UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

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Title: BRIEFING ON CURRENT STATUS OF INFORMATION REGARDING THE POSSIBLE USE OF SUBSTANDARD COMPONENTS IN CONCLEAR POWER PLANTS

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2	NUCLEAR REGULATORY COMMISSION
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4	BRIEFING ON CURRENT STATUS OF INFORMATION REGARDING THE POSSIBLE USE OF SUBSTANDARD COMPONENTS IN NUCLEAR POWER
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7	Public Meeting
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10	THURSDAY, JULY 21, 1988
11	One White Flint North
12	Rockville, Maryland
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14	The Commission met, pursuant to Notice, at
15	2:00 p.m.
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17	COMMISSIONERS PRESENT:
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19	LANDO W. ZECH, JR., Chairman of the Commission
20	THOMAS M. ROBERTS, Commissioner
21	KENNETH M. CARR, Commissioner
22	KENNETH C. ROGERS, Commissioner
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NRC STAFF AND PRESENTERS SEATED AT COMMISSION TABLE: S. Chilk W. Parler V. Stello T. Murley B. Grimes AUDIENCE SPEAKERS: F. Rosa L. Shao B. Hayes * * * * *

1 PROCEEDINGS 2 CHAIRMAN ZECH: Good afternoon, ladies and gentlemen. Recently, through the efforts of the NRC Staff, the NRC 3 Licensees and some affected manufacturers, it has come to the 4 5 Commission's attention that some substandard equipment and 6 material may have been purchased by some of our reactor plant 7 licensees who understand that it would appear that counterfeit 8 markings may have been placed on some of this equipment.

9 Today, the staff is going to brief the Commission on 10 the information developed to date on this matter. The 11 utilities, using the NUMARC organization, are aware of the 12 problem and are conducting a major effort to define the 13 problem, to develop remedial actions and to develop appropriate 14 mechanisms to preclude recurrence of the problem. The NRC's 15 Office of Investigation is also conducting its own independent 16 investigations of these matters.

This briefing today will address the significance of this substandard equipment as it affects operations of NRC licensed facilities. The staff is expected to discuss whether or not any regulatory action is needed at this time. The staff should also discuss how it intends to proceed to address these issues in the future, as well as the efforts of the utility industry regarding these issues.

The NRC has already contacted the Office of
Management and Budget about this issue because the substandard

equipment issue may involve government agencies other than the NRC. We will be working with the Office of Management and Budget in helping assure that information discovered through the NRC efforts is appropriately disseminated within our government.

Do any of my fellow Commissioners have any opening
remarks before we begin this afternoon?

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[No response.]

If not, Mr. Stello, you may proceed.

10 MR. STELLO: Thank you, Mr. Chairman. In a moment I 11 will turn to Dr. Murley to give us an overview of this subject 12 and a detailed briefing following that by Mr. Grimes. Before I do, what I thought may be appropriate is to first make clear 13 14 that we view the problem as a serious problem, one for which 15 there are clear regulatory implications that we're going to have to deal with. But more significantly, there is a clear 16 17 industry problem. It is the industry, after all, who purchase 18 the equipment and install it and operate it, and that process 19 is the process through which this substandard material has 20 gotten by one way or the other.

The industry -- and we've had considerable conversations with them -- is now taking this problem equally seriously. They have organized special working groups to understand the true implications of this; where in their process in terms of procurement, receipt inspection and

verification they need to augment to deal with the problem and
 preclude any recurrence of the problem, and they are in the
 process of establishing those kinds of groups to deal with the
 broader issues.

The specific issues of which you will hear today --5 6 there are already in place various working groups that have had 7 workshops and meetings to develop in situ testing to detect, 8 for example, flanges, which you will hear about during the briefing, and to deal with the issues, a rather broad 9 10 collection of issues, as they arise. NUMARC is already in the 11 process of establishing working groups for this purpose, 12 relying on industry resources which they will have to develop.

13 We are convinced that the industry is prepared to 14 deal with this crisply, and what resources it is necessary to 15 bring into the working groups I am convinced the industry will 16 bring them in and deal with the issue. We, of course, have the 17 same commitment and we are devoting considerable resources to 18 the problem now, and to the extent we need to augment them we 19 are in the process of doing that and we will augment them as 20 necessary to make sure we deal with the problem.

I am satisfied now that I believe we have a course of action laid out to deal effectively with the problem, although I am not able to tell you today how long that's going to take because we are still, as you will understand from the briefing, in the early stages of identifying some of the kind of

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equipment that's involved.

With that brief introduction, let me turn to Dr. Murley who will start by giving you an overview of the safety implications of this and what our view and interpretation is of the kinds of equipment that's involved and what it might mean to safety.

With that, let me ask Dr. Murley to begin.

8 CHAIRMAN ZECH: All right, thank you very much. You 9 may proceed.

10 MR. MURLEY: Thank you, Mr. Chairman. As this issue 11 unfolded over the past several months, we were of course 12 dealing with each issue as it came along, and this goes back 13 actually to 1986 when we first learned of the potential problem 14 with falsified fasteners. It then went on to flanges and 15 fittings and lugs. We are now dealing with electrical 16 equipment and small diameter valves, and perhaps I think Bryan 17 will even talk about some substandard pumps, for example.

18 We have now pulled all of this together in an outline 19 of an Action Plan for dealing with the area in a comprehensive 20 way -- the whole area of substandard materials and equipment. 21 Bryan Grimes is the Division Director in my office that is 22 responsible for this, and Bill Brock is the Branch Chief of the 23 Vendor Branch who is responsible. I have taken steps to 24 augment Mr. Brock's staff. We expect that this will be a major 25 emphasis in NRR for quite some time to come, and so I've taken

1 the steps to augment his branch.

2 With regard to the elements of the plan, briefly, we are of course coordinating very closely with the Office of 3 Investigation. We have issued Information Notices and 4 Bulletins, which I understand have been made available outside 5 the room here. We've communicated with NUMARC, as Vic Stello 6 7 said. We've coordinated with other federal agencies. We are 8 now developing the scope of the electrical equipment problem to make sure that we understand just how broad that issue is. 9 10 We've done some safety studies and analysis, which I'll describe in a moment. And then finally, we're beginning to 11 12 look at the longer-range issue of how we need to modify our 13 regulations to deal with this issue in the longer run to 14 prevent it from recurring.

15 The nuclear quality assurance system we believe will 16 detect a great majority of deficiencies in materials and 17 equipment that might come to a plant. For instance, much of 18 the substandard equipment that we'll be discussing today was 19 found by reports to the NRC. Not all of it, of course, but 20 some of it. We require periodic functional testing of safety 21 systems as part of our routine safety quality assurance 22 Therefore, we believe that the chances are high that program. 23 the combined quality assurance program and the testing programs 24 would detect any potential serious safety condition caused by 25 substandard equipment in nuclear power plants.

1 Still, we acknowledge that the quality assurance 2 system is not perfect; it relies heavily, for example, on paper 3 audits and prototype testing. It is aimed at finding errors; 4 it's not aimed at detecting fraudulent equipment. That's why 5 we are taking this matter seriously, that's why we're putting 6 the resources into it that we are, and we are considering 7 whether we need to make changes in our regulations. As I said, 8 it's too early to tell where that will lead us.

9 Let me speak now for the various issues that we have 10 dealt with. The first one is fasteners; it's the one we've 11 been dealing with the longest. The fasteners used in nuclear 12 power plants have large safety margins. Typically, the design 13 margin is at least a factor of three, but it can be as much as 14 a factor of 10. The allowable stresses are more conservative 15 than those for mechanical components, and usually the bolted connections are structurally redundant; that is to say, the 16 17 design almost always uses more bolts than is required strictly 18 by its -- that is to say, it can actually lose some bolts in 19 service and it still will not have any effect in the function 20 of the component or equipment.

For pressure-retaining applications we require preservice and in-service hydrostatic pressure tests. In addition, we have found, through a fairly extensive sampling program, that of the tests performed on fasteners, only a small percentage, less than one percent, of those fasteners were

significantly out of specification. So this small percentage
 we are confident can be adequately covered by the design
 margins that I referred to.

4 So the staff has concluded that the non-conforming 5 fasteners are a quality assurance issue but they're not a 6 safety issue.

With regard to flanges and fittings and lugs, here
again we find large safety margins. The allowable stresses
typically have margins of a factor of three to four, if one
uses the ASME Section III code or the B31.7 nuclear piping
code, or B31.1 for that matter.

Again, for flanges or fittings, if they're in pressure service we require that pre-service and in-service hydrostatic pressure tests equal to one and a quarter times the design pressure be carried out. That gives us confidence that there are no major fundamental flaws in the system.

The materials are generally quite ductile. Based on operating experience, we believe that the probability of a sudden break for flanges or fittings is very low. We have a lot of data that shows us that it's most likely that these would leak before they break, even if they were seriously weakened.

Based on the experience that we have, the analysis that we've done, -- here again for flanges and fittings and lugs -- we have concluded that there is no immediate safety concern. We will continue, of course, to follow this issue
 carefully.

3 The question with regard to electrical equipment --4 and here we're talking trip breakers, I mean electrical 5 breakers, and perhaps some other equipment that Bryan will 6 outline -- we are not as far along in our safety analysis of 7 electrical equipment because we're still determining the scope. 8 Nonetheless, we have looked at what it could possibly mean if 9 some of this equipment were to find its way into nuclear 10 plants.

11 The primary concern would be that it would find its 12 way into non-safety related equipment, typically in the 13 balance-of-plant systems. Here, the concern is that it could 14 cause transients and thereby challenges to the safety systems. 15 We do have safety systems that are safety grade; these systems 16 are redundant, we do require frequent testing of these systems. 17 And therefore, we think it's unlikely that there is a serious 18 safety concern, but I'm not as confident yet because as I said, we have not totally determined the scope of that. And in 19 20 addition, we haven't concluded all of our safety analyses on 21 electrical equipment.

We still must continue to follow the electrical equipment problem quite closely.

In summary then, for all of the equipment where we
found substandard material, substandard equipment, our

conclusion is that we must continue to vigorously deal with the problem but that there is no immediate safety issue. We are proposing no actions, no regulatory actions beyond those that we are describing today.

5 That completes my summary and Bryan Grimes is going 6 to talk in more detail.

7 CHAIRMAN ZECH: Thank you very much. You may8 proceed.

9 MR. GRIMES: Thank you. May I have the first visual, 10 please.

[Slide.]

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12 I'd like to first mention what the overall plan of 13 action is in dealing with these problems. First and foremost, 14 we want to determine what the facts are, develop the 15 information and provide that to the licensees, and of course we 16 expect the licensees to be generating some of this information 17 themselves. But it is the licensees' responsibility to assess 18 the safety significance in each particular case and to take 19 appropriate action to correct the deficiencies.

We will be issuing information notices to that purpose and also, when we feel it is of significance to safety, we will also require responses through bulletins issued to the nuclear industry with specific timeframes in which actions must be taken.

The second aspect of the overall plan is to cooperate

1 with other federal agencies and state agencies, and this has 2 two aspects. One, developing some overall coordination mechanism to provide transfer of information between the 3 agencies and some commonality of action; and the second is when 4 we find that federal or state agencies are customers of the 5 companies who are suspected of misrepresenting their product, 6 7 we will directly inform those agencies, and we have done that in the case of the electrical equipment. 8

9 The third aspect of the overall action plan is to 10 investigate the circumstances and take appropriate action. 11 This includes our Office of Investigation doing an independent 12 look at particular aspects of these things, and also 13 enforcement action as appropriate.

And finally but certainly not least important, is to assess whether there are lessons here for the overall regulatory framework or the industry approach to procurement, and that is a longer-term thing but it's certainly of very great importance.

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[Slide.]

I'd like to go to the second visual and just outline the briefing today. We'll scope the problem, discuss some of the existing programs in quality assurance and the ASME code which are meant to detect and prevent substandard products. Third, give some specific examples of the equipment that's been affected by these recent problems. And fourth, mention some specific coordination with other federal agencies, and then
 deal briefly with overall problems and issues that come out of
 this.

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[Slide.]

5 In your handout package you have both the overhead 6 visuals and some additional points that I'll be talking to that 7 will not go up on the screen.

8 First, the scope of the problem. It essentially extends potentially to all materials, equipment and components, 9 as they are subject to counterfeiting or substitution of 10 materials along the procurement route. Our existing quality 11 assurance and vendor audits are generally structured to confirm 12 13 the quality of the products and to detect substandard 14 components due to errors or mistakes and generally do not have 15 a focus on fraud or intent to deceive. Of course, any good substantive audit should run across obvious instances of fraud 16 17 as well, and we expect that the overall relationship between a 18 utility and supplier should be such that there is confidence 19 that these things are not occurring.

As Dr. Murley mentioned and Mr. Stello mentioned, in the last couple of years we've run unto a number of additional instances of substitution or counterfeiting that have been primarily identified through our process of allegations; when individuals in the industry find something wrong, they have an ability to tell us about it and we look into it and they look 1 into it.

2 The underlying cause for this may be that the 3 shrinking nuclear market has caused the larger manufacturers to 4 leave the nuclear market or reduce their product lines which are offered under nuclear production standards. A larger 5 6 fraction we found in our inspections of these safety-related 7 components are being procured as so-called commercial grade and 8 then specifically upgraded to safety-related use, because often 9 the products are not available on a nuclear product line.

10 CHAIRMAN ZECH: Do we know whether the utilities, in 11 their quality assurance programs, do we know whether they have 12 any procedures for auditing material, components that they may 13 purchase?

14 COMMISSIONER ROBERTS: Straight out of Appendix B to
15 Part 50, and it is very explicit.

MR. GRIMES: They are required to have auditing programs. In the past we have found that these audits tend to be more paper than substance, and we have been concerned about cases where we have visited the suppliers and found things that the immediate preceding audits of the licensees have not found. And we issued an information notice this spring and pointed out several specific instances of that condition.

23 So one of the past problems has been inadequacy of 24 the audits that have been performed by licensees.

25 CHAIRMAN ZECH: But it is a requirement that they

1 have such an audit.

2 MR. GRIMES: Yes, they must have such an audit. 3 CHAIRMAN ZECH: Go ahead.

MR. STELLO: Let me make a point. We have found 4 cases where a legitimate company, if audited, would be shown to 5 be satisfactory in producing electrical equipment such as 6 7 breakers. But there are companies who take surplus scrap, breakers, refurbish them, put counterfeit labels -- they are in 8 fact an identical-looking breaker in appearance because they 9 10 have the same case for the breaker as the original 11 manufacturer, put their labels on and then send them to a 12 distributor. So if you went out and looked at that 13 manufacturer of that particular breaker and their company, they 14 would indeed have a program that's okay. But if you're not 15 aware that this particular breaker found its way through this 16 company that refurbished it, you would not know that. So the 17 utility could in fact be getting a breaker which is, by 18 definition, fraudulent, but in every appearance is not.

19 COMMISSIONER ROBERTS: On the breakers, these
20 obviously are not covered by the ASME code. What is this, IEEE
21 standards?

22 MR. STELLO: General principles for all the 23 electrical equipment would be under IEEE specs, or for 24 commercial grade equipment it would probably have the 25 underwriter labs' seals on them. That is part of the problem.

COMMISSIONER ROBERTS: I show my ignorance. I know a hell of a lot about the ASME; I don't know anything about the IEEE. Do they have any sort of enforcement power over the people that they authorize to manufacture to their specification? Because the ASME will jerk your stamp if they find you doing something --

MR. STELLO: I don't know.

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8 MR. GRIMES: I believe there is not a parallel system 9 in the IEEE. They publish standards which are adopted by the 10 nuclear industry.

MR. ROSA: Faust Rosa, Chief of the Electrical 11 12 There is a certification process associated Systems Branch. 13 with the underwriters' laboratory program. They have a 14 specific test standard which they implement, and then they have 15 a follow-up program on an audit basis which makes inspections 16 of manufacturers and manufacturers' testing facilities. And 17 should the manufacturers and their testing facilities fall 18 below the standard, then they remove the UL certification. 19 COMMISSIONER ROBERTS: Has that happened? 20 MR. ROSA: It has happened, yes, sir. 21 CHAIRMAN ZECH: Thank you very much. Let's proceed. 22 COMMISSIONER CARR: But the point I understand that 23 you're trying to make is you can inspect the legal quy's 24 program and it's great; it's the illegal guy in his garage that 25 you don't know is putting out the same brand.

1 MR. STELLO: With the forged label that indicates it 2 has that manufacturer's markings as well as the UL stamp on it. 3 And that's where the vendor inspection clearly won't pick that 4 up. 5 CHAIRMAN ZECH: But should the licensee's quality 6 assurance program pick that up? 7 MR. GRIMES: I wouldn't give it a very great chance

8 of doing it.

CHAIRMAN ZECH: It may not.

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10 COMMISSIONER CARR: It depends on the receipt
11 inspection program, I would think.

12 MR. STELLO: In the case where we got the 13 information, where it began, Diablo Canyon, that is in fact how 14 it was picked up; by the receipt inspection, where the receipt 15 inspection and the conducted tests showed that the particular 16 relays did not meet the specifications. That is, in fact, in 17 that case how it was found. So the answer to your question is 18 yes, and the specific example that started the bulk of this was 19 in fact picked up by that very process. But can you say it 20 will do them all is a little difficult. Will it catch all of 21 them? I would be reluctant to say yes. But it can. In the 22 one instance where this began, that's how it began; by receipt 23 inspection by the vendor.

24 MR. GRIMES: I believe the tests at Diablo were 25 partially initiated by an allegation from the manufacturers whose name was on the package, and additional tests were done
 to determine that the breakers were substandard.

MR. MURLEY: If I might just add a point, it may be obvious from this discussion but it's unlikely that you can find it from a visual type of inspection or an inspection of records. It's very, very unlikely that that would define --

7 CHAIRMAN ZECH: But the quality assurance inspections 8 themselves that the licensees are required to do, are they 9 specific enough to require more than a visual inspection? Are 10 they more than a paper inspection? In other words, is 11 equipment occasionally tested, a certain percentage of it 12 tested?

MR. MURLEY: Sometimes -- they do test for dimensional checks, they make those kinds of tests. But it's not usual in my experience that they do actual in-service type testing. Or if it's an electrical piece of equipment, for example, it's not usual that they test it in electrical service.

MR. STELLO: Mr. Chairman, I think one of the big issues that comes out of this is receipt inspection. There is a program of receipt inspection, in some cases for particular components it's fairly comprehensive; for rather routine commercial grade equipment it is less, it is audit. And that is one of the questions that we will have to look at, and the industry itself has got to look at -- whether the receipt

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inspection is in fact comprehensive enough.

The problems that we see clearly suggest that is an area that needs further looking. I don't believe we are prepared today to tell you that we are satisfied that that receipt inspection is enough; perhaps to the contrary, to suggest that there are probably things that need to be done in improving receipt inspection by licensees.

8 MR. GRIMES: As we will mention later, there is we 9 believe an over-reliance on the paper rather than on the actual 10 testing.

CHAIRMAN ZECH: It is certainly something that has
 got to be looked into.

13 MR. STELLO: We intend to.

14 COMMISSIONER CARR: It's interesting to me that of 15 the purchasers of this equipment, one utility went out and looked at his operation and decided not to purchase from him. 16 17 So there's a lot, I guess, in going and looking at your vendor 18 before you buy him because they obviously saw something they 19 didn't like and they did not contract with him. But it's 20 interesting that of the ones in that eight or ten there's only 21 one guy that decided he didn't want to do business with him. 22 MR. STELLO: That's correct. 23 CHAIRMAN ZECH: All right, can we proceed.

24 MR. GRIMES: With respect to existing programs -- and 25 we've discussed this somewhat already -- I'd like to just briefly go through the main characteristics of the Appendix B
 program and the ASME system with visual number four.

[Slide.]

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The Appendix B system applies to all safety-related components and nuclear power plants; it sets forth fairly comprehensive but very general requirements with respect to quality assurance, as an appendix to 10 CFR Part 50.

8 The licensees are responsible for assuring that all 9 safety-related components comply with these quality 10 requirements. The components procured from vendors who use a 11 nuclear production line in accordance with Appendix B can be 12 accepted subject to licensee audit of their program 13 implementation, and whatever additional inspections are 14 determined necessary for the particular component on receipt.

15 Safety-related components may also be procured from 16 vendors that do not have a safety-related Appendix B program as 17 long as the licensee does the additional inspections and tests 18 that assure the equivalent quality. And as I mentioned, this 19 is getting more and more prevalent in the nuclear industry as 20 the larger manufacturers either stop carrying product lines or 21 do not participate in the business.

The alternative concept is called a commercial grade dedication process, and I'll describe that in a few minutes. First, let me just briefly hit points on the ASME system.

[Slide.]

For key materials in the nuclear power plant, the Section III of the ASME code contains testing, fabrication, installation, material examination, testing and QA requirements for the key components -- for example, pressure boundary components and internals and supports.

6 The ASME has an accreditation system, and the 7 organizations with the overall responsibility for those 8 functions must be surveyed and accredited by the ASME. The 9 ASME survey teams review and approve the vendors' quality 10 assurance programs.

11 A question was raised earlier about the IEEE. The 12 IEEE itself does not have a parallel program that publishes 13 standards; does not, but the underwriters' laboratory, as Mr. 14 Rosa mentioned, have an accreditation program.

The NRC regulations adopt the ASME code for the key materials and require that licensees also audit the implementation of the ASME programs. Again, as in the case of Appendix B, the ASME surveys and licensee audits are intended to detect errors and may or may not detect fraudulent activities.

21 [Slide.]

The commercial grade dedication process -- this applies primarily to electrical components and other mechanical components such as pumps or valves. The commercial grade equipment is equipment that is not unique to a nuclear

1 facility. The specification does not require invoking the ASME 2 code or an IEEE standard, which the NRC may require. So it can be procured from a manufacturer's catalog. The dedication 3 process requires the utility to specify specific technical 4 attributes and to determine what attributes are critical to 5 performing the safety function of that particular component, 6 and then an acceptance process to assure that those 7 8 characteristics are met.

We found in practice that oftentimes there is an 9 10 over-reliance on a prototype test of a particular model number 11 and then an adoption of a similar model -- or the same model 12 number, which may or may not be the identical piece of equipment, as the basis for allowing something to become 13 14 commercial grade. And if there has been some substitution 15 process, certainly the utility is vulnerable to obtaining a 16 substandard product.

17 COMMISSIONER CARR: Does that require each utility to 18 do their own testing, or can one utility do the test and then 19 it carries for anybody else who wants to buy it as long as it's 20 the same product?

21 MR. GRIMES: A test report can be used by any number 22 of utilities. For example, in the equipment qualification it's 23 common to have a vendor --

24 COMMISSIONER CARR: I guess that's where you are on25 the cable problem.

MR. GRIMES: Yes. Number five, please.

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I would like to just list and then briefly go through some of the specific examples of misrepresented equipment. I won't dwell --

6 CHAIRMAN ZECH: Before you go on to that, to what 7 extent has substandard equipment been identified that was used 8 in safety grade applications?

9 In terms of materials, one of the MR. GRIMES: 10 examples I'll discuss on ASME materials, there's a large amount of it used in safety-related applications. The flanges and 11 12 fittings that we are most concerned about are in ASME Class 2 13 and 3 components and systems in nuclear power plants, and this 14 ranges from a plant having no such fittings to a plant having tens of fittings, and in one case it's reported that one plant 15 16 may have 3000 such fittings in safety-related applications.

17 CHAIRMAN ZECH: Let me get it straight. How does 18 that relate to what Dr. Murley said about no immediate safety 19 concerns when you're telling me that we've got a lot of safety 20 concerns -- safety grade applications?

21 MR. GRIMES: I think that's a good point and we have 22 to separate the materials case from the electrical components 23 case.

24 CHAIRMAN ZECH: Let's do that.

25 MR. GRIMES: In the materials case we have a large

number of pieces in systems but the margins are so large here, 1 2 both for fasteners and for these materials, that the degree of 3 substandard equipment we have found does not give rise to 4 immediate safety questions. So we have found typically hardness 5 testing of in situ situations to lead us to believe that 6 perhaps the tensile strength may be 20 percent less than design, but we have factors of three or four applied in the 7 8 design of these components so that is not a very large -- it's 9 an infringement on design margin that we do not like to see and 10 we will require some specific measures in the long term, either 11 detailed analyses or replacement, but it does not give rise to 12 any fear that things would be immediately failing in power 13 And indeed, we don't appear to have had a history of plants. 14 these types of things failing.

15 CHAIRMAN ZECH: So you're agreeing with Dr. Murley's16 assessment, is that right?

17 MR. GRIMES: Yes, very much.

18 The other aspect to your question is on the 19 electrical equipment, and there it's less evident that 20 equipment is in safety systems. For example, the five company 21 case that I'll talk about later appears to be primarily 22 commercial grade material sold to utilities and to nuclear 23 power plants, and we still have to develop the facts as to what 24 extent that material found its way, by a dedication process, into safety grade systems. So at this point we really don't 25

have evidence that there is much at all from those five companies in safety grade systems, but the potential is there so we're taking it seriously and we're tracking it down to find out.

5 The other aspect of the electrical components is the 6 PMS case which I'll mention later, which was specific material 7 sold for safety-related applications, and there we will have to 8 -- we will be asking utilities to specifically determine 9 whether that got installed and what the safety significance of 10 its use is.

11 MR. STELLO: For those who might not have understood 12 this, and I think it's important to separate -- in the case of 13 the breakers for which they have documents that suggest that 14 they are suitable for Class 1E service, those, as best we can 15 determine, are in fact new, bona fide breakers and not 16 subjected to the process of refurbishment where you have 17 questions about whether or not they were even suitable as 18 commercial grade. There's a big difference between the two 19 breaker problems and I think it would be better maybe to 20 highlight that as you go through specific examples, one at a 21 time.

22 MR. GRIMES: Yes, as I go through I'll try to 23 differentiate between those things.

CHAIRMAN ZECH: One last thing before you go off
that. How do we audit, or do we audit? How does NRC audit for

and evaluate these dedication process that you're discussing?

2 MR. GRIMES: Well, we have specific inspection 3 procedures, and this week for example we have a vendor 4 interface and procurement inspection at Maine Yankee. That is 5 done over about a three-week period.

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CHAIRMAN ZECH: That's our own people.

MR. GRIMES: That's our own people, checking on
specific utilities. We do three or four of those a year on a
spot-check basis, and then if we find problems in a particular
dedication process we'll bring that to the attention --

11 CHAIRMAN ZECH: But we're doing that, as you say, on 12 a spot-check basis; that's auditing, we know we're not doing a 13 very high percentage so we are indeed relying on the utilities, 14 the licensees, to do a more comprehensive audit and 15 certification process.

MR. GRIMES: That's correct. In the last couple of years the industry has become more active in this regard and have published some suggested guidelines on this process which we believe, if followed, will indeed upgrade the process.

20 CHAIRMAN ZECH: All right, let's proceed.

21 MR. GRIMES: Briefly we mentioned fasteners, ASME 22 materials, a couple of components and fittings, and then a 23 couple of examples of electrical equipment. Fasteners, we've 24 had extensive testimony over the last two years before 25 congressional committees -- I believe the Commission is fairly familiar with the fastener issue, and Dr. Murley briefly
 discussed the safety margins available there, and we don't see
 it as an immediate safety problem.

[Slide.]

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5 The ASME material question has been going on for several months now, and that is a case where certified material 6 7 test reports were supplied with materials to indicate that it 8 was ASME material, whereas it was actually commercial grade 9 foreign material. The certification supplied said that it was 10 domestic material from specific steel mills and forging shops. 11 These companies apparently did machining operations on this 12 material, particularly for flanges, and then passed them on 13 with false paper.

14 COMMISSIONER CARR: By foreign you mean non-U.S.
15 made?

MR. GRIMES: Non-U.S. made. The problem encompasses carbon and stainless steel pipe fittings and flanges and carbon steel plate and bar stock. These companies apparently had manufacturing capability to only provide flanges, fittings, plate and lugs, and based on our records review to date we have not found materials beyond that.

When we initiated the bulletin on this problem we were not sure whether the material properties would be substandard or whether the paper was the only thing that was the problem. As it turns out, as some testing has been done, while some material has met ASME requirements for strength, there have been other materials as low as 60 percent of required tensile strength. Typically, that we found in plant has not been lower than about 20 percent below, or 80 percent of the required tensile strength as inferred from hardness tests.

7 The Action Plan involves extensive record review, which we are just completing this week, to determine customers 8 9 primarily of this material so that we could pass that 10 information on to the industry and they can take appropriate 11 action to track down the actual pieces of equipment. The NRC 12 in the February timeframe subpoenaed numerous records and got a 13 large number of boxes of material that we have been since 14 reviewing.

15 We issued a bulletin to require specific action by 16 the industry in May. We have been working actively with 17 NUMARC, and NUMARC has indeed been very active in coordinating 18 an industry response. They are coordinating a random sample of 19 300 pieces to be destructively tested to provide correlations 20 with the hardness tests that are being done on the in-place 21 equipment. So we meet with NUMARC tomorrow to hear some initial results of those tests and the initial records reviews 22 23 by utilities.

CHAIRMAN ZECH: Could you tell us a little about the
initiatives that NUMARC is doing. What are the utilities, the

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industry doing? Can you elaborate on that a bit?

2 MR. GRIMES: Yes. NUMARC has developed for this particular issue an ad hoc group with a staff member assigned 3 in their Washington offices to meet periodically and to 4 coordinate the industry activities. We have used NUMARC to 5 provide information to utilities through NUMARC. INPO has put 6 7 out information on a rapid basis on its network system. And NUMARC is active in collecting this information and developing 8 a database from which perhaps we can deduce some overall 9 10 lessons on the extent of the problem and determine the safety significance, faster than we could go to individual utilities 11 and wait until the bulletin expiration date is up. 12 So we're 13 getting more rapid feedback from the industry than we otherwise 14 would in this case.

15 CHAIRMAN ZECH: Mr. Stello, are you satisfied that 16 the utilities and the industry is responding satisfactorily to 17 this serious problem?

MR. STELLO: Yes, sir. I would augment a little what Bryan has already said. The industry has developed a test in situ so they can test the flanges in place; they have been verifying that the testing is appropriate, as Bryan already mentioned, by correlation to actual data from flanges from the facilities. This is being coordinated in the NDE lab in Charlotte, North Carolina.

They have hired Bechtel Corporation to get a generic

1 database to understand what more they need to deal with the 2 They have formed a working group where they are problem. 3 asking now these same questions you have been asking of us 4 about their procurement system; is their receipt testing okay, is their procurement system for purchasing okay, how might they 5 They're looking very hard at 6 need to change it or upgrade it. 7 the broader generic implications, not just because of flanges as Bryan mentioned, but in the broader context of some of the 8 9 other problems you will hear.

I am persuaded that the industry now recognizes that they indeed do have a serious problem to deal with both for the short term and the generic problem over the long haul to make sure that we do not have a recurrence of this in the future.

CHAIRMAN ZECH: All right, thank you, let's proceed.

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Just two more points in the Action Plan. 15 MR. GRIMES: 16 We are, NRR, is preparing a safety basis and testing positions; 17 in other words, to what extent do additional destructive tests 18 or hardness tests have to be performed on this material to 19 reach an acceptable level of confidence in the materials that 20 are in plant. And we are considering an additional bulletin 21 supplement with the specific requirements for testing overall 22 for the industry.

23 CHAIRMAN ZECH: When is that going to come out? Do24 you have any estimate? That bulletin?

25 MR. GRIMES: Perhaps Mr. Shao could answer.

1 MR. SHAO: Larry Shao, I'm the Director of the 2 Division of Engineering and Systems Technology, NRR. The 88-05 3 was sent out a couple weeks ago and we are writing another 88-05 which is the so-called Acceptance Criteria for Testing and 4 5 also for Short-Term Operations. CHAIRMAN ZECH: Will that be a bulletin? 6 7 MR. SHAO: It will be a bulletin, yes. 8 CHAIRMAN ZECH: And what will it cover? 9 MR. SHAO: It will cover all the testing acceptance 10 criteria. 11 CHAIRMAN ZECH: For what? 12 MR. SHAO: For the flanges, fittings and lugs. 13 CHAIRMAN ZECH: How about the circuit breakers --14 MR. SHAO: The circuit breakers will -- another bulletin will be out in about two weeks; a separate bulletin. 15 16 CHAIRMAN ZECH: So we have two bulletins underway 17 being prepared now. MR. SHAO: Yes. So 88-05, there will be another 18 19 supplement bulletin for -- we already issued a bulletin on 20 flanges, fittings and lugs, but we will give some more guidance 21 to the industry. And electrical equipment will be out in about 22 two weeks. 23 CHAIRMAN ZECH: All right, fine. Are you satisfied,

24 Mr. Stello, that we have published the proper information 25 notices and bulletins?

1 MR. STELLO: I am satisfied that we are getting them 2 out as soon, as quickly with sufficient information for the 3 industry to work with. I am also pleased that the industry is 4 setting up a group for them to help us to develop information 5 faster from the sources. And as you're going to hear a little 6 later, new sources are being identified on a somewhat 7 continuous basis. So as we try to understand from these 8 allegations whether there is anymore to that, we're certainly 9 needing to augment the ability of the staff to go out and 10 understand that kind of a problem and get us that kind of 11 information.

12 So I'm satisfied both from the point of view that the 13 system and cooperation we have together now with the industry 14 working that problem and providing us with that kind of input, 15 as well as our ability to go through and analyze the 16 information and evolve what additional guidance and 17 requirements might be needed, that they are now being done on a scale that I'm satisfied is as quickly as we can possibly do 18 19 it.

CHAIRMAN ZECH: All right, fine. I fully appreciate the fact that we don't want to put out a bulletin that lays requirements on unless we really know what we're doing, and I appreciate the fact that that is what you're working hard to understand and bound the problem before you lay on the requirements. But in the meantime, I think it's important that

the utilities have all the information available and can be working the problem, as you're just telling us that they are already doing through the NUMARC organization.

But the information must get out and then we must 4 5 decide from the regulatory standpoint what we must do about it. And I recognize that is what you're trying to do with the 6 7 bulletin. I do think that -- and I appreciate the fact, too, that you've had a very demanding schedule laid on the staff in 8 order to do these things as fast as possible, but it is a 9 10 serious matter and I think it does require augmentation of the 11 vendor group and the guality assurance group under Mr. Grimes, 12 as Dr. Murley has pointed out.

So I would commend you to, as far as the NRC effort 13 14 is concerned, to make sure you have the people you need and 15 then to continue to work real closely with the utilities so that they have the information and we can follow it through to 16 17 see if indeed there are any really safety-related matters to be 18 concerned with. This is, of course, what we are primarily 19 concerned with; do we have a public health and safety problem or not. So far, I guess you're telling us that as far as you 20 21 know, we do not. Is that correct?

22 MR. MURLEY: Correct.

CHAIRMAN ZECH: But with the uncertainty of these
fraudulent, defective components, we've just got to get our
arms around it and find out exactly how big the problem is, and

we need a lot of help getting there, and that's why we need the utilities, the industry to be involved in this problem themselves. It's their responsibility to operate those plants safely, as we know. We provide the regulatory framework for safe operations, and I'm pleased to hear that you are working closely with them and commend you to continue to do so.

7 MR. STELLO: Mr. Chairman, I think there's probably 8 one more point that we ought to emphasize that we look forward 9 to potentially helping us a great deal. As you already 10 mentioned in your opening comments and has been mentioned by 11 both Dr. Murley and Bryan Grimes -- this is not a problem 12 unique to the nuclear industry. You will recall there have 13 been extensive hearings in Department of Defense with respect to fasteners, for which the problem is very, very large. 14

15 We have found indications that this problem does 16 affect other agencies of the federal government, and you have 17 sent a letter to OMB drawing it to their attention, and I hope 18 from my conversations thus far that they are going to cause an 19 interagency, of all potentially affected agencies of the 20 federal government, to come together in a meeting to hopefully 21 coordinate, cooperate and pool their resources to develop this 22 kind of information. And if that comes to pass I think that 23 will help enormously in the identification of these kinds of 24 problems.

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CHAIRMAN ZECH: Well, it is important to keep the
other government agencies involved, and I think that meeting coming up should be scheduled reasonably soon. And in the meantime, though, I think it behooves us to continue to make sure that the other agencies are involved, as I believe we have done to date. Let's proceed.

6 MR. GRIMES: I'd like to briefly take another example 7 of lesser safety significance we believe, and that is 8 refurbished counterfeit valves.

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[Slide.]

10 This is an instance where we found an isolated case, 11 we hope, of a refurbished valve being sold as a new valve. It 12 was detected by a licensee, Pacific Gas & Electric, because it 13 had been installed in a non-safety area and it was leaking at 14 the bonnet and packing. The company that supplied this 15 refurbished valve as a new valve is no longer in business, and in talking to the legitimate manufacturer of both valves, we 16 17 believe it's unlikely that this particular valve would be put 18 in a safety-related application because it has a somewhat 19 different face on the abutment to the pipe.

We nevertheless issued an Information Notice to bring this to the utilities' attention with the description of the background, and I bring that to your attention because it's another example of a refurbished valve being sold as new and our taking action on it.

Two other items that I'll mention just briefly are

1 counterfeit pumps -- we have an allegation there that a pump 2 manufacturer is supplying substandard pumps; however, we're at a very early stage in this particular example. We don't have 3 specific evidence that these are being supplied to the nuclear 4 5 industry, so we are continuing to explore, through inspections 6 and investigations, and we'll follow that. And as the facts 7 develop we'll provide that to the nuclear industry if it's safety significant. 8

9 Pipe fittings is another example where we have an 10 allegation of a pipe fitting manufacturer providing 11 certifications in an unwarranted way for their product. We are 12 also looking into that situation. As we get some factual 13 material there, we'll provide that also to the industry.

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[Slide.]

15 I'd like to now go through two examples of electrical 16 equipment problems. The first example is the PMS case where we 17 believe the company was certifying commercial grade components which were not particulary substandard as far as we know, just, 18 19 for example, a Westinghouse commercial grade component that was 20 purchased by this company and passed on with certification that 21 it was a nuclear grade component and could meet equipment 22 qualification standards.

There is potential safety significance here, however it's not clear that any of these individual cases will be found substandard or unable to meet their applications, so we will

1 just have to trace that through and verify whether or not any 2 specific cases resulted in problems in a safety-related 3 application. This started in April and we issued an Information Notice also in April. We have performed an 4 5 inspection at Plant Maintenance Systems in May and verified that the program was inadequate and have done extensive records 6 review, and in your handout package there is a list of 7 8 customers of this company. This indeed is a company that I 9 verbally have been informed that one company decided not to use 10 this particular outfit after an audit.

11 The other example and the one which has required a 12 great deal of resources on our part over the last weeks is the 13 case of five companies supplying surplus and refurbished 14 equipment --

15 CHAIRMAN ZECH: Can you define components? What do
16 you mean by components? What kind of components?

MR. GRIMES: For example, two examples on the PMS case would be resistance temperature detectors and some circuit breakers and relays. And Sequoyah and Rancho Seco are customers of those.

21 CHAIRMAN ZECH: And you say they've been supplied 22 without adequate justification.

23 MR. GRIMES: Yes.

CHAIRMAN ZECH: Well, have we tracked down any of
this? Have we run the string out on it?

1 MR. GRIMES: We have not yet pulled the string all 2 the way. We have issued an Information Notice.

3 CHAIRMAN ZECH: But have we heard from any of our 4 licensees here that they may have purchased any of this 5 equipment and they have it in their plants? Do we know that or 6 not?

7 MR. GRIMES: In speaking to NUMARC, my staff informs 8 me that one licensee has determined that they indeed have this 9 in the plant but they have not found the exact location yet so 10 they are in the process of trying --

11 CHAIRMAN ZECH: What is it that we're talking about? 12 MR. GRIMES: I don't have the information on that 13 particular case, but we know that all of these companies did 14 order for the purpose of putting it in a safety-related system, 15 so we suspect there is a high likelihood, in this PMS case, of 16 it being in safety-related components, but that there is a 17 lower likelihood that it's substandard equipment; it may only 18 be a problem with the paper in this case and we have to check 19 each individual situation.

CHAIRMAN ZECH: But the plants, these people know that and they're checking it now. Is that what's going on? MR. GRIMES: Yes, they're in the process of checking it.

24 MR. STELLO: Mr. Chairman, this is the one I wanted 25 to point out that this company, to the best of our ability to

understand at the moment, the equipment that they are dealing with is not refurbished, it's new, commercial grade equipment that they're adding documentation to that suggests that it is in fact Class 1E -- been manufactured to Class 1E standards. But it is legitimate, bona fide new equipment that is being sold in that manner, so we don't have a question, as you are going to hear, on it with respect to the next case.

8 You asked earlier about the bulletin. We have 9 drafted a bulletin to go forward with this issue, and since we 10 are coming together with the next electrical problem which also 11 involves breakers and relays, we thought it would be perhaps 12 wise to, and are now looking at the possibility of, combining 13 the two to avoid confusion that might go with having these come 14 out one at a time -- to avoid confusion between this problem 15 and the next one you're going to hear about.

16 CHAIRMAN ZECH: All right, I'm all for avoiding 17 confusion, but we also have to get to the heart of the problem 18 as soon as we can. So this long list that you've given us here 19 that shows the purchaser and facility -- that's the one you're 20 referring to, I guess.

21 MR. GRIMES: Yes. And we provided that to NUMARC 22 about a week ago --

CHAIRMAN ZECH: And do the utilities have that?
MR. GRIMES: Yes. And we asked them to distribute it
to the utilities. We'll also be following up with an

1 Information Notice to make sure that it's available --2 CHAIRMAN ZECH: So these plants that are listed here 3 in the Facility column, they know that they may have purchased 4 something from this purchaser? 5 MR. GRIMES: Yes. CHAIRMAN ZECH: And they're tracking it down now, is 6 7 that what's going on? 8 MR. GRIMES: Yes, that's correct. CHAIRMAN ZECH: All right. Let's proceed. 9 10 [Slide.] 11 The last specific example I want to MR. GRIMES: 12 cover, as I said, was the five companies supplying surplus and 13 refurbished equipment, particularly circuit breakers but also 14 some other electrical equipment. They have been supplying it 15 to a number of nuclear power plants through a number of major

16 suppliers such as Westinghouse and G.E. Supply Companies. Our 17 information indicates that there are a large number of model 18 numbers of these circuit breakers that could be used in nuclear 19 power plants, and we have, through our records review,

20 determined that indeed there was material shipped.

Now in this case, to differentiate it from the PMS case, in this case things were non-certified to be safety grade components, and we do not know whether this material has actually arrived into a safety grade system through a utility's dedication process. So there we are in the process of pulling the string on that, providing information to the industry on specific orders that we know have happened and been dropshipped, for example, to nuclear utilities.

The concern here is that a refurbishment process done by these companies using non-manufacturer equipment could result in degraded performance, for example, of a circuit breaker in actual service.

8 Actual breakers that have been tested from this 9 company by the Square D Company, which requested some of the 10 Diablo Canyon breakers for testing purposes did not pass all 11 the underwriters' lab requirements and four failed to trip 12 under the specified conditions. There were additional 13 breakers, not from Diablo Canyon, that Square D obtained which 14 failed tests. And during our seizure of the records we 15 independently verified that a refurbishment process was indeed going on and that apparently this was being represented as new 16 17 equipment.

18 CHAIRMAN ZECH: Do we know that there's any of these 19 breakers that have problems that are installed in any safety 20 equipment in any of the plants in our country?

21 MR. GRIMES: Not to date, no, sir.

22 CHAIRMAN ZECH: We don't know that.

23 MR. GRIMES: No.

CHAIRMAN ZECH: We don't know that they're not, for
sure. That's what you're telling us, I guess.

MR. GRIMES: That's correct, and that's why we
 believe it's important to check it through.

CHAIRMAN ZECH: But you don't know that they are. MR. GRIMES: We don't know that they are, and in each of these cases we have to address our actions proportional to the facts, and a lot of this is sorting out the facts by doing a number of inspections at various utility and supplier locations to determine what is the trail of these components and what is the likelihood that they are in safety systems.

CHAIRMAN ZECH: I understood.

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11 MR. MURLEY: Mr. Chairman, I should point out if it's 12 not clear that the judgments that my staff and I made and that 13 I summarized at the beginning were based on the possibility 14 that some of this equipment may have found its way into plants; 15 we don't know that it has or hasn't. But we believe even if it 16 has there is not an immediate safety problem, and for the 17 reasons that I mentioned. There's sufficient redundancy and 18 testing of these electrical safety systems that we are 19 confident that even if they were in safety systems that it 20 wouldn't compromise the basic safety of the plant.

21 CHAIRMAN ZECH: I think that's important to recognize 22 that that is the basis for your assessment. All right, let's 23 proceed.

24 MR. GRIMES: If I could add one additional fact that 25 my staff has brought to my attention. That is, in one case we

did find an order for safety-related equipment from the San
Onofre plant not for a breaker but for thermal overload
equipment, and in that case San Onofre has informed us that it
was still in the warehouse and had not yet been installed. So
I think the statement is correct that we have not found any of
this equipment yet in safety-related equipment.

CHAIRMAN ZECH: All right, let's proceed.

8 COMMISSIONER CARR: There must be something I don't 9 understand about supply companies. When Westinghouse Supply 10 Company wants to buy a new breaker, they don't buy it from 11 Westinghouse, they buy it from this guy?

MR. GRIMES: In some cases that seems to be the case, to provide a particular perhaps older breaker not immediately available in inventory. Both Westinghouse and G.E. Supply Companies seem to use whatever sources may be available for such breaker.

17 CHAIRMAN ZECH: They'll buy back one of their
18 refurbished breakers? Is that what you're saying?
19 COMMISSIONER CARR: No, they buy it thinking it's

20 new.

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21 MR. GRIMES: Yes. We believe they buy it back as new 22 and it is packaged as new.

23 CHAIRMAN ZECH: Well, is it new?

24 MR. GRIMES: In many cases we believe it's
25 refurbished.

COMMISSIONER CARR: My question was why would
 Westinghouse Supply Company go to somebody but Westinghouse to
 get a new breaker, but I still guess I don't understand that.
 MR. STELLO: I don't think we understand that,

5 either. Good question.

6 COMMISSIONER CARR: I can understand if they 7 discontinue a line, somebody might buy up all that line for 8 spare parts or whatever, and this must be one of those 9 companies.

MR. STELLO: This company also did that. They went in and bought surplus electrical equipment, new, so they had that as well. But to answer your question as to what really is going on, we haven't really gotten to the bottom of that yet and I don't think we can give you --

15 COMMISSIONER CARR: It sounds like they've got a
 16 mixture of both, new breakers and refurbished breakers, and new
 17 old breakers.

18 MR. STELLO: You're right, yes.

19 CHAIRMAN ZECH: I suppose it's possible, as you just 20 said, the line finishes and they don't make anymore of that 21 type of breaker -- somebody else may have bought them out and 22 have a whole warehouse full, but Westinghouse or General 23 Electric must know that.

24 MR. STELLO: What we do know --

25 CHAIRMAN ZECH: And then they go back and buy them

1 back again. Interesting process.

2 MR. STELLO: What we do know is this company did 3 purchase surplus new equipment from power plants. We do know 4 they did that.

5 CHAIRMAN ZECH: Surplus new equipment. They bought 6 it, and then on the chance --

COMMISSIONER CARR: From plants that shut down or
never got built or something.

MR. STELLO: Or cancelled plants or whatever, yes. 9 10 CHAIRMAN ZECH: I suppose that goes on. Well, I'm 11 sure we're going to hear more about how that works because I 12 think we'd all be interested in it. I can understand it could 13 be surplus and it could be refurbished and so forth, but 14 certainly we ought to have a system to separate the new 15 breakers from the refurbished breakers, so I think we need to 16 find out more about that. I know we'd be very interested in 17 learning more about how that system works.

18 MR. STELLO: We are currently pursuing it and we will
19 inform the Commission of the outcome of our looking into that.

20 CHAIRMAN ZECH: I'm sure a lot of it is perfectly 21 legitimate; I think it would be interesting for us to know --22 what we're focusing on here is perhaps the part that's not 23 legitimate. But perhaps that's confusing because perhaps it is 24 a certain legitimate process that is out there in the industry 25 and then that gets confused by that process that is not 1 legitimate.

But in any case, I think we would be interested in
learning more about it as you proceed.

4 COMMISSIONER CARR: Are breakers made with serial 5 numbers? I assume there is an ID number on the breaker of some 6 sort.

7 MR. STELLO: There's model numbers for sure.
8 COMMISSIONER CARR: You should be able to take that
9 ID number and serial number and track it back to the
10 manufacturer then.

MR. ROSA: Yes, all major electrical equipments have both model numbers and ID numbers, so it's possible in theory anyway to trace a breaker back to the manufacturer through the purchase train.

15 COMMISSIONER CARR: So if this guy was phonying ID 16 numbers you should be able to at least get the fact that there 17 was a duplicate or that had never been issued or something.

18 MR. ROSA: That in theory, yes.

19 COMMISSIONER CARR: Okay.

20 MR. STELLO: let me clarify something -- someone help 21 me. As I understand what they did, they took the actual 22 breaker case with the identification numbers and model numbers 23 that were actual, Square D or whatever, and then refurbished 24 the inside of them, cleaned them all up and then put new labels 25 on them.

1 COMMISSIONER CARR: I quess the new label, but did he 2 put the new label with the same ID number? 3 MR. GRIMES: I don't think we know. 4 MR. STELLO: Faust, is the ID number on the paper on 5 the breaker, or is it marked in the breaker case itself? 6 MR. ROSA: I believe it's on the nameplate; it's a 7 serial number, and that's what I consider to be an ID number. 8 MR. STELLO: But is it on paper or is it on the 9 actual case? 10 MR. ROSA: I believe it's -- probably, if the breaker rating is on a form that's on paper, it will be on there and 11 12 pasted on the breaker. In larger equipment, you have an actual 13 nameplate that is stamped and attached to the case. 14 MR. STELLO: If it was on the paper then we would be able to determine that because we do know that the new paper 15 16 that they attached to these are in fact false. 17 CHAIRMAN ZECH: All right, let's proceed. 18 MR. GRIMES: Just to briefly go over the Action Plan, 19 we did find out about this in April. We developed information 20 with the Office of Investigation over a couple months' period. 21 There were search warrants obtained to seize records of five 22 companies and we did that on July 7th of this year. We 23 confirmed that there was a problem and published, on July 8th, 24 an Information Notice 88-46, which gave the information, some 25 specifics of what we could cull immediately from the records.

We met with NUMARC on July 12th to inform them of the problem and asked them to establish whatever resources were needed to scope and cope with this situation. We have, as Mr. Shao indicated, a bulletin under development which should be issued within the next two weeks.

6 Our initial record review is essentially complete of 7 the material that was copied from the original records seized, 8 and we just today issued a supplement to our Information Notice 9 88-46 to provide some more specifics to the industry of 10 specific breakers which had gone to nuclear power plants.

We are doing a large number of follow-up inspections at various places in the supply chain to determine whether these components are being incorrectly updated for use in safety-related systems.

15 The customers of these five companies include nuclear 16 utilities which may or may not have gone to nuclear power 17 plants, the actual nuclear power stations themselves --18 Westinghouse Supply Company, Power Conversion Company, General 19 Electric Supply Company, Graybar Supply Company and ITE 20 Company.

21 COMMISSIONER CARR: And maybe all other kind of22 plants in the world.

23 MR. GRIMES: Yes, and a lot of other places. And a 24 large number of government agencies. And in those specific 25 cases we have called and are providing copies of invoices affecting those agencies that were in our own example to those
 agencies. That includes the Navy and a number of other federal
 agencies.

4 COMMISSIONER CARR: Do we know if they sold any of5 these internationally?

MR. GRIMES: I don't know.

7 MR. STELLO: We have Ben Hayes. Maybe Mr. Hayes can
8 provide an answer to that question.

9 MR. HAYES: My name is Ben Hayes, I'm Director of the 10 Office of Investigation. So far, we have not detected any 11 international sales, Commissioner, but we are keenly aware of 12 that problem. I've discussed the potential with Mr. Denton 13 already.

COMMISSIONER CARR: All right.

15 MR. STELLO: But we have made other countries aware 16 of the problem and have supplied them with the bulletins and 17 information notices.

18 COMMISSIONER CARR: Okay.

MR. GRIMES: On the materials, ASME materials, we did find a few cases of foreign reactors which had received these materials, and through the Office of International Programs we did notify these countries.

23 CHAIRMAN ZECH: All right.

24 [Slide.]

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25 MR. GRIMES: That completes the examples I was going

to go through, Mr. Chairman, and Visual No. 6 indicates our coordination to date with federal agencies. As you know, you sent a letter requesting OMB to organize an interagency meeting and offered NRC's assistance, and we will be working with OMB to organize that meeting.

6 The NRC also notified, as I mentioned, other agencies 7 of the known problems that we identified from the five 8 companies, and you have also issued letters to NASA, the U.S. 9 Navy and DOE on this subject of problems with electrical 10 equipment.

11

[Slide No. 7.]

12 I'd like to just now give an overview of the overall 13 problems that need to be addressed. Of course, we're following 14 up on specific facts as they develop in specific cases, but we 15 also need to think a little longer term and address what are 16 the root causes of these problems and how should we make sure 17 that this situation does not continue.

18 I guess the first overall problem that I perceive is an over-reliance on paper certification; the basis for that 19 20 certification is not adequately verified by the licensee audits 21 of vendors, and that particularly adequate testing on receipt 22 is often not performed. We had a particular situation where 23 the Department of Defense I believe testified before the 24 Dingell committee and indicated that out of about 400 supply 25 companies for fasteners, when they announced the intent to do

receipt testing, that 85 of those contractors dropped out of the supply business for fasteners. So we think that actual receipt testing has a very large potential for discouraging people who don't intend to supply a top quality product from being in this business at all.

6 The dependence on prototype test reports refers to 7 the use of part number for qualification of electrical 8 components in particular and is subject to the substitution 9 process, is vulnerable to the substitution process.

10 There is another general problem and that is there's 11 a lack of transfer of negative information among utilities. 12 Commissioner Carr mentioned the utility who had done an audit 13 and then rejected the particular vendor. That information did 14 not get around and usually does not readily get around to the 15 nuclear industry. There are liability considerations which 16 someone might be accused of blacklisting, for example, so I 17 think we need to look into how can this be done --

18 COMMISSIONER CARR: He can call his better business19 bureau.

20 MR. GRIMES: And the last problem which we're 21 addressing through the OMB effort is the lack of transfer of 22 information and approaches among the federal agencies. So 23 those are the three major areas that we believe should be 24 addressed and we need to look longer term, and we've asked the 25 industry to look long term. NUMARC is forming, in addition to the ad hoc groups to address the specific issues, issues that we've identified, NUMARC is forming a working group to be a little more proactive on the long term and determine what things can be done to reduce the likelihood of this sort of thing happening in the future.

6 COMMISSIONER CARR: Let me ask the general counsel, 7 if you were a utility and you found a vendor was not providing 8 you with legal material, couldn't you publish that? Is that a 9 liability problem?

10 MR. PARLER: I would do whatever I thought I would 11 have to do in order to have a safe plant and worry about the 12 liability consequences later. As a matter of fact, most of the 13 things that I've heard discussed here, it seems to me as one of 14 the Commissioners has already mentioned, our requirements in 15 very general terms called for in our Appendix B to Part 50. 16 For example, non-conforming materials, parts and components. 17 And I've heard people say well, all that's for safety-related, et cetera, it doesn't cover the other stuff. But I've also 18 19 heard for at least four years plus around here that there is 20 something in balance of plant called important to safety but 21 not safety related.

22 So it seems to me the framework for what you're 23 talking about is already in Part 50. The thing presumably 24 hasn't been executed or implemented.

25

And I've also heard -- I'm generally answering your

1 question --

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2 COMMISSIONER CARR: All right. I'm generally
3 following you.

[Laughter.]

5 MR. PARLER: I think it will be a long time before we 6 solve the greed problem and to make sure that these things do 7 not get into the stream of commerce, domestic or international. 8 That's why I would think that you would have to have an 9 important and workable guality assurance system.

But under that system that presumably people should have I would assume that if a nuclear utility would discover the thing that you asked me about, it would take the appropriate action to make sure that it certainly doesn't use the material and alerts others. But I would assume that's one of the things that this agency, who is supposed to be the regulatory agency, should give a little bit of guidance on.

17 It seems to me that at least to deal with the 18 immediate problem, we get the facts as they come along on 19 individual cases, et cetera, try to exercise damage control; 20 but the real target should be how these things should be 21 screened and identified, because counterfeit material is going 22 to be out there whether it's a watch, a pair of shoes, a belt 23 or something that I use in my house as a circuit breaker or 24 what have you.

MR. STELLO: Let me add, we I think already have from

Department of Defense their list of disbarment companies. They have a formal process for disbarment in bidding in federal procurement. We're looking to get that list, get that information to the utilities and looking at the feasibility of trying to do something like that in the nuclear industry if there is a way we can --

COMMISSIONER CARR: I would think the industry
themselves, either working through NUMARC or INPO, could handle
that problem without a worry about liability. But I don't know
what the laws are.

MR. STELLO: I don't either, but my point is that is
an area that we wanted to look at more.

13 MR. HAYES: What we have done, as a matter of fact 14 about four hours ago, was to dictate the necessary information 15 to staff and advise them as to where to go to get that 16 information. It is public information, and it's a debarment 17 list that I believe most likely GSA as well as DOD Department 18 They have the authority to debar certain vendors who have has. 19 gone through an administrative process and defrauded the 20 government or otherwise cheated the government or what have 21 you. And we are going to make that available.

22 MR. PARLER: The debarment lists that I'm familiar 23 with generally are debarred contractors, people that shouldn't 24 do business with the government. That's been around for 25 decades. Whatever the problem is, if the people, the

1 rascalians, are identified, it seems to me that whether you 2 call it a debarment list, whatever it is, as long as the 3 information is available in one central place that would go a 4 long ways toward addressing the problem and also taking care of 5 whether or not there's concern about liability; a question, by 6 the way, which is not easily answered by looking in some law 7 book somewhere and saying yes, you're liable or no, you're not. 8 It depends on the facts whether you're right or not. If you 9 happen to have the right facts and you are correct, you don't 10 have to overly be concerned about being liable. And besides 11 that, I would think that these companies are probably well 12 protected from the insurance standpoint.

13 CHAIRMAN ZECH: Mr. Stello, did you have anymore 14 comments?

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MR. STELLO: Dr. Murley has some concluding comment. 16 MR. MURLEY: I will reiterate the basic points here. 17 We are treating this issue as a serious regulatory matter. We 18 have a broad plan in place to deal with the issue. We've gotten the industry involved through NUMARC. As Mr. Stello 19 20 said, we've made it clear this is largely their problem.

21 We, at the moment, do not see that this is an 22 immediate safety issue and we see no need to take regulatory 23 actions beyond those that we already have underway. 24 MR. STELLO: We are through, Mr. Chairman.

25 CHAIRMAN ZECH: Thank you very much. Questions from my fellow Commissioners -- Commissioner Roberts?

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2 COMMISSIONER ROBERTS: I rarely disagree with our 3 distinguished General Counsel, but I would say I do not think 4 the Appendix B requirements are broad and vague. You may not 5 have used the word "vague". I think they're quite specific.

6 MR. PARLER: That was my point, I was agreeing with 7 the point that you made. You just referred to audits, but 8 there's one -- non-conforming materials, parts and components, 9 corrective action, et cetera, et cetera.

10 COMMISSIONER ROBERTS: I think it is a detailed 11 blueprint on how to assure quality in components in nuclear 12 power plants.

MR. PARLER: I'm not an expert in that area but I certainly would agree with you. That's what I meant. As I said, Appendix B seemed to me to be adequate. What is lacking appears to be the implementation by those that need to implement Appendix B.

COMMISSIONER ROBERTS: Let me give you my opinion. I certainly think Appendix B is adequate. Now, when you get into specific things such as counterfeiting a UL label, that's a different matter. But the framework is there in Appendix B. MR. MURLEY: I should point out, I hope it's clear, that Appendix B does not apply to this electrical equipment

falls under I believe Appendix A, does it not? So Appendix B

that we've been talking about. That is procured under and

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does not apply in this case.

2 MR. PARLER: Well, if that's a part of the important 3 to safety problem vis a vis safety related, that's been around 4 for quite a while -- I don't know whether it's part of that 5 problem or not.

6 MR. STELLO: Let me take one specific example because 7 I agree completely with Commissioner Roberts and the General 8 Counsel. If I take ASME code-certified flanges, it clearly 9 falls within Appendix B. Appendix B, if it is in fact 10 implemented and implemented correctly, should avoid that. It 11 shouldn't happen. But here you have someone who forged 12 documents saying that the material met certain material 13 certification, passed on to someone who took that raw material 14 and turned it into fittings. The individual who turned it into 15 fittings had the documents that are required by the audit of 16 the particular material fabricator -- it didn't occur because 17 he had the material cert that he required. You could argue 18 should there have been an audit, and perhaps the answer is yes. 19 If there had been, perhaps it would have been caught and it 20 wouldn't work.

The point is that even with Appendix B there where people go out and by design are fabricating components and doing so willfully violating in a fraudulent manner documents and pieces of equipment, to suggest that our system is good enough leaves me wanting because clearly this material went by,

1 and we have got to look at whether we have got to increase the 2 amount of receipt inspection. As an example, for nuts and 3 bolts, would you be able to get this without far more comprehensive receipt inspection than we now have. 4 5 COMMISSIONER ROBERTS: Well, receipt inspection would 6 not determine the flange problem you're talking about. 7 MR. STELLO: I could define one for you that clearly 8 would. 9 COMMISSIONER CARR: But the guy that machined that 10 flange, if he had a good receipt inspection program he could 11 have found out that the material was not correct. 12 MR. STELLO: He could have. So it is also possible 13 that a simple hardness test would have detected that the 14 tensile strength of the material was not what it was advertised 15 That's a non-destructive test. to be. 16 COMMISSIONER CARR: Or probably a look at the price 17 would have determined a lot. 18 MR. STELLO: That may be true, too. But I really 19 think that's an issue we have got to look at. I think we may want and need to do more in that area. I'm not satisfied today 20 21 and cannot tell the Commission that I'm satisfied that the 22 system of our regulation is good enough to deal with this 23 issue. I want to look some more and we need to look some more, 24 and we will have some recommendations to the Commission. Maybe

25 it will turn out we need not do more, but I'd rather wait until

1 we're finished.

2 CHAIRMAN ZECH: Anything else, Commissioner Roberts? 3 Commissioner Carr?

4 COMMISSIONER CARR: I need to explore this one so I 5 understand it. It said that the CMTR's were supplied to 6 certify commercial grade, foreign material met the ASME code 7 requirements without adequate justification. The fact that it 8 was foreign material doesn't really make any difference; it 9 could have been U.S. material, but foreign material might meet 10 the specs --

COMMISSIONER ROBERTS: That's right. Foreign
 material is not necessary excluded.

COMMISSIONER CARR: Per se, foreign material is not
 excluded.

MR. GRIMES: That's correct. And indeed, as I mentioned, when we first put out the bulletin we weren't certain that there was substandard material or whether it was just falsified paper, and as it turned out it was not the material.

20 COMMISSIONER CARR: It just happened to be foreign,21 then.

22 MR. GRIMES: Just happened to be foreign in this 23 particular case.

24 COMMISSIONER CARR: That's all I have.
25 CHAIRMAN ZECH: Commissioner Rogers?

1 COMMISSIONER ROGERS: Just a general concern that I 2 think it's important that we do emphasize that this is the licensees' problem and not try to solve the whole thing 3 ourselves. I think we must be concerned about the quality but 4 it's not our obligation to solve the problem of this whole 5 thing, it seems to me. Even though we are a regulatory agency 6 7 and we have to be assured of the quality of what's happening, but not necessarily every step in that process that leads to a 8 9 part.

10 So I think we want to be careful that we're not 11 trying to solve a problem that really the licensees and the 12 industry should be solving. We have to be very firm in our 13 requirements but I think we should just be a little careful 14 about trying to take on the solution of the big problem that in 15 a sense we really shouldn't be solving.

16 MR. STELLO: I agree. I would add that one thing it 17 is clear the industry will need the NRC help on, government 18 help I might say, is in the area of having the authority to 19 investigate and inspect, get the records in this kind of thing 20 for which I think there's a degree to which the availability of authority of the agency and the government at large can help 21 22 immeasurably in speeding up the process and getting information 23 to get on with it.

24 COMMISSIONER ROBERTS: I think we should be
25 exercising our leverage but without trying to do the whole

1 work.

2 MR. PARLER: Everytime one of these obligations comes 3 about, if we launch subpoenas, search warrants, et cetera, et 4 cetera, that process is not going to work. If there's 5 something that is identified as a major problem, highly 6 focused, et cetera, the government will do what the government 7 has to do. But surely, the utilities must know what they have, 8 they must know what they have in their spare parts, they must 9 know if they bought some gadgets that are significant to safety, where they got them from, where they are, et cetera. 10 11 It would seem to me that is where the problem would have to be 12 dealt with largely. We have all these utilities out there that 13 presumably deal with many people, so we have to use all those 14 resources to attack the problem, primarily.

There may be millions of counterfeit goods out there. I guess the government perhaps would be interested in those, but unless something that is significant to safety ends up in one of these power plants, that's not one of our primary concerns.

20 CHAIRMAN ZECH: Commissioner Carr?

21 COMMISSIONER CARR: Let me ask you, is it against our 22 regulations for the guy who made that raw material to sell it 23 as certified material?

24 COMMISSIONER ROBERTS: It's against our regulations
 25 for a licensee to utilize material that does not conform to the

requirements. The onus is on the licensee and all his tiers of
 subcontractors to make sure Appendix B is executed.

3 COMMISSIONER CARR: But I have no recourse against 4 the guy who made it and certified it wrong?

5 COMMISSIONER ROBERTS: If you're the purchaser? 6 COMMISSIONER CARR: I don't know, that's not my 7 question.

MR. PARLER: Well, I wouldn't necessarily agree with 8 that. You have the Part 21 problem. At least we have recourse 9 10 so that if you find out about it we could tell the outfit to 11 knock it off, and then use the resources of the government. 12 Certainly we can deal with the problem. Whether or not we 13 could impose \$300,000 worth of civil penalties, that's another 14 question. But most of the other resources are available, even 15 though these people are not licensees.

16CHAIRMAN ZECH: Commissioner Rogers, anything else?17COMMISSIONER ROBERTS: No.

18 CHAIRMAN ZECH: Let me just first of all thank the 19 staff for a very important briefing and for the actions that 20 you've taken on your own initiative to get this issue at least 21 started, and for your actions to deal with the utilities and 22 the industry to get them alerted. I think the staff has done 23 an excellent job in that regard.

We have a very serious issue before us in my judgment, and that of my colleagues, I know. And there are 1

only two things that I'd like to say in summary.

2 First of all, our business is public health and safety, and we're concerned in this particular area about the 3 safe operation of the plants. I appreciate the staff's 4 5 assessment and certainly think that's one that you've arrived 6 at with a great deal of thought, that there is no immediate 7 safety concern that you're aware of now and you think there's 8 no regulatory actions at least at the moment needed, but that 9 you continue to say you are continuing to watch it and will be 10 alert for situations as they develop. And I think that is 11 appropriate.

12 So the concern we have is to make sure that we're 13 doing everything we can, and industry, the utilities, as we've 14 emphasized here, with the responsibility they have for safe 15 operations are doing everything they can to insure that this 16 defective material that we've been alerted to is not in their 17 plants. So that ought to be a high priority issue for every 18 utility we have to be tracking down that material that they 19 have purchased through their system, and to find out whether they have that in their organization, and if so where is it. 20

And along the same line on the safety-related and non-safety related and the balance of plant and the nuclear steam supply system, we've all heard the various discussions on that. I can't help but feel that the balance of plant and the so-called non-safety related systems can indeed cause us problems, and I don't want to get into a big debate about our specific regulatory responsibilities and so forth. But I do believe that it's awfully important that we recognize that even in the balance-of-plant systems, we should try to make sure that we don't have any defective material. Whether it's in the safety-related or non-safety related I don't think is what we should be focusing on.

8 Of course, we don't want to release any radiation to 9 the public and we don't want the public to be harmed, and 10 that's our primary role, we all recognize that. But I do 11 believe that when you look at the whole plant we don't want any 12 defective material in there, certainly not any fraudulent 13 material in there and that's my point.

So as we're looking for safety and focusing on safety, I hope we will bear in mind that we do have regulations that cover very specifically some of these areas we've talked about. We should make sure our regulations are complied with. We should demand compliance.

And then we should look -- the second part of endeavor, of course, is the investigations, to go down the route to find out as much as we can about where it's coming from, why it got in the plants and then deal with that through the proper authorities to make sure that we do what we can at least to ferret out and find out where these fraudulent defective materials may be coming from and who's bringing them

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into our system, into the system in this utility industry, and make sure that is stopped to the best of our ability.

3 So we've got the two things to do, I think; make sure that we're looking right now at the plants to make sure that we 4 don't have any safety situations out there that would cause us 5 to take regulatory actions, and if it's necessary we'll take 6 7 them, as we've pointed out. And also, though, to make sure 8 that we do pursue the investigation process to ferret out as 9 best we can where this fraudulent, defective material is coming 10 from and do everything we can to stop it.

Mr. Stello, you have a comment?

MR. STELLO: Mr. Chairman, I think there was -- at least I perceived there to be -- some confusion as to the fact that there clearly is equipment we hold to be very important and we require Appendix B. The safety-related equipment in a plant that we rely on to protect health and safety.

17 The suggestion that we're not concerned over balance 18 of plant is not correct. The licensees have all committed in 19 the balance of plant to use certain processes, procedures and equipment. That's commercial grade. If they have equipment 20 21 that is not even commercial grade in there, they haven't lived 22 up to the commitment that they made to this agency as to how 23 they would in fact operate that plant and with what kind of 24 equipment.

Flanges, that even if they're balance of plant are

supposed to be ASME code, and ASME code applies to balance of
 plant. We're going to hold them to those standards. We want
 that equipment corrected as well.

4 I think that because we emphasize safety systems, for 5 which I think it's legitimate to do so, simply because those 6 are the most important systems in the plant with respect to 7 health and safety of the public -- if we left any impression 8 whatsoever that we are going to tolerate equipment non conforming in balance of plant, I wish to correct the record. 9 10 We are not. And we have sufficient authority, there is no lack 11 of authority to cause us to go in there and get that kind of 12 non-conformance fixed.

13 CHAIRMAN ZECH: Thank you for that statement. I 14 think it was important. I don't think -- I was not confused by 15 what you said at all. I was just, frankly, trying to emphasize 16 the fact that the whole plant is certainly our concern, not 17 just the steam supply system. I agree with you and I think 18 it's important that we all be alert to the fact that there are 19 standards for the whole plant. We have standards that must be 20 met and we can demand that they be met.

We're only trying to get our arms around this problem, let's continue to work it on the staff and with the priority you're giving it, and continue to work with the industry and the utilities and keep the Commission informed. With that we stand adjourned. Thank you very much.

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CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON CURRENT STATUS OF INFORMATION REGARDING USE OF SUBSTANDARD COMPONENTS IN OUR NUCLEAR POWER PLACE OF MEETING: Washington, D.C. PLANTS DATE OF MEETING: THURSDAY, JULY 21, 1988 were transcribed by me. I further certify that said transcription is accurate and complete, to the best of my ability, and that the transcript is a true and accurate record of the foregoing events.

Suzanne Young

Ann Riley & Associates, Ltd.

BRIEFING ON CURRENT STATUS OF INFORMATION REGARDING THE POSSIBLE USE OF SUBSTANDARD COMPONENTS IN OUR NUCLEAR POWER PLANTS

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JULY 21, 1988

OVERALL ACTION PLAN

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- O DEVELOP INFORMATION TO GIVE LICENSEES (LICENSEES ASSESS AND CORRECT DEFICIENCIES)
- O COOPERATE WITH OTHER FEDERAL AND STATE AGENCIES
- O INVESTIGATE CIRCUMSTANCES AND TAKE APPROPRIATE ACTION
- O ASSESS NRC REGULATORY FRAMEWORK TO PREVENT FUTURE PROBLEMS
SUPPLY OF MISREPRESENTED EQUIPMENT

O SCOPE OF PROBLEM

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- O EXISTING PROGRAMS
- O EXAMPLES OF AFFECTED EQUIPMENT
- O COORDINATION WITH OTHER FEDERAL AGENCIES
- O OVERALL PROBLEMS AND ISSUES

SCOPE OF PROBLEM

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- O ALL EQUIPMENT SUBJECT TO COUNTERFEIT OR SUBSTITUTION
- O EXISTING QA PROGRAMS AND VENDOR AUDITS:
 - CONFIRM PRODUCT QUALITY
 - ASSUME INTEGRITY

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- NOT FOCUSED ON INTENT TO DECEIVE

- O ESSENTIALLY ALL MATERIALS, EQUIPMENT AND COMPONENTS ARE SUBJECT TO COUNTERFEITING OR SUBSTITUTION
- EXISTING QA PROGRAMS AND VENDOR AUDITS ARE GENERALLY STRUCTURED TO CONFIRM: QUALITY OF PRODUCTS AND TO DETECT SUBSTANDARD PRODUCTS, BUT NOT TO DETECT FRAUD AND INTENT TO DECEIVE
- RECENTLY MORE INSTANCES OF COUNTERFEITING OR SUBSTITUTION HAVE BEEN IDENTIFIED BY BOTH THE NRC AND LICENSEES
- O SHRINKING NUCLEAR MARKET HAS CAUSED LARGER MANUFACTURERS TO LEAVE NUCLEAR MARKET OR REDUCE PRODUCT LINES OFFERED UNDER NUCLEAR QA PRODUCTION STANDARDS
- A LARGER FRACTION OF SAFETY-RELATED COMPONENTS ARE BEING PROCURED COMMERCIAL GRADE BY INTERMEDIATE SUPPLIERS AND "UPGRADED" TO NUCLEAR GUALITY-ALLOWABLE IF APPROPRIATE INSPECTION AND TESTING IS PERFORMED FOR EACH LOT
- O THE DIFFERENCE BETWEEN NUCLEAR AND COMMERCIAL PRICES OR BETWEEN REFURBISHED AND NEW COMPONENT PRICES PROVIDES AN INCENTIVE TO MIS-REPRESENT PRODUCT
- O PROBLEM IS NOT RESTRICTED TO NUCLEAR INDUSTRY

EXISTING PROGRAMS

- O 10 CFR APPENDIX B QA PROGRAM
- O ASME SYSTEM

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- O COMMERCIAL GRADE EQUIPMENT
- O DEDICATION PROCESS FOR SAFETY-RELATED APPLICATIONS

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TALKING POINTS ON 10 CFR 50 APPENDIX B PROCUPENENT

- O ALL SAFETY-RELATED COMPONENTS USED IN NUCLEAR POWER PLANTS ARE SUBJECT TO THE QUALITY ASSURANCE REQUIREMENTS OF 10 CFR 50, APPENDIX B.
- O APPENDIX B PRESCRIBES ALL THOSE PLANNED AND SYSTEMATIC ACTIONS -NECESSARY TO PROVIDE ADEQUATE CONFIDENCE THAT A STRUCTURE SYSTEM OR COMPONENT WILL PERFORM SATISFACTORILY IN SERVICE.
- LICENSEES ARE RESPONSIBLE FOR ASSURING THAT ALL SAFETY-RELATED COMPONENTS COMPLY WITH THE APPLICABLE QUALITY REQUIREMENTS OF APPENDIX B.
- COMPONENTS PROCURED FROM VENDORS WHO ARE COMMITTED TO APPENDIX B QUALITY PROGRAMS CAN BE ACCEPTED SUBJECT TO LICENSEE VERIFICATION (BY AUDIT) OF THE PROGRAM IMPLEMENTATION AND SUCH INSPECTIONS AS DETERMINED NECESSARY.
- O SAFETY-RELATED COMPONENTS MAY BE PURCHASED FROM VENDORS WHO DO NOT HAVE QUALITY PROGRAMS REQUIRED BY APPENDIX B WITH THE LICENSEE SPECIFYING ADDITIONAL INSPECTIONS OR TESTS WHICH WOULD ASSURE EQUIVALENT GUALITY.
- ALTERNATIVELY COMPONENTS MAY BE PROCURED AS "NON-SAFETY" OR "COMMERCIAL GRADE" AND "DEDICATED" BY THE LICENSEE FOR SAFETY-RELATED APPLICATION.

TALKING POINTS ON ASPE SYSTEM

0 10 CFR 50,55A ENDORSES SECTIONS III AND XI

- O SECTION III CONTAINS NUCLEAR DESIGN, FABRICATION, INSTALLATION, MATERIAL, EXAMINATION, TESTING AND QA REQUIREMENTS FOR ASME COMPONENTS (E.G., PRESSURE BOUNDARY COMPONENTS, INTERNALS, SUPPORTS)
- ORGANIZATIONS WITH OVERALL RESPONSIBILITY FOR THESE FUNCTIONS MUST BE SURVEYED AND ACCREDITED BY ASME (DESIGN, TESTING, EXAMINATION, AND SUPPLY OF MATERIAL MAY BE SUBCONTRACTED TO ORGANIZATIONS NOT ACCREDITED BY ASME)
- O ASME SURVEY TEAMS REVIEW AND APPROVE VENDORS' QUALITY ASSURANCE PROGRAMS
- O NRC REGULATIONS REQUIRE THAT LICENSEES AUDIT THE IMPLEMENTATION OF ASME APPROVED GA PROGRAMS AT THE VENDORS FACILITY
- O ASME SURVEYS AND LICENSEE AUDITS ARE INTENDED TO DETECT ERRORS AND MAY DETECT FRAUDULENT ACTIVITIES BUT ARE NOT DESIGNED TO DO SO

TALKING POINTS ON COMMERCIAL GRADE AND DEDICATION PROCESS

- O COMMERCIAL GRADE EQUIPMENT
 - NOT SUBJECT TO DESIGN OR SPECIFICATION REQUIREMENTS UNIQUE TO NUCLEAR FACILITIES (E.G., SECTION III ASME CODE, IEEE 344 & 323) AND CAN BE ORDERED FROM MANUFACTURER'S PUBLISHED PRODUCT DESCRIPTION
- O COMMERCIAL ITEMS MAY BE DEDICATED FOR USE IN SAFETY-RELATED APPLICATIONS
- O THE DEDICATION PROCESS REQUIRES:

- 1) A TECHNICAL EVALUATION TO DETERMINE THE CHARACTERISTICS CRITICAL TO FULFILLING THE SAFETY FUNCTION AND
- 2) AN ACCEPTANCE PROCESS TO ASSURE THOSE CRITICAL CHARACTERISTICS ARE MET

EXAMPLES OF MISREPRESENTED EQUIPMENT

O FASTENERS

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- O ASME MATERIALS (WJM/PSI)
- O REFURBISHED/COUNTERFEIT VALVES
- O COUNTERFEIT PUMPS ALLEGATION
- O PIPE FITTINGS ALLEGATION
- O ELECTRICAL EQUIPMENT (2 EXAMPLES)

TALKING POINTS ON ASME MATERIAL - WJM/PSI

PROBLEM:

- O CMTRS WERE SUPPLIED TO CERTIFY COMMERICAL-GRADE, FOREIGN MATERIAL MET THE ASME CODE REQUIREMENTS WITHOUT ADEQUATE JUSTIFICATION
- O ENCOMPASSES CARBON AND STAINLESS STEEL PIPE FITTINGS AND FLANGES, AND CARBON STEEL PLATE AND BAR STOCK
- O WJM/PSI APPARENTLY HAD MANUFACTURING CAPABILITY TO ONLY PROVIDE FLANGES FITTINGS, PLATE, AND LUGS

SAFETY SIGNIFICANCE:

- O ACTUAL MATERIAL PROPERTIES DO NOT MEET REQUIRED SPECIFICATIONS
- O MATERIAL MAY NOT PERFORM INTENDED USE
- O TWO FLANGES TESTED BY A LICENSEE REVEALED MECHANICAL RESULTS 60 PERCENT OF REQUIRED VALUES, CHEMICAL RESULTS SIGNIFICANTLY OUT OF SPECIFICATION

ACTION PLAN:

- O NRC WAS NOTIFIED BY A MATERIAL SUPPLIER
- O INITIAL RECORD REVIEW BY NRC STAFF (JANUARY 1988)
- O RECORDS SUBPOENAED AND NUMEROUS RECORDS REVIEWS PERFORMED BY NRC STAFF (FEBRUARY JULY 1988)
- O REQUESTED INDUSTRY TO TAKE ACTION THROUGH NRC BULLETIN 88-05, MAY 6, 1988
- O NUMARC ACTIVE IN COORDINATING INDUSTRY RESPONSE
- O INDUSTRY PERFORMING DESTRUCTIVE TESTS ON A RANDOM SAMPLE OF 300 PIECES AND EXTENSIVE IN SITU HARDNESS TESTS
- O NRR/DEST PREPARING SAFETY BASIS AND TESTING POSITIONS AND WILL PERFORM REVIEWS OF A SAMPLE OF LICENSEE JCOS
- O ADDITIONAL BULLETIN SUPPLEMENT BEING CONSIDERED

SCOPE:

- 0 TO DATE, 37 PLANTS HAVE SUBMITTED REPORTS OF SUBSTANDARD MATERIAL
- O TO DATE, OVER 31 PLANTS HAVE REPORTED THE NEED TO FORMULATE JCOS
- O MORE MAY BE IDENTIFIED AS LICENSEES RESPOND TO BULLETIN
- O NUMBER OF ITEMS AT A NUCLEAR POWER PLANT RANGES FROM LESS THAN 50 TO GREATER THAN 3000

TALKING POINTS ON REFURBISHED/COUNTERFEIT VALVES

PROBLEM:

- REFURBISHED VALVES BEING SOLD AS "NEW" VOGT VALVES
- VALVES DISCOVERED BECAUSE OF STEAM LEAKS AT BONNET AND PACKING
- SUPPLY COMPANY NO LONGER IN BUSINESS

SAFETY SIGNIFICANCE:

- VALVES MAY NOT MEET INTENDED FUNCTION
- BASED ON DISCUSSIONS WITH THE VALVE MANUFACTURER, IT DOES NOT APPEAR THAT THESE VALVES WOULD BE USED AS REPLACEMENT VALVES IN SAFETY-RELATED APPLICATIONS

ACTION PLAN:

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- NRC NOTIFIED BY LICENSEE APRIL 21, 1988
- INFORMATION NOTICE ISSUED JULY 12, 1988 TO INFORM INDUSTRY OF PROBLEM WITH NON-SAFETY-RELATED VALVES

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- LICENSEES EXPECTED TO TAKE APPROPRIATE CORRECTIVE ACTION
- NRC WILL CONTINUE TO FOLLOW

PROBLEM:

- CERTIFICATION BY PMS OF CLASS 1E COMPONENTS SUPPLIED WITHOUT ADEQUATE 0 JUSTIFICATION
- EQUIPMENT QUALIFICATION REQUIREMENTS OR PURCHASE ORDER AND SPECIFICATIONS Û NOT MET

SAFETY SIGNIFICANCE

COMPONENTS NOT SUBJECTED TO REGUIRED TESTS THUS INVALIDATING IEEE 0 QUALIFICATION AND CERTIFICATION

ACTION PLAN:

- LICENSEE (WOLF CREEK) SUBMITTED 10 CFR PART 21 NOTIFICATION TO NRC APRIL 1, 1988 (FUSES) 0
- NRC INFORMED INDUSTRY THROUGH INFORMATION NOTICE 88-19 ISSUED APRIL 26, 0 1988
- INSPECTION PERFORMED AT PMS BY NRC STAFF MAY 9-12, 1988 VERIFIED THAT QUALIFICATION PROGRAM WAS INADEQUATE, PMS COULD NOT PROVIDE BASIS FOR 0 CERTIFICATIONS ISSUED
- BULLETIN BEING DRAFTED 0
- EXAMPLES OF PMS SUPPLIED EQUIPMENT: 0
 - SEQUOYAH RESISTANCE TEMPERATURE DETECTORS RANCHO SECO CIRCUIT BREAKERS/RELAYS

SCOPE:

INFORMATION TO DATE INDICATES 34 LICENSEES AFFECTED (SEE ATTACHED LIST) 0

POSSIBLE RECIPIENTS OF CLASS 1E COMPONENTS FROM PMS

Purchaser

Bechtel Power Boston Edison Commonwealth Edison Commonwealth Edison Commonwealth Edison Commonwealth Edison Connecticut Yankee Power Consolidated Edison Florida Power & Light Florida Power & Light Florida Power Corp. Illinois Power Kansas Gas & Electric Long Island Lighting Maine Yankee Power Mississippi Power & Light Miagara Mohawk Power Corp. Northeast Nuclear Energy Omaha Service Co. Pacific Gas & Electric Power Authority of the State of NY Power Authority of the State of NY Public Service Electric and Gas Public Service Electric and Gas Public Service of New Hampshire Sacramento Municipal Utility District Tennessee Valley Authority Tennessee Valley Authority Tennessee Valley Authority Tennessee Valley Authority Vermont Yankee Power Virginia Electric Power Wisconsin Public Service Yankee Atomic Electric

Facility

SNUPPS Project Pilgrim 1 Byron 1 & 2 Dresden 2 & 3 LaSalle Zion Haddam Neck Indian Point 2 St. Lucie Turkey Point Crystal River Clinton Wolf Creek Shoreham Maine Yankee Grand Gulf Nine Mile Point Millstone Ft. Calhoun Diablo Canyon Fitzpatrick Indian Point 3 Hope Creek Salem Seabrook Rancho Seco Bellefonte Browns Ferry Sequoyah Watts Bar Vermont Yankee Surry Kewaunee Yankee Rowe

TALKING POINTS ON ELECTRICAL EQUIPMENT - SURPLUS/REFURBISHED

PROBLEM:

- O CIRCUIT BREAKERS, AND OTHER ELECTRICAL EQUIPMENT BEING REFURBISHED AND SUPPLIED AS "NEW"
- O ENCOMPASSES 10 MAJOR MANUFACTURERS
- O INFORMATION TO DATE INDICATES 39 DIFFERENT MODEL NUMBERS INVOLVED

SAFETY SIGNIFICANCE:

- O OF SIX DIABLO CANYON BREAKERS TESTED BY SQUARE D, NONE PASSED ALL UL REQUIREMENTS AND FOUR FAILED TO TRIP UNDER SPECIFIED CONDITIONS
- O OTHER BREAKERS OBTAINED BY SQUARE D FAILED TESTS
- O DEFECTIVE BREAKERS MAY NOT PERFORM INTENDED FUNCTIONS, I.E., TRIP
- O IN SOME CASES, ELECTRICAL EQUIPMENT WAS SUPPLIED DIRECTLY TO NUCLEAR POWER PLANTS

ACTION PLANNED:

- O NRC NOTIFIED BY LICENSEE (DIABLO CANYON) APRIL 14, 1988
- O SEARCH WARRANT ISSUED FOR NRC STAFF TO SEIZE RECORDS OF FIVE COMPANIES JULY 6, 1988
- O SEIZURE CARRIED OUT SIMULTANEOUSLY ON JULY 7, 1988
- O INFORMED INDUSTRY THROUGH INFORMATION NOTICE 88-46
- O MET WITH NUMARC JULY 12, 1988
- 0 BULLETIN POSITION UNDER DEVELOPMENT
- O INITIAL RECORD REVIEW COMPLETE
- O SUPPLEMENT TO INFORMATION NOTICE 88-46
- O FOLLOWUP INSPECTIONS TO DETERMINE WHETHER COMPONENTS ARE BEING INCORRECTLY UPGRADED FOR USE IN SAFETY-RELATED SYSTEMS

SCOPE:

O A PRELIMINARY LIST OF CUSTOMERS INCLUDES: NUCLEAR UTILITIES, NUCLEAR POWER STATIONS, WESTINGHOUSE SUPPLY COMPANIES, POWER CONVERSION CO., GENERAL ELECTRIC SUPPLY COMPANIES, GRAYBAR SUPPLY COMPANIES, ITE CO. ELECTRICAL PRODUCT SUPPLY COMPANIES, KNUDSON CORPORATION, AND OTHER ELECTRICAL COMPANIES

O TRACEABILITY OF REFURBISHED/SURPLUS ELECTRICAL EQUIPMENT MAY BE DIFFICULT DUE TO LACK OF UNIQUE EQUIPMENT IDENTIFICATION AND PAPER TRAIL

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COORDINATION WITH FEDERAL AGENCIES

- REQUESTED OMB TO ORGANIZE INTER-AGENCY MEETING AND OFFERED ASSISTANCE
- NRC NOTIFIED OTHER FEDERAL AGENCIES OF KNOWN PROBLEMS
- CHAIRMAN ISSUED LETTERS TO NASA, U.S. NAVY, AND DOE ON KNOWN PROBLEMS WITH ELECTRICAL EQUIPMENT

OVERALL PROBLEMS WHICH NEED TO BE ADDRESSED

- OVERRELIANCE ON PAPER CERTIFICATION
 - BASIS FOR CERTIFICATION NOT VERIFIED BY ADEQUATE VENDOR AUDIT
 - ADEQUATE RECEIPT INSPECTION, INCLUDING TESTING, NOT PERFORMED
 - DEPENDENCE ON PROTOTYPE TEST REPORTS

(CONTINUED)

- LACK OF TRANSFER OF NEGATIVE INFORMATION ON VENDORS BETWEEN UTILITIES
 - LIABILITY CONCERNS

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- LACK OF TRANSFER OF INFORMATION AND APPROACHES AMONG FEDERAL AGENCIES

7/21/88 - Briefing on Current Status of Information Regarding the Possible Use of Substandard Components in Nuclear Power Plants (PUBLIC MEETING)

Handouts

1.	NRC Information Notice No. 88-46, Supplement 1, dtd 7/21/88
2.	NRC Information Notice No. 88-48, dtd 7/12/88
3.	NRC Information Notice No. 88-46, dtd 7/8/88
4.	NRC Bulletin No. 88-05, Supplement 1, dtd 6/15/88
5.	NRC Bulletin No. 87-02, Supplement 2, dtd 6/10/88
6.	NRC Information Notice No. 88-35, dtd 6/3/88
7.	NRC Bulletin No. 88-05, dtd 5/6/88
8.	NRC Information Notice No. 88-19, dtd 4/26/88
9.	NRC Bulletin No. 87-02, Supplement 1, dtd 4/22/88

10. NRC Compliance Bulletin No. 87-02, dtd 11/6/87

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UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

JULY 21, 1988

NRC INFORMATION NOTICE NO. 88-46, SUPPLEMENT 1: LICENSEE REPORT OF DEFECTIVE REFURBISHED CIRCUIT BREAKERS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice supplement is being provided to present additional information regarding customers of the five California electrical suppliers discussed in NRC Information Notice (IN) No. 88-46 that may have supplied defective refurbished electrical equipment, such as circuit breakers (CBs), to nuclear power plants. It is expected that recipients will review this information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

IN 88-46 discussed a report by Pacific Gas and Electric (PG&E) that defective refurbished CBs were supplied to PG&E's Diablo Canyon Nuclear Power Plant by a California electrical supplier. The IN listed four other California companies involved in refurbishing and supplying possibly defective circuit breakers to nuclear power plants. In addition, the IN provided a preliminary list of customers of the five companies and a list of original equipment manufacturers whose names may have been used on surplus or refurbished equipment sold as new equipment obtained during NRC investigations and vendor inspections in progress at the subject companies.

Discussion:

The NRC has obtained additional information from its inspections and investigations related to this issue. Attachment 1 provides a list of shipments of circuit breakers to nuclear power plants or nuclear utilities by the subject electrical suppliers. This list was compiled based on a partial review of records obtained from the five California electrical suppliers discussed in IN 88-46. The majority of the sales were through distributors; however, direct sales and shipments to nuclear utilities have been identified. Except for certain sales to San Onofre for safety-related use, the safety classification of the electrical equipment as sold appears to be commercial grade.

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IN 88-46, Supplement 1 July 21, 1988 Page 2 of 2

The NRC is continuing its investigations and review of records on this issue and, if warranted, a further generic communication will be issued.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

1 Charles E. Rossi, Director

Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contacts: K. R. Naidu, NRR

(301) 492-0980

Jaime Guillen, NRR (301) 492-1170

Attachments:

- 1. Shipments of Circuit Breakers to Nuclear Power Plants or
- Nuclear Utilities
- 2. List of Recently Issued NRC Information Notices

Attachment 1 IN 88-46, Supplement 1 July 21, 1988 Page 1 of 4

SHIPMENTS OF CIRCUIT BREAKERS TO NUCLEAR POWER PLANTS OR NUCLEAR UTILITIES

The following list represents shipments of circuit breakers to nuclear plants or utilities from five suppliers in the Los Angeles area. The majority were sold through distributors; however, direct sales to the utilities are identified. Except for the direct sales to San Onofre, classification of the circuit breakers as sold appears to be commercial grade.

Plant or Utility	Items (Qty)	Date	Sold to and Purchase Order Nos.	<u>Invoice</u> 1	<u>Company</u> 2
Palisades	W EB1020 (2)	9/14/87	WESCO Lansing, MI PO3255-87089	I 10995	ATS
Harris	ITE EF3B125(2) ITE EF3B125(2) ITE EF3B125(6)	2/9/88 3/2/88 3/14/88	WESCO, Raleigh, NC POs DS3645-80171 DS3645-08047	WO 24781 WO 25377 WO 25811	CAL BKR CAL BKR CAL BKR
Dresden	³ w FA 2100 (2)	2/21/87	WESCO Elmhurst, IL	I 14174	HLC
Quad Cities	W EH 2050 (3)	1/18/88	WESCO Davenport, IA	I 14673	HLC
;	³ W EH2070 (1)	3/10/88	WESCO Davenport, IA S05106-M031010	Unknown	GEN BKR
Connecticut Yankee	W HFB 3050 (3)	8/12/87	Economy Elect Manchester, CT DS08127-995428	I 12585	HLC
Mark 860590	W STARTER CONTROLS A200M1CAC (13) A201K1CA (8) A201K2CA (4) AN13A (6) W HED 3020 (12)	6/25/87	06157-730176	I 11752	14 14 14 15 15 17
Braidwood	W MA3500 (1)	7/15/86	WESCO Flmburst. II	I 07721	11
0.4.6.004	w/ bell alarm	// 10/00		1 0//11	
Ginna	¥ FA3125 (3)	9/26/84	WESCO Rochester, NY 93095	I 30501	GEN MAG
	W EA2090 (3) W FA3125 (3)	_ 11 *1	n 11	I 30371 "	37 81
Clinton (Baldwin As	SD Q0220 (10) sociates)	7/18/84	WESCO Peora, IL 91586	I 29 708	11
Rancho Seco	W JB3100 (2)	8/8/84	WESCO Sacramento, CA	I 29971	89
(Shou)	FPE NEF433030 (1)	3/6/87	SMUD RN870356713	I 27290	GEN BKR

Attachment 1 IN 88-46, Supplement 1 July 21, 1988 Page 2 of 4

Plant or <u>Utility</u>	Items (Qty)	Date	Sold to and Purchase Order Nos.	<u>Invoice</u> 1	<u>Company</u> 2
SONGS	GE TED134030WL (1)	6/10/88	Southern Ca. Edison	I 102174	ECD
	IT BQ2B030	6/9/88	88068300 8W068023	I 102193	ECD
Lilco	FPE NF631100(2)	6/12/86	Graybar Hauppauge, NY(540-BLP901363)	I 7297	HLC
Mississippi Power Co.	W F2020 (1)	1/30/86	WESCO, Mobile, AL DS-3725-860126	I 5585	HLC
PG&E	W EH2100 (1)	3/5/86	AMFAC, Stockton, CA	I 6076	HLC
	FPE NE224060(2)	4/11/88	CED, San Luis Obispo.	I 15793	HLC
	W HMC3800F (1) 8MC800 (1L0T)	1/28/88	7605-D76367D	I 14829	HLC
	LUGS (3)	84	n	11	11
	ITE EE3B050(1) EE3B030 (1)	11/3/87 "	7605D-76116D	I 13783 "	87 31
	W EB3050 (1) FPE NE224100 (2)	10/2/87 5/13/88	7605-D209190D 7605-D87976D	I 13333 I 16309	87 21
Detroit Ed.	IT EH3B100 (1)	3/18/88	Detroit Ed. Monroe	I 11510	ATS
	SD 989316 (2)	11/23/87	Splane Electric Detroit, MI(111275)	WO 02160	ATS
CECo	IT EF3B070	6/3/87	Graybar Melrose Pk,	I 10684	ATS
	³ W EH2070 (4)	12/22/87	WESCO Davenport, IA WS5106-258143	I 31399	GEN BKR
Consumers Power Co.	W HDEA2030 (1)	3/30/88	WESCO Lansing, MI DS3255-14766	I 11530	ATS
Southern Cal. Edison	IT FJ3B225 (1)	4/22/88	SCE Construction	I 34435	AC BKR
	IT EE3B070 (3)	11	117055L	1 34436	11
	EE2B100 (1)	11	11	"	н
	EE2B050 (2)	u	11	11	н
	EE2B030 (1)	N	"	81	11
	GE TEF134015 (1) W EB2030 (2)	6/15/78 5/2/88	GESCO El Monte, CA Southern Ca. Edison	I 11734 I 101586	HLC ECD
	SD SBW-12 CONTACTOR (1)	1/28/88	20048013	I 100384	
	SD LO-3 CONTACTOR	1) "	'n	12	u ^{° .}
VEPCO	IT EF3H050 (1)	6/9/88	Electrical Suplrs Norfolk, VA 1410Q34998	WO 28849	CAL BKR

Attachment 1 IN 88-46, Supplement 1 July 21, 1988 Page 3 of 4

Plant or <u>Utility</u>	Items (Qty)	Date	Sold to and Purchase Order Nos.	Invoice	<u>Company</u> 2
Carolina Power &	IT EF3B125 (2)	2/9/88	WESCO Raleigh, NC DS3645-80171	WO 24781	CAL BKR
Light	EF3B125 (2) EF3B040 (6)	2/26/88 3/11/88	DS3645-08047	WO 25377 WO 25811	. H
Omaha Pub. Pwr Dist	GE THEF136m1100(2)	1/22/85	GESCO Omaha, NE 86687	I 31695	GEN MAG
Boston Ed.	W EH2050 (1)	3/18/85	WESCO Boston, MA	I 32348	GEN MAG
Arkansas Power & Licht	IT E42B020 (2)	1/28/88	Treadway Elect. Little Rock, AR 1217D	WO 24372	CAL BKR
	IT 0J2B200 (2)	1/28/88	1215D	WO 24373	17
	GE TEB122015WL (1)	1/28/88	1216D	WO 24376	11
	IT QJ2B200 (2)	2/2/88	1245D	WO 24505	11
	W MCP331000R (4)	2/17/88	1329D	WO 25104	11
	IT QJ2B200 (2)	2/24/88	1357D	WO 25268	8 4
	GE TEB132090WL (1)	3/1/88	1391D	WO 25485	11
	W MCP431550CR (2)	3/1/88	1392D	WO 25529	
	W BAB3060H (1)	3/11/88	1464D	WO 25913	
	SD FAL3650-16M (2)	3/31/88	15890	WU 26447	
	11 QJ2B200 (2)	4/8/88	163/0	WU 26/U/	
	11 UPIBUZU (2)	5/6/88	1/540	WU 2/6/6	
	$\begin{array}{c} \text{GE} \text{IEIIIUIS} (1) \\ \text{IT} \text{O} \text{O} (2) \end{array}$	5/18/88	18050	WU 28104	
	11 UJ2B2UU (2)	0///88	10200	WU 28/5/	11
	$ \begin{array}{c} \text{GE} \text{IEDI34000WL} (1) \\ \text{W} \text{SESD149002} (1) \\ \end{array} $	0/10/00	14900	KU 29030	
	MOTOR OPERATOR	3/13/00	14000	1 52997	
	IT QJ2B200 (2)	6/7/88	1869D	I 53437	**
	GE TEB122050WL (1)	6/30/88	19950	I 54164	11
	GE THED136100WL(1)	11/30/87	9975D	WO 22497	
	GE TED126050 (1)	7/15/87	9324D	WO 18318	H
	IT QJ3B2CO (3)	7/31/87	9369D	WO 18774	11
	IT QJ2B200 (3)	7/31/87	9369D	WO 18774	n
	GE THED136060WL (2)	8/7/87	9430D	WO 19041	81
	IT QJ3B200 (1)	8/13/87	9473D	WO 19245	n
	GE THGB2120 (3)	8/7/87	9430D	WO 19041	81
	IT QJ3B200 (6)	8/16/87	9424D	WO 19042	
	IT QJ2B200 (10)	8/16/87	9424D	WO 19042	fI

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Attachment 1 IN 88-46, Supplement 1 July 21, 1988 Page 4 of 4

Plant or <u>Utility</u>	Items (Qty)	Date	Sold to and Purchase Order Nos.	Invoice ¹	<u>Company</u> ²
Florida Power Corp.	IT JL3B400 (2)	12/23/87	149278	WO 23293	CAL BKR
Houston Power & Light	IT HE9B040 (4)	8/20/87	Aucoin & Miller Houston, TX 0153721	WO 19474	CAL BKR

Notes; I - invoice; WO - work order ² ATS - ATS Circuit Breakers, Inc. CAL BKR - California Breakers, Inc. ECD - Electro Components Distributors GEN BKR - General Circuit Breakers and Electrical Supply, Inc. GEN MAG - General Magnetics/Electric Wholesale HLC - HLC Electric Supply Co. AC BKR - AC Circuit Breaker - Electrical Supply

 $^{\rm 3}$ Shipped to final destination from the distributor

Attachment 2 IN 88-46, Supplement 1 July 21, 1988 Page 1 of 1

LIST OF RECENTLY ISSUED NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
88-51	Failures of Main Steam Isolation Valves	7/21/88	All holders of OLs or CPs for nuclear power reactors.
88-50	Effect of Circuit Breaker Capacitance on Availability of Emergency Power	7/18/88	All holders of OLs or CPs for nuclear power reactors.
88-49	Marking, Handling, Control, Storage and Destruction of Safe- guards Information	7/18/88	All holders of OLs or CPs for nuclear power reactors and all other licensed activities involving a formula quantity of special nuclear material.
88-48	Licensee Report of Defective Refurbished Valves	7/12/88	All holders of OLs or CPs for nuclear power reactors.
88-47	Slower-Than-Expected Rod-Drop Times	7/14/88	All holders of OLs or CPs for PWRs.
88-46	Licensee Report of Defective Refurbished Circuit Breakers	7/8/88	All holders of OLs or CPs for nuclear power reactors.
88-45	Problems In Protective Relay and Circuit Breaker Coordination	7/7/88	All holders of OLs or CPs for nuclear power reactors.
88-44	Mechanical Binding of Spring Release Device in Westinghouse Type DS-416 Circuit Breakers	6/24 /88	All holders of OLs or CPs for nuclear power reactors.
88-43	Solenoid Valve Problems	6/23/88	All holders of OLs or CPs for nuclear power reactors.

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OL = Operating License CP = Construction Permit

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION

July 12, 1988

NRC INFORMATION NOTICE NO. 88-48: LICENSEE REPORT OF DEFECTIVE REFURBISHED VALVES

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice is being provided to alert licensees to potential problems with refurbished valves. It is expected that recipients will review this information for applicability to their facilities and consider action, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

In April 1988, Pacific Gas and Electric (PG&E) informed the NRC about a potential problem concerning Vogt 2-inch valves (Vogt Figure No. SW 12111), which were leaking steam at the bonnet and packing. According to PG&E, the valves were purchased from a local supply company in May 1986 and installed in nonsafety-related applications. Although the supply company is now out of business, additional information was obtained by PG&E that indicated that the valves, although supplied as new, were actually shipped from CMA International of Vancouver, Washington, a valve salvage supply house. Henry Vogt Company examined the valves at the Diablo Canyon plant and determined that it had not manufactured the valves. The valves at Diablo Canyon had square flanges, and all Vogt-manufactured valves have round flanges.

Discussion:

NRC again stresses the importance of the licensee's role in ensuring that procurement activities for both safety-related and non-safety-related components and materials are given attention commensurate with their importance. Had an adequate review of the source of the valves been performed, this problem would have been identified and salvage valves would not have been installed.

On the basis of discussions with Vogt representatives, these valves would not be appropriate as replacement valves in safety-related applications. These valves are full-port design; that is, the valve port is the same size as the

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IN 88-48 July 12, 1988 Page 2 of 2

inside diameter of the pipe. Vogt valves designed and sold for safety-related use are standard-port design; that is, the valve port is slightly smaller than the inside diameter of the pipe. Vogt representatives were not aware of any full-port design valves sold for safety-related applications to nuclear power plants.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the technical contact listed below or the Regional Administrator of the appropriate regional office.

Charles E. Arm

Charles E. Rossi, Director Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contact: Edward T. Baker, NRR (301) 492-3221

Attachment: List of Recently Issued NRC Information Notices

Attachment IN 88-48 July 12, 1988 Page 1 of 1

LIST OF RECENTLY ISSUED NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
88-47	Slower-Than-Expected Rod-Drop Times	7/14/88	All holders of OLs or CPs for PWRs.
88-46	Licensee Report of Defective Refurbished Circuit Breakers	7/8/88	All holders of OLs or CPs for nuclear power reactors.
88-45	Problems In Protective Relay and Circuit Breaker Coordination	7/7/88	All holders of OLs or CPs for nuclear power reactors.
88-44	Mechanical Binding of Spring Release Device in Westinghouse Type DS-416 Circuit Breakers	6/24/88	All holders of OLs or CPs for nuclear power reactors.
88-43	Solenoid Valve Problems	6/23/88	All holders of OLs or CPs for nuclear power reactors.
88-42	Circuit Breaker Failures Due to Loose Charging Spring Motor Mounting Bolts	6/23/88	All holders of OLs or CPs for nuclear power reactors.
88-41	Physical Protection Weaknesses Identified Through Regulatory Ef- fectiveness Reviews (RERs)	6/22/88	All holders of OLs or CPs for nuclear power reactors.
88-40	Examiners' Handbook for Developing Operator Licensing Examinations	6/22/88	All holders of OLs or CPs for nuclear power reactors.
88-39	LaSalle Unit 2 Loss of Recirculation Pumps With Power Oscillation Event	6/15/88	All holders of OLs or CPs for BWRs.
88-38	Failure of Undervoltage Trip Attachment on General Electric Circuit Breakers	6/15/88	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License CP = Construction Permit

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

July 8, 1988

NRC INFORMATION NOTICE NO. 88-46: LICENSEE REPORT OF DEFECTIVE REFURBISHED CIRCUIT BREAKERS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice is being provided to alert addressees of licensee reported information that defective refurbished electrical equipment, such as circuit breakers (CBs), may have been supplied to nuclear power plants. It is expected that recipients will review this information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

Pacific Gas and Electric Company (PG&E) has informed NRC that it placed a purchase order for 30 new, non-safety-related, molded-case, KHL 36125-type CBs manufactured by the Square D Company (Square D) with a local electrical distributor. These CBs were intended for use in non-safety-related applications at PG&E's Diablo Canyon Nuclear Power Plant.

According to PG&E, the distributor in turn placed the order with a local supplier who bid the lowest price and promised the quickest delivery. The CBs were delivered directly to the Diablo Canyon plant by the supplier; the distributor did not have an opportunity to inspect the CBs. Square D, aware of the purchase order, questioned its failure to receive an order for the unique vintage KHL 36125-type CBs. With PG&E's permission, Square D inspected the CBs and determined that PG&E had been given refurbished, rather than new, CBs. Square D tested and performed detailed examinations of the CBs, and the results reported by PG&E follow.

A. Physical Examination

The yellow side labels used on the CBs were suspect in that the CB model numbers were typed on the labels whereas authentic labels are preprinted. The CBs departed from normal appearance in other respects as well.

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The individual CB cases and each of the CB components appeared to be Square D products; however, the individual CBs incorporated components of different years of manufacture. Each CB bore evidence of having been opened and reassembled.

B. Electric Testing

Square D subjected the CBs to five electrical tests. None of the CBs complied with Square D or Underwriters' Laboratory (UL) specifications for all of the tests, and several of the CBs were out of tolerance on each of the tests. At least four of the CBs failed to trip under circumstances in which they are designed to trip.

Discussion:

In the past, there have been instances in which licensees purchased commercialgrade components, such as CBs, relays, trip units, and other electrical components, from electrical distributors and have received components that did not meet the original purchase order requirements. NPC has received additional information indicating that the problem of surplus or defective refurbished CBs may also apply to CBs sold under other manufacturers' names (e.g., General Electric, Westinghouse, ITE, Cutler Hammer, and Sylvania).

The electrical suppliers involved in refurbishing and sales of circuit breakers, including the Diablo Canyon, Square D circuit breakers, apparently include five California corporations. These companies are (1) General Circuit Breaker & Electric Supply, Inc., (2) HLC Electric Supply Co., Inc., (3) Pencon International, Inc., doing business as General Magnetics/Electric Wholesale, (4) California Breakers, Inc., and (5) Anti-Theft Systems, Inc., doing business as ATS Circuit Breakers and as AC Circuit Breaker-Electrical Supply.

NRC has an investigation and vendor inspection in progress at the above companies. On the basis of the information developed to date, a preliminary list of customers of the five companies including a list of nuclear utilities (where available) is provided in Attachment 1. Attachment 2 contains a list of original equipment manufacturers whose names may have been used on surplus or refurbished equipment sold as new equipment. The information included in Attachments 1 and 2 is only preliminary and is provided to assist licensees in reviewing the potential of having procured suspect electrical equipment at their facilities.

Licensees are reminded of the requirements to ensure that procured items meet the relevant specifications and codes and are suitable for the intended application. Licensees should consider, as a matter of prudence, the need to inquire of and to verify with their authorized distributors the sources of procured materials, equipment, and components. Licensees may meet these requirements by effectively implementing their quality assurance (QA) programs, particularly in the areas of vendor evaluations, vendor surveillances, receipt inspection, bench tests, and post-installation tests.

IN 88-46 July 8, 1988 Page 3 of 3

NRC is gathering additional information to determine what further actions are necessary. The primary purpose of this information notice is to alert addressees of the situation as soon as possible. The NRC is considering issuing a bulletin to followup on this information notice when the NRC has sufficient information to define requirements.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi, Director

Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contacts: K. R. Naidu, NRR (301) 492-0980

> Jaime Guillen, NRR (301) 492-1170

Attachments:

- 1. Preliminary List of Customers (Intermediate Suppliers) of Suspect Electrical Equipment
- Preliminary List of Original Equipment Manufacturers Whose Names May Have Been Used on Surplus or Refurbished Equipment Sold as New Equipment
- 3. List of Recently Issued NRC Information Notices

Attachment 1 IN 88-46 July 8, 1988 Page 1 of 2

PRELIMINARY LIST OF CUSTOMERS (INTERMEDIATE SUPPLIERS) OF SUSPECT ELECTRICAL EQUIPMENT

Organization	Location	Nuclear Utility (if available)
Westinghouse Electric Supply Co. (WESCO)	St. Louis, MO; Boston, MA; Boise, ID; Atlanta, GA; Charleston, SC; Panama, FL; Santa Clara, CA; Fresno, CA; Sacramento, CA; Shreveport, LA; Green Bay, WI; Elk Creek, IL; Albuquerque, NM; Mobile, AL; Ft. Worth, TX; Baton Rouge, LA; Birmingham, AL; East Hartford, CT; Kokomo, IN; Jackson, MS; Milwaukee, WI; Beaumont, TX; Nashville, TN; Skelton, WV; Albany, NY; Hartford, CT; Portland, ME; St. Paul, MN; Minneapolis, MN; other locations	· · ·
Power Conversion	Huntington Beach, CA	
Rockwell International	Los Angeles, CA	
Arkansas Power and Light	Little Rock, AR	ANO
Southern California Edison	San Clemente, CA; other locations	SONGS
Phoenix Electric	Phoenix, AZ	
Rensenhouse Electric	Topeka, KS	
Breaker and Control	Houston, TX	
General Electric Company	Baltimore, MD; Houston, TX; Landover, MD; Chantilly, VA; Emeryville, CA; Elmhust, IL	
Southern Electric Supply Company	Alexandria, LA	

Cleveland Electric Company

Attachment 1 IN 88-46 July 8, 1988 Page 2 of 2

PRELIMINARY LIST OF CUSTOMERS (INTERMEDIATE SUPPLIERS) OF SUSPECT ELECTRICAL EQUIPMENT

Org	ani	zati	on

Location

Nuclear Utility (if available)

Stokley Enterprises	Norfolk, VA
Taylor Electric Company	Portland, OR
Graybar	Ventura, CA; Atlanta, GA
Hughes Aircraft	El Segundo, CA
Houston Electric Distribution Company	Houston, TX
ITE Electrical Products	Atlanta, GA; Knoxville, TN
Knudson Corporation	Los Angeles, CA
Georgia Power Company	Milledgeville, GA

Attachment 2 IN 88-46 July 8, 1988 Page 1 of 2

PRELIMINARY LIST OF ORIGINAL EQUIPMENT MANUFACTURERS WHOSE NAMES MAY HAVE BEEN USED ON SURPLUS OR REFURBISHED EQUIPMENT SOLD AS NEW EQUIPMENT

Manufacturer	Model Number	Equipment Description
Square D	B19.5; B22	Heater for overload relay
General Electric	12HGA11S52	Auxiliary relay
Exide Company	NX400	
Spectro Inc.	V00014	Mercury lamps
Bussman Company	REN15	15-amp 250-V fuse
Bussman Company	NOS-30	30-amp 600-V fuse
(unknown)	FSN 5925-628-0641	Circuit breaker
Westinghouse	DB-50	Trip unit
Westinghouse	DB-25	400-amp circuit breaker
Westinghouse	HKB3150T	Trip unit
Westinghouse	KB3250F	Frame
Westinghouse	FB3020	Circuit breaker
Westinghouse	FB3070	Circuit breaker
Westinghouse	FB3050	Circuit breaker
Westinghouse	ÉHB3040	Circuit breaker
Westinghouse	EHB3025	Circuit breaker
Westinghouse	LBB3125	Circuit breaker
Westinghouse	HKA31250	Trip unit
Westinghouse	JA3200	Circuit breaker
Westinghouse	EHB2100	Circuit breaker
Westinghouse	CAH3200	Circuit breaker

Attachment 2 IN 88-46 July 8, 1988 Page 2 of 2

PRELIMINARY LIST OF ORIGINAL EQUIPMENT MANUFACTURERS WHOSE NAMES MAY HAVE BEEN USED ON SURPLUS OR REFURBISHED EQUIPMENT SOLD AS NEW EQUIPMENT

Manufacturer	<u>Model Number</u>	Equipment Description
Westinghouse	225N	Navy trip units
ITE	EF-3B100	100-amp circuit breaker
General Electric	AK-2-75-3	Circuit breaker
General Electric	AK-2	Circuit breaker
General Electric	AK-1-50	Circuit breaker
General Electric	AK-1-75	Circuit breaker
General Electric	B; TDQ; TFJ	Circuit breakers
General Electric	TCVVFS	Circuit breaker
ITE	ET; KA	Circuit breakers
Cutler Hammer		Circuit breakers
Zinsco/Sylvania		Circuit breakers
Bryant	er m	Circuit breakers
Murry		Circuit breakers
Federal Pacific Electric		Circuit breakers

Attachment 3 IN 88-46 July 8, 1988 Page 1 of 1

LIST OF RECENTLY ISSUED NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
88-45	Problems In Protective Relay and Circuit Breaker Coordination	7/7/88	All holders of OLs or CPs for nuclear power reactors.
88-44	Mechanical Binding of Spring Release Device in Westinghouse Type DS-416 Circuit Breakers	6/24/88	All holders of OLs or CPs for nuclear power reactors.
88-43	Solenoid Valve Problems	6/23/88	All holders of OLs or CPs for nuclear power reactors.
88-42	Circuit Breaker Failures Due to Loose Charging Spring Motor Mounting Bolts	6/23/88	All holders of OLs or CPs for nuclear power reactors.
88-41	Physical Protection Weaknesses Identified Through Regulatory Ef- fectiveness Reviews (RERs)	6/22/88	All holders of OLs or CPs for nuclear power reactors.
88-40	Examiners' Handbook for Developing Operator Licensing Examinations	6/22/88	All holders of OLs or CPs for nuclear power reactors.
88-39	LaSalle Unit 2 Loss of Recirculation Pumps With Power Oscillation Event	6/15/88	All holders of OLs or CPs for BWRs.
88-38	Failure of Undervoltage Trip Attachment on General Electric Circuit Breakers	6/15/88	All holders of OLs or CPs for nuclear power reactors.
88-37	Flow Blockage of Cooling Water to Safety System Components	6/14/88	All holders of OLs or CPs for nuclear power reactors.
88-36	Possible Sudden Loss of RCS Inventory During Low Coolant Level Operation	6/8/88	All holders of OLs or CPs for PWRs.

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OL = Operating License CP = Construction Permit
OMB No.: 3150-0011 NRCB 88-05, Supplement 1

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

June 15, 1988

NRC BULLETIN NO. 88-05, SUPPLEMENT 1:

NONCONFORMING MATERIALS SUPPLIED BY PIPING SUPPLIES, INC. AT FOLSOM, NEW JERSEY AND WEST JERSEY MANUFACTURING COMPANY AT WILLIAMSTOWN, NEW JERSEY

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

The purpose of this supplement is to 1) provide additional information concerning material supplied by Piping Supplies, Incorporated (PSI) and West Jersey Manufacturing Company (WJM), 2) reduce the scope of the requested materials review to only flanges and fittings, 3) delineate actions licensees are requested to take to identify these materials and to determine whether the materials comply with ASME and ASTM design and material specifications, and 4) clarify what actions licensees are requested to take once they identify material that does not comply with the above material specifications.

Description of Circumstances:

On June 10, 1988 the NRC staff was informed by Carolina Power & Light (CP&L) that the Shearon Harris Nuclear Plant had tested two flanges from their warehouse that had been supplied by WJM. The two flanges were identified as belonging to Heat No. 7218, SA-105 material. The CP&L test results did not match those reported on WJM's Certified Material Test Reports (CMTRs) and did not meet the tensile and yield strength requirements for SA-105 material. Required minimum tensile strength is 70 KSI whereas the measured tensile strengths were 45 KSI and 46 KSI. The tensile strength reported on the CMTR was 77 KSI. Required minimum yield strength is 36 KSI whereas the measured yield strengths were 27 KSI and 31 KSI. The yield strength reported on the CMTR was 50 KSI. Measured chemistry composition was also out of specification, notably percent carbon was very low at 0.045 and manganese was measured at 0.32 (required range 0.6 to 1.05).

Bulletin 88-05 requires that all PSI and WJM supplied material be identified and that a determination be made as to its suitability for the intended or

NRCB 88-05, Supplement 1 June 15, 1988 Page 2 of 3

actual application. This supplement narrows the scope of review from ASME and ASTM "materials" to ASME and ASTM fittings and flanges. In view of the recent verification that flanges which do not comply with ASME and ASTM specifications have been supplied to the nuclear industry, the time frames for certain actions are also modified by this supplement.

Actions Requested:

The actions requested in Bulletin 88-05 remain in effect with the following additions:

- 1. Review of purchasing records may be reduced in scope from ASME and ASTM "materials" to ASME and ASTM "fittings and flanges" and the review should be initiated and completed promptly.
- 2. The scope of paragraph 2 of Bulletin 88-05 is reduced from ASME and ASTM "materials" to ASME and ASTM "flanges and fittings." All other provisions of paragraph 2 of Bulletin 88-05 remain in effect.
- 3. The scope of paragraph 3 of Bulletin 88-05 is reduced from ASME and ASTM "materials" to ASME and ASTM "flanges and fittings." For ASME and ASTM flanges and fittings furnished by PSI or WJM already installed in safety-related systems in operating plants, the following actions are requested:
 - a. Commence appropriate testing of accessible flanges and fittings promptly to identify conformance of materials to ASME and ASTM material specifications. Test results for flanges and fittings reported to be from the same heat should be compared for consistency and for conformance to the ASME/ASTM specifications and to values listed on material CMTRs. Any deviation from the specification requires an appropriate analysis justifying continued operation.
 - b. If any inaccessible flanges or fittings are identified, an analysis must be performed justifying continued operation.
 - c. All other provisions of paragraph 3 of Bulletin 88-05 remain in effect.
- 4. For flanges and fittings already identified as having been supplied by PSI or WJM, the actions requested in 3a and 3b above are to be completed within 30 days of receipt of this supplement. For flanges and fittings identified after receipt of this supplement, the actions requested in 3a and 3b above are to be completed within 30 days of identifying the flanges or fittings as being supplied by PSI and WJM.

1/ Based on the discovery by CP&L of nonconforming flanges and on NRC review of records of WJM's production of numerous flanges purportedly from Heat No. 7218, licensees should specifically be alert to identify records for flanges from Heat No. 7218.

NRCB 88-05, Supplement 1 June 15, 1988 Page 3 of 3

- 5. Addressees are requested to retain nonconforming materials until advised further by the NRC. Nonconforming materials should be segregated to ensure that they are not inadvertently used.
- 6. Addressees are encouraged to report the results of tests of PSI and WJM supplied flanges and fittings to the INPO Nuclear Network for dissemination to the industry.

Reporting Requirements:

The reporting requirements of Bulletin 88-05 remain in effect with the following additions:

- 1. The NRC Operations Center should be notified by telephone, 202-951-0550, of the need for analysis to justify continued operation as required in paragraphs 3a and 3b. Where the need for analysis to justify continued operation results in a requirement for a report under 10 CFR 50.72, the notification to the Operations Center should be in accordance with the reporting times required by 10 CFR 50.72. If the need for analysis to justify continued operation would not result in a requirement for a report under 10 CFR 50.72, the notification to the Operations Center should be made within 48 hours.
- 2. Include the results of all tests of PSI or WJM materials in the written response to Bulletin 88-05.

The written reports required above shall be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, under oath or affirmation under the provisions of Section 182a, Atomic Energy Act of 1954, as amended. In addition, a copy shall be submitted to the appropriate Regional Administrator.

This requirement for information was approved by the Office of Management and Budget under blanket clearance number 3150-0011. Comments on burden and dupliications should be directed to the Office of Management and Budget, Reports Management, Room 3208, New Executive Office Building, Washington, D.C. 20503.

If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate NRC regional office.

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Charles E. Rossi, Director Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contacts: Ray Cilimberg, NRR (301) 492-3220

> Ed Baker, NRR (301) 492-3221

Attachment: List of Recently Issued NRC Bulletins

OMB No.: 3150-0011 NRCB 87-02, Supplement 2

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

June 10, 1988

NRC BULLETIN NO. 87-02, SUPPLEMENT 2: FASTENER TESTING TO DETERMINE CONFORMANCE WITH APPLICABLE MATERIAL SPECIFICATIONS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

The purpose of this supplement is to clarify the type of information addressees were required to submit in response to Bulletin 87-02, Supplement 1 on the source of fasteners purchased for use in nuclear power plants.

Discussion:

The "action required" statement of Supplement 1 is revised in its entirety to clarify that the intent of Supplement 1 was to require addressees to provide a list of suppliers and manufacturers from which fasteners may have been purchased. Licensees are not required to contact subcontractors to obtain the requested information, nor are they required to submit data on fasteners supplied as part of an original component. The type of fasteners for which vendor/ supplier names and addresses are requested is limited to ferrous fasteners 1/4 inch in diameter or greater.

Action Required:

Within 90 days from the receipt of Supplement 1 to Bulletin 87-02 (issued on April 22, 1988), addressees shall provide the following information concerning the procurement of fasteners:

1. A list of the suppliers and manufacturers from which safety-related ferrous fasteners 1/4 inch in diameter or greater may have been purchased, within the past 10 years, including addresses. For those fasteners purchased from fastener suppliers and/or original equipment manufacturers, any available information that identifies the manufacturer or sub-tier supplier of the

NRCB 87-02, Supplement 2 June 10, 1988 Page 2 of 2

fasteners also should be provided. Approved Vendor List or Qualified Supplier Lists are the intended sources for this information. Addressees are not required to search purchase order files, contact subcontractors to obtain the information, or submit data on fasteners supplied as part of an original component.

2. For nonsafety-related fasteners the same information as requested in the first two sentences of item 1, above, except that a) the time of interest is for fasteners procured in the last 5 years, and b) the search of available records in this case should include purchase orders unless the licensee utilizes approved vendor lists or qualified supplier lists in procuring nonsafety-related fasteners. This information collection is understood to be on a best-effort basis. Further, addressees are not required to contact subcontractors to obtain the information or to submit data on fasteners supplied as part of an original component.

The written reports requested above shall be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, under oath or affirmation under the provisions of Section 182a, Atomic Energy Act of 1954, as amended. In addition, a copy shall be submitted to the appropriate Regional Administrator.

This requirement for information was approved by the Office of Management and Budget under a blanket clearance number 3150-0011. Comments on burden and duplication may be directed to the Office of Management and Budget, Reports Management, Room 3208, New Executive Office Building, Washington, D.C., 20503.

If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi, Director

Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contacts: J. T. Conway, NRR (301) 492-0978

E. T. Baker, NRR (301) 492-3221

Attachment: List of Recently Issued NRC Bulletins

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

June 3, 1988 -

NRC INFORMATION NOTICE NO. 88-35: INADEQUATE LICENSEE PERFORMED VENDOR AUDITS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice is being provided to alert addressees to potential problems resulting from inadequately performed licensee audits at vendor facilities which may not reveal the vendor's failure to implement critical portions of its quality assurance (OA) program. It is expected that recipients will review this information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

NRC reviews during January-April 1988 of documents obtained from Piping Supplies, Incorporated (PSI) of Folsom, New Jersey and West Jersey Manufacturing Company (WJM) of Williamstown, New Jersey identified several inconsistencies that indicate potential generic safety implications with pipe fittings and flanges supplied by PSI and WJM to nuclear power plants. (This issue is discussed further in NRC Bulletin No. 88-05, "Nonconforming Materials Supplied by Piping Supplies, Inc. at Folsom, New Jersey and West Jersey Manufacturing Company at Williamstown, New Jersey.") The NRC inspectors reviewed such typical licensee-auditable manufacturer/supplier records as certified material test reports (CMTRs), certificates of compliance, and heat treat records. The NRC believes the inconsistencies found should have been identified by a licensee during the performance of its own audit.

An NRC inspection on June 10-15 and June 24-28, 1985 at the Nuclear Energy Services Company (NES) at Greensboro, North Carolina identified 22 conditions that did not conform to the NES QA program implementation and one 10 CFR Part 21 violation (reference NRC inspection report 99901018/85-01). The NRC performed these inspections at the request of the Department of Energy to determine the adequacy of the NES QA program relative to the fabrication of canisters to collect, transport, and store the Three Mile Island, Unit 2 core debris. The inspection results raised a concern in regard to the adequacy of the implementation of the QA program at the NES facility in Greensboro, North Carolina because of the collective impact of the numerous deviations from the vendor's program. Before the NRC inspections, General Public Utilities and Bechtel Power Company had jointly performed surveillance activities. On the

IN 88-35 June 3, 1988 Page 2 of 3

cover sheet of the report the results of the surveillance were summarized as unsatisfactory. However, no nonconformances were issued to NES, nor was the vendor requested to perform any corrective actions other than to develop a specific non-destructive testing examination procedure which, required by contract, should have already been established.

An NRC inspection on November 16-20, 1987 at the Nutherm International Industries, Incorporated (NI) facility in Mount Vernon, Illinois identified six nonconforming areas of implementation failures (reference NRC inspection report 99900779/87-01). Considering a number of identified problems, substantiated allegations, and the breakdown of the OA program in certain areas, the NRC became concerned about the validity of NI's certificates of conformance. Before the NRC audit, inspections had been performed by several licensees. NRC's review of the audit reports produced by licensees indicates that only one licensee identified any deviations, and that that licensee failed to correctly interpret the audit findings.

An NRC inspection on August 25-29, 1986 at the Amerace Corporation facility in Union, New Jersey (Amerace is the manufacturer of Agastat 7000 series timer relays) identified that the vendor had failed to adequately establish and implement a QA program in several areas. One violation of 10 CFR Part 21 and nine nonconformances to the vendor's QA program were identified (reference NRC inspection report 99900296/86-01). The NRC inspection found, in part, that "The failures are indicative of a lack of management involvement in the quality assurance functions...." A review of several audits previously performed by licensees indicated that licensees had identified few or no problems with either the vendor's QA program or its implementation.

An NRC inspection on July 11-12 and August 5-9, 1985 at the Air Balance Incorporated facilities at Westfield, Massachusetts and at Wrens, Georgia found that the vendor had failed to (a) establish a 10 CFR Part 21 program, (b) effectively implement a QA program, and (c) obtain QA program support from management. Two violations of 10 CFR Part 21 and 17 nonconforming items were identified (reference NRC inspection report 99901005/85-01). Again, a review of several audits that licensees had previously performed indicated that licensees had identified few or no problems.

A recent NRC inspection of Elgar Corporation identified several concerns with the vendor's QA program. These include 1) failure to perform independent design review (12 of 55 engineering change notices audited were prepared, reviewed, and approved by the same individual), 2) failure to ensure that the cumulative effects of multiple design changes on an individual drawing did not adversely affect the ability of the equipment to perform its intended function, 3) failure to maintain previous versions of revised drawings, 4) failure to establish duties and authorities of engineering personnel, and 5) failure to perform 10 CFR Part 21 evaluations of identified design errors and deviations. Again, a review of audits licensees had previously performed indicated that these concerns were not identified.

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On April 29, 1988, in accordance with the requirements of 10 CFR Part 21, IMO Delaval, Inc. (Delaval) notified the NRC of potential problems with certain engine control devices in the air start, lube oil, jacket water, and crankcase systems in their DSR or DSRV standby diesel generators. In response to a number of reported failures, Delaval performed an audit of the manufacturer of these components, California Controls (Calcon) which identified a concern regarding the implementation of the Calcon QA program. Delaval concluded that there was no objective evidence of product testing having been performed by the sub-vendor. The NRC staff is not certain as to whether any licensees have previously audited Calcon.

Discussion:

The NRC is concerned that the inspections discussed above appear to indicate that licensees may not be adequately implementing their established 10 CFR Part 50 Appendix B program requirements, particularly Criterion VII. Licensees are reminded that it is their responsibility to ensure, by such actions as verifying the validity of and the basis for such manufacturer/vendor records as CMTRs, certificates of compliance, and heat treat records, that purchased equipment and components are able to perform their intended functions. Licensees are further reminded that, as discussed in 10 CFR Part 50 Appendix B Criterion VII, "the effectiveness of the control of quality by contractors and subcontractors shall be assessed by the applicant or designee at intervals consistent with the importance, complexity, and quantity of the product or services." On the basis of the NRC inspections discussed here, it appears that, in some cases, licensee audit efforts have not been effective. The NRC believes that additional attention in this area may be appropriate.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the technical contact listed below or the Regional Administrator of the appropriate regional office.

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Charles E. Rossi, Director Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contact: Joseph J. Petrosino, NRR (301) 492-0979

Attachment: List of Recently Issued NRC Information Notices

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

May 6, 1988

NRC BULLETIN NO. 88-05: NONCONFORMING MATERIALS SUPPLIED BY PIPING SUPPLIES, INC. AT FOLSOM, NEW JERSEY AND WEST JERSEY MANUFACTURING COMPANY AT WILLIAMSTOWN, NEW JERSEY

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

The purpose of this bulletin is to require that licensees submit information regarding materials supplied by Piping Supplies, Incorporated (PSI) at Folsom, New Jersey and West Jersey Manufacturing Company (WJM) at Williamstown, New Jersey and to request that licensees 1) take actions to assure that materials comply with ASME Code and design specification requirements or are suitable for their intended service, or 2) replace such materials.

Description of Circumstances:

The NRC has obtained copies of certified material test reports (CMTRs) for material supplied by PSI and WJM that contain false information about material supplied to the nuclear industry. A number of CMTRs were apparently used to certify that commercial-grade, foreign steel meets the requirements of ASME Code Section III, Subarticle NCA-3800, by using a domestic forging company's letterhead. There was no evidence that PSI or WJM performed or had a subcontractor perform the testing required by Section III to upgrade the commercially produced steel for these falsified CMTRs. The information available to date indicates that WJM started supplying ASME Code components to the nuclear industry in 1976, both directly as well as through intermediaries, and that PSI started supplying ASME Code components to the nuclear industry in theremediaries in 1985. In addition, WJM held an ASME Quality System Certificate (QSC-385) as a material manufacturer from November 30, 1979 to November 30, 1985.

The NRC has concluded that there are potential generic safety implications at facilities that either have received direct shipment of materials furnished by PSI or WJM (i.e., pipe fittings and flanges) or received piping subassemblies and other components from holders of ASME Certificates of Authorization or other subcontractors which incorporated materials supplied by PSI or WJM.

NRCB 88-05 May 6, 1988 Page 2 of 4

Actions Requested:

- 1. Review purchasing records for your facility and determine whether any WJMor PSI-supplied ASME Code or ASTM materials have been furnished to your facility. The lists of purchasing and receiving companies given in Attachments 1 and 2 have been developed through the NRC's partial review of PSI and WJM documents. It is emphasized that the NRC has not reviewed all documents; therefore, the review of records should not be limited to the companies on these lists. The records review for PSI-supplied material should cover the period since January 1, 1985. The WJM review should cover the period since January 1, 1976.
- 2. For ASME Code and ASTM materials furnished by PSI or WJM that are either not yet installed in safety-related systems at your facility or are installed in safety-related systems of plants under construction, the following actions are requested: (perform action a and either action b or c)
 - a. Provide a list of WJM- and PSI-supplied materials that are found not to be in conformance with the applicable code requirements or procurement specifications and identify the applications in which these materials are used or will be used. Include the material specification, the nature of the component (e.g., pipe flange), size and pressure rating; also indicate the chain of purchase, and either
 - b. Take actions that provide assurance that all received materials comply with ASME Code Section III, ASTM, and applicable procurement specification requirements, or that demonstrate that such materials are suitable for the intended service. For example, this program should include specific verification that austenitic stainless steels have been received in a non-sensitized condition, or,
 - c. Replace all questionable fittings and flanges with materials that have been manufactured in full compliance with ASME Code Section III, ASTM, and the applicable procurement specification requirements.
- 3. For ASME Code and ASTM materials furnished by WJM or PSI already installed in safety-related systems in operating plants, the following actions are requested:
 - a. Provide a list of the WJM- and PSI-supplied materials that are found not to be in conformance with the applicable code requirements or procurement specifications and identify the applications in which the materials are used. Include the material specification, the nature of the component (e.g., pipe flange), size, and pressure rating; also indicate the chain of purchase.
 - b. Take actions requested in 2b or 2c above. However, an evaluation should be undertaken prior to replacing questionable material in accordance with 2c above that considers the occupational radiation

NRCB 88-05 May 6, 1988 Page 3 of 4

exposure that would be received during the replacement process. This evaluation should be considered in developing the method and timing of material replacements.

- c. Document and maintain for inspection a basis for continued plant operation if the program requested in item 3b has not been completed within 120 days of the date of receipt of this bulletin.
- 4. For any PSI- or WJM-supplied materials having suspect CMTRs and used in systems that are not safety-related, take actions commensurate with the function to be performed.
- 5. Maintain for inspection the documentation of the specific actions taken for the identified materials.
- 6. For operating plants, all scheduled actions should be completed before a restart from the next major outage starting after 180 days from the date of receipt of this bulletin. For plants under construction all scheduled actions and the reporting required by 2 below should be completed prior to the planned fuel load date. If any addressee cannot meet this schedule, they should justify to the NRC their proposed alternative schedule.

Reporting Requirements:

- 1. Provide a written report within 120 days of the date of receipt of this bulletin that either:
 - a. States that no WJM- or PSI-supplied materials have been furnished for your facility for use in safety-related systems, if such is the case, or
 - b. Provides the information requested in items 2a and 3a above that indicates which materials have been found not to be in conformance with the applicable code requirements or procurement specifications, confirms completion of other actions requested in items 2b or c, 3b and 4, and provides a schedule for completing any remaining actions.
- 2. Confirmation of completion of all scheduled actions shall be submitted to the NRC within 60 days of completion for operating plants and prior to the fuel load date for plants under construction.

The written reports, required above, shall be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, under oath or affirmation under the provisions of Section 182a, Atomic Energy Act of 1954, as amended. In addition, a copy shall be submitted to the appropriate Regional Administrator.

This requirement for information was approved by the Office of Management and Budget under clearance number 3150-0011.

If you have any questions regarding this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate NRC Regional Office.

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Charles E. Rossi, Director Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contacts: Ray Cilimberg, NRR (301) 492-3220

> Ed Baker, NRR (301) 492-3221

Attachments:

- 1. Table 1 Known and Intended Recipients of Carbon Steel Materials furnished by PSI or WJM
- 2. Table 2 Known and Intended Recipients of Stainless Steel Materials furnished by PSI or WJM
- 3. List of Recently Issued NRC Bulletins

Attachment 1 NRCB 88-05 May 6, 1988 Page 1 of 2

TABLE 1 - KNOWN AND INTENDED RECIPIENTS OF CARBON STEEL MATERIALS FURNISHED BY PSI AND WJM

Purchaser Radnor Alloys, Inc. Capitol Pipe & Steel Pullman Power Products Tyler Davison Osborne Brothers Welding Supply HUB Incorporated HUB Incorporated HUB Incorporated Chicago Tube & Iron Chicago Tube & Iron Chicago Tube & Iron Chicago Tube & Iron Chicago Tube & Iron

Dravo Corp. Joliet Valves, Inc. McJunkin Guyon Alloys ITT Grinnell Guyon Alloys, Jnc. Guyon Alloys, Inc. Bellows American Standard Louis P. Canuso

Receiving Company Bechtel Power Corp. Pilgrim Bechtel Power Corp. Midland Pullman Power Products Danje] Cleveland Electric Perry Bechtel Power Corp. Pullman Power Pullman Power Vogtle Bechtel Power Corp. General Electric Perrv Duke Power **Oconee** Bechtel Power Corp. Arkansas Bechtel Power Corp. WNP-2 Omaha Public Power District Commonwealth Edison Braidwood Cherne Construction Co. Northern States Power --------Consumer Power Palisades Dravo Corp. Seabrook Joliet Valves, Inc. Bechtel Power Corp. Babcock & Wilcox _____ ITT Grinnell -------Bechtel Power Corp. Limerick Northeast Nuclear Energy Millstone Company Bechtel c/o PP&L Duke Power Catawba Bechtel Power Corp. WNP-2 Carolina Power & Light Baldwin Associates Clinton South Carolina Electric and Gas Carolina Power & Light Gulf States River Bend -------American Standard -----Bechtel/Public Service

Nuclear Plant (if known)

Palo Verde Wolf Creek South Texas San Onofre Grand Gulf Fort Calhoun Marble Hill San Onofre Susquehanna Hope Creek Brunswick V.C. Summer Shearon Harris

Hope Creek

Attachment 1 NRCB 88-05 May 6, 1988 Page 2 of 2

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TABLE 1 - KNOWN AND INTENDED RECIPIENTS OF CARBON STEEL MATERIALS FURNISHED BY PSI AND WJM (continued)

<u>Purchaser</u>	Receiving Company	Nuclear Plant (if known)
Capitol Pipe & Steel Gulfalloy Public Service Electric	Bechtel Bechtel Power Corp.	Hope Creek Palo Verde
and Gas	PSE&G	Salem
Conax	Conax	
Consolidated Power*	Bechtel Power	South Texas
Consolidated Power*	Duke Power	McGuire
Consolidated Power*	Boston Edison	Pilgrim
Consolidated Power*	Niagara Mohawk	Nine Mile Point
Consolidated Power*	Philadelphia Electric	Limerick
Louis P. Canuso	Bechtel Corp.	Hope Creek
Dubose	Toledo Edison	Davis-Besse
Dubose	Florida Power	Crystal River
Dubose	TVA	Sequoyah
Dubose	TVA	Watts Bar
Dubose	PP&L	Susquehanna
Dubose	SMUD	Rancho Seco
Dubose	Rochester Gas & Electric	Ginna
Dubose	Duke Power	Oconee
Dubose	Power Authority State of N.Y.	FitzPatrick
Dubose	South Carolina Electric and Gas	

*Consolidated Power is also known as Consolidated Piping and Supply located in Birmingham, Alabama, Furlong, Pa., and Charlotte, N.C.

Attachment 2 NRCB 88-05 May 6, 1988 Page 1 of 1

TABLE 2 - KNOWN AND INTENDED RECIPIENTS OF STAINLESS STEEL MATERIALS FURNISHED RY PSI AND WJM

Purchaser	Receiving Company	<u>Nuclear Plant (if known)</u>
HUB Incorporated Radnor Alloys Pullman Power Products Dravo Corp. Louis P. Canuso, Inc. L. P. Canuso, Jnc.	Bechtel Power Corp. Radnor Alloys Pullman Power Dravo Corp. Philadephia Electric Bechtel Power Corp.	Limerick Seabrook Peach Bottom

Attachment 3 NRCB 88-05 May 6, 1988

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LIST OF RECENTLY ISSUED NRC BULLETINS

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Bulletin		Date of			
No.	Subject	Issuance	Issued to		
88-04	•04 Potential Safety-Related Pump Loss		All holders of OLs or CPs for nuclear power reactors.		
85-03, Supplement 1	Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings	4/27/88	All holders of OLs or CPs for BWRs.		
87-02, Fastener Testing to Supplement 1 Determine Conformance with Applicable Material Specifications		4/22/88	All holders of OLs or CPs for nuclear power reactors.		
88-03	Inadequate Latch Engagement in HFA Type Latching Relays Manufactured by General Electric (GE) Company	3/10/88	All holders of OLs or CPs for nuclear power reactors.		
88-02	Rapidly Propagating Fatigue Cracks in Steam Generator Tubes	2/5/88	All holders of OLs or CPs for <u>W</u> -designed nuclear power reactors with steam generators having carbon steel support plates.		
88-01	Defects in Westinghouse Circuit Breakers	2/5/88	All holders of OLs or CPs for nuclear power reactors.		
87-02	Fastener Testing to Determine Conformance with Applicable Material Specifications	11/6/87	All holders of OLs or CPs for nuclear power reactors.		
37-01 Thinning of Pipe Walls in Nuclear Power Plants		7/9/87	All licensees for nuclear power plants holding an OL or CP.		

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OL = Operating License CP = Construction Permit

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

April 26, 1988

NRC INFORMATION NOTICE NO. 88-19: QUESTIONABLE CERTIFICATION OF CLASS 1E COMPONENTS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice is being provided to alert addressees to a possible problem with the certification of Class 1E components furnished by Planned Maintenance Systems (PMS) of Mt. Vernon, Illinois. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

On April 1, 1988, Wolf Creek Nuclear Operating Corporation (WCNOC) submitted a written 10 CFR Part 21 Notification to NRC Region IV concerning 60 Class 1E fuses that had been procured from PMS. One of the requirements of the purchase order (PO) issued to PMS was that the PO items were to be supplied in accordance with the requirements of a specific fuse qualification specification for Class 1E equipment. This specification contained detailed requirements including materials, environmental qualification, seismic qualification, and inspection/ test requirements. The PMS Certificate of Compliance supplied with the order certified that all of the procurement document requirements had been met and no deviations from the requirements had been identified.

The fuses were placed on hold by WCNOC because a required Quality Department surveillance had not been performed. A subsequent WCNOC surveillance revealed that the records in PMS's possession did not support the statement on the PMS Certificate of Compliance that all PO requirements had been met. Qualification specification requirements were not covered by PMS quality assurance records with respect to information on environmental qualification, radiation levels, and seismic qualification. In addition, it could not be established that a required continuity/resistance check of each fuse had been performed before the fuses were shipped.

IN 88-19 April 26, 1988 Page ? of 2

Discussion:

The WCNOC 10 CFR Part 21 notification has brought into question the validity of the Certificate of Compliance issued by PMS for Class 1E fuses that they supplied. Accordingly, licensees may wish to review Class 1E component procurements from this vendor to ensure that appropriate bases exist for the use of the components.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the technical contact listed below or the Regional Administrator of the appropriate regional office.

Charles E Romi

Charles E. Rossi, Director Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contact: Joseph J. Petrosino, NRR (301) 492-0979

Attachment: List of Recently Issued NRC Information Notices

Attachment IN 88-19 April 26, 1988 Page 1 of 1

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LIST OF RECENTLY ISSUED NPC INFORMATION NOTICES

All NRC licensees authorized to manufacture, distribute, and/or operate radio- graphic exposure devices.
All holders of OLs or CPs for nuclear power reactors.
Radioactive waste collection and service company licensees handling prepackaged waste, and licensees operating low-level waste disposal facilities.
Medical, Academic, and Commercial licensees who possess radioactive iodine.
All holders of OLs or CPs for nuclear power reactors.
All holders of OLs or CPs for nuclear power reactors.
All holders of OLs or CPs for nuclear power reactors.

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OMB No.: 3150-0011 NRCB 87-02, Supplement 1

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

April 22, 1988

NRC BULLETIN NO. 87-02, SUPPLEMENT 1: FASTENER TESTING TO DETERMINE

FASTENER TESTING TO DETERMINE CONFORMANCE WITH APPLICABLE MATERIAL SPECIFICATIONS

Addressees:

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All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

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The purpose of this supplement is to require addressees to submit additional information on the source of fasteners purchased for use in nuclear power plants.

Description of Circumstances:

Item 5 of NRC Compliance Bulletin 87-02 requested that all holders of operating licenses or construction permits for nuclear power reactors submit information regarding the identity of the suppliers and manufacturers of the safety-related and non-safety-related fasteners selected for testing. After further consideration, the NRC has determined that it needs information regarding the identity of all vendors from which safety-related and non-safety-related fasteners have been obtained within the past 10 years, a reasonable period which will not put undue burden on addressees. This information will assist the NRC in determining whether nuclear facility fasteners in use have been supplied in accordance with their intended use. In addition, this information is needed so that the NRC can properly coordinate information with other government agencies concerned with problems identified in the quality of fasteners.

Action Required:

Within 90 days from the receipt of this supplemental bulletin, addressees shall provide the following information concerning the procurement of fasteners within the past 10 years:

1. A list of the suppliers and manufacturers from which safety-related fasteners have been purchased, including addresses, and the type of fasteners purchased (i.e., the material specifications). For those fastener purchases made from fastener suppliers and/or original equipment manufacturers, any available information concerning the manufacturer or sub-tier supplier of the fastener also should be provided.

NRCB 87-02, Supplement 1 April 22, 1988 Page ? of ?

2. For non-safety-related fastemers the same information as requested in item 1.

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The written reports requested above shall be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555, under oath or affirmation under the provisions of Section 182a, Atomic Energy Act of 1954, as amended. In addition, a copy shall be submitted to the appropriate Regional Administrator.

This requirement for information was approved by the Office of Management and Budget under a blanket clearance number 3150-0011. Comments on burden and duplication may be directed to the Office of Management and Budget, Reports Management, Room 3208, New Executive Office Building, Washington, D.C. 20503.

If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

Charles & Rossi

Charles E. Rossi, Director Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contacts: J. T. Conway, NRR (301) 492-0978

E. T. Baker, NRR (301) 492-3221

Attachment: List of Recently Issued NPC Bulletins

Attachment NRCB 87-02, Supplement 1 April 22, 1988

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LIST OF RECENTLY ISSUED NRC BULLETINS

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Bulletin No.	Subject	Date of Issuance	Issued to
88-03	Inadequate Latch Engagement in HFA Type Latching Relays Manufactured by General Electric (GE) Company	3/10/88	All holders of OLs or CPs for nuclear power reactors.
88-02 Rapidly Propagating Fatigue Cracks in Steam Generator Tubes		?/5/88	All holders of OLs or CPs for <u>W</u> -designed nuclear power reactors with steam generators having carbon steel support plates.
88-01	Defects in Westinghouse Circuit Breakers	2/5/88	All holders of OLs or CPs for nuclear power reactors.
87-02	Fastener Testing to Determine Conformance with Applicable Material Specifications	11/6/87	All holders of OLs or CPs for nuclear power reactors.
87-01	Thinning of Pipe Walls in Nuclear Power Plants	7/9/87	All licensees for nuclear power plants holding an OL or CP.
86-04	Defective Teletherapy Timer That May Not Terminate Dose	10/29/86	All NRC licensees authorized to use cobalt-60 teletherapy units.
86-03	Potential Failure of Multiple ECCS Pumps Due to Single Failure of Air-Operated Valve in Minimum Flow Recirculation Line	10/8/86	All facilities holding an OL or CP.
86-02	Static "O" Ring Differential Pressure Switches	7/18/86	All power reactor facilities holding an OL or CP.
86-01	Minimum Flow Logic Problems That Could Disable RHR Pumps	5/23/86	All GE BWP facilities holding an OL or CP.

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Attachment 1

Fastener Testing Data Sheet

*Sample ID#

Fastener Description:

Description of Sample Stock Location:

Material Specification as Documented by Licensee Records:

Head Marking (Specification and Manufacturer):

******Class/Procurement Level:

General Plant Application (e.g., Pressure Boundary, Structural)

Vendor:

QA Requirements Imposed on Vendor:

Licensee Representative:

Signature _____

Date ___

*The sample ID# shall have a prefix that contains the licensee facility initials.

******If applicable, please provide an explanation for your classification system.

Attachment 2

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Data Summary

	Mechanical Analysis		Chemical Analysis ¹						
<u>ID#</u>	Hardness	UTS	0.2% YS	_ <u>C</u>	Mn	Р	 <u>S1</u>	Mo	Cr

Note: UTS-ultimate tensile strength; YS-yield strength; C-carbon; Mn-Manganese; P-Phosphorous; S-Sulfur; Si-Silicon; Mo-Molybdenum; Cr - Chromium.

¹The elements listed apply to ASTM A193 B7 or SA193 B7 material. The elements to be reported for other materials tested, shall conform to those reported in the applicable material specification. Properties found out of specification shall be noted with an asterisk.

Attachment 3 NRC Compliance Bulletin 87-02 November 6, 1987

LIST OF RECENTLY ISSUED BULLETINS

Bulletin No.	Subject	Date of Issuance	Issued to	
87-01	Thinning of Pipe Walls in Nuclear Power Plants	7/9 /87	All licensees for nuclear power plants holding an OL or CP.	
86-04	Defective Teletherapy Timer that May Not Terminate Dose	10/29/86	All NRC licensees authorized to use cobalt-60 teletherapy units.	
8 6-03	Potential Failure of Multiple ECCS Pumps Due to Single Failure of Air-Operated Valve in Minimum Flow Recirculation Line	10/8/86	All facilities holding an OL or CP.	
86-0?	Static "O" Ring Differential Pressure Switches	7/18/86	All power reactor facilities holding an OL or CP.	
8 6-01	Minimum Flow Logic Problems That Could Disable RHR Pumps	5/23/86	All GE BWR facilities holding an OL or CP.	
8 5-03	Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings	11/15/85	All power reactor facilities holding an OL or CP.	
85- 02	Undervoltage Trip Attachments of Westinghouse DB-50 Type Reactor Trip Breakers	11/5/85	All power reactor facilities holding an OL or CP.	
8 5-01	Steam Binding of Auxiliary Feedwater Pumps	10/29/85	Nuclear power facilities and CPs listed in Attachment 1 for action; all other nuclear power facilities for information.	

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SSINS No.: 6820 OMB No.: 31500011 NRC Compliance Bulletin 87-02

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR REGULATION WASHINGTON, D.C. 20555

November 6, 1987

NRC COMPLIANCE BULLETIN NO. 87-02: FASTENER TESTING TO DETERMINE CONFORMANCE WITH APPLICABLE MATERIAL SPECIFICATIONS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

The purpose of this bulletin is to request that licensees 1) review their receipt inspection requirements and internal controls for fasteners and 2) independently determine, through testing, whether fasteners (studs, bolts, cap screws and nuts) in stores at their facilities meet required mechanical and chemical specification requirements.

Description of Circumstances:

Over the past year, some NRC procurement inspections have included the collection and testing of a small sample of fasteners. This limited program was initiated in response to a concern by the Industrial Fastener Institute over the potential use of inferior fasteners in military and industrial applications, including nuclear power plants. The results of NRC testing of fasteners obtained from San Onofre, Palo Verde and Rancho Seco indicates that 11 out of the 32 fasteners tested do not meet specification requirements for mechanical and/or chemical properties. Nine of the nonconforming bolts from Palo Verde and San Onofre were out of specification based on chemistry. Five nonconforming bolts came from Palo Verde and were all marked as SAE Grade 8 but were actually found to be SAE Grade 8.2. The four nonconforming fasteners from San Onofre were slightly out of specification for nickel or chromium. Two bolts from Rancho Seco with ASTM A193 B7 head markings were determined to have an average ultimate tensile strength of approximately 55 ks1 instead of the specified 125 ks1 for ASTM A193 B7 bolting material. The chemical analysis of these bolts indicated that they were medium carbon steel material. Rancho Seco is still investigating the extent and safety significance of these substandard fasteners.

NRC Compliance Bulletin 87-02 November 6, 1987 Page 2 of 3

In a separate effort, Calvert Cliffs recently tested 1539 fasteners following their discovery that commercial grade fasteners had been used in safety-related applications. The test results indicated that 399 failed to meet specification requirements for mechanical and/or chemical properties. Based on evaluations performed by Calvert Cliffs, the fasteners which did not meet specification would have still fulfilled their safety function.

Actions to be Taken:

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The results of the limited testing described above have demonstrated the need to obtain additional information on the adequacy of fasteners used in nuclear power plants.

Within 60 days from the receipt of this bulletin, licensees are requested to provide the following information concerning their receipt inspection and internal control procedures for fasteners and the results of independent testing of fasteners:

- Describe a) the characteristics currently examined during receipt inspection of fasteners (i.e., head markings for grade and manufacturer symbols, review of certified material test report or certificate of conformance), and b) internal controls utilized during storage and issuance from stock to assure the appropriate use of fasteners.
- 2. Select a minimum sample of ten (10) non-safety related fasteners (studs, bolts, and/or cap screws), and ten (10) safety-related fasteners (studs, bolts, and/or cap screws) from current, in use, stock. The sample is to be obtained by the licensee with the participation of an NRC inspector. Fasteners procured to meet the following chemical and mechanical properties are of interest: A-193 grades B7, B8, and B16; SAE J429 grades 5 and 8; A-449; A-325 Types 1,2 or 3; A-354 grades BB, BC, BD; A-490; A-320 LTM; A-307; A-563; or equivalent.
- 3. For the selected sample of fasteners in item 2, include a sample of typical nuts that would be used with each fastener (one-for-one). In particular, nuts purchased to the chemical and mechanical specifications of A-194 are of interest.
- 4. Chemical testing shall be performed on all samples. Mechanical testing shall be performed on each safety-related fastener. Hardness testing shall be performed on each nut and non-safety-related fastener. All testing shall be performed by a laboratory which the licensee has qualified for this type of testing and appears on the licensee's approved vendor list. Testing performed shall be done in accordance with the requirements of the fastener's specification, grade, and class, and the test shall evaluate the ultimate tensile strength, hardness and chemical properties as required by the fastener's specification, grade, and class. Each sample shall be tagged with the sample's ID number.

NRC Compliance Rulletin 87-02 November 6, 1987 Page 3 of 3

- 5. The results of all tests, together with supporting information, are to be reported to the NRC utilizing the format shown in Attachments 1 and 2 of this bulletin. Include the names and addresses of suppliers and manufacturers of safety-related fasteners and, to the extent possible, of non-safety-related fasteners. For any fastener found out of specification, provide an evaluation of the safety significance including consideration of the most limiting application.
- 6. Based on the results of the testing and review of current procedures, describe any further actions being taken to assure that fasteners used in the plant meet the requisite specifications and requirements and that the operability of safety-related plant components is not affected.

The written reports shall be submitted to the appropriate Regional Administrator under oath or affirmation under provisions of Section 182a, Atomic Energy Act of 1954, as amended. Also, the original copy of the cover letters and a copy of the reports shall be transmitted to the U.S. Nuclear Regulatory Commission, Document Control Desk, Washington, D.C., 20555 for reproduction and distribution.

This request for information was approved by the Office of Management and Budget under a blanket clearance number 31500011. Comments on burden and duplication may be directed to the Office of Management and Budget, Reports Management, Room 3208, New Executive Office Building, Washington, D.C., 20503.

If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

Charles E Prossi

Charles E. Rossi, Director Division of Operational Events Assessment Office of Nuclear Reactor Regulation

Technical Contacts: J. T. Conway, NRR (301) 492-9740

> E. T. Baker, NRR (301) 492-4783

J. C. Harper, NRR (301) 492-4143

Attachments:

- 1. Fastener Testing Data Sheet
- 2. Data Summary
- 3. List of Recently Issued Bulletins