

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

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

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2 NUCLEAR REGULATORY COMMISSION

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

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8 Public Meeting

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10 THURSDAY, JULY 21, 1988

11 One White Flint North

12 Rockville, Maryland

13
14 The Commission met, pursuant to Notice, at
15 2:00 p.m.

16
17 COMMISSIONERS PRESENT:

18
19 LANDO W. ZECH, JR., Chairman of the Commission

20 THOMAS M. ROBERTS, Commissioner

21 KENNETH M. CARR, Commissioner

22 KENNETH C. ROGERS, Commissioner
23
24
25

1 NRC STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

2

3 S. Chilk W. Parler

4 V. Stello T. Murley

5 B. Grimes

6

7 AUDIENCE SPEAKERS:

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9 F. Rosa L. Shao

10 B. Hayes

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P R O C E E D I N G S

CHAIRMAN ZECH: Good afternoon, ladies and gentlemen.

Recently, through the efforts of the NRC Staff, the NRC Licensees and some affected manufacturers, it has come to the Commission's attention that some substandard equipment and material may have been purchased by some of our reactor plant licensees who understand that it would appear that counterfeit markings may have been placed on some of this equipment.

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

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

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

8 [No response.]

9 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
13 do, what I thought may be appropriate is to first make clear
14 that we view the problem as a serious problem, one for which
15 there are clear regulatory implications that we're going to
16 have to deal with. But more significantly, there is a clear
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.

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

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

5 The specific issues of which you will hear today --
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
9 briefing, and to deal with the issues, a rather broad
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.

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

1 equipment that's involved.

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

7 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
3 are of course coordinating very closely with the Office of
4 Investigation. We have issued Information Notices and
5 Bulletins, which I understand have been made available outside
6 the room here. We've communicated with NUMARC, as Vic Stello
7 said. We've coordinated with other federal agencies. We are
8 now developing the scope of the electrical equipment problem to
9 make sure that we understand just how broad that issue is.
10 We've done some safety studies and analysis, which I'll
11 describe in a moment. And then finally, we're beginning to
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 program. Therefore, we believe that the chances are high that
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
16 connections are structurally redundant; that is to say, the
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.

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

1 significantly out of specification. So this small percentage
2 we are confident can be adequately covered by the design
3 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.

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

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

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

23 Based on the experience that we have, the analysis
24 that we've done, -- here again for flanges and fittings and
25 lugs -- we have concluded that there is no immediate safety

1 concern. We will continue, of course, to follow this issue
2 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,
19 we have not totally determined the scope of that. And in
20 addition, we haven't concluded all of our safety analyses on
21 electrical equipment.

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

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

1 conclusion is that we must continue to vigorously deal with the
2 problem but that there is no immediate safety issue. We are
3 proposing no actions, no regulatory actions beyond those that
4 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 may
8 proceed.

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

11 [Slide.]

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.

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

25 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
3 mechanism to provide transfer of information between the
4 agencies and some commonality of action; and the second is when
5 we find that federal or state agencies are customers of the
6 companies who are suspected of misrepresenting their product,
7 we will directly inform those agencies, and we have done that
8 in the case of the electrical equipment.

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.

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

19 [Slide.]

20 I'd like to go to the second visual and just outline
21 the briefing today. We'll scope the problem, discuss some of
22 the existing programs in quality assurance and the ASME code
23 which are meant to detect and prevent substandard products.
24 Third, give some specific examples of the equipment that's been
25 affected by these recent problems. And fourth, mention some

1 specific coordination with other federal agencies, and then
2 deal briefly with overall problems and issues that come out of
3 this.

4 [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
9 extends potentially to all materials, equipment and components,
10 as they are subject to counterfeiting or substitution of
11 materials along the procurement route. Our existing quality
12 assurance and vendor audits are generally structured to confirm
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
16 substantive audit should run across obvious instances of fraud
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.

20 As Dr. Murley mentioned and Mr. Stello mentioned, in
21 the last couple of years we've run unto a number of additional
22 instances of substitution or counterfeiting that have been
23 primarily identified through our process of allegations; when
24 individuals in the industry find something wrong, they have an
25 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
5 are offered under nuclear production standards. A larger
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.

16 MR. GRIMES: They are required to have auditing
17 programs. In the past we have found that these audits tend to
18 be more paper than substance, and we have been concerned about
19 cases where we have visited the suppliers and found things that
20 the immediate preceding audits of the licensees have not found.
21 And we issued an information notice this spring and pointed out
22 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.

4 MR. STELLO: Let me make a point. We have found
5 cases where a legitimate company, if audited, would be shown to
6 be satisfactory in producing electrical equipment such as
7 breakers. But there are companies who take surplus scrap,
8 breakers, refurbish them, put counterfeit labels -- they are in
9 fact an identical-looking breaker in appearance because they
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.

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

7 MR. STELLO: I don't know.

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.

11 MR. ROSA: Faust Rosa, Chief of the Electrical
12 Systems Branch. There is a certification process associated
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 guy'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.

9 CHAIRMAN ZECH: It may not.

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

1 whose name was on the package, and additional tests were done
2 to determine that the breakers were substandard.

3 MR. MURLEY: If I might just add a point, it may be
4 obvious from this discussion but it's unlikely that you can
5 find it from a visual type of inspection or an inspection of
6 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?

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

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

1 inspection is in fact comprehensive enough.

2 The problems that we see clearly suggest that is an
3 area that needs further looking. I don't believe we are
4 prepared today to tell you that we are satisfied that that
5 receipt inspection is enough; perhaps to the contrary, to
6 suggest that there are probably things that need to be done in
7 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.

11 CHAIRMAN ZECH: It is certainly something that has
12 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
16 looked at his operation and decided not to purchase from him.
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

1 briefly go through the main characteristics of the Appendix B
2 program and the ASME system with visual number four.

3 [Slide.]

4 The Appendix B system applies to all safety-related
5 components and nuclear power plants; it sets forth fairly
6 comprehensive but very general requirements with respect to
7 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.

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

25 [Slide.]

1 For key materials in the nuclear power plant, the
2 Section III of the ASME code contains testing, fabrication,
3 installation, material examination, testing and QA requirements
4 for the key components -- for example, pressure boundary
5 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.

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

21 [Slide.]

22 The commercial grade dedication process -- this
23 applies primarily to electrical components and other mechanical
24 components such as pumps or valves. The commercial grade
25 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
3 be procured from a manufacturer's catalog. The dedication
4 process requires the utility to specify specific technical
5 attributes and to determine what attributes are critical to
6 performing the safety function of that particular component,
7 and then an acceptance process to assure that those
8 characteristics are met.

9 We found in practice that oftentimes there is an
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
13 equipment, as the basis for allowing something to become
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 on
25 the cable problem.

1 MR. GRIMES: Yes. Number five, please.

2 [Slide.]

3 I would like to just list and then briefly go through
4 some of the specific examples of misrepresented equipment. I
5 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 MR. GRIMES: In terms of materials, one of the
10 examples I'll discuss on ASME materials, there's a large amount
11 of it used in safety-related applications. The flanges and
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
15 tens of fittings, and in one case it's reported that one plant
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

1 number of pieces in systems but the margins are so large here,
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
7 design, but we have factors of three or four applied in the
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 plants. And indeed, we don't appear to have had a history of
14 these types of things failing.

15 CHAIRMAN ZECH: So you're agreeing with Dr. Murley's
16 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,
25 into safety grade systems. So at this point we really don't

1 have evidence that there is much at all from those five
2 companies in safety grade systems, but the potential is there
3 so we're taking it seriously and we're tracking it down to find
4 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.

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

1 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.

6 CHAIRMAN ZECH: That's our own people.

7 MR. GRIMES: That's our own people, checking on
8 specific utilities. We do three or four of those a year on a
9 spot-check basis, and then if we find problems in a particular
10 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.

16 MR. GRIMES: That's correct. In the last couple of
17 years the industry has become more active in this regard and
18 have published some suggested guidelines on this process which
19 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

1 familiar with the fastener issue, and Dr. Murley briefly
2 discussed the safety margins available there, and we don't see
3 it as an immediate safety problem.

4 [Slide.]

5 The ASME material question has been going on for
6 several months now, and that is a case where certified material
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?

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

22 When we initiated the bulletin on this problem we
23 were not sure whether the material properties would be
24 substandard or whether the paper was the only thing that was
25 the problem. As it turns out, as some testing has been done,

1 while some material has met ASME requirements for strength,
2 there have been other materials as low as 60 percent of
3 required tensile strength. Typically, that we found in plant
4 has not been lower than about 20 percent below, or 80 percent
5 of the required tensile strength as inferred from hardness
6 tests.

7 The Action Plan involves extensive record review,
8 which we are just completing this week, to determine customers
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
22 initial results of those tests and the initial records reviews
23 by utilities.

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

1 industry doing? Can you elaborate on that a bit?

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

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

25 They have hired Bechtel Corporation to get a generic

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

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

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

15 MR. GRIMES: Just two more points in the Action Plan.
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? Do
24 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-
4 05 which is the so-called Acceptance Criteria for Testing and
5 also for Short-Term Operations.

6 CHAIRMAN ZECH: Will that be a bulletin?

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
15 bulletin will be out in about two weeks; a separate bulletin.

16 CHAIRMAN ZECH: So we have two bulletins underway
17 being prepared now.

18 MR. SHAO: Yes. So 88-05, there will be another
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
18 scale that I'm satisfied is as quickly as we can possibly do
19 it.

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

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

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

13 So I would commend you to, as far as the NRC effort
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
16 that they have the information and we can follow it through to
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
20 or not. So far, I guess you're telling us that as far as you
21 know, we do not. Is that correct?

22 MR. MURLEY: Correct.

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

1 we need a lot of help getting there, and that's why we need the
2 utilities, the industry to be involved in this problem
3 themselves. It's their responsibility to operate those plants
4 safely, as we know. We provide the regulatory framework for
5 safe operations, and I'm pleased to hear that you are working
6 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
14 to fasteners, for which the problem is very, very large.

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.

25 CHAIRMAN ZECH: Well, it is important to keep the

1 other government agencies involved, and I think that meeting
2 coming up should be scheduled reasonably soon. And in the
3 meantime, though, I think it behooves us to continue to make
4 sure that the other agencies are involved, as I believe we have
5 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.

9 [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
16 in talking to the legitimate manufacturer of both valves, we
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.

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

25 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
3 a very early stage in this particular example. We don't have
4 specific evidence that these are being supplied to the nuclear
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
8 safety significant.

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.

14 [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
18 which were not particularly substandard as far as we know, just,
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.

23 There is potential safety significance here, however
24 it's not clear that any of these individual cases will be found
25 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
4 Information Notice also in April. We have performed an
5 inspection at Plant Maintenance Systems in May and verified
6 that the program was inadequate and have done extensive records
7 review, and in your handout package there is a list of
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?

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

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

23 MR. GRIMES: Yes.

24 CHAIRMAN ZECH: Well, have we tracked down any of
25 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.

20 CHAIRMAN ZECH: But the plants, these people know
21 that and they're checking it now. Is that what's going on?

22 MR. GRIMES: Yes, they're in the process of checking
23 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

1 understand at the moment, the equipment that they are dealing
2 with is not refurbished, it's new, commercial grade equipment
3 that they're adding documentation to that suggests that it is
4 in fact Class 1E -- been manufactured to Class 1E standards.
5 But it is legitimate, bona fide new equipment that is being
6 sold in that manner, so we don't have a question, as you are
7 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 --

23 CHAIRMAN ZECH: And do the utilities have that?

24 MR. GRIMES: Yes. And we asked them to distribute it
25 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.

6 CHAIRMAN ZECH: And they're tracking it down now, is
7 that what's going on?

8 MR. GRIMES: Yes, that's correct.

9 CHAIRMAN ZECH: All right. Let's proceed.

10 [Slide.]

11 MR. GRIMES: The last specific example I want to
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.

21 Now in this case, to differentiate it from the PMS
22 case, in this case things were non-certified to be safety grade
23 components, and we do not know whether this material has
24 actually arrived into a safety grade system through a utility's
25 dedication process. So there we are in the process of pulling

1 the string on that, providing information to the industry on
2 specific orders that we know have happened and been drop-
3 shipped, for example, to nuclear utilities.

4 The concern here is that a refurbishment process done
5 by these companies using non-manufacturer equipment could
6 result in degraded performance, for example, of a circuit
7 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
16 going on and that apparently this was being represented as new
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.

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

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

3 CHAIRMAN ZECH: But you don't know that they are.

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

10 CHAIRMAN ZECH: I understood.

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

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

7 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?

12 MR. GRIMES: In some cases that seems to be the case,
13 to provide a particular perhaps older breaker not immediately
14 available in inventory. Both Westinghouse and G.E. Supply
15 Companies seem to use whatever sources may be available for
16 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.

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.

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

4 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.

10 MR. STELLO: This company also did that. They went
11 in and bought surplus electrical equipment, new, so they had
12 that as well. But to answer your question as to what really is
13 going on, we haven't really gotten to the bottom of that yet
14 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 --

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

9 MR. STELLO: Or cancelled plants or whatever, yes.

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.

2 But in any case, I think we would be interested in
3 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.

11 MR. ROSA: Yes, all major electrical equipments have
12 both model numbers and ID numbers, so it's possible in theory
13 anyway to trace a breaker back to the manufacturer through the
14 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 guess 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
11 rating is on a form that's on paper, it will be on there and
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
15 able to determine that because we do know that the new paper
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.

1 We met with NUMARC on July 12th to inform them of the
2 problem and asked them to establish whatever resources were
3 needed to scope and cope with this situation. We have, as Mr.
4 Shao indicated, a bulletin under development which should be
5 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.

11 We are doing a large number of follow-up inspections
12 at various places in the supply chain to determine whether
13 these components are being incorrectly updated for use in
14 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 of
22 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

1 affecting those agencies that were in our own example to those
2 agencies. That includes the Navy and a number of other federal
3 agencies.

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

6 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.

14 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.

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

23 CHAIRMAN ZECH: All right.

24 [Slide.]

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

1 to go through, Mr. Chairman, and Visual No. 6 indicates our
2 coordination to date with federal agencies. As you know, you
3 sent a letter requesting OMB to organize an interagency meeting
4 and offered NRC's assistance, and we will be working with OMB
5 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
19 an over-reliance on paper certification; the basis for that
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

1 receipt testing, that 85 of those contractors dropped out of
2 the supply business for fasteners. So we think that actual
3 receipt testing has a very large potential for discouraging
4 people who don't intend to supply a top quality product from
5 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 business
19 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

1 the ad hoc groups to address the specific issues, issues that
2 we've identified, NUMARC is forming a working group to be a
3 little more proactive on the long term and determine what
4 things can be done to reduce the likelihood of this sort of
5 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,
18 et cetera, it doesn't cover the other stuff. But I've also
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 --

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

4 [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 quality assurance system.

10 But under that system that presumably people should
11 have I would assume that if a nuclear utility would discover
12 the thing that you asked me about, it would take the
13 appropriate action to make sure that it certainly doesn't use
14 the material and alerts others. But I would assume that's one
15 of the things that this agency, who is supposed to be the
16 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.

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

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

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

11 MR. STELLO: I don't either, but my point is that is
12 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 has. They have the authority to debar certain vendors who have
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 rascilians, 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?

15 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
19 gotten the industry involved through NUMARC. As Mr. Stello
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

1 my fellow Commissioners -- Commissioner Roberts?

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.

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

18 COMMISSIONER ROBERTS: Let me give you my opinion. I
19 certainly think Appendix B is adequate. Now, when you get into
20 specific things such as counterfeiting a UL label, that's a
21 different matter. But the framework is there in Appendix B.

22 MR. MURLEY: I should point out, I hope it's clear,
23 that Appendix B does not apply to this electrical equipment
24 that we've been talking about. That is procured under and
25 falls under I believe Appendix A, does it not? So Appendix B

1 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.

21 The point is that even with Appendix B there where
22 people go out and by design are fabricating components and
23 doing so willfully violating in a fraudulent manner documents
24 and pieces of equipment, to suggest that our system is good
25 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
4 comprehensive receipt inspection than we now have.

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 to be. That's a non-destructive test.

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
20 want and need to do more in that area. I'm not satisfied today
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 --

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

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

15 MR. GRIMES: That's correct. And indeed, as I
16 mentioned, when we first put out the bulletin we weren't
17 certain that there was substandard material or whether it was
18 just falsified paper, and as it turned out it was not the
19 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
3 licensees' problem and not try to solve the whole thing
4 ourselves. I think we must be concerned about the quality but
5 it's not our obligation to solve the problem of this whole
6 thing, it seems to me. Even though we are a regulatory agency
7 and we have to be assured of the quality of what's happening,
8 but not necessarily every step in that process that leads to a
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
21 authority of the agency and the government at large can help
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
10 safety, where they got them from, where they are, et cetera.
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.

15 There may be millions of counterfeit goods out there.
16 I guess the government perhaps would be interested in those,
17 but unless something that is significant to safety ends up in
18 one of these power plants, that's not one of our primary
19 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

1 requirements. The onus is on the licensee and all his tiers of
2 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.

8 MR. PARLER: Well, I wouldn't necessarily agree with
9 that. You have the Part 21 problem. At least we have recourse
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.

16 CHAIRMAN ZECH: Commissioner Rogers, anything else?

17 COMMISSIONER 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.

24 We have a very serious issue before us in my
25 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
3 safety, and we're concerned in this particular area about the
4 safe operation of the plants. I appreciate the staff's
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
20 they have that in their organization, and if so where is it.

21 And along the same line on the safety-related and
22 non-safety related and the balance of plant and the nuclear
23 steam supply system, we've all heard the various discussions on
24 that. I can't help but feel that the balance of plant and the
25 so-called non-safety related systems can indeed cause us

1 problems, and I don't want to get into a big debate about our
2 specific regulatory responsibilities and so forth. But I do
3 believe that it's awfully important that we recognize that even
4 in the balance-of-plant systems, we should try to make sure
5 that we don't have any defective material. Whether it's in the
6 safety-related or non-safety related I don't think is what we
7 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.

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

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

1 into our system, into the system in this utility industry, and
2 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
4 that we're looking right now at the plants to make sure that we
5 don't have any safety situations out there that would cause us
6 to take regulatory actions, and if it's necessary we'll take
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.

11 Mr. Stello, you have a comment?

12 MR. STELLO: Mr. Chairman, I think there was -- at
13 least I perceived there to be -- some confusion as to the fact
14 that there clearly is equipment we hold to be very important
15 and we require Appendix B. The safety-related equipment in a
16 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
20 equipment. That's commercial grade. If they have equipment
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.

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

1 supposed to be ASME code, and ASME code applies to balance of
2 plant. We're going to hold them to those standards. We want
3 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
9 conforming in balance of plant, I wish to correct the record.
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.

21 We're only trying to get our arms around this
22 problem, let's continue to work it on the staff and with the
23 priority you're giving it, and continue to work with the
24 industry and the utilities and keep the Commission informed.

25 With that we stand adjourned. Thank you very much.

[Whereupon, at 4:45 p.m., the meeting was adjourned.]

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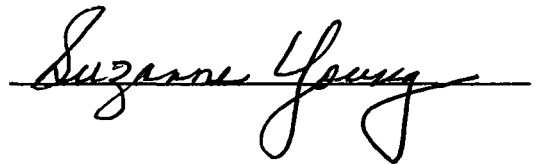
This is to certify that the attached events
of a meeting of the U.S. Nuclear Regulatory Commission
entitled:

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.

A handwritten signature in cursive script, reading "Suzanne Young", written over a horizontal line.

Ann Riley & Associates, Ltd.

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

JULY 21, 1988

OVERALL ACTION PLAN

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

SCOPE OF PROBLEM

- O ALL EQUIPMENT SUBJECT TO COUNTERFEIT
OR SUBSTITUTION
- O EXISTING QA PROGRAMS AND VENDOR AUDITS:
 - CONFIRM PRODUCT QUALITY
 - ASSUME INTEGRITY
 - NOT FOCUSED ON INTENT TO DECEIVE

TALKING POINTS ON SCOPE OF PROBLEM

- o ESSENTIALLY ALL MATERIALS, EQUIPMENT AND COMPONENTS ARE SUBJECT TO COUNTERFEITING OR SUBSTITUTION
- o 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
- o 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
- o A LARGER FRACTION OF SAFETY-RELATED COMPONENTS ARE BEING PROCURED COMMERCIAL GRADE BY INTERMEDIATE SUPPLIERS AND "UPGRADED" TO NUCLEAR QUALITY-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
- O COMMERCIAL GRADE EQUIPMENT
- O DEDICATION PROCESS FOR SAFETY-RELATED APPLICATIONS

TALKING POINTS ON 10 CFR 50 APPENDIX B PROCUREMENT

- 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.
- o LICENSEES ARE RESPONSIBLE FOR ASSURING THAT ALL SAFETY-RELATED COMPONENTS COMPLY WITH THE APPLICABLE QUALITY REQUIREMENTS OF APPENDIX B.
- o 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 QUALITY.
- o ALTERNATIVELY COMPONENTS MAY BE PROCURED AS "NON-SAFETY" OR "COMMERCIAL GRADE" AND "DEDICATED" BY THE LICENSEE FOR SAFETY-RELATED APPLICATION.

TALKING POINTS ON ASME SYSTEM

- o 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)
- o 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 QA 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
- 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 COMMERCIAL-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:

- o 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:

- NRC NOTIFIED BY LICENSEE APRIL 21, 1988
- INFORMATION NOTICE ISSUED JULY 12, 1988 TO INFORM INDUSTRY OF PROBLEM WITH NON-SAFETY-RELATED VALVES
- LICENSEES EXPECTED TO TAKE APPROPRIATE CORRECTIVE ACTION
- NRC WILL CONTINUE TO FOLLOW

TALKING POINTS ON ELECTRICAL EQUIPMENT - PMS

PROBLEM:

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

SAFETY SIGNIFICANCE

- o COMPONENTS NOT SUBJECTED TO REQUIRED TESTS THUS INVALIDATING IEEE QUALIFICATION AND CERTIFICATION

ACTION PLAN:

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

SCOPE:

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

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
 Niagara 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
- o 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

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
- 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

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.

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.



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

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.

<u>Plant or Utility</u>	<u>Items (Qty)</u>	<u>Date</u>	<u>Sold to and Purchase Order Nos.</u>	<u>Invoice¹</u>	<u>Company²</u>
Palisades	W EB1020 (2)	9/14/87	WESCO Lansing, MI P03255-87089	I 10995	ATS
Harris	ITE EF3B125(2)	2/9/88	WESCO, Raleigh, NC	WO 24781	CAL BKR
	ITE EF3B125(2)	3/2/88	POs DS3645-80171	WO 25377	CAL BKR
	ITE EF3B125(6)	3/14/88	DS3645-08047	WO 25811	CAL BKR
Dresden	³ W FA 2100 (2)	12/21/87	WESCO Elmhurst, IL	I 14174	HLC
Quad Cities	W EH 2050 (3)	1/18/88	WESCO Davenport, IA D/S5106-259401	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	6/25/87	06157-730176	I 11752	"
	A200M1CAC (13)		"		"
	A201K1CA (8)		"		"
	A201K2CA (4)		"		"
	AN13A (6)		"		"
	W HFD 3020 (12)	6/16/87	06167-740072	I 11760	"
Braidwood	W MA3600 (1) w/ bell alarm	7/15/86	WESCO Elmhurst, IL	I 07721	"
Ginna	W FA3125 (3)	9/26/84	WESCO Rochester, NY 93095	I 30501	GEN MAG
	W EA2090 (3)	"	"	I 30371	"
	W FA3125 (3)	"	"	"	"
Clinton (Baldwin Associates)	SD Q0220 (10)	7/18/84	WESCO Peora, IL 91586	I 29708	"
Rancho Seco (SMUD)	W JB3100 (2) W/LINE & LOAD LUGS	8/8/84	WESCO Sacramento, CA 90629	I 29971	"
	FPE NEF433030 (1)	3/6/87	SMUD RN870356713	I 27290	GEN BKR

<u>Plant or Utility</u>	<u>Items (Qty)</u>	<u>Date</u>	<u>Sold to and Purchase Order Nos.</u>	<u>Invoice¹</u>	<u>Company²</u>
SONGS	GE TED134030WL (1)	6/10/88	Southern Ca. Edison 8B068300	I 102174	ECD
	IT BQ2B030	6/9/88	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 D7232-8980	I 6076	HLC
	FPE NE224060(2)	4/11/88	CED, San Luis Obispo, CA 7605087444D	I 15793	HLC
	W HMC3800F (1)	1/28/88	7605-D76367D	I 14829	HLC
	8MC800 (1LOT)	"	"	"	"
	LUGS (3)	"	"	"	"
	ITE EE3B050(1)	11/3/87	7605D-76116D	I 13783	"
	EE3B030 (1)	"	"	"	"
	W EB3050 (1)	10/2/87	7605-D209190D	I 13333	"
	FPE NE224100 (2)	5/13/88	7605-D87976D	I 16309	"
Detroit Ed.	IT EH3B100 (1)	3/18/88	Detroit Ed. Monroe Pwr plant (190501)	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, IL (328M502114CS)	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 Forces (117053L)	I 34435	AC BKR
	IT EE3B070 (3)	"	117055L	I 34436	"
	EE2B100 (1)	"	"	"	"
	EE2B050 (2)	"	"	"	"
	EE2B030 (1)	"	"	"	"
	GE TEF134015 (1)	6/15/78	GESCO El Monte, CA	I 11734	HLC
	W EB2030 (2)	5/2/88	Southern Ca. Edison H1238007	I 101586	ECD
	SD SBW-12	1/28/88	Z0048013	I 100384	"
	CONTACTOR (1)	"	"	"	"
	SD LO-3 CONTACTOR(1)	"	"	"	"
VEPCO	IT EF3H050 (1)	6/9/88	Electrical Suplrs Norfolk, VA 1410Q34998	WO 28849	CAL BKR

<u>Plant or Utility</u>	<u>Items (Qty)</u>	<u>Date</u>	<u>Sold to and Purchase Order Nos.</u>	<u>Invoice¹</u>	<u>Company²</u>	
Carolina Power & Light	IT EF3B125 (2)	2/9/88	WESCO Raleigh, NC	WO 24781	CAL BKR	
	EF3B125 (2)	2/26/88	DS3645-80171	WO 25377	"	
	EF3B040 (6)	3/11/88	DS3645-08047	WO 25811	"	
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 & Light	IT E42B020 (2)	1/28/88	Treadway Elect. Little Rock, AR 1217D	WO 24372	CAL BKR	
	IT QJ2B200 (2)	1/28/88	1215D	WO 24373	"	
	GE TEB122015WL (1)	1/28/88	1216D	WO 24376	"	
	IT QJ2B200 (2)	2/2/88	1245D	WO 24505	"	
	W MCP331000R (4)	2/17/88	1329D	WO 25104	"	
	IT QJ2B200 (2)	2/24/88	1357D	WO 25268	"	
	GE TEB132090WL (1)	3/1/88	1391D	WO 25485	"	
	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	1589D	WO 26447	"	
	IT QJ2B200 (2)	4/8/88	1637D	WO 26707	"	
	IT QP1B020 (2)	5/6/88	1754D	WO 27676	"	
	GE TE111015 (1)	5/18/88	1805D	WO 28164	"	
	IT QJ2B200 (2)	6/7/88	1869D	WO 28757	"	
	GE TED134060WL (1)	6/16/88	1930D	WO 29038	"	
	W 656D148G03 (1)	3/15/88	1480D	I 52997	"	
	MOTOR OPERATOR					
	IT QJ2B200 (2)	6/7/88	1869D	I 53437	"	
	GE TEB122050WL (1)	6/30/88	1995D	I 54164	"	
	GE THED136100WL (1)	11/30/87	9975D	WO 22497	"	
	GE TED126050 (1)	7/15/87	9324D	WO 18318	"	
	IT QJ3B200 (3)	7/31/87	9369D	WO 18774	"	
	IT QJ2B200 (3)	7/31/87	9369D	WO 18774	"	
	GE THED136060WL (2)	8/7/87	9430D	WO 19041	"	
	IT QJ3B200 (1)	8/13/87	9473D	WO 19245	"	
	GE THGB2120 (3)	8/7/87	9430D	WO 19041	"	
	IT QJ3B200 (6)	8/16/87	9424D	WO 19042	"	
	IT QJ2B200 (10)	8/16/87	9424D	WO 19042	"	

<u>Plant or Utility</u>	<u>Items (Qty)</u>	<u>Date</u>	<u>Sold to and Purchase Order Nos.</u>	<u>Invoice</u> 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:

¹ 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

³ Shipped to final destination from the distributor

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.

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 non-safety-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:

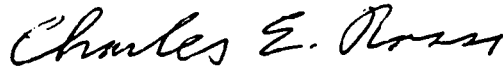
NRC again stresses the importance of the licensee's role in ensuring that procurement activities for both safety-related and non-safety-related components and materials are given attention commensurate with their importance. Had an adequate review of the source of the valves been performed, this problem 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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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. 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

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.

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 commercial-grade 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.

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
2. 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

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

<u>Organization</u>	<u>Location</u>	<u>Nuclear Utility (if available)</u>
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; Elmhurst, IL	
Southern Electric Supply Company	Alexandria, LA	
Cleveland Electric Company		

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

<u>Organization</u>	<u>Location</u>	<u>Nuclear Utility (if available)</u>
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	

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

<u>Manufacturer</u>	<u>Model Number</u>	<u>Equipment Description</u>
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	EHB3040	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

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

<u>Manufacturer</u>	<u>Model Number</u>	<u>Equipment Description</u>
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	--	Circuit breakers
Murry	--	Circuit breakers
Federal Pacific Electric Company	--	Circuit breakers

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.

OL = Operating License
CP = Construction Permit

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

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.

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:

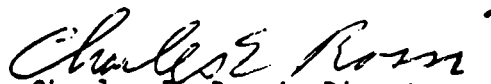
The reporting requirements of Bulletin 88-05 remain in effect with the following additions:

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 duplications 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.



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

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

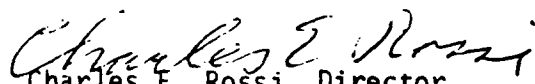
fasteners also should be provided. Approved Vendor List or Qualified Supplier Lists are the intended sources for this information. Addressees are not required to search purchase order files, contact subcontractors to obtain the information, or submit data on fasteners supplied as part of an original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

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(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 (QA) 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

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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 QA 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.

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.

Charles E. Rossi
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 directly and through intermediaries 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.

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Actions Requested:

1. Review purchasing records for your facility and determine whether any WJM- or 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

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.

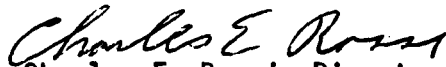
Reporting Requirements:

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.



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

Technical Contacts: Ray Cillimberg, 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

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

<u>Purchaser</u>	<u>Receiving Company</u>	<u>Nuclear Plant (if known)</u>
Radnor Alloys, Inc.	Bechtel Power Corp.	Pilgrim
Capitol Pipe & Steel	Bechtel Power Corp.	Midland
Pullman Power Products	Pullman Power Products	Palo Verde
Pullman Power Products	Daniel	Wolf Creek
Pullman Power Products	Cleveland Electric	Perry
Pullman Power Products	Bechtel Power Corp.	South Texas
Pullman Power Products	Pullman Power	San Onofre
Pullman Power Products	Pullman Power	Vogtle
Tyler Davison	Bechtel Power Corp.	Grand Gulf
Osborne Brothers Welding Supply	General Electric	Perry
HUB Incorporated	Duke Power	Oconee
HUB Incorporated	Bechtel Power Corp.	Arkansas
HUB Incorporated	Bechtel Power Corp.	WNP-2
Chicago Tube & Iron	Omaha Public Power District	Fort Calhoun
Chicago Tube & Iron	Commonwealth Edison	Braidwood
Chicago Tube & Iron	Cherne Construction Co.	Marble Hill
Chicago Tube & Iron	Northern States Power	-----
Chicago Tube & Iron	Consumer Power	Palisades
Dravo Corp.	Dravo Corp.	Seabrook
Joliet Valves, Inc.	Joliet Valves, Inc.	-----
McJunkin	Bechtel Power Corp.	San Onofre
Guyon Alloys	Babcock & Wilcox	-----
ITT Grinnell	ITT Grinnell	-----
Guyon Alloys, Inc.	Bechtel Power Corp.	Limerick
Guyon Alloys, Inc.	Northeast Nuclear Energy Company	Millstone
Guyon Alloys, Inc.	Bechtel c/o PP&L	Susquehanna
Guyon Alloys, Inc.	Duke Power	Catawba
Guyon Alloys, Inc.	Bechtel Power Corp.	Hope Creek
Guyon Alloys, Inc.		WNP-2
Guyon Alloys, Inc.	Carolina Power & Light	Brunswick
Guyon Alloys, Inc.	Baldwin Associates	Clinton
Guyon Alloys, Inc.	South Carolina Electric and Gas	V.C. Summer
Guyon Alloys, Inc.	Carolina Power & Light	Shearon Harris
Guyon Alloys, Inc.	Gulf States	River Bend
Bellows		-----
American Standard	American Standard	-----
Louis P. Canuso	Bechtel/Public Service	Hope Creek

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

<u>Purchaser</u>	<u>Receiving Company</u>	<u>Nuclear Plant (if known)</u>
Capitol Pipe & Steel	Bechtel	Hope Creek
Gulfalloy	Bechtel Power Corp.	Palo Verde
Public Service Electric 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.

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

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

LIST OF RECENTLY ISSUED
NRC BULLETINS

Bulletin No.	Subject	Date of Issuance	Issued to
88-04	Potential Safety-Related Pump Loss	5/5/88	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, Supplement 1	Fastener Testing to 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 W-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.

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.

Discussion:

The WCNOG 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. Rossi
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

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
88-18	Malfunction of Lockbox on Radiography Device	4/25/88	All NRC licensees authorized to manufacture, distribute, and/or operate radio- graphic exposure devices.
88-17	Summary of Responses to NRC Bulletin 87-01, "Thinning of Pipe Walls in Nuclear Power Plants"	4/22/88	All holders of OLs or CPs for nuclear power reactors.
88-16	Identifying Waste Generators in Shipments of Low-Level Waste to Land Disposal Facilities	4/22/88	Radioactive waste collection and service company licensees handling prepackaged waste, and licensees operating low-level waste disposal facilities.
88-15	Availability of U.S. Food and Drug Administration (FDA)-Approved Potassium Iodide for Use in Emergencies Involving Radioactive Iodine	4/18/88	Medical, Academic, and Commercial licensees who possess radioactive iodine.
88-14	Potential Problems with Electrical Relays	4/18/88	All holders of OLs or CPs for nuclear power reactors.
88-13	Water Hammer and Possible Piping Damage Caused by Misapplication of Kerotest Packless Metal Diaphragm Globe Valves	4/18/88	All holders of OLs or CPs for nuclear power reactors.
88-12	Overgreasing of Electric Motor Bearings	4/12/88	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

April 22, 1988

NRC BULLETIN NO. 87-02, SUPPLEMENT 1: 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 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.

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

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 E. 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 NRC Bulletins

LIST OF RECENTLY ISSUED
NRC BULLETINS

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	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.
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 BWR facilities holding an OL or CP.

OL = Operating License
CP = Construction Permit

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

Data Summary

<u>ID#</u>	<u>Mechanical Analysis</u>		<u>Chemical Analysis</u> ¹							
	<u>Hardness</u>	<u>UTS</u>	<u>0.2% YS</u>	<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Mo</u>	<u>Cr</u>

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.

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.
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 BWR facilities holding an OL or CP.
85-03	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.
85-01	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.

OL = Operating License
CP = Construction Permit

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 ksi instead of the specified 125 ksi 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.

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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:

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:

1. 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.

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.

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Attachments:

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