptable band of where they were at startup?

MR. ABRAMOVICI: All I can tell you is we will be trying to correlate the flow instrument on the main lines and flow instrument individually and see if we can somehow

correlate the flow split between each line, the required flow strip.

MR. PAGE: In terms of IST, you are going to be flow checking the test valves. Are you going to make a basis based on what you find here? Based on what your flow elements are reading for future acceptability?

MR. ABRAMOVICI: You will be trying to develop that.

MR. SHIPMAN: There is not a direct readout of the flow element, the 380 number that you gave us. Those are the cavitating Venturies; we do not have any DP instrument across them.

MR. ABRAMOVICI: They are temporary flow instruments.

MR. PAGE: Let's start over again.

The FE-384 and 385, 386 and 387, which you referred to, are cavitating Venturies, there is no DP sensing or indication provided with those.

Those are merely flow limiters. Flow indicators that we were talking about using during the startup testings, are the ones that Julien has indicated on the transparency there upstream of the individual 16 valves.

Those are permanent instruments. There is a startup test that I think are given in the draft of the startup test procedures, 655 -- there is a startup test procedure developed that installs temporary controlatron strap-on flow meters at several locations on the cross connect

piping. It is that test, the information from those temporary instruments that we hope to correlate back to the MU-23 flow instruments upstream at 16 valves to determine how adequately we can say we have tested individual valves.

MR. PAGE: Based on what you find with those instruments, do you have any idea of what percent deviation will allow in terms of --

MR. ABRAMOVICI: Don't know at this point. Until we run the test, it is going to be very difficult to predict.

MR. COLITZ: We should be running that test within the next two weeks. We'll really wait and see the results, what information we could gather before we do.

MR. PAGE: I was wondering, it seems like -- I don't know if we have had a situation like this before. You already know about what you are going to get,at least ballpark, what you should get, what you hope --

MR. SHIPMAN: Yes.

MR. PAGE: I was wondering based on that if you allow a certain amount of deviation for instruments and stuff like that but you will try to incorporate that, right, in terms of the valve testing?

That is basically what the question really is.

MR. ABRAMOVICI: We will definitely try.

MR. BARLEY: It is dependent on how good we can correlate back to the installed flow instruments in the piping

is what the dependency is and we don't know how well we are going to be able to do that until we have the startup test data to really analyze it.

End 14.

(Slide.)

MR. ABRAMOVICI: The next item for discussion, I think, is Item B-3 and that deals with stroke testing of emergency feedwater valve V3, which is from the emergency river water service. The normal water to emergency feedwater system is supplied by the two condensate storage tanks. We have backups to that, the main condensor and the demineralized water storage tank. When all those four sources of water are lost, then the alternate source of water would be from the emergency river water.

This line has normally two closed valves and is not being used.

MR. PAGE: Why do you have it there at all? I don't see what the valves are doing for you.

MR. COLITZ: Check valves.

MR. CAPODANNO: It's beyond us. We don't either. It's something that was put in there when the AE designed the plant. The way the plant is now operated, that check valve is really gilding the lily.

MR. PAGE: I was just wondering, would you all consider just stuffing it and putting the top back on? I can't think of any use for the thing. It's a component that sits there. It could get in your way. You're going to know the MOVs work. I hope you do stroke testing on those, at some point. I can't imagine what that V3 valve does. I can't figure it out from that drawing. It's an extra piece of

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equipment that is unneeded.

(Slide.)

MR. ABRAMOVICI: Again, just for correctness, this is supposed to be a symbol for the turbine driven feed pumps. There are two motor driven and one turbine driven. So this is the turbine driven. Those were two motor driven.

MR. COLITZ: Are you going on to the next sheet?

MR. ABRAMOVICI: Yes.

(Slide.)

He's still presenting on this one. Again, the basis for exemption, the system has diverse backup to the normal water I just explained. And secondly, if we use river water, the water chemistry can cause steam generator damage. We don't want to use river water.

MR. PAGE: You can disassemble, though, right? EF is 82?

MR. ABRAMOVICI: 81.

MR. PAGE: 81 would show the two MOVs. I don't think I got that one.

MR. SHIPMAN: Both motor operators are shown on 610.

MR. ABRAMOVICI: The four and five.

MR. PAGE: The 610?

MR. SHIPMAN: I believe so. It's the river water.

(Discussion off the record.)

MR. COLITZ: The point we were trying to make, I think, is that the condensate tanks and the million gallon demin water storage tank and the condensor, the likelihood of ever having to go to the river is pretty far, and the concern considering the chemistry concerns with getting river water into the piping of the steam generators, we can't justify doing anything to the check valve. We can't even justify what we're doing right now to the motor operated valve.

MR. PAGE: But you've taken credit for having that ultimate source of water. If you can't get it somewhere else, there is credit. And let's see, if I remember looking at these right, that's seismic 1 all the way back to the river. So I assume there's a certain amount of importance given to that line. Other people have the same problem. They have event between the two MOVs. They don't have the check valve. That's a new one. That's why I asked about it.

But they have the two MOVs with a vent drain between them. The last people we talked to, I think you're going to put a vent in the top. So after they stroked the two MOVs, they can steam it out. They leave the middle vent open. That way, if water does come in between the two valves it goes back out on the ground.

They don't have to worry about getting it into their -- it may leak out of the system, but they're not going

to leak in, is what it amounts to. Do any of those things sound reasonable, or even removing the guts from the check valve, which personally would be my first choice?

MR. COLITZ: We can look at removing the guts from the check valve. I don't want to commit to that without looking at all the design requirements, why it went in there, and have somebody come up with a good reason. I don't see a reason why it's there.

MR. PAGE: I don't either. The reason I ask is because I've seen the system in other plants and we don't have it.

MR. ABRAMOVICI: There's a check valve up the river system for emergency feedwater.

MR. CHERNY: Four valves in that line?

MR. CAPODANNO: Two [illegible]rating valves and the check valve. I think [illegible]ight have been referring to a check valve on the dis[illegible]rge side of the pumps. But there is between the river water pumps and the suction header, for emergency feedwater system, two motor operated valves and this check valve.

MR. CHERNY: There's not another one out here?

MR. CAPODANNO: No. If you go back that way, you know, into the river water system itself, but that's really no longer the interface between the river water system and emergency feedwater.

MR. THOMPSON: So the resolution of this, firstly you will look -- investigate on eliminating that valve?

MR. CAPODANNO: Yes.

MR. THOMPSON: And should we go further than if you cannot do that or are you holding high hopes that that can be done?

MR. COLITZ: I think it could be done. We need to look at that, though.

MR. CAPODANNO: The real point Joe is trying to make and Julie is trying to make is simply this is kind of the redundancy on top of the redundancy, so to speak.

MR. THOMPSON: But the issue, with that particular valve, is that it needs to open when you need it, which is going to be assuming essentially never. And I see what Joe's point is. And if that seems like a particularly vulnerable spot there, if it sits there for a long period of time and never gets used or tested, it seems like it's a weak point in the system.

MR. COLITZ: Chemistry is a major concern, too. Another reason we had problems with our two steam generators is due to some of the surveillance testing we did.

MR. PAGE: This thing isn't going to help in chemistry. It's pointed in the wrong direction to help, in terms of chemistry.

MR. COLITZ: If I get that river water in the

steam generators, it doesn't help.

MR. PAGE: I hope this valve doesn't keep it from going in there. It's headed in the wrong direction.

MR. COLITZ: What I'm saying is every time I cycle those valves, the two motor operated valves --

MR. PAGE: I understand that. But I'm saying this should have no restriction whatsoever.

MR. CAPODANNO: The check valve doesn't.

MR. PAGE: Not in the flow direction. So the contamination, if you should get this contaminated, the only thing that's helping you, I guess, is the pressure holding the valve closed. Do you have a drain between your two MOVs?

MR. CAPODANNO: No.

MR. BARLEY: Physically, there's about a foot of pipe between the two valves.

MR. PAGE: That's probably why it's there. There's no drainage between the two MOVs.

(Discussion off the record.)

MR. THOMPSON: I think we would like to go a step further because it seems there may be some good reasons for having that check valve in there. And I think I would like to hear us discuss the other alternative or another alternative.

MR. CHERNY: Maybe you'd like to state what you

just said a minute ago, why you think it's in there.

MR. PAGE: It appears you're right. The contamination was a concern. What they did was put the vent behind the check. Had they put the vent between the MOVs there would be no reason at all for having that valve. But here, by putting it in here, you can vent or through this flush connection, you're essentially putting your barrier between your contaminated water and your system here.

And that's -- they shouldn't have done it that way. It's not a particularly design, I don't think.

MR. SHIPMAN: One other point that should be made, I don't think, if we had a valve there, that that would not necessarily be a flush valve, it would be a drain valve. And to convince our chemists that we have adequately flushed that area is a task that sometimes takes a long, long time.

MR. CHERNY: I don't think I understood what he just said about convincing the chemists. What's the problem there?

MR. CAPODANNO: The concern was that you can do one of two things, if you're concerned about chemistry. You can simply drain the volume, but that doesn't flush it with clean water. I think Henry's point was that simply draining it may not satisfy the chemists that that volume, that has been drained, is really totally flushed of contaminants. You fill it back up again, you may in fact introduce contamination

in the steam generator anyway, even though you theoretically drained it.

MR. SHIPMAN: And theoretically flushed it, Gary. There's no guarantee that filling it back up with steam and water and then draining it again has removed the contamination. We used to have a flush for the thiosulfate tank test. And we're being questioned whether that flush was adequate and what contribution that had into the failure of the steam generators.

MR. PAGE: The line itself has always had higher pressure than the river, obviously.

MR. SHIPMAN: No.

MR. PAGE: You always have higher pressure in the system than you do out here, attached to the end of this pipe, coming from the river. Is that correct?

MR. CAPODANNO: Only if the river pumps aren't operating, running off the static head from the water in the condensate storage tank against that check valve.

MR. SHIPMAN: Those motor operated valves are locked close[illegible] --

MR. PAGE: Is the pressure always higher downstream of the check valve than upstrea, of the check valve?

MR. BLITZ: The fours and fives are locked closed.

MR. CAPODANNO: If the river water pump is operating and the motor operated valves are open, clearly the river water

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pressure is at higher guage pressure than is the other side of the check valve.

MR. THOMPSON: So the question appears to be one, can you essentially remove that check valve by taking out the internals and if that's not a viable option, what can be done to do an inservice testing program on it?

MR. PAGE: Can you include this in the disassembly report, if that be the answer, as opposed to gutting the valve?

MR. COLITZ: I don't know if we've ever done anything of this type.

MR. SHIPMAN: I don't know if we've ever opened these two valves. The position I thought we were trying to persuade you with was the argument that we have a tech spec requirement for condensate tank storage. We have additional water in the hotwell that is available to us. We have an additional water in both the hotwell and this additional source, which is the demin gallon tank, are not tech spec reliable, but are available as a source of water to the emergency feedwater system.

We have procedures to categorize these as the sources of water you go to, and for any design basis accident, I believe those sources of water ruled out the use of these valves. And if, in the remote chance that we had to use these valves, there is time enough to take the valve apart, if

the valve didn't work, for some reason, we have enough talent and energy and material that we would find some juryrig.

In a real sense, there are things that we did, during the Unit 2 accident, that weren't ISI tested that were thought of on the spur of the moment that helped mitigate that accident.

MR. PAGE: Would you like to rely on that procedure again, to get out of another one?

MR. SHIPMAN: For the one item that I have in mind, it would be adequate for me.

MR. PAGE: At least the way we look at it -- I know everyone doesn't look at it this way, is that what is required for the IST program is any level -- you may have three or four levels of protection or potential sources of water, whatever they are, that if their credit had been assumed through some reactor system auxiliary systems or whatever, we feel they should be in the IST program in testing. That's a real basic concept. We just feel that all components that have been taking credit for them, it may be the fourth level, it may be the second level in a different scenario. But that's kind of where we're coming from.

We would just like to see the thing in the program and tested at some level.

MR. CHERNY: Is there any accident scenario that you do take credit for this system, this source of water?

MR. SHIPMAN: I'm not prepared to answer that

question. I have always read that if you run out of demin water, you've got a river water source. I don't know, to my recollection, I have no tech spec that tells me that that source of water has to be available.

MR. CAPODANNO: I think the answer --

MR. SHIPMAN: Yes, I do, fire service.

MR. CAPODANNO: It's really no. We have identified this as a backup source of water that could be used. But in every analysis that I'm aware of, every presentation or inquiry that's been made about the emergency feedwater system, we have had to demonstrate that we had adequate inventory available in the two condensate storage tanks and with the loss of one tank or the other, we would then go through a description how the backup inventory available in the hotwell and demin water tank was also available as "good quality water."

So long as I know, most of the source has gotten kind of a casual mention and said, if everything you could possibly think of went wrong, regardless of how improbably that was, this was still an available source of water.

MR. PAGE: Is it possible to leave your two tanks for a common mode?

MR. CAPODANNO: No.

MR. COLITZ: They're opposite sides of the plant.

MR. CAPODANNO: We went through that issue

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separately, in responding to the 81-14 generic letter on emergency feedwater systems. In particular, how ours functions.

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I think probably a point Henry was trying to get to in regard to these valves maybe didn't come across entirely clearly. As part of our evaluation emergency feedwater analysis of the amount of water available in the storage tanks and so on, we have established procedures to assure that inventory is available and that it gives you at least eight hours or so of cooling water inventory.

And I think Henry's point was, given I have that eight hours, I certainly have enough time to go down and simply take the internals out of these valves. Once they are an open conduit that river water source is available.

So there's plenty of time to respond to this extremely remote condition of having to use this in the first place.

MR. THOMPSON: How long would it take to go down there and strip it out and cap it and get your line back into operation? I mean, I just think of a situation where all of a sudden you realize, hey, we're suddenly out of other sources. We may have to go to the source. You may not have the eight hours --

MR. SHIPMAN: Correct me if I'm wrong, Gary. The eight hours is based upon the tech spec required source of water. That does not include the two --

MR. RODANNO: That's correct. The eight hours does not include the hot well or the backup million gallon

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tank. I couldn't answer your question specifically. I haven't time for somebody taking these valves apart. They're in an area in the intermediate building. They're easy to get to. They're about waist high. They're not big valves.

I would say --

MR. THOMPSON: Hours at the most?

MR. ABRAMOVICI: They have eight bolts, I would say, half inch or less.

MR. CAPODANNO: I would say probably one individual could take a valve apart and certainly two working as a crew can get it apart in very short order.

MR. CHERNY: I think we're going to have to talk to some systems people about that. I don't think we'll be able to answer that now.

(Slide.)

MR. THOMPSON: Have you agreed to look at the possibility of taking that apart now, eliminating it? Or did you reserve judgment on whether you'd even look at that?

MR. COLITZ: We're going to go back and see whether that valve is required or can be taken out.

(Slide.)

MR. ABRAMOVICI: The next item is Item B-4 and it deals with check valve exercising on feedwater system valve 12-A and 12-B. This line is the normal line from which feedwater comes into the generator into normal power

16pb3

operation.

So the valves will be stroked tested every time the generator is put into service, the feedwater system is put into service.

(Slide.)

This is the basis for our exemption request. We have again inspected those valves, in approximately 1981, and we can include that with the submittal of the final inspection report.

I think one of the two has been inspected to be correct.

MR. SHIPMAN: B has been inspected I know.

MR. ABRAMOVICI: At least one has been inspected.

MR. PAGE: This valve has to shut on loss of main feedwater?

side 2 bu

MR. ABRAMOVICI: Yes.

MR. CHERNY: Let me understand that right --

MR. PAGE: We're talking leak rate testing in this particular instance we're back off full stroking and backup to close position type testing.

MR. CHERNY: What you just said though --

MR. PAGE: On loss of main feed the valve has to close to prevent flowing back up that line.

MR. BARLEY: Let me correct the record on one item. We did inspect both A and B valves.

MR. PAGE: Both valves?

MR. CHERNY: So it's to prevent reverse flow in the feedwater line.

MR. PAGE: It's hard to tell from this drawing.

(Discussion off the record.)

MR. CHERNY: Where does the auxiliary feedwater come in?

MR. COLITZ: It's a separate line.

MR. CAPODANNO: Entirely separate.

MR. PAGE: I think the isolation would be the V5A and V12A if you should lose main feed.

MR. ABRAMOVICI: Yes. I think it's 5 and 12. Yes, motor operated 5A and 12A.

MR. CHERNY: How often do you experience a loss of feedwater?

MR. COLITZ: Have we ever had a loss of feedwater at TMI? Not that I know of.

MR. SHIPMAN: Yes. Remember when we had the acid induction? We had a problem around 1977 when we were regenerating our demineralizing machine, that makes demineralized water. We had a valve problem that inadvertently put some sulfuric acid into the hot well. And at that point we shut off main feedwater and went on emergency feedwater.

MR. CHERNY: That's the only time?

16pb5

MR. SHIPMAN: But that was a chemistry concern with the steam generator. It's not a loss of feedwater event. It was at about 50 percent power.

MR. PAGE: Loss of off-site power would also lose main feed.

MR. SHIPMAN: Yes. We also have -- we presently have a feedwater isolation criteria on low steam generator pressure, if that helps in the understanding. The 5 and the 92, 16 and 17 valves are closed, which are just upstream of that power.

MR. PAGE: Going through most of these design concepts, it seems like we always put two barriers on something. When we go from an injection mode or a recirc mode, it seems like there are always two barriers, single failure criteria, which I guess is a very basic design concept.

In looking at this one, it seems like the 12 and the 5 valve would be the ones for that particular concept of losing your main feed for whatever reason you lost it, whether it was a line break or whatever. That's why I was wondering, it seems like the V12 valve should receive something like a reverse flow test just to see that it checks.

MR. CHERNY: What are the consequences of one of those valves not closing as it's supposed to. Obviously

16pb6

it will blow the steam generator down.

MR. COLITZ: I think manual control of the 5s and 12s would close them, whatever the other one is, the two series.

MR. SHIPMAN: 5s and 92s, 16 and 17. If we had a loss of feedwater because of either a line severage, a feedwater line break on either side of that check valve, inside or outside the reactor building. The consequences to me as an operator, and I'm a licensed operator, are that I have procedures that would prevent me from removing heat from the reactor, emergency feedwater.

MR. PAGE: Would this valve be part of that procedure?

MR. SHIPMAN: No, that valve is not part of that procedure.

MR. PAGE: In other words, this valve would not be included in any credit taken for that isolation.

MR. SHIPMAN: I'm an operator, I'm not the safety analysis guide. To me, as an operator, that valve plays no role in that loss of feedwater accident.

In the safety analysis, I can't answer that question at this moment.

MR. PAGE: My guess would be, safety analysis would take credit for it and the operator would have to close the 5 valve just for insurance. I imagine that's the

16pb7

one that shows up on the procedure.

MR. SHIPMAN: The 5 and the 92 and the 16 and the 17 show in the procedure. They are automatically closed on a system that senses steam generator pressure. When that steam generator pressure decreases to 600 pounds, those valves would close and the steam generator would blow down and decrease in pressure on loss of feedwater.

MR. PAGE: The 92 valve?

MR. SHIPMAN: 92 is the block on the startup valve 16.

MR. BARLEY: It's a bypass, flow-pass.

(Discussion off the record.)

MR. CAPODANNO: You had said something earlier, I'm not sure, but maybe there's a murkiness in the understanding.

The reason that the valves that were just pointed out to you are there to get the isolation signal is to make sure you cease to add water to an affected steam generator, not working in a reverse direction to back up the check valve.

I thought I heard you say earlier, that you have an understanding that they might also be backups to the check valve. It's really not what they're in there for.

MR. PAGE: I'm saying that they look like the likely partner to do this reverse flow situation.

16pb8

MR. CAPODANNO: They're there. You can close them if you choose to, but their real isolation function is to prevent further water addition to an affected steam generator.

MR.PAGE: This may be their secondary responsibility If they show up in a procedure something for that particular scenario, they may have been designed for use in that just in case.

end 16.

MR. CHERNY: That is another systems configuration.

(Slide.)

MR. ABRAMOVICI: The last item on the list is Item B-5, which is the building spray check valves inside the reactor building to the spray headers, BS-V30A and B in particular. Normally the system is inactive. The only time the system would be active is on 30 pounds of building pressure and water would be supplied from the borated water storage tank to the building spray pump. BS-V1A's and B's will be open and water will flow through the check valves to the spray header inside the building.

Again, if the BWST water is depleted, then the suction would be switched to reactor building sump and the decay to the RPI system.

(Slide.)

The basis for exemption is if we would do a full flow test on the reactor building spray. With those valves the reactor building spray will activate and spray down the reactor building. We do do a part stroke test for plant procedure with 1303A; that is an air test.

MR. PAGE: Very small part stroke?

MR. ABRAMOVICI: Yes.

MR. CHERNY: Where are these valves physically located?

MR. ABRAMOVICI: Inside the reactor building, lower

elevation.

MR. CHERNY: Lower elevation?

MR. ABRAMOVICI: Yes.

MR. SHIPMAN: About 10 feet off the floor, the floor, 281 elevation.

MR. PAGE: Have they been disassembled at all? I guess you have disassembled quite a few valves it seems like in the last few years?

MR. BARLEY: These weren't disassembled to my knowledge.

MR. ABRAMOVICI: We can check.

MR. CHERNY: They do a part stroke quarterly.

MR. PAGE: Do you have a permanent --

MR. COLITZ: That's another operator burden.

MR. PAGE: Do you run in there?

MR. COLITZ: His people do it.

MR. SHIPMAN: I believe the actual connection that we make to connect the areas in the auxiliary building, down in the reactor building to the vent, just this side of the wall but it still requires manipulation of a bottle of compressed air, connection of the bottle to a contaminated system in an RWP area.

MR. PAGE: You have two different connections, one on either side of the valve, so you can blow air one way and blow it the other to make sure it is closed?

MR. SHIPMAN: Just blow it in the one direction, in the open direction. We also do another air test that is inconsequential but we are required to do a path free open test up to the nozzles on the spray headers. That is another air test.

I am not sure it checks the BS-V30 but I think it is kind of downstream of the 30.

MR. PAGE: So you are using a three-quarter inch connection basically to check an 8 inch valve -- a 6 inch valve?

MR. SHIPMAN: I think it is 8 -- the 6 inch is a cross connector used for recirculation purposes. It is an 8 inch system.

MR. PAGE: It's 8 inch.

MR. SHIPMAN: Yes, sir.

MR. CHERNY: These have not been recently inspected?

MR. ABRAMOVICI: Yes.

That concludes my presentation.

MR. THOMPSON: So where did we finish? Would that be 5?

MR. CHERNY: This is essentially a static lull except when they run their air testing.

(Discussion off the record.)

MR. CHERNY: Well, in this fairly quiet environment, I think we have to discuss a little further whether once in

ten years isn't very often. On the other hand, I don't know if in a particular situation once every refuelling is necessary. That is generally a proposal for a line that is not so quiet.

MR. PAGE: Could you include this in that disassembly report?

MR. COLITZ: I think we could go back and find out that we probably have not disassembled as often.

MR. PAGE: There may be one or two that we talked about in terms of disassembly. I was wondering if maybe you were to do it as a complete package, would go ahead and do those as part of the sequence and just make it one complete report and we could look at it in toto and see what intervals would be appropriate for those groups of outages.

MR. THOMPSON: Are you suggesting that they go ahead and actually inspect this one?

MR. PAGE: I think we have two or three that have not been but they have a pile that have been, but to make it a complete package would be to sample from each of these other systems which I think there may have been two, to go ahead and do those and make a complete report requesting under intervals other than refueling outages.

MR. CHERNY: I think that is a general comment to make on all of those.

MR. THOMPSON: Do you have any response to that? I think what we are saying, if I am correct, is to go ahead

and inspect a selected small number of valves additionally now, report all the results of those inspections along with all the others you have done by grouping them into similar types of environment and types of valves or models and so on.

MR. PAGE: I think we handled them under discussion in groups.

MR. THOMPSON: And the result of all that, too, for example on this last item, to say we have checked one of these that is 10 years old and no significant deterioration therefore there is a basis for going another 10 years before checking the next one, is that what we are saying, Joel?

MR. PAGE: I don't know if 10 years is going to be the appropriate interval. I am saying they ask for definitely longer intervals on each refuel, to sample each refueling.

MR. THOMPSON: This is what they are asking for now, ten years. They have gone 10 years, not looked at either as I understand it, so you want to make it 20 years before you look at them.

Now what we are suggesting is that you look at maybe inspecting one of them now and giving a compromise time for the next inspection.

MR. COLITZ: We will go back and look at all these valves you talked about, go back to the machinery history.

We are in the process of getting ready to heat up at the end of this week. I am not sure plant conditions are

going to allow me to go in and inspect any valves in the immediate future that kind of add to the package.

What we can do is look at what we have done to date and put that type thing together.

We'll look at it and I may find out that I just don't recollect ever taking this apart, but there was a period of time I wasn't at the plant and we may find out the machinery history, 1974-75 or something, that we did some repairs to this valve, had it disassembled, I don't know -- but we will go back to the machinery history on all of the valves we talked about.

MR. PAGE: All the candidates for disassembly?

MR. COLITZ: Yes.

MR. PAGE: That sounds good.

MR. THOMPSON: Now the tough part is to go back and summarize what we have covered so far.

MR. CHERNY: I think we have to talk in generalities first.

MR. THOMPSON: Before we get to generalities, there is a couple more items on this April 8, 1982 memo that I don't know were addressed.

Item 2 was to grant relief for P sub I and T sub B but not for delta P on that spent fuel pumps.

MR. COLITZ: Where do we stand on that one?

MR. MUSHISTA: I guess we have to look at them.

We are not prepared to address this.

MR. BARLEY: I wasn't prepared to address this subject. We have taken the spent fuel pool level into account. I am not certain whether we have taken the spent fuel pool level into account in the delta P calculation for that pump. I have to go back to that procedure and look at it.

MR. THOMPSON: So you are not prepared to look at that or discuss that one relief request that was not granted, is that right?

MR. COLITZ: I think we concentrated on this last memo. I didn't go back, taking this memo to see what we did with that one. I don't recollect either.

MR. THOMPSON: You only got this with this packet. That had not been formally submitted prior to --

MR.COLITZ: This never came in back in '82?

MR. THOMPSON: No. That has not been issued to you other than as an attachment to this meeting notice.

End 17

MR. COLITZ: I guess item 3 is only other item, and that has to do with those boric acid mix tank pumps.

MR. THOMPSON: Which may go away.

MR. COLITZ: Which we discussed at great length.

MR. CHERNY: Who is going to do what? And by when? Let's go off the record.

(Discussion off the record.)

MR. THOMPSON: Let's go back on the record.

I think what we need to do at this point is I'd like to see us summarize what we have here, send them home to do their homework, us to do ours, and set some time in the very immediate future to get back together by telephone and then see what we have left for the managements to argue out.

MR. COLITZ: Let me ask you, because it's not clear to me, the letter that was formally submitted to that, has that been signed? And is that an official NRC letter that we are supposed to respond to or what?

MR. CHERNY: These two letters -- you're referring to this April 8 of '82 and May 2 of '84?

MR. COLITZ: Yes.

MR. THOMPSON: They are in the docket room by virtue of being attached to the meeting notice. They have not been formally submitted to you.

What we have been trying to do is to resolve open items by discussion, rather than by paper.

I had hoped that we would be ready to put something down in writing by the end of this meeting. Now it looks like we've still got more things. We could put that down in writing as a partial submittal, just taking resources to do that. If you feel that needs to be done, we can certainly do that.

MR. CHERNY: You lost me with that statement. What's the partial submittal?

MR. THOMPSON: We still have a lot of open items. We have to talk to our systems people. They have to provide more information to go ahead and document that --

MR. CHERNY: The transcript is a partial submittal.

MR. THOMPSON: More than on a transfer from today -- if we can agree, of what we are each going to do, I would hope we could get back together in the next few days, next week or something like that, and resolve them and try to do it without back and forward letters.

But if you feel you need more than that, I would like to know that.

MR. COLITZ: Maybe what I want to do is go down -- again, we ought to go down each of the items and summarize where we think we're at.

MR. THOMPSON: We can put that on the transcript and excerpt that as a --

MR. CHERNY: Let's do it that way.

MR. COLITZ: Some of these are, to be honest with you, tough issues -- on primary to secondary or primary high-pressure to low-pressure isolation. To go in and check each valve -- okay, understand now today -- and I don't think I understood it before, that it's not an Event V, but an NRC management requirement, not required by the codes or anything else other than a management requirement.

We've gone to our management with those three different situations. We presented to them what we are doing. We presented to them the safety hazards, the personal hazards of doing it, the fact that we're going to have to put in plant modifications, the fact that it takes critical path time.

In no way in God's name am I able to commit to do that, because we kind of have their backing and that, hey, we don't intend to commit to that right now. It's not justifiable. It's critical path time on the heatup. We're doing other more important surveillance. It's going to require plant modification, and so forth.

So, I'm not sure if we're going to be able to resolve that one between us at all levels.

MR. PAGE: I'd like to add something.

You say it's not a code requirement. That's not necessarily true.

Category A valves are required to be leak tested

by the code -- any valve whose leakage is important. And these valves, leakage is important -- are Category A and require leak testing.

So, in fact, if you follow the letter of the code, I think you'll find a lot more Category A valves than you really have listed in your program.

If you followed it right down -- I mean, for any kind of water hammer concerns or anything, you'll find Category A valves that are out there in the industry, including your plant, that are not being tested and are not categorized A.

MR. THOMPSON: Joel, I don't think it's the point --

MR. PAGE: You said it's not a code --

MR. COLITZ: I think if we looked long and hard enough we could come up with good rationale for testing every valve in the plant.

MR. PAGE: Almost every check valve, to be sure.

MR. THOMPSON: But irrespective of whether or not, where it is, I think that what I'm hearing is that they are not, at this point, prepared to commit to doing some of these things; and we're asking them to do them.

The next step is escalated to a higher level of management. And that's what we have to do, get those very clearly identified, what problems do we have that have to get escalated and get them escalated and do it soon so that these

things will get done.

MR. CAPODANNO: I don't want to immediately escalate things instantaneously. I think what Joe has said is there are some issues here, in our first assessment and discussion with our management, are things that they are not immediately going to commit to.

I think what we're looking for now is something that gets on paper what you feel are the things that you want to ask of us so it's very clear and something that we can take to somebody who has not participated in this meeting and show them and say: "That's, from the Staff's point of view, the outcome of this meeting, what additional items they would like GPU to accomplish."

Then, that becomes a point of --

MR. PAGE: This isn't a new issue. You got an SER in 1980, four years ago. That's not immediately raising it to the management.

MR. CAPODANNO: I understand, but I believe this draft came in about a week and a half ago with your comments.

I'm talking about the early May letter. We hadn't had the benefit of that detailed comment, I don't believe, until about a week and a half ago.

MR. THOMPSON: Okay. Let me clarify my statement.

When I say immediately raise it, I mean immediately raise it after we gone as far as we can go, but not leave it

for another three years.

MR. CAPODANNO: Okay. I just didn't want the sense to be that we've suddenly come to absolute loggerheads here.

I think Joe's point is we would like to get something that you feel is your position on paper so that it's clear and we can either question it if we don't understand it or, if it's abundantly clear, simply show it to higher levels of management and proceed to discuss what it is we feel we're going to do about it.

MR. THOMPSON: Will you be agreeable to get that down on paper now via the recorder?

MR. CAPODANNO: Is that something we can take back with us?

MR. THOMPSON: It will be available in 24 hours, I believe.

MR. CAPODANNO: I'm not sure it's good or bad. My past experience coming here has been Staff personnel worked up a list of the things they wanted. We simply Xeroxed it, and they turned that into a letter ultimately.

MR. THOMPSON: You're talking about a handwritten list?

MR. CAPODANNO: Yes.

MR. THOMPSON: Let's do that then.

We're going to make a handwritten list, rather than rely on the reporter to get the list -- a handwritten list

that they will take back to their management, and we will formalize that.

MR. CAPODANNO: Joe has suggested that we work up the wording of this handwritten list so, hopefully, we all understand what it says. And we'll take another shot at things sometime next week.

MR. COLITZ: I think what we cannot resolve by phone next week basically boils down into the NRC deciding what they're going to require of us and sending, probably, a formal letter to our company for us to formally respond.

MR. CAPODANNO: That would just give us some time to discuss with our management where, collectively, we think we are.

MR. THOMPSON: Good.

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MR. THOMPSON: Let's start on April 8, 1982, then.

MR. CHERNY: You're going to do the April '82 first?

MR. THOMPSON: Let's do it in order.

Item 1 is okay.

Item 2, GPU to review the Delta P issue.

MR. COLITZ: We owe you are position on that item.

MR. THOMPSON: Item 3 -- we will relegate that to the --

MR. COLITZ: That's A-2.

MR. THOMPSON: To item A-2.

Item 4 is okay.

MR. PAGE: You're talking about B-1?

MR. THOMPSON: We're talking about the first April '82 --

MR. PAGE: Okay.

MR. THOMPSON: Now, we are going to the 5/2/84 letter, A-1.

MR. COLITZ: The only thing on item A-1 was I want to clarify for the record that that was an end of Cycle 6 commitment, and I think we agreed to that.

MR. CHERNY: That's the refueling after next?

MR. COLITZ: Right.

MR. CHERNY: We said okay.

MR. PAGE: We said before -- in view of the rest

of this, I don't know whether we should consider that okay or not.

MR. CHERNY: We said okay.

MR. THOMPSON: A-2 is that first paragraph.

It's our understanding that your new 20-month program is scheduled for September, will endorse the 1980 code.

And are we just electing to delay any comment on that until we review the 1980 -- the total review of the new 120-month program?

MR. CHERNY: All right. Do you want to take that at the same time as the 120-month review?

MR. PAGE: Uh-huh.

MR. CHERNY: Which is coming in when, this fall? Is that right?

It should be coming in soon.

MR. THOMPSON: It's supposed to become effective in September.

MR. COLITZ: What were we looking at for submittal, June?

Early June on that.

MR. KNIGHT: We had said June 1 on that. But since it's looking to be more work filtering in on all this additional work, a couple of weeks more might be in order. It will give us more time.

MR. THOMPSON: You wanted to revise that date then?

MR. KNIGHT: How much additional work are we going to have to put into the submittal as a result of what we talked about here?

MR. BARLEY: It sounds like we're going to be preparing a report on the disassembled valve inspections.

MR. KNIGHT: Are we talking about a submittal date for two pieces then? The submittal that we had talked about earlier, plus this additional work?

So, what is the appropriate submittal date, then, for everything that we have discussed?

MR. THOMPSON: I would like to separate out the disassembly report from --

MR. CHERNY: From that submittal?

MR. THOMPSON: From that.

Keep that as somehow sort of a separate submittal. Maybe we can write off -- I don't know how we're going to do that, but maybe we can write some of these things off contingent upon a justification from -- we're also thinking in terms of how to show some completion on this, at least show some progress.

And a way to do that is --

MR. CHERNY: All of these items can be closed separate from that other submittal. These are all loose ends from the previous review.

MR. THOMPSON: Yes. And that's what I'm trying to get to. I would like to try to get these resolved and completed, even if we have to complete them contingent upon the disassembly report. I think we can sort of do that.

MR. CHERNY: I don't know how we can do that. We need the disassembly report to do it.

How can we -- what basis can we use to write anything up if we haven't seen the data?

MR. THOMPSON: At least some of these things we can.

MR. CHERNY: I don't see how.

Most of those where we have a disagreement on disassembly I think are in that category.

MR. THOMPSON: How long is it going to take you to prepare that report on all the valve work you have done?

MR. COLITZ: A minimum of a week.

Somewhere in a week to two-week time frame to go back through all the machinery history.

MR. BARLEY: Particularly to gather photos and what have you.

MR. COLITZ: To see what we have in the way of photos.

MR. CHERNY: Photos would be very helpful.

MR. THOMPSON: Okay. That still puts us within the time frame of being able to get all of these issues out by

mid-June, with the Commission decision now scheduled for late June. It still puts us within a doable time frame.

I would certainly rather see the submittal of the new program slip rather than completing out these.

Talk about a delay -- and with the limited amount of resources they have -- they can't get everything done this week, clearly.

So, I think it would be agreeable to give a -- I mean, to agree to some sort of a slip. Can we do that? Agree to a slip on the --

MR. CHERNY: You're not talking about a big, long slip, are you? You're just saying do this first, and then doing the other -- do the others. Is that what you're saying?

MR. THOMPSON: If we put it to you that way, complete these items and your disassembly report first, followed by, then, your 120-month program, when could you give us the 120-month program? Certainly not by June 1.

MR. CHERNY: Let's back up a minute before you get to that part.

When do you want them to send this stuff in?

MR. THOMPSON: We're talking two weeks.

In the meantime, we're going to be resolving a lot of the other items.

MR. CHERNY: We'll do some homework while they're doing their work.

new bu

MR. KNIGHT: Mid-June?

MR. THOMPSON: June 15th.

If it's a Sunday, you get a day's grace.

MR. KNIGHT: The following workday, past June 15th. If it's a Friday --

MR. CAPODANNO: The 15th is a Friday.

MR. KNIGHT: June 1 for the disassembly, and June 15th for the program.

MR. THOMPSON: Let's move on to item A-2.

We already covered the update. So, that GPU submittal expected June 15.

The second part of that, A-2, boric acid pumps, my understanding is that the Staff is going to check tech specs and, with our systems group, to look at these five or six points that you have made as your justification for not including the system.

MR. SHIPMAN: Correct me if I am wrong. We can't meet the code requirements with the system we have installed. To do some testing that would satisfy some intermediate goal is a burden for the following reasons, which would be the points you already have.

And that burden, when measured against the benefit of some intermediate test, has to be considered.

MR. THOMPSON: Let's see if I can get some wording here. We're working on wording.

I said the Staff is to review the tech specs and discuss with NRC Systems Group to evaluate Licensee's basis for not meeting code. Licensee cannot meet code with the present system, for the reasons -- and there are about five reasons stated in transcript.

MR. CAPODANNO: I thought you had made some rather concise notes earlier about the reasons.

Are you going to enter them on your list, versus judging on our memories as to how clear the transcript is?

MR. THOMPSON: Joel, did we get to the stage where we would look at that and possibly agree with the Licensee that this boric acid system could be excluded from the ISP program?

MR. PAGE: My notes tell me we were going to check with the systems people. But the way it looks right now I don't see any way that that should be removed.

MR. THOMPSON: The other question, of course, was changing the tech specs to eliminate -- if they don't need that -- did we get to that? Was that still a viable option when you completed that talk?

MR. CHERNY: I had written down there was an apparent inconsistency between the tech specs and Section 11 that we have to get resolved.

MR. PAGE: That isn't the inconsistency, the inconsistency, according to their statements, of whether the

system is needed or not.

MR. CHERNY: It's almost the same thing if they have it on emergency power for convenience. I question why it's in the tech spec.

Somebody did something before Section 11 came out, and now they have to figure out why they did it.

MR. PAGE: They put some of the systems in the early tech specs with specific testing requirements because there was no standardized testing requirements for all safety systems.

MR. CHERNY: But maybe it doesn't have to be that way.

We'll have to check into it.

MR. CAPADANNO: So, the action is you would review with systems and tech spec people this issue of deleting these pumps?

MR. CHERNY: Another thing I wrote down is they're not required in any Chapter 14 accident scenarios. So, that also -- there's a problem there for me. They don't belong in the tech specs if they're not taking credit for it in Chapter 14 accidents. I don't understand that.

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MR. CAPODANNO: I am still groping with how that tabulation comes out on your official scrab list here.

MR. CHERNY: I think at this point we have the ball on that one, that's how I see that one. We may throw it back but right now we have it.

MR. CAPODANNO: You're going to check with your people, the reasons being because of the number of pumps, because of the fact that they are powered for convenience only, for emergency power, because of the fact that the Chapter 14 accident analysis does not account for these?

MR. CHERNY: Right.

MR. THOMPSON: Okay. Let me just read what I have here so far. The Staff is to review the tech specs and discuss with NRC systems group to evaluate Licensee's bases for not including the boric acid pumps and valves. That is,system is not needed for accident scenario. Would require a plant modifications. Creates problems with a large amount of IST. The system is used frequently, giving a subjective check. You have got many redundant pumps and to test would inject boric acid into the reactor.

MR. CHERNY: That is about it.

MR. THOMPSON: Okay.

And let's see, we will -- Staff to discuss with GPU by -- we make them give us dates. We ought to give them dates too.

MR. CAPODANNO: I will go along with that.

MR. COLITZ: I think sometimes we need to maybe get back in a telephone conversation on all of these items where either you owe us or we need to look at ours.

MR.CAPODANNO: Do we want to set a target? Let's at least keep something in mind.

MR. ABRAMOVICI: Let me make a suggestion. As we go down the line, maybe there'll be a lot of action items for you and a lot of action items for us. Maybe we could come to a common date and discuss them all.

MR. COLITZ: That is what I would hope, a common conference call where we address all of our items and vice versa.

MR. THOMPSON: Today is Tuesday. Next Tuesday -- that is a week.

MR. CHERNY: I think what we are going to do, we are going to do most of this this week because I am going to be on travel all next week myself. So we are going to try just for that reason, we are going to try to do whatever -- we are going to mount a drive this week. If we don't make any progress this week, it is not going to be our fault.

So I am not quite sure what you want to hear. I guess maybe what you want to hear is if we are going to throw the ball back to you, you want to hear it as soon as possible.

We ought to be in a position by next Monday to tell.

MR. THOMPSON: Monday?

MR. CHERNY: Unless you can think of a reason why we wouldn't be.

MR. PAGE: I have got a pretty tight week this week.

MR. THOMPSON: You can't make that schedule?

MR. PAGE: I don't know if I can or not. I don't even know if those systems people are going to be available.

MR. CHERNY: We are going to have our management call their management.

MR. THOMPSON: I've got Monday, 5/21.

MR. CHERNY: If we can't get Bosnak or somebody's help to get the right systems people immediately, we are going to call you guys, okay? If I am not sure how much pull we are going to have, we are going to depend on your help .

MR.CAPODANNO: So that would be complete by you --

MR. CHERNY: We intend to be able to say something by next Monday.

MR. CAPODANNO: Should we be scheduling your call, then, on Tuesday, the 22nd?

MR. CHERNY: Let me say further, I'm not sure what I envision for us to do may take a lot less time than what you guys may have to do. We are just going to check on some of your statements about system redundancy and not meeting them for accident scenarios.

That is the kind of stuff we are going to do. If the systems people don't agree with you, we are just going to report that back to you.

It is kind of out of our hands at that point.

MR. THOMPSON: Then we are back to negotiation, aren't we?

MR. CHERNY: Then we are back to "They have got to do some kind of tests."

MR. CAPODANNO: Why don't we do this? Your tentative date is 5/21, let's get to the rest of the list and then decide when GPU thinks they can finish their pieces, then we'll pick a conference call date.

MR. THOMPSON: Okay, Item B-1, valve categories. Did you get those, Joel?

MR. PAGE: Yes.

MR. THOMPSON: So, paragraph 1 is okay. Paragraph 2 --

MR. COLITZ: CFV 4 A and B, you wanted a copy of the procedure.

MR. THOMPSON: Do you have any comment on that, Joel? Did you get a chance to look at it?

MR. PAGE: Sure, I had all the time in the world. I got them yesterday afternoon. It is only that thick.

MR. THOMPSON: Are you in a position to make a comment on [illegible]

MR. PAGE: No.

MR. CHERNY: Still under review.

MR. THOMPSON: Okay. Staff-2, complete review, paragraph 3, RC-V4.

MR. CHERNY: RC-V4 and 23, right?

MR. THOMPSON: What I have got here is Staff still is wanting to have some check, some sort of testing that will check that these valves are closed.

MR. CHERNY: Staff requires individual tests, preferably leak tests.

MR. THOMPSON: But didn't we already cover that that was impractical, to leak test.

MR. CHERNY: Plant modifications would be needed to do that. We said maybe.

MR. COLITZ: I think maybe -- I am not trying to speed things up but for these three RC-V4, 23 and then the next set, which were in the high pressure injection lines and DH-V1 and V2, I think your position was the same on all of them. That was, you require individual leak tests on these valves. Okay.

MR. CHERNY: Wait a second. I think he went too far. My notes had down for this next group I think it was, 107, 86 and 95, that was the bunch where the pumpt was running at all times as I recall.

MR. CAPODANNO: I thought what you had said there was that you had an interest in the low flow measurement

capability of the existing instruments as a possible means of indicating valve integrity.

MR. CHERNY: That was one thing that we said, yes.

MR. PAGE: That is the leak free test on the MOV, on that one MOV, to see if the instruments work.

MR. CAPODANNO: I thought therefore you were expecting us to get back to you and say, we will measure whatever it does.

MR. PAGE: You said you had already leak free tested the others.

MR. CHERNY: The 73A and C are tested.

MR. SHIPMAN: On the 16, they are cycled quarterly.

MR. CAPODANNO: Maybe we ought to clear this up. Probably in my mind the easiest way to attack it is exactly what is your position with respect to this middle group here, the 107 A,B,C,C, 86A,B and 95?

MR. THOMPSON: You were presenting some additional support for operability for those. You said you are stroking the 16s, you are shiftly checking by the operators in the sense that you would detect a hot pipe, which would indicate leakage, and you have got your inventory check.

So you have got three things that you are doing there and your position is that that is adequate to verify that they are closed.

MR. CHERY: I thought we said too there was another

potential barrier. I think there was another point that somebody made.

MR. CAPODANNO: Didn't we also have a discussion of the MU-V 73 valves as well?

MR. CHERNY: Yes, those are the ones that were tested quarterly, right?

MR. CAPODANNO: Pump discharge check. My note was after all that discussion, then the issue of flow instrumentation came up as yet another means of getting an indication of the flow path and leak tightness.

MR. CHERNY: That's right.

MR. CAPODANNO: So I have got all of that down but I am not clear --

MR. CHERNY: I am not clear what the action item was on the flow assembly. I guess I didn't write that down.

These were the flow instruments that were upstream of MU-16 and I have an 80 gpm. What was the bottom line on the flow instrumentation?

MR. PAGE: The leak tests in the forward flow direction.

MR. CHERNY: When did they do that?

MR. PAGE: They don't right now.

MR.ABRAMOVICI: I thing the testing of the 80 gpm was the recirc, the 80 gpm I think --

MR. BARLEY: The pumps are tested recirc.

MR. CAPODANNO: Henry was making a comparison with minimum flow requirements. With two pumps operating, you would have to at least see those on those indicators to be satisfied you were getting adequate flow as far as pump protection goes.

But that didn't really answer the question of how low can you go. It was just a number as far as minimum flow out of the pump.

End 20.

MR. THOMPSON: I'm still at the top of the page, on V4 and V23 -- haven't got past that yet.

MR. CHERNY: There's nothing to write down except that they're going to individually test them.

MR. COLITZ: I think these three items -- we're just rehashing everything we hashed already.

Their position is, in all three cases, you've got to individually check valves, preferably leak check them.

MR. CAPODANNO: That's what I'm trying to get to. TH-V1 and 2 I thought you were very clear on -- and the RC-V4 and RC-V23.

MR. CHERNY: That's correct.

MR. CAPODANNO: I came away with a feeling -- I didn't write down a specific note on this, but I thought, on the third block of valves, you were, in essence, going to mull over the whole scenario that we presented and also the possibility of a flow instrument being an additional leak indicator.

I didn't come away with any clear action item out of that.

MR. PAGE: You weren't going to verify the capability of that instrument?

MR. CAPODANNO: I thought we were.

MR. PAGE: THat's an action item.

MR. CAPODANNO: I though that was a GPUN item --

try to feed back to you the information.

MR. CHERNY: I think that's write.

MR. CAPODANNO: For your part, there was another piece --

MR. CHERNY: I thought we were going to check with the systems people to see --

MR. PAGE: To see whether a continuously running pump -- the pressure itself --

MR. CHERNY: So, I think we both have an action item on that.

We're going to check with our systems people to see if continuous running of one makeup pump is sufficient to -- and one adequate pressure barrier. That's what we're going to do.

And they're going to check on, I guess, the accuracy of those flow-measuring devices upstream of the MU-V16 valves.

Is that right?

MR. CAPODANNO: Yes.

MR. THOMPSON: I didn't get down the other valves that Staff requires individual tests, preferably leak tests.

That was V4, V23 --

MR. COLITZ: TH-71 and 2.

MR. CHERNY: When you check those MU-73s quarterly, with pressure, what do you do if you see some pressure? What

is the action item?

What's your criteria? That's the check. What's the acceptance level.

MR. BASHISTA: Right now we only have a draft procedure that we're working on. I guess we're not ready to comment about what that acceptance criteria is going to be.

MR. CHERNY: The basic procedure, the concept is not bad. But they haven't developed it far enough along yet before we discuss it apparently, on MU-73, A through C -- V73, A through C.

MR. THOMPSON: Okay. Give it to me again. GPU to check what?

MR. CHERNY: They're going to advise us of what their acceptance criteria is for pressure of monitoring those valves during these quarterly tests.

MR. THOMPSON: Give me two of those --

MR. CHERNY: MU-V73A, B, and C.

MR. THOMPSON: V73.

MR. CHERNY: Does that, by implication, mean you weren't running that test before currency checkout?

MR. BASHISTA: We were running a different type test before. The test we're proposing is well refined.

MR. CHERNY: In the interest of time, I move on to the next item.

Have you got down TH-V1 and TH-V2?

MR. THOMPSON: I included them up with IC-V4 and IC-V23.

MR. CHERNY: Okay.

Are we ready to go on to B-2?

MR. THOMPSON: We're going to check with our system people on --

MR. ABRAMOVICI: For the record, DH-V1 and DH-V2 are not check valves.

MR. CHERNY: That's right.

MR. CAPODANNO: The heading in the memorandum --

MR. CHERNY: It says suction check valves; that's right.

MR. CHERNY: I want to find out how they feel about disabling one train of DH, decay heat refueling valves.

MR. COLITZ: Are we on item B-2 now?

MR. CHERNY: Right.

MR. THOMPSON: And GPU is to develop comments from their testing disassembly program.

MR. CAPODANNO: We talked about checking with the systems people and disabling a decay heat train.

Does that mean, aside from their comments, your position is you want one of those valves opened up on some specificed interval?

MR. CHERNY: Each refueling outage.

MR. CAPODANNO: So, that would be one of the

CF-V4s or CF-V5s. Your position is open it up, inspect it each refueling outage.

Owen, could we get that in your notes? That's your specific position? Then, you're going to check with your systems people?

MR. PAGE: Well, mostly there's somebody interjecting they didn't want that to happen or something.

MR. THOMPSON: I was off on a tangent. So, come back.

Do you want to give that to me again?

MR. CHERNY: We want them to disassemble -- the numbering is a little bit confusing to me here. They're having a CF-V4A and B. But down in the body it says CF-V --

MR. PAGE: They use the discussion of C5s to support the C4 operability -- sort of augmented discussion.

MR. CHERNY: We'd better write all the numbers down, I guess.

MR. THOMPSON: Okay.

Staff --

MR. CHERNY: For his notes, we want them to disassemble each refueling outage, one of the four, C-4A or B, CF-V4A/B -- or CF-V5A/B -- one of those four -- unless the systems people tell us that they have a problem with disabling one train of decay heat removal -- we're not sure about that.

MR. THOMPSON: You want to add alternately, between the 4s and the 5s?

MR. CHERNY: You can add all that. I would hope that that would be just done.

MR. PAGE: That's a detail that can be taken care of at a later date.

end 21

MR. THOMPSON: All right.

MR.THOMPSON: .op of page 4, next two paragraphs are okay.

MR. CHERNY: Right. Okay, 14 and 16.

MR. THOMPSON: Now GPU is going to get that information from the manufacturer?

MR. CHERNY: I wrote down they are going to obtain information from valve manufacturer to define testable system parameters that can be used to verify valve disc position.

MR. THOMPSON: Give me those words again please.

MR. CHERNY: Licensee to obtain letter from valve manufacturer to define testable system parameters that can be used to verify valve disc position.

MR. ABRAMOVICI: Again, if I may, I think the discussion revolves around DH-V14 A and B; DH V16 A and B are getting a full stroke, right? Those are the pump discharge.

MR. COLITZ: Just on the 14.

MR. CHERNY: So V-16 is okay.

MR. CAPODANNO: I think there is another minor hit in this memorandum. I believe it describes the 16 valves as discharge check valves also -- I am sorry the 14s and the 16s are both identified as pump discharge check valves. It is only the 16s that are --

MR. THOMPSON: The 14 are not check?

MR. PAGE: The 14 are suction. It should say suction discharge.

MR. ABRAMOVICI: Again, what are we going to get from the vendors? Whatever parameters are required and that the flow is 3000 gpm, the valve is open based on that X percent, one flow condition.

MR. PAGE: If that is what it says.

MR. THOMPSON: So I'll say at 3000 gpm.

MR. CHERNY: 3000 gpm is one parameter.

MR. ABRAMOVICI: Oh, I am trying to point out if indeed he used all the parameters we would get the other parameters, but I am using the flow condition of 3000 gpm.

MR. CHERNY: That's right.

MR. THOMPSON: That can be used to verify valve disc position at 3000 gpm.

MR. COLITZ: The 14s also we'll include them. Since we inspected them, we'll include them in that valve disassembly package.

MR. THOMPSON: Main steam V-9 and we are awaiting those calculations then, right?

MR. CAPODANNO: Yes.

MR. CHERNY: Awaiting which calculations?

Oh, that is similar to the other one. We are down on this one now.

MR. THOMPSON: MS-V9 A and B. We are awaiting

the Licensee's calculations.

(Discussion off the record.)

MR. PAGE: The original request was to get copies of the calculations to show an 80 percent open position for a 48 percent flow rate.

Subsequent to that, during our discussions it appears possibly something to do with the turbine coming up to speed could play an important role on the disc position of the check valves. That I believe they were going to check out to see which is the best way to do that.

MR. CHERNY: You want to tell them what to write in their master notes?

MR. THOMPSON: Read on.

What am I going to put down here, GPU to provide calculations?

MR. PAGE: Concerning turbine parameters, open parentheses, i.e., time to reach operating speed, et cetera. That will verify check valve disc position.

MR. THOMPSON: BS-V21.

MR. CHERNY: Lines have been cut and capped.

MR. THOMPSON: Okay.

Side 2 BU MR. CHERNY: Let's see if we can get this done in about 15 more minutes.

MR. THOMPSON: Good. V-21 A and B is okay, lines cut and capped.

MR. CAPODANNO: No action items.

MR. THOMPSON: Okay, 52.

MR. CAPODANNO: Are you going to note there at least as of today's meeting you accept the obvious?

MR. THOMPSON: I called it okay.

MR.COLITZ: That is the one we had unanimous agreement on.

MR. CAPODANNO: One. Not bad.

MR. THOMPSON: Okay, 52 A and B, as I understand it, is to be included in your disassembly report, to provide justification for extended testing --

MR. CHERNY: Extended disassembly interval.

MR. THOMPSON: Why don't we call it the disassembly report, all right?

MR. PAGE: Fluid block system valves are open for the NRC to check with probably containment systems or auxiliary systems as to whether they should be included in the program.

MR. CHERNY: That's along with the tech spec change?

End 23. MR. PAGE: Right.

MR. PAGE: MU-V73A/B/C, MU-V107A/B/C/D -- the valves are part-stroke quarterly -- 73 valves are part-stroke quarterly.

MR. THOMPSON: I have that. It's okay.

MR. PAGE: That's okay. No open items.

The following one is the same, the V14A and B received no part strokes.

MR. THOMPSON: MU-V14.

MR. CHERNY: That's okay, too.

MR. PAGE: And then the MU-V94/95 -- 86A and B, 220 -- Licensee, I believe, is to supply some sort of information on how you're going to use it, how you're going to set up acceptance criteria for your check valves.

MR. COLITZ: That test should be complete this month. So, we will need to evaluate the results and come up with our criteria.

MR. CHERNY: I think what I hear him saying is I need a little more time on that one.

MR. THOMPSON: For GPU to complete, you're going to need some more time on that.

How much time do you need on that?

MR. BARLEY: They're going to start the test later this week. It should be done sometime next week.

(Discussion off the record.)

MR. ABRAMOVICI: The problem, as I see it, once

we get the data, we've got, somehow, to do some kind of sensitivity analysis to see how much one would change versus the other. We'll have to set up some kind of mathematical model to go and get the results, and then getting from a modeling guide into a systems guide to interpret the results.

MR. CHERNY: How much time do you estimate?

I see a good reason for more time on that one.

MR. CAPODANNO: What Julien describes may take three to four weeks, total, first having to run the test to get the data, analyze it, put it in to understand the whole form.

So, we're talking about, I think, basically four weeks from today.

MR. THOMPSON: You're talking about mid-June.

MR. CAPODANNO: Yes.

MR. CHERNY: Okay. We'd better jot that down. That's a separate date for this item.

MR. SHIPMAN: Four weeks from today.

MR. CHERNY: Four weeks from today, June 15.

MR. CAPODANNO: June 15.

MR. ABRAMOVICI: Assuming the test is done in a week.

MR. CHERNY: Maybe you'd rather do it differently and commit to sometime two weeks after completion of tests or something like that.

MR. BARLEY: It should be noted here that the tests this time will satisfy the testing requirements on the valves, because of the temporary strap-on flow instruments that will be installed for the start-up tests.

MR. CHERNY: It will satisfy the code tests is what you're saying?

MR. BARLEY: For this performance, but not necessarily for future, because those instruments are temporary.

MR. THOMPSON: For three weeks after --

MR. CHERNY: Three weeks after completino of tests. Is that all right?

MR. CAPODANNO: Right.

MR. PAGE: Open item B-3 has to do with EF-V3. They're going to investigate the possibility of removing the valve internals, and we are going to talk amongst ourselves in terms of their other proposal with the system people.

MR. CHERNY: Right.

MR. PAGE: Before FW-V12A and B -- both were inspected in 1981, or approximately in 1981 -- these will be included in the disassembly inspection report.

ESV30A and B --

MR. THOMPSON: Wait a second. I got left behind. The one -- V12?

MR. PAGE: V12A and B were both inspected approximately in 1981. The results of that will be included in the Disassembly Inspection Report.

MR. THOMPSON: Give me the data again.

MR. PAGE: Approximately in 1981.

MR. COLITZ: We'll give you specific dates in that report.

MR. PAGE: The last item, B-5, is on ES-V30A and B. They're not sure if there was any previous disassembly. They're going to do a record search to see if there's any information available.

And if it's available, they will include it in their report. If it's not available, we will continue to discuss this item.

MR. THOMPSON: What were the dates --

MR. CHERNY: I think we need to make a copy of these for everybody.

MR. THOMPSON: I was going to do that.

What were the dates we had now they would have the submittal --

MR. CHERNY: Disassembly report, June 1; 120-month program, June 15th; and the MU-94/95 and V86A and B -- that was three weeks after completion of tests for the items.

MR. THOMPSON: What about the rest of these items, then, that we were going to discuss -- discussion of items

below -- did we have a date?

MR. CHERNY: There is no specific date.

Well, we're going to have a discussion -- we plan to have a discussion next Monday, I think, on the phone.

With our items, I think we should report whatever we've been able to find out.

If we have any trouble getting together with our system people, we're going to call on the Division of Licensing for help.

end 23

MR. THOMPSON: Discussion -- that will be 5/21.

(Off the record.)

MR. THOMPSON: We have very rough handwritten notes which I will put together in complete form here in the next day or so and probably issue these as summary minutes of the meeting or whatever.

We are going to get together on Monday by telephone, hopefully have --

MR. CHERNY: We'll set a time a little later, rather than doing that today.

MR. COLITZ: As long as we know by tomorrow.

MR. CHERNY: I envision that as more of our stuff to you.

MR. COLITZ: If we have anything like vendor calculations, those things that don't fit the disassembly report, if we have them available Monday we will pass them on to you.

MR. CHERNY: Okay.

MR. THOMPSON: Gentlemen, I think we will declare this meeting closed.

(Whereupon, at 4:45 p.m., the hearing was recessed.)

End 24.

* * * *

CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the

NRC COMMISSION

In the matter of: GPU Nuclear TMI in Service Testing for Pumps amd Vales

Date of Proceeding: 15 May 1984

Place of Proceeding: Bethesda, Md.

were held as herein appears, and that this is the original transcript for the file of the Commission.

Mimie Meltzer
Official Reporter - Typed

Official Reporter - Signature

VIEWGRAPHS ENCLOSURE 3

OPEN ITEM: A-2

COMPONENT IDENTIFICATION: CA-P1A/B

ASME SECTION XI REQUIREMENTS: TEST PUMP OPERABILITY ON QUARTERLY BASIS

COMPONENT FUNCTION: PROVIDES FOR BORIC ACID TRANSFER FROM BORIC ACID MIX TANK TO MAKE-UP TANK FOR RCS BORON CONTROL

BASIS FOR EXEMPTION REQUEST:

1. HIGH DEGREE OF REDUNDANCY (DIVERSITY EXISTS)

   - PER TECH. SPEC. 3.2.2 EITHER ONE BORIC ACID MIX PUMP OUT OF (2) OR ONE RECLAIMED BORIC ACID PUMPS OUT OF (2) MUST BE OPERABLE. ONLY ONE PUMP NEEDED (OUT OF FOUR) FOR NORMAL PLANT OPERATION (HIGH RELIABILITY).

   - BORATED WATER CAN ALSO BE PROVIDED FROM THE RC BLEED TANKS VIA THE THREE RC WASTE TRANSFER PUMPS.

2. OPERATIONAL TEST OCCURS AND WOULD SHOW FAILURE

   - CA-P1A/B ARE PERIODICALLY USED TO CONTROL RCS BORON CONCENTRATION AND THEY DO, THEREFORE, GET AN OPERATIONAL CHECK.

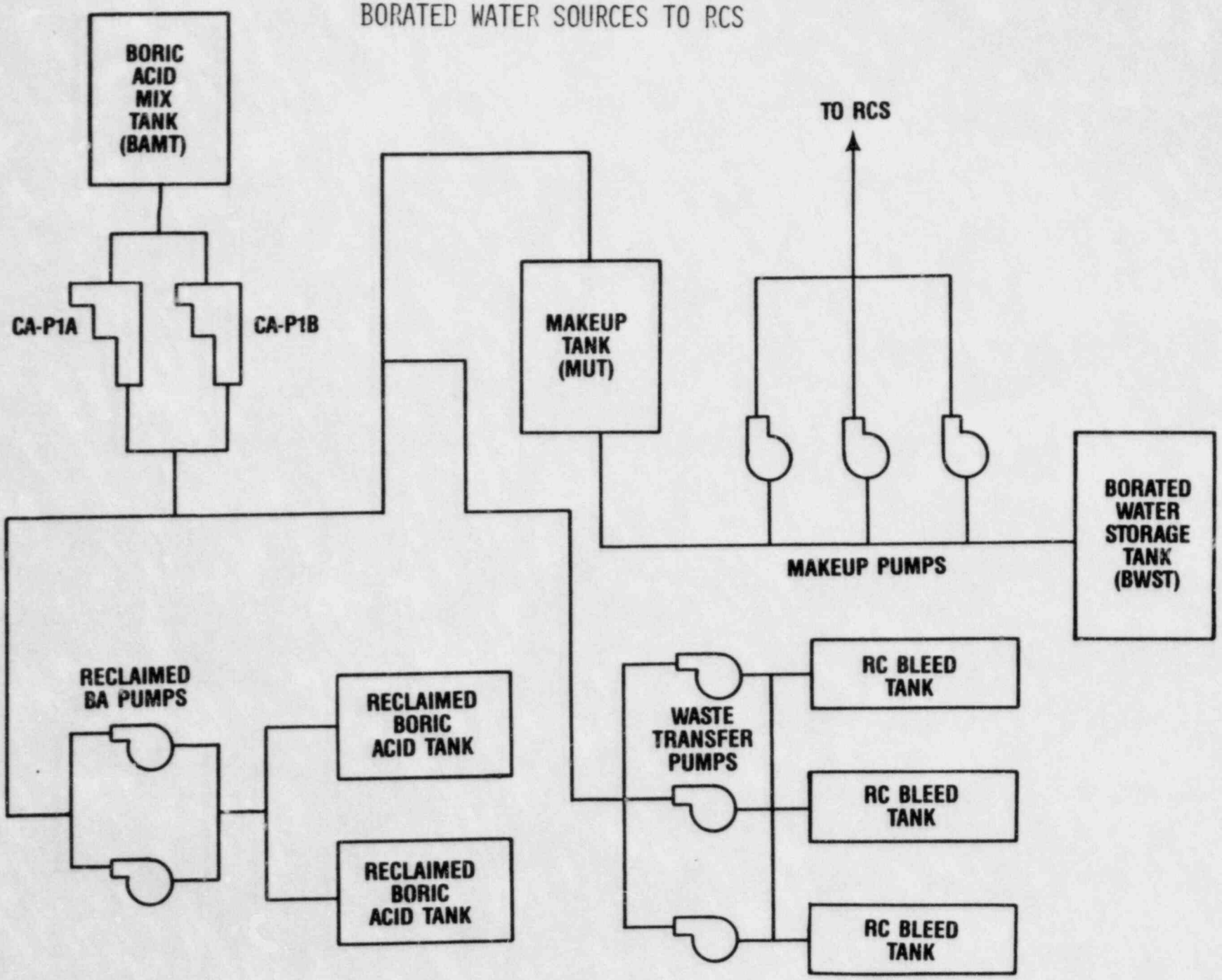
3. NOT REQUIRED BY SECTION XI

   - CA-P1A/B ARE POWERED FROM A SAFETY GRADE POWER SOURCE FOR CONVENIENCE ONLY (ASME XI ALLOWS EXEMPTION IF ONLY FOR CONVENIENCE USE). [IWP-1200(B)]

   - PUMPS NOT RELIED UPON IN CHAPTER 14 FOR ACCIDENT MITIGATION.

   - BORATED WATER STORAGE TANK IS THE ACCIDENT SOURCE OF BORATED WATER VIA THE MAKE-UP PUMPS (3) OR DECAY HEAT PUMPS (2).

BORATED WATER SOURCES TO RCS



EVENT V (WASH 1400)

GPUN INTERPRETATION

- FAILURE OF TWO CHECK (ACTIVE) VALVES IN SERIES IN A HIGH PRESSURE SYSTEM ALLOWING THE LOW PRESSURE PORTION OF THE SYSTEM OUTSIDE THE REACTOR BUILDING TO BE PRESSURIZED TO RCS PRESSURE, CAUSING A LOCA OUTSIDE THE REACTOR BUILDING.

EVALUATION

- EVENT V FOR TMI-1 ANALYSIS PERFORMED BY FRANKLIN RESEARCH CENTER FOR NRC (OCTOBER 24, 1980).

- PER ANALYSIS ABOVE, THE FOLLOWING VALVES WERE NOT IDENTIFIED AS EVENT V:

  - RC-V4 AND RC-V23
  - DH-V1 AND DH-V2
  - MU-V107A/B/C/D, 94, 95 AND 86A/B

OPEN ITEM: B-1

COMPONENT IDENTIFICATION: RC-V4, RC-V23

ASME SECTION XI REQUIREMENTS: LEAK TIGHTNESS VERIFICATION

COMPONENT FUNCTION: RCS ISOLATION FROM DECAY HEAT SYSTEM PRESSURIZER SPRAY LINE

BASIS FOR EXEMPTION REQUEST:

1. VALVES ARE INACTIVE AT PRESSURE

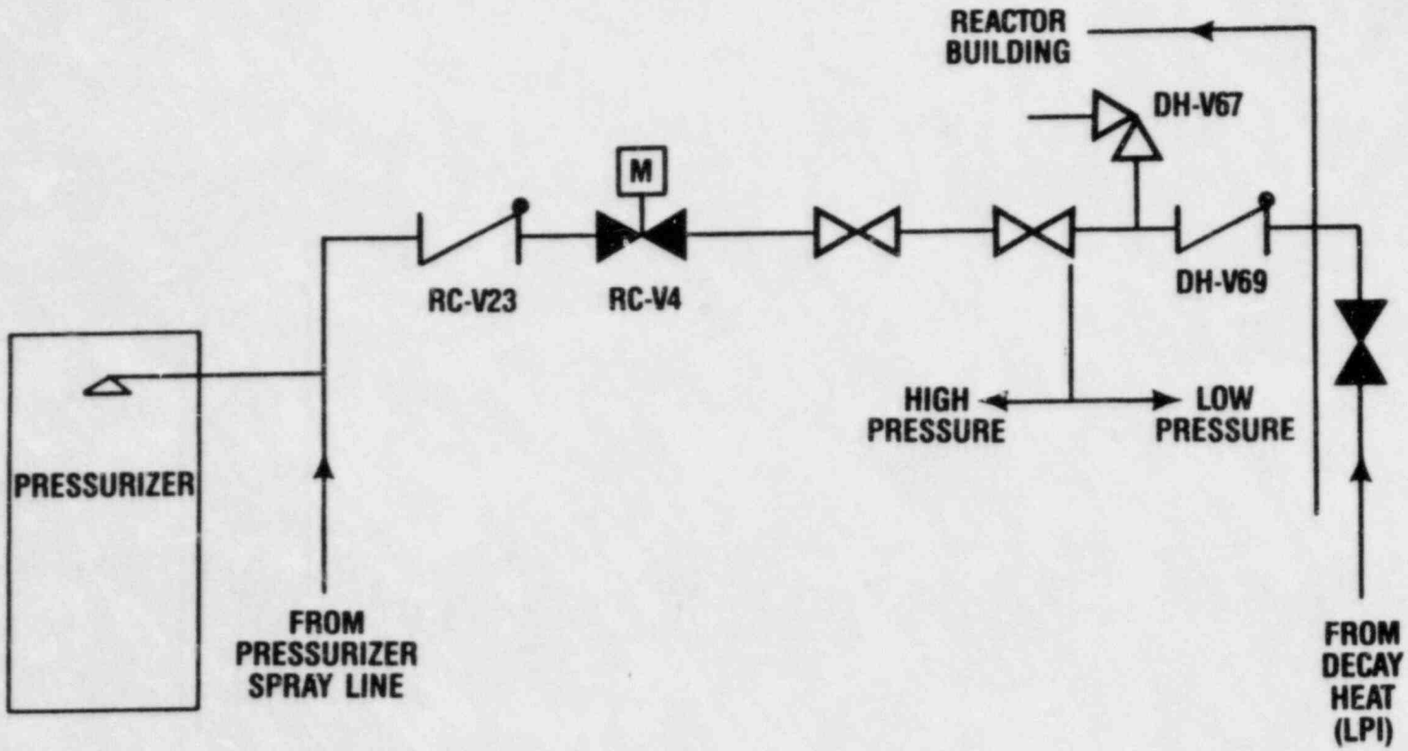
   - AT HIGH PRESSURE (GREATER THAN 400 PSIG) BOTH VALVES ARE CLOSED AND DO NOT SERVE ANY FUNCTION OTHER THAN ISOLATION.
   - THEY ARE ONLY ACTIVE DURING BORON PRECIPITATION MODE WHEN SYSTEM PRESSURE IS LOW (LESS THAN 400 PSIG).

2. SIMULTANEOUS LEAKAGE THROUGH BOTH VALVES WILL BE DETECTED

   - IF LEAKAGE WAS EXPERIENCED, IT WOULD BE GRADUAL AND THE RCS LEAK RATE CALCULATION WOULD IDENTIFY IT (LEAK RATE PERFORMED IN ACCORDANCE WITH TECH. SPEC. REQUIREMENTS).
   - A LEAKAGE THAT WOULD EXCEED TECHNICAL SPECIFICATION LIMIT IS WELL WITHIN THE RELIEF VALVE UPSTREAM OF THE SUBJECT VALVES (DH-V-67).

3. BACKUP CHECK VALVE INSIDE CONTAINMENT

   - IF BOTH SUBJECT VALVES FAILED OPEN AND THE RELIEF VALVE FAILED TO LIFT, THERE IS HIGH PROBABILITY THAT THE BREAK WOULD BE INSIDE THE REACTOR BUILDING (DH-V69 CLOSED).
   - HIGH PRESSURE TO LOW PRESSURE INTERFACE IS INSIDE CONTAINMENT.
   - LOCKED CLOSED VALVE OUTSIDE CONTAINMENT.



PRESSURIZER AUXILIARY SPRAY FROM DECAY HEAT (LPI)

OPEN ITEM: B-1

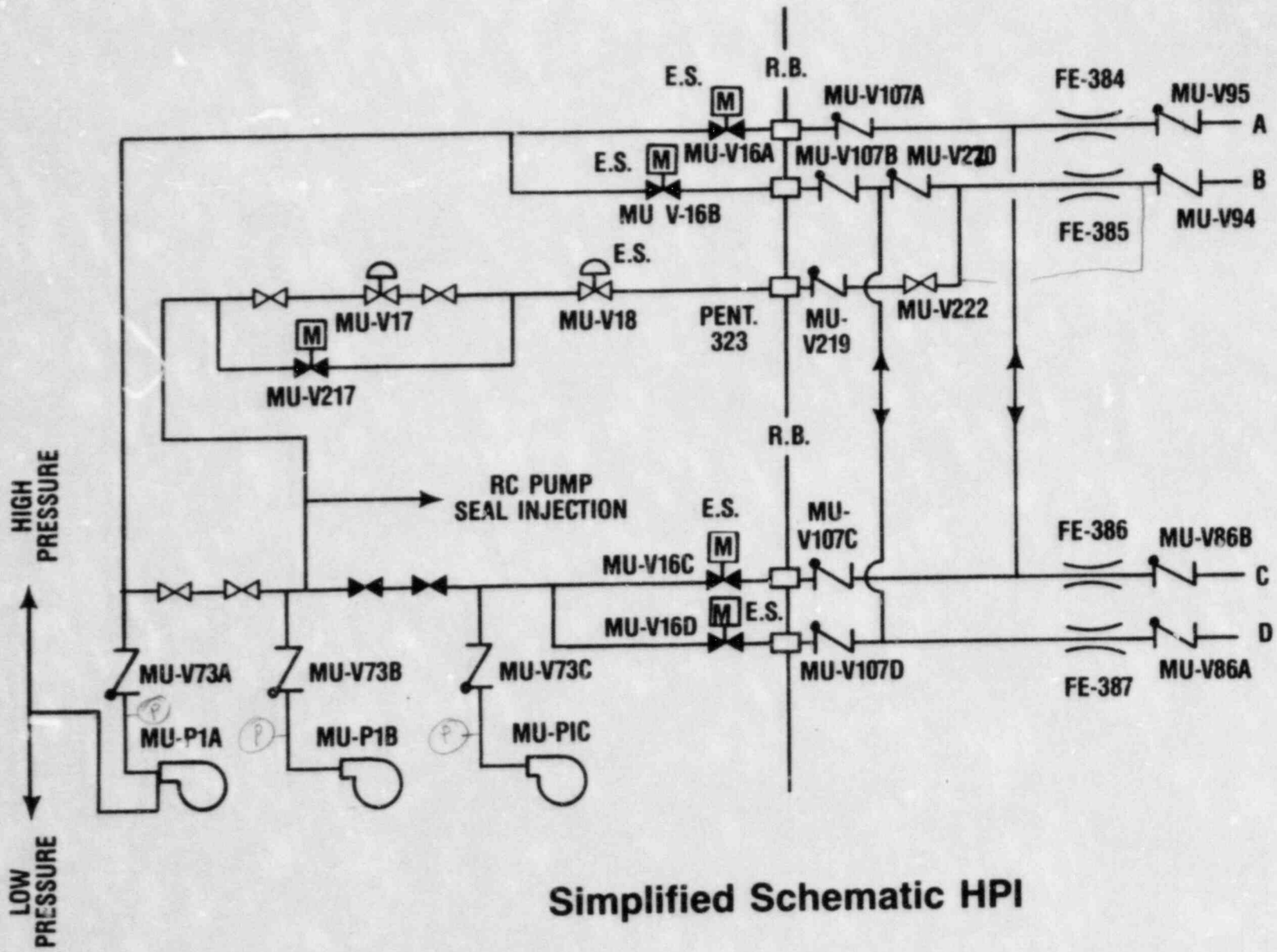
COMPONENT IDENTIFICATION: MU-V107A/B/C/D, 94 & 95
86A/B

ASME SECTION XI REQUIREMENTS: LEAK TIGHTNESS VERIFICATION

COMPONENT FUNCTION: PREVENT RCS BACKFLOW TO MAKE-UP SYSTEM

BASIS FOR EXEMPTION REQUEST:

- HP AND LP ARE SEPARATED BY FOUR VALVES IN SERIES.
  - LOOP CHECK VALVE (MU-V94/95/86A/B)
  - SECOND LOOP CHECK ~~CONTAINMENT ISOLATION~~ VALVE (MU-V107A/B/C/D)
  - HPI MOTOR OPERATED VALVE (MU-V16A/B/C/D)
  - PUMP DISCHARGE CHECK (MU-V73A/B/C)



Simplified Schematic HPI

OPEN ITEM: B-1

COMPONENT IDENTIFICATION: DH-V1 AND 2

ASME SECTION XI REQUIREMENTS: LEAK TIGHTNESS VERIFICATION

COMPONENT FUNCTION: RCS ISOLATION FROM DECAY HEAT SYSTEM

BASIS FOR EXEMPTION REQUEST:

1. VALVES ARE INACTIVE AT PRESSURE

   - DURING HIGH PRESSURE OPERATION (GREATER THAN 400 PSIG) BOTH VALVES ARE CLOSED AND DO NOT SERVE ANY FUNCTION OTHER THAN ISOLATION.

     ONLY ACTIVE DURING BORON PRECIPITATION CONTROL AT LOW PRESSURE (LESS THAN 400 PSIG).

2. SIMULTANEOUS LEAKAGE THROUGH BOTH VALVES WILL BE DETECTED

   - IF LEAKAGE WAS EXPERIENCED, IT WOULD BE GRADUAL AND THE RCS LEAK RATE CALCULATION WOULD IDENTIFY IT (LEAK RATE PERFORMED IN ACCORDANCE WITH TECH. SPEC. REQUIREMENTS).

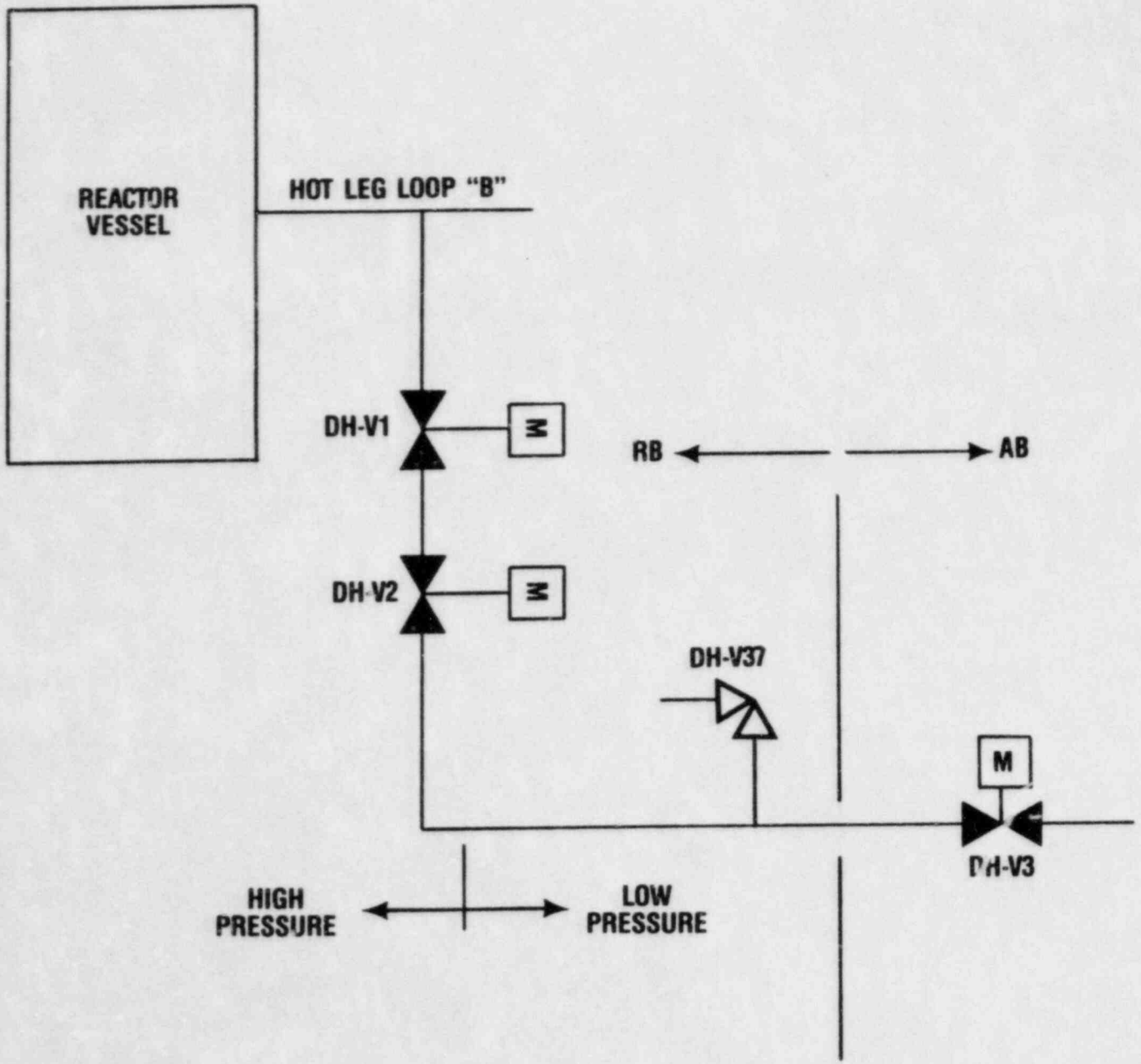
   - A LEAKAGE THAT WOULD EXCEED TECHNICAL SPECIFICATION LIMITS IS WELL WITHIN THE RELIEF VALVE UPSTREAM OF THE SUBJECT VALVES (DH-V-37).

3. PREVIOUS INSPECTION SHOWS GOOD CONDITION

   - DH-V-1 AND 2 RECENTLY OPENED AND INSPECTED.

   - HIGH PRESSURE TO LOW PRESSURE IS INSIDE CONTAINMENT.

   - CLOSED VALVE OUTSIDE CONTAINMENT (DH-V3).



DECAY HEAT DROP LINE

OPEN ITEM: B-2

COMPONENT IDENTIFICATION: CF-V4A/B

ASME SECTION XI REQUIREMENTS: STROKE TESTING OF CHECK VALVES

COMPONENT FUNCTION: ALLOWS COREFLOOD TANK WATER INTO THE RCS UPON A LARGE BREAK LOCA.

BASIS FOR EXEMPTION REQUEST:

1. PART FLOW TESTING PERFORMED

   - PART STROKE TESTING PERFORMED (1303-11.21) ONCE PER CYCLE.

2. TEST IS IMPRACTICAL

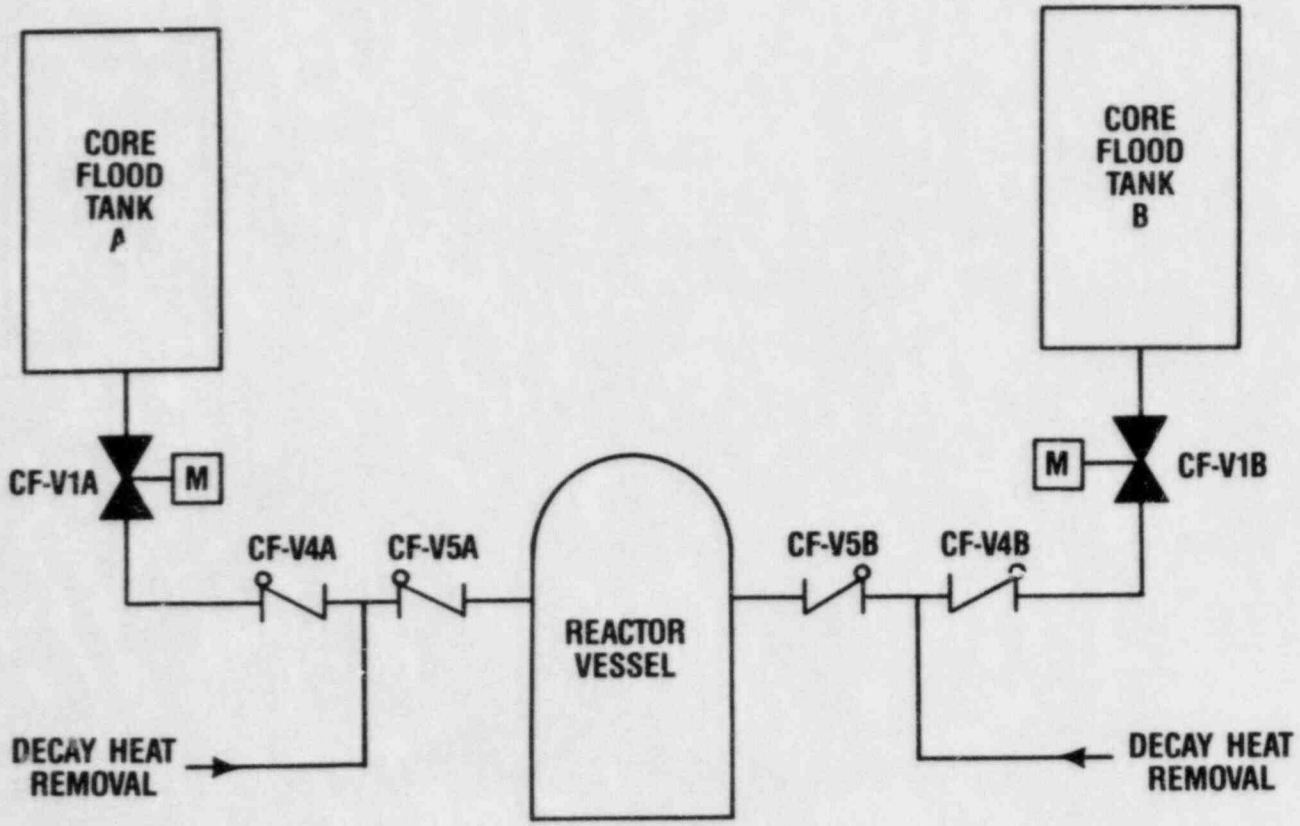
   - FULL FLOW TEST AT REACTOR OPERATING PRESSURE NOT ACHIEVABLE DUE TO PRESSURE CONSIDERATIONS (ABOVE CF TANKS PRESSURE ACTUATION SETPOINT).

   - NOZZLE CYCLES USED, (POSSIBLY THERMAL).

3. SIMILAR VALVE DESIGN IS TESTED

   - SIMILAR DESIGN VALVES (CF-V 5A/B) DO GET STROKE TESTING EACH REFUELING DURING LPI FULL FLOW INJECTION TESTING.

Core Flood


CORE FLOOD TANK A
CORE FLOOD TANK B
CF-V1A
M
M
CF-V1B
CF-V4A
CF-V5A
CF-V5B
CF-V4B
REACTOR VESSEL
DECAY HEAT REMOVAL
DECAY HEAT REMOVAL

OPEN ITEM: B-2

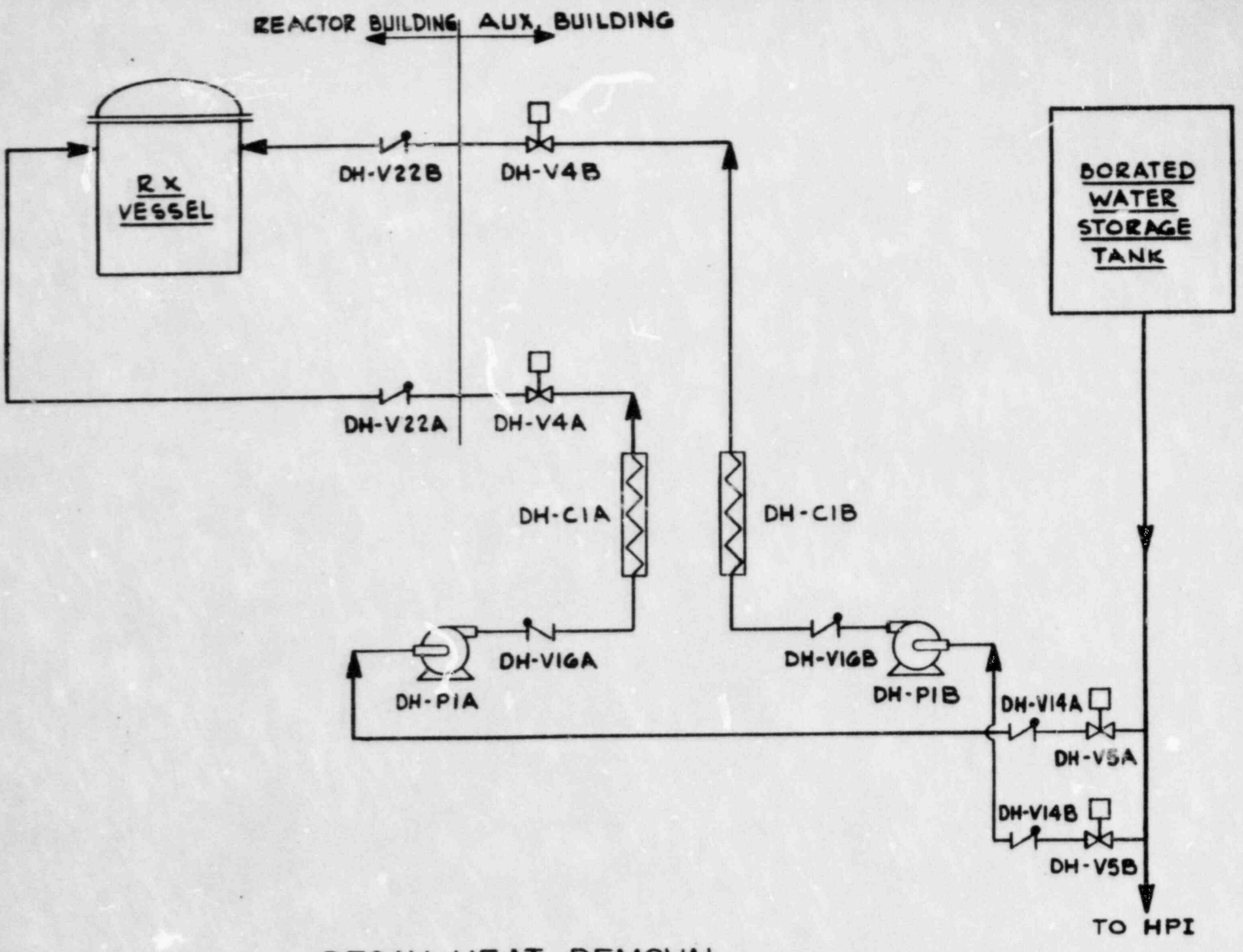
COMPONENT IDENTIFICATION: DH-V14A/B

ASME SECTION XI REQUIREMENTS: FULL STROKE TESTING

COMPONENT FUNCTION: ALLOWS BWST WATER INTO THE LPI SYSTEM UPON ITS INITIATION.

BASIS FOR EXEMPTION REQUEST:

- PER DISCUSSION WITH VALVE MANUFACTURER, WALWORTH, FOR VALVE AT LPI PUMP TEST FLOW TO BWST (3000 GPM) THE VALVE IS OPEN 73%.



DECAY HEAT REMOVAL

OPEN ITEM: B-2

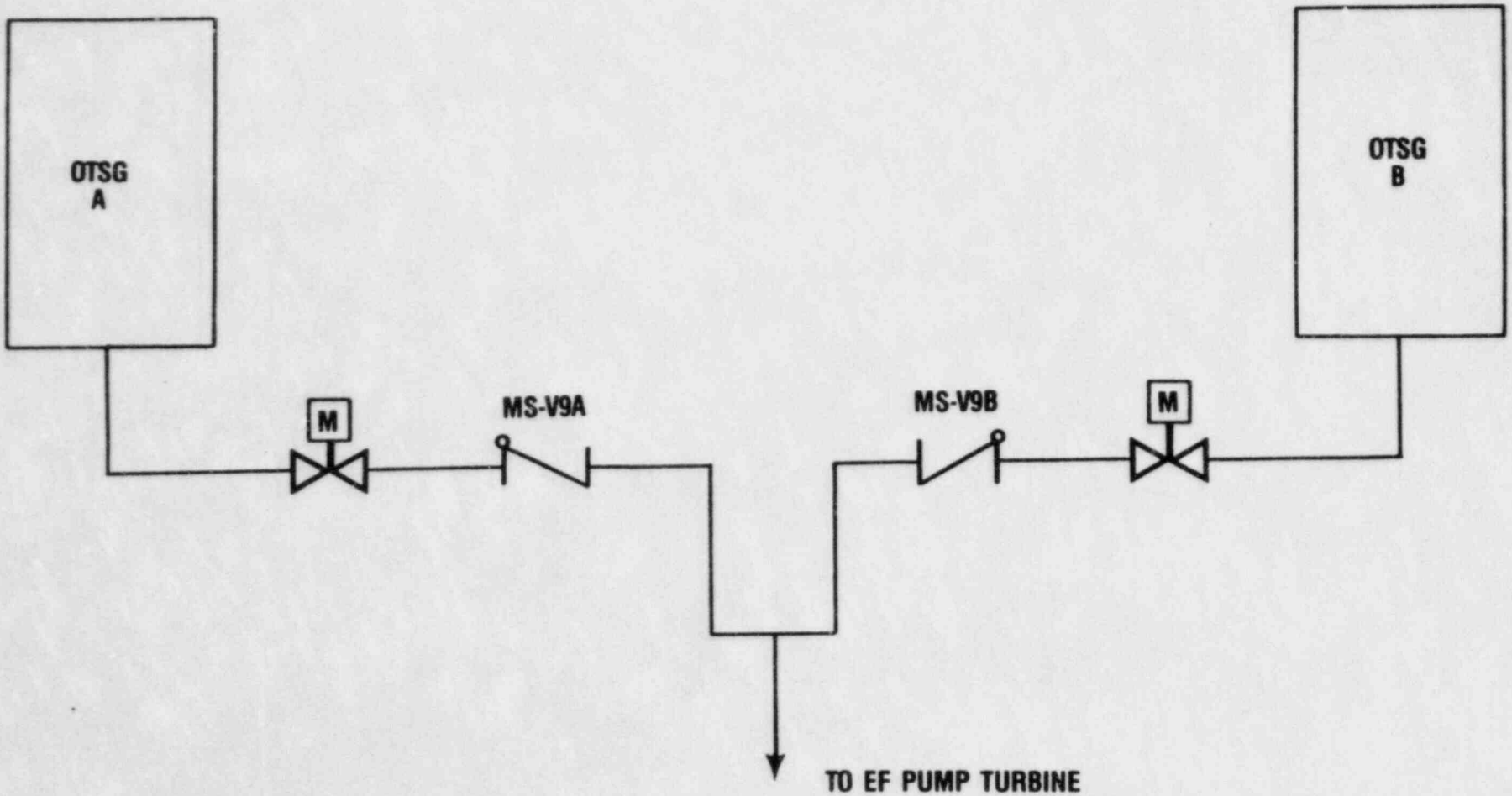
COMPONENT IDENTIFICATION: MS-V9A/B

ASME SECTION XI REQUIREMENTS: FULL STROKE TESTING

COMPONENT FUNCTION: ALLOWS MAIN STEAM TO TURBINE DRIVEN EMERGENCY FEEDWATER PUMP.

BASIS FOR EXEMPTION REQUEST:

- EF SYSTEM IS TESTED QUARTERLY WITH EF ON RECIRCULATION. SUCCESSFUL TEST REQUIRES 48% OF DESIGN STEAM FLOW.



MAIN STEAM TO E F PUMP TURBINE

OPEN ITEM: B-2

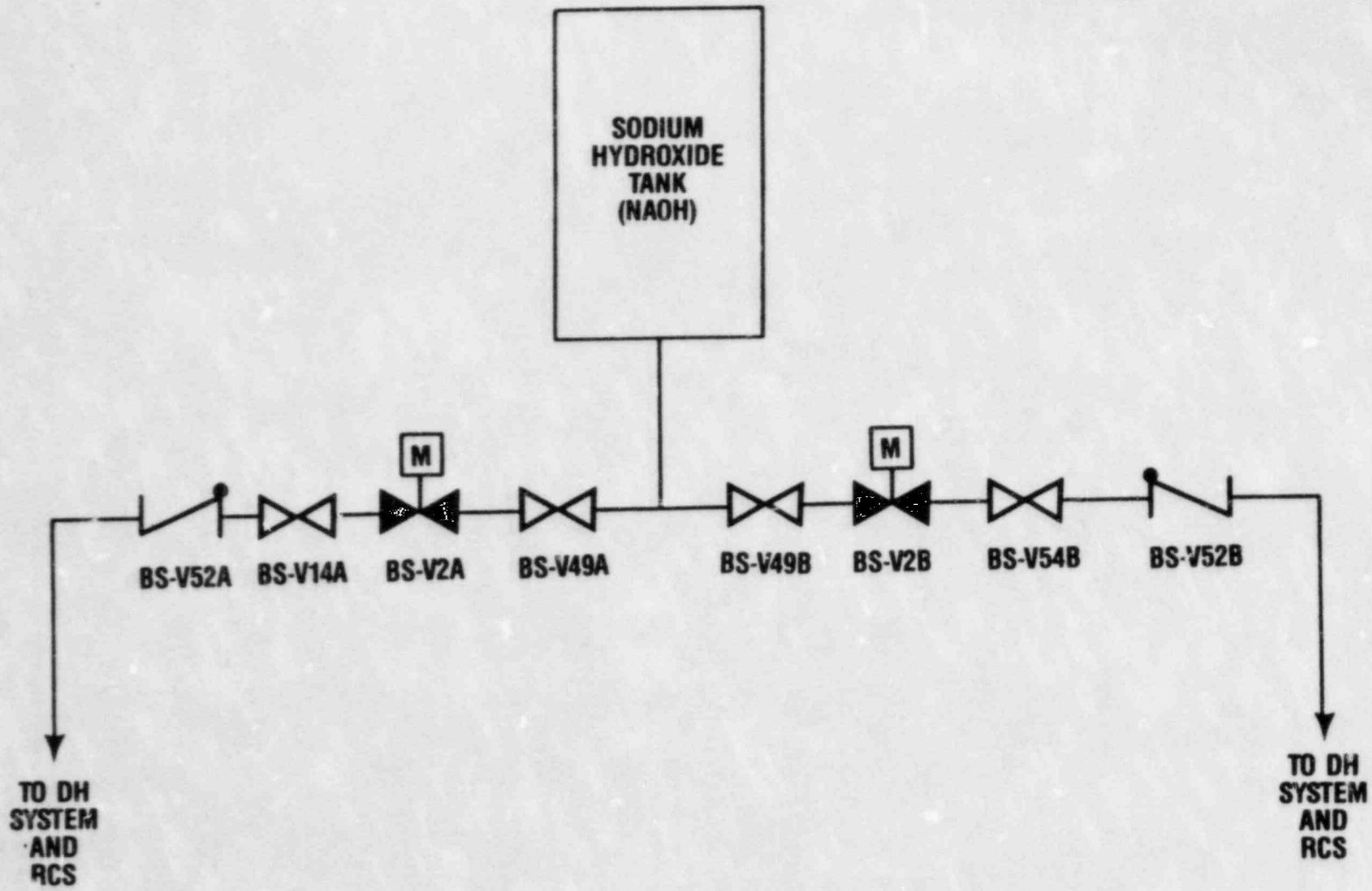
COMPONENT IDENTIFICATION: BS-V52A/B

ASME SECTION XI REQUIREMENTS: STROKE TESTING

COMPONENT FUNCTION: ALLOW SODIUM HYDROXIDE TO ENTER LPI/BUILDING SPRAY FROM POST ACCIDENT COOLING/FISSION PRODUCT CONTROL.

BASIS FOR EXEMPTION REQUEST:

- TESTING OF THESE VALVES WOULD INTRODUCE AND/OR INCREASE POTENTIAL FOR NA INTRUSION AND HIGH REACTOR COOLANT ^{24}NA ACTIVITY LEVELS.
- VALVES WERE INSPECTED IN JANUARY 1984 WITH NO VISUAL DAMAGE (APPEARED IN AS-NEW CONDITION).



SODIUM HYDROXIDE TO DECAY HEAT
AND BUILDING SPRAY SYSTEM

OPEN ITEM: B-2

COMPONENT IDENTIFICATION: BS-V21A/B

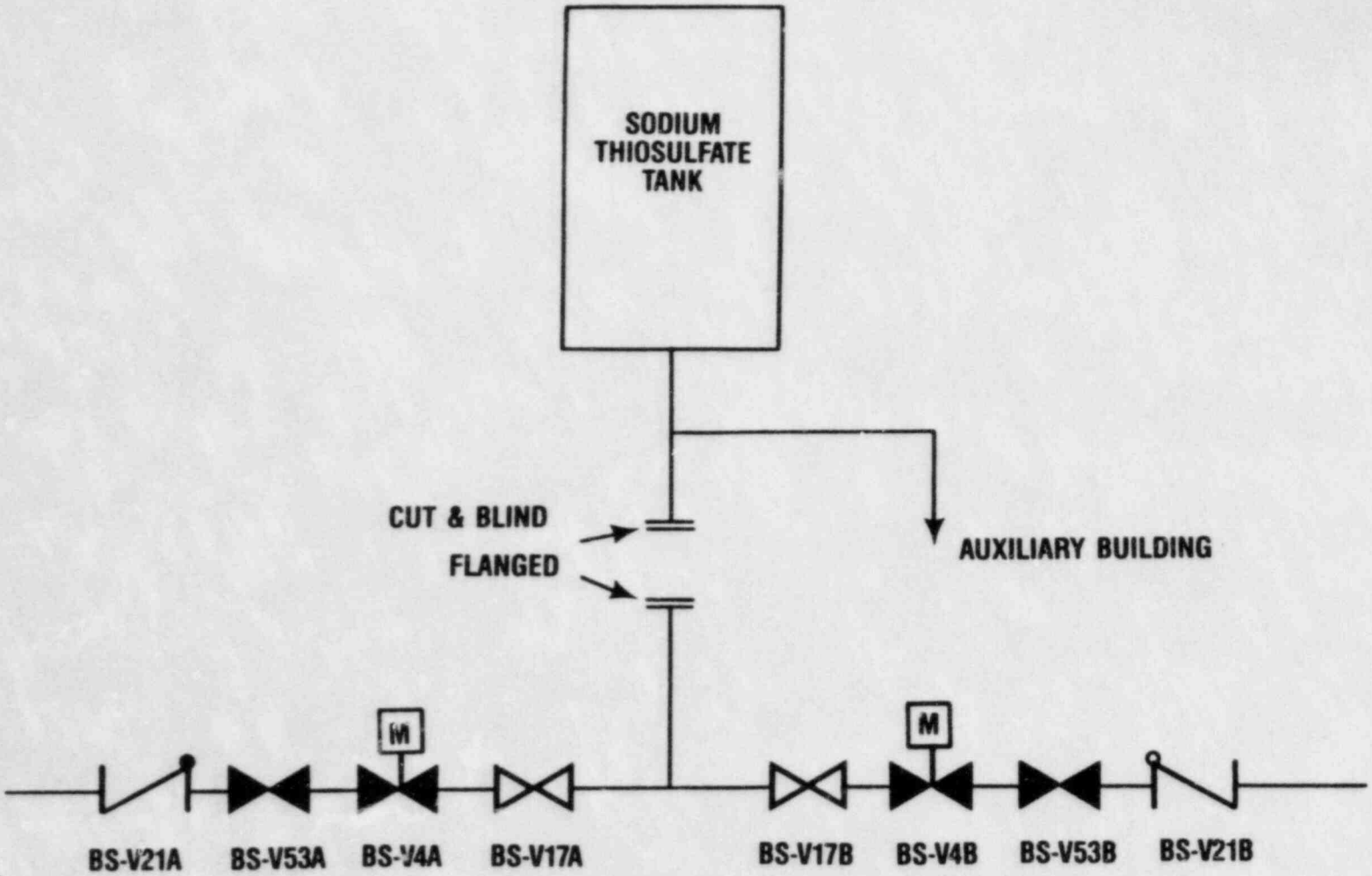
ASME SECTION XI REQUIREMENTS: FULL STROKE TESTING

COMPONENT FUNCTION: NONE

BASIS FOR EXEMPTION REQUEST:

- SODIUM THIOSULFATE TANK HAS BEEN DELETED FROM THE BUILDING SPRAY SYSTEM.

- COMMON LINE FROM TANK HAS BEEN CUT AND CAPPED.



SODIUM THIOSULFATE TANK DELETION FROM
BUILDING SPRAY SYSTEM

OPEN ITEM: B-2

COMPONENT IDENTIFICATION: FLUID BLOCK

ASME SECTION XI REQUIREMENTS: FULL STROKE TESTING

COMPONENT SAFETY FUNCTION: NONE

BASIS FOR EXEMPTION REQUEST:

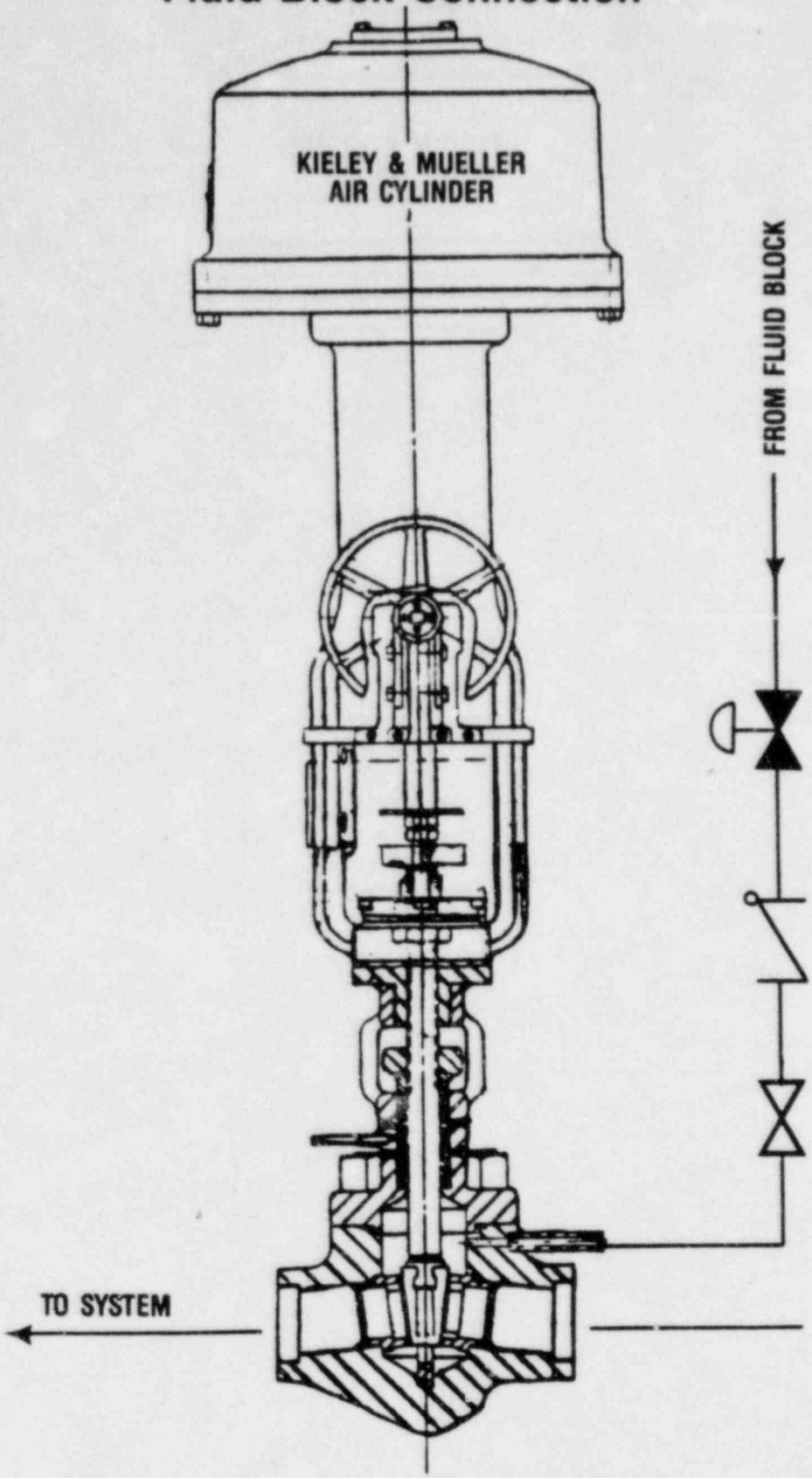
1. VALVE SAFETY FUNCTION IS TO REMAIN CLOSED (EXTENSION OF CONTAINMENT ISOLATION)

   - GPU HAS SUBMITTED TO NRC REQUEST TO DELETE THIS SYSTEM FROM TECH. SPECS. (TSC 113)
   - A SIGNIFICANT NUMBER OF FAILURES WOULD HAVE TO OCCUR FOR THIS SYSTEM TO BE NEEDED (I.E., PIPE FAILURE, DISC LEAKAGE AND FLUID BLOCK CHECK VALVE FAILURE AS A RESULT OF A LOCA).
   - NOT NEEDED TO OPEN TO MITIGATE ACCIDENT.

2. VALVE LEAKTIGHTNESS IS TESTED

   - TESTED AS PART OF 10CFR50 APPENDIX J VALVES AS TYPE C.

Typical
Fluid Block Connection



OPEN ITEM: B-2

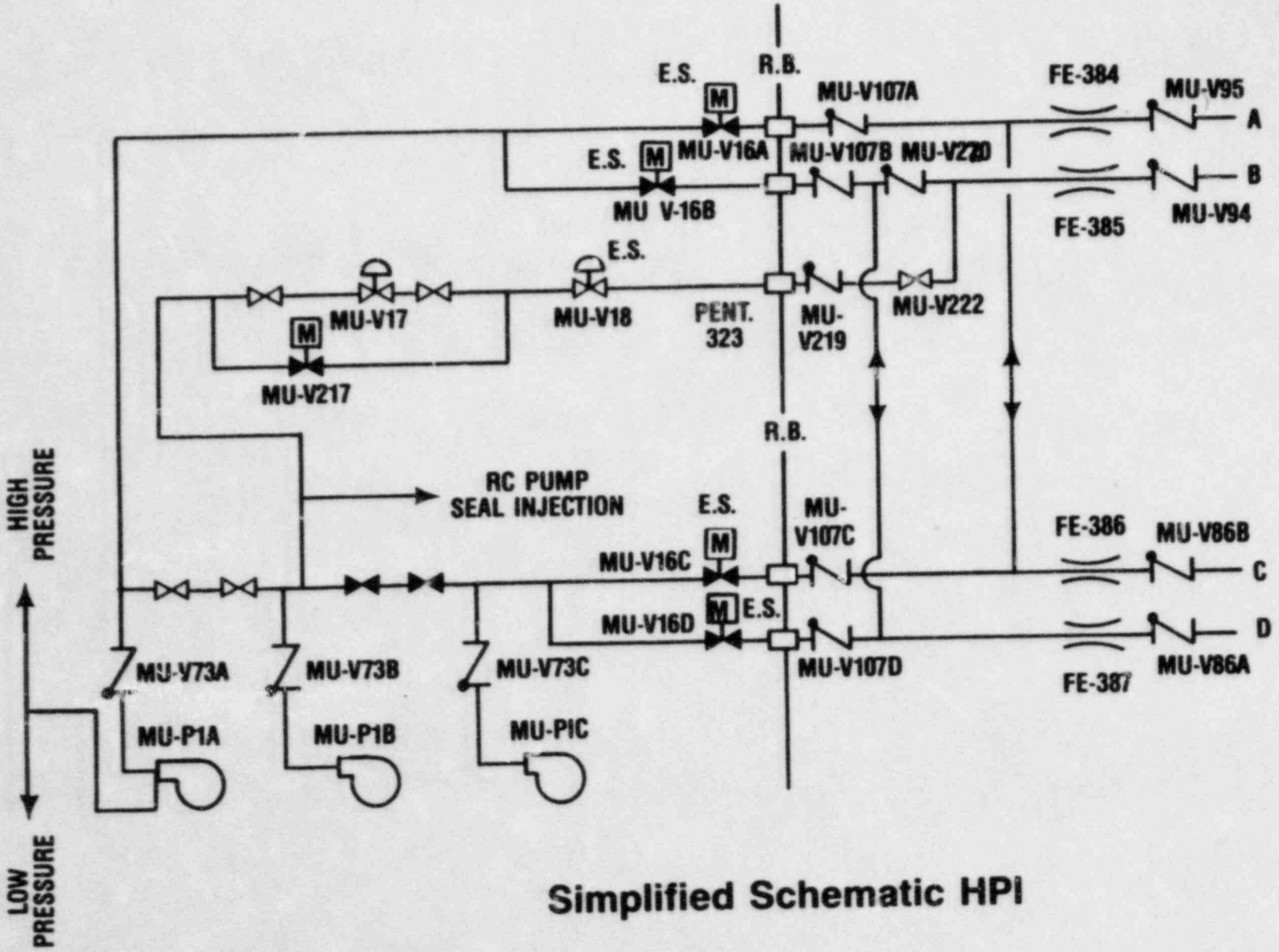
COMPONENT IDENTIFICATION: MU-V73A/B/C, MU-V107A/B/C/D

ASME SECTION XI REQUIREMENTS: FULL FLOW STROKE TESTING

COMPONENT FUNCTION: DISCHARGE OF HPI/MAKE-UP PUMPS

BASIS FOR EXEMPTION REQUEST:

- NONE.
  - FULL STROKING IS VERIFIED EACH REFUELING OUTAGE.
  - ADDITIONALLY, MU-V73A/B/C ARE STROKED WHENEVER THE RESPECTIVE PUMP IS IN OPERATION (AT LEAST QUARTERLY PER 1300-3H).



Simplified Schematic HPI

OPEN ITEM: B-2

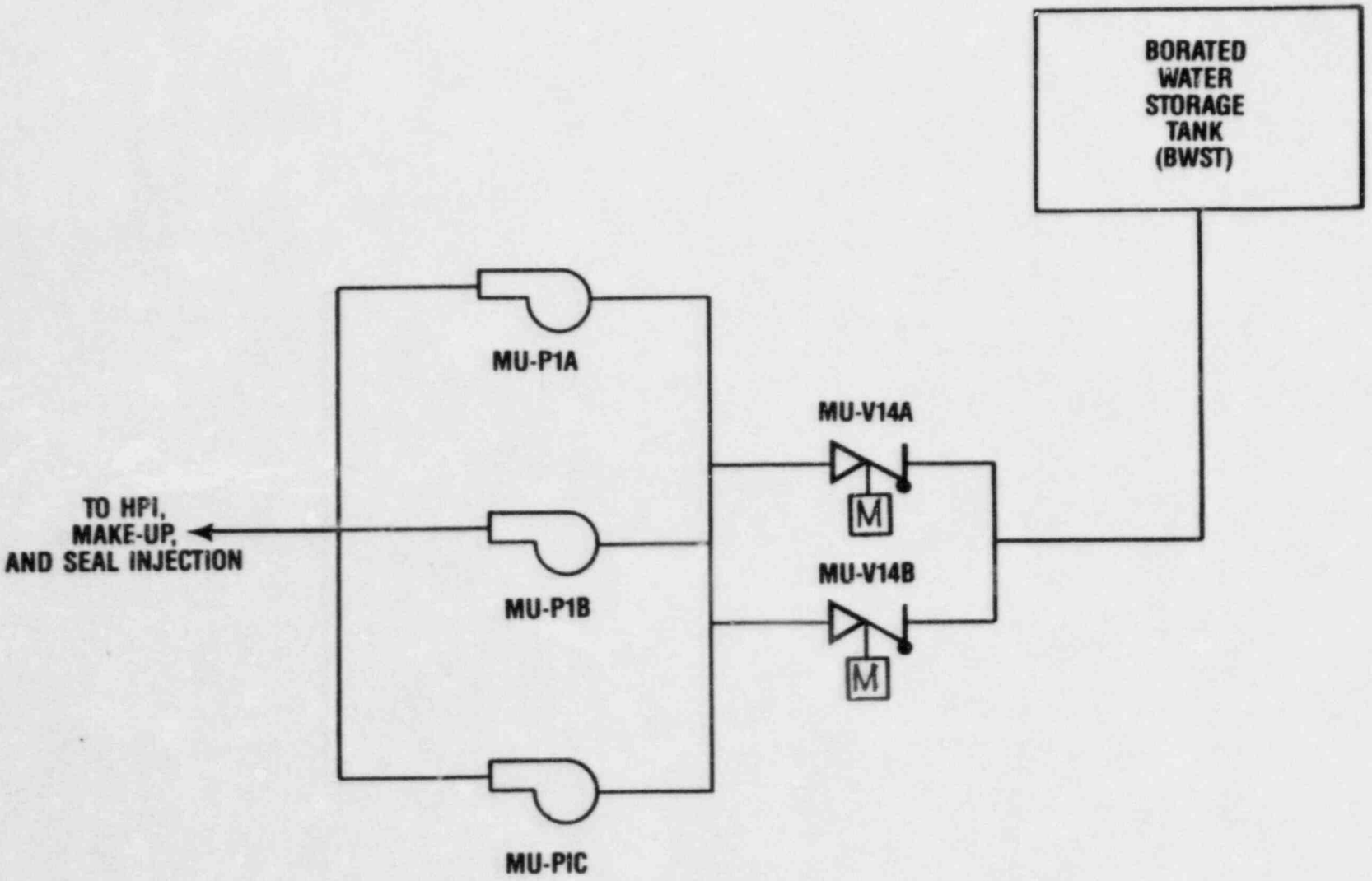
COMPONENT IDENTIFICATION: MU-V14A/B

ASME SECTION XI REQUIREMENTS: FULL STROKE TESTING

COMPONENT FUNCTION: MAKE-UP SUCTION FROM BWST

BASIS FOR EXEMPTION REQUEST:

- NONE.
- VALVES ARE FULL STROKE TESTED EACH REFUELING OUTAGE.



HPI SUCTION FROM BWST

OPEN ITEM: B-2

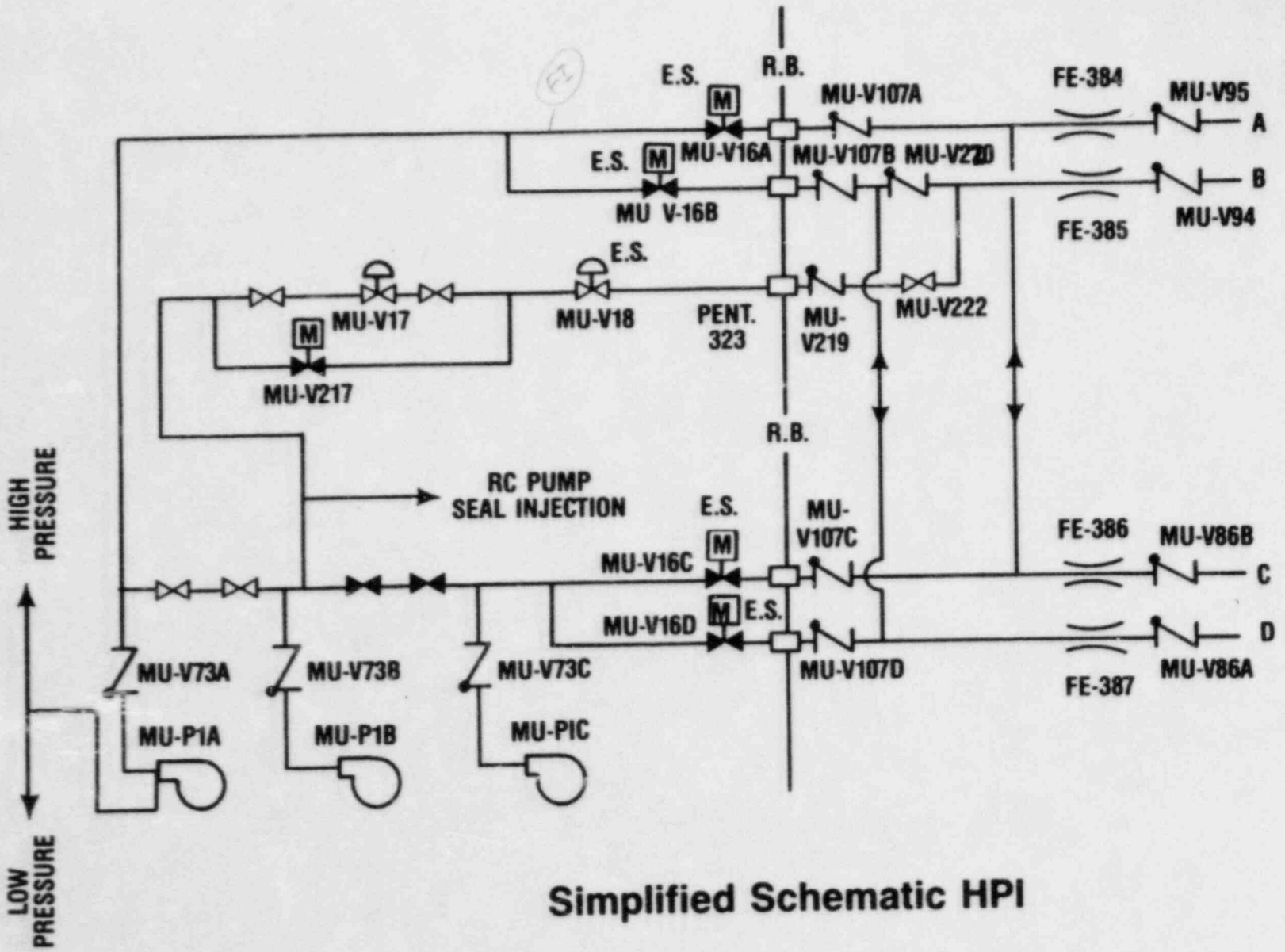
COMPONENT IDENTIFICATION: MU-V94, 95, 86A/B, 220

ASME SECTION XI REQUIREMENTS: FULL STROKE TESTING

COMPONENT FUNCTION: HPI INJECTION LINES CHECK VALVES

BASIS FOR EXEMPTION REQUEST:

- FLOW THROUGH THESE VALVES IS VERIFIED EACH REFUELING OUTAGE.
- GPUN IS DEVELOPING CORRELATION BETWEEN FLOW INSTRUMENT INDICATION AND VALVE POSITION.



Simplified Schematic HPI

OPEN ITEM: B-3

COMPONENT IDENTIFICATION: EF-V3

ASME SECTION XI REQUIREMENTS: FULL STROKE TESTING

COMPONENT FUNCTION: EMERGENCY FEEDWATER BACKUP SUPPLY FROM EMERGENCY RIVER WATER SYSTEM

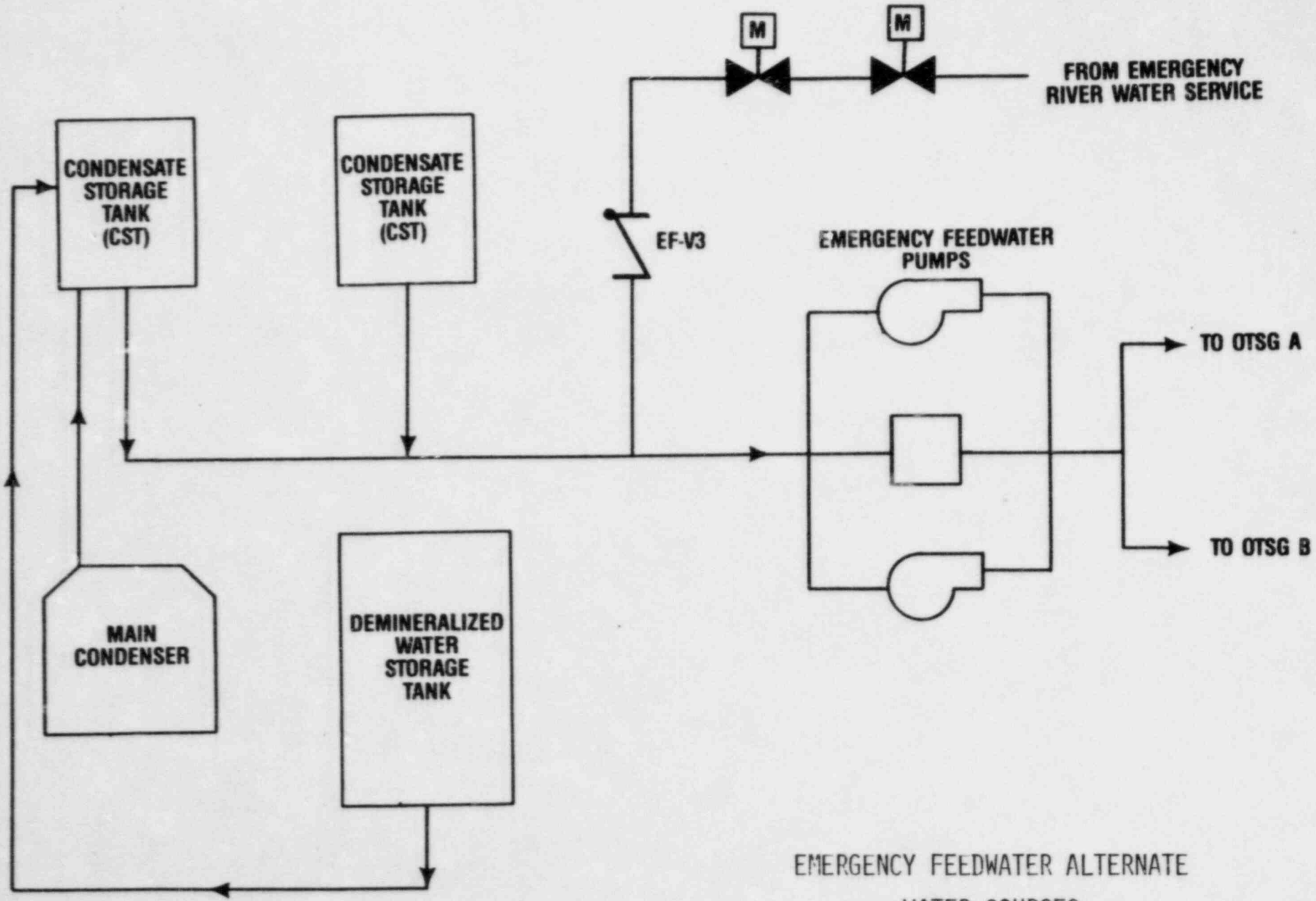
BASIS FOR EXEMPTION REQUEST:

1. SYSTEM IS DIVERSE BACKUP TO NORMAL WATER SUPPLY

   - EMERGENCY RIVER WATER IS USED ONLY IF CONDENSATE STORAGE TANK, DEMINERALIZED WATER TANK AND CONDENSER HOTWELL ARE LOST OR SOURCE DEPLETED.

2. FULL FLOW TEST WOULD RESULT IN OTSG CHEMISTRY EXCURSION

   - RIVER WATER CHEMISTRY CAN CAUSE OTSG DAMAGE.



EMERGENCY FEEDWATER ALTERNATE
WATER SOURCES

OPEN ITEM: B-4

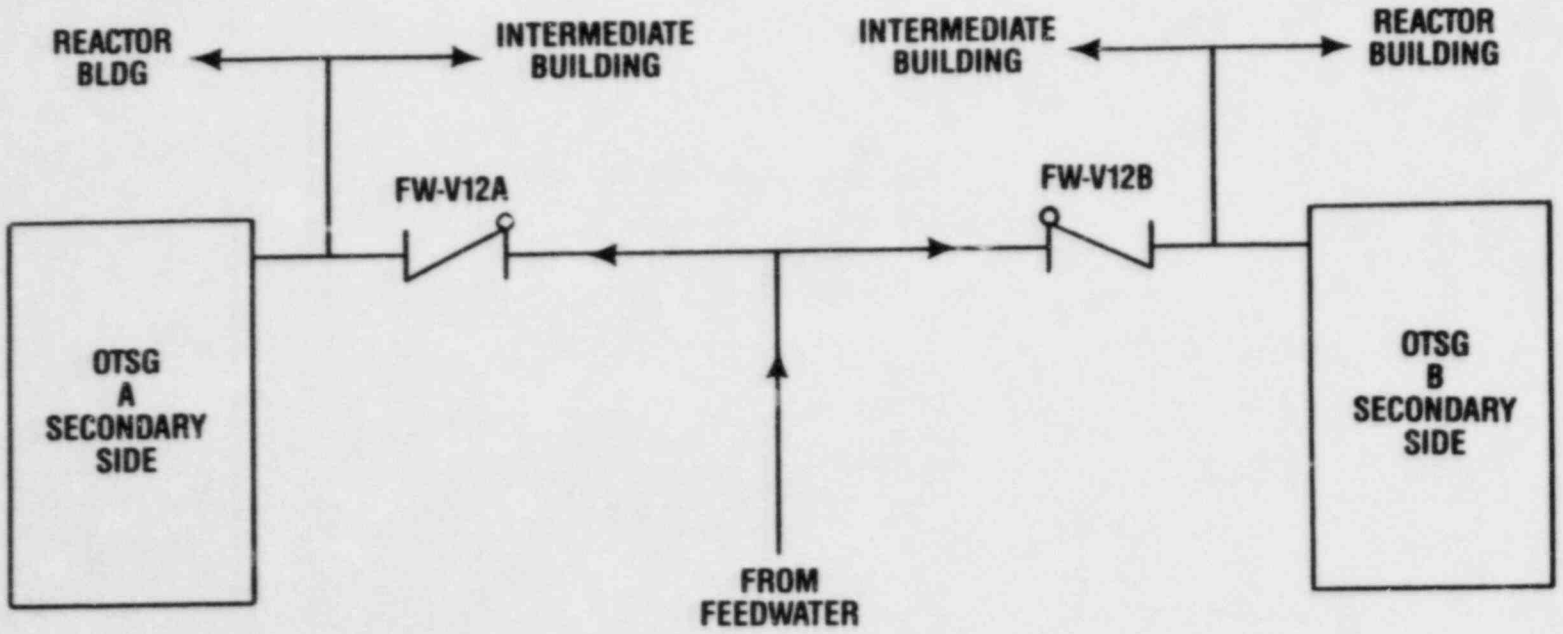
COMPONENT IDENTIFICATION: FW-V12A/B

ASME SECTION XI REQUIREMENTS: CHECK VALVE EXERCISING

COMPONENT FUNCTION: OTSG ISOLATION

BASIS FOR EXEMPTION REQUEST:

- VALVE INSPECTION PERFORMED WITH NO VISUAL DAMAGE (APPROX. 1981).


REACTOR BLDG
INTERMEDIATE BUILDING
INTERMEDIATE BUILDING
REACTOR BUILDING
FW-V12A
FW-V12B
OTSG A SECONDARY SIDE
OTSG B SECONDARY SIDE
FROM FEEDWATER

FEEDWATER

OPEN ITEM: B-5

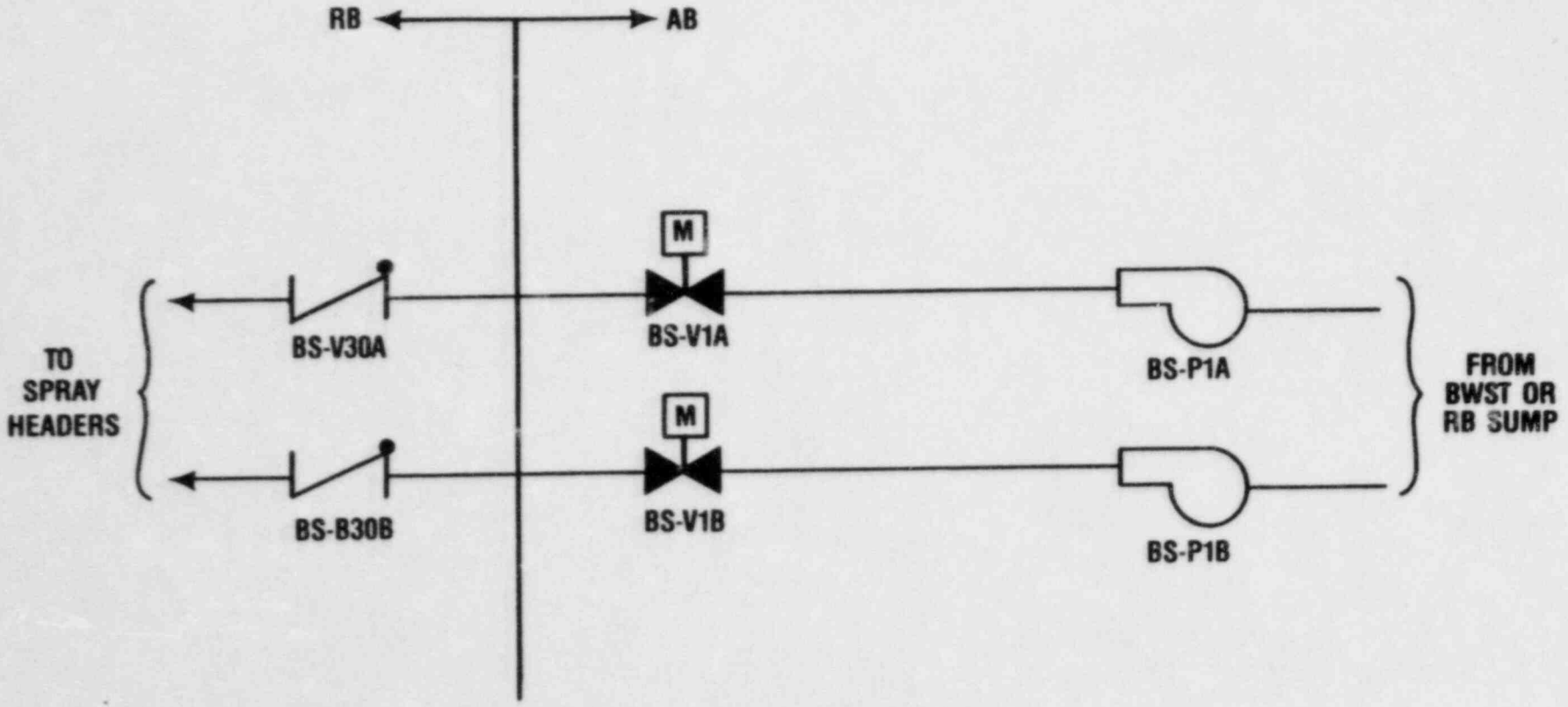
COMPONENT IDENTIFICATION: BS-V30A/B

ASME SECTION XI REQUIREMENTS: FULL STROKE TESTING

COMPONENT FUNCTION: RB SPRAY DISCHARGE CHECK VALVES

BASIS FOR EXEMPTION REQUEST:

- IF FULL FLOW TESTED RB SPRAY WILL ACTIVATE AND SPRAY DOWN ENTIRE REACTOR BUILDING.
- PART STROKED BY PLANT PROCEDURE 1500-3A.



REACTOR BUILDING SPRAY TO SPRAY HEADERS

ENCLOSURE 4

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 4, 1984

Docket No. 50-289

MEMORANDUM FOR: John F. Stolz, Chief, Operating Reactors Branch #4, DL

FROM: Owen O. Thompson, Project Manager, Operating Reactors Branch #4, DL

SUBJECT: FORTHCOMING MEETING WITH GPU NUCLEAR (THREE MILE ISLAND 1) INSERVICE TESTING (IST) FOR PUMPS AND VALVES

Time & Date: Tuesday, May 15, 1984
10:00am & 2:00pm

Location: Maryland National Bank Building, Rm. 6507
Bethesda, Maryland

Purpose: Morning - To discuss IST open items as outlined in NRC memos dated April 8, 1982 and May 2, 1984 (attached).

Afternoon - To resolve open items -- licensee and NRC staff, with management assistance.

Requested Participants: NRC Morning -RBosnak, FCherny, JPage, OThompson;
Afternoon -JKnight, GLainas, JStolz

Licensee-JColitz, RBarley, JBashista, CSmyth, et al

Owen O. Thompson, Project Manager
Operating Reactors Branch #4, DL

cc: See next page

Dupe PDR
~~8405180040~~