UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Title: BRIEFING ON STATUS OF INDUSTRY'S IMPLEMENTATION OF UNRESOLVED SAFETY ISSUES

Location: ROCKVILLE, MARYLAND

Date: FEBRUARY 14, 1990

Pages: 49 PAGES

NEAL R. GROSS AND CO., INC.

COURT REPORTERS AND TRANSCRIBERS
1323 Rhode Island Avenue, Northwest
Washington, D.C. 20005
(202) 234-4433

DISCLAIMER

This is an unofficial transcript of a meeting of the United States Nuclear Regulatory Commission held on February 14, 1990, in the Commission's office at One White Flint North, Rockville, Maryland. The meeting was open to public attendance and observation. This transcript has not been reviewed, corrected or edited, and it may contain inaccuracies.

The transcript is intended solely for general informational purposes. As provided by 10 CFR 9.103, it is not part of the formal or informal record of decision of the matters discussed. Expressions of opinion in this transcript do not necessarily reflect final determination or beliefs. No pleading or other paper may be filed with the Commission in any proceeding as the result of, or addressed to, any statement or argument contained herein, except as the Commission may authorize.

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

- - - -

BRIEFING ON STATUS OF INDUSTRY'S IMPLEMENTATION OF UNRESOLVED SAFETY ISSUES

- - - -

PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Wednesday, February 14, 1990

The Commission met in open session, pursuant to notice, at 2:00 p.m., Kenneth M. Carr, Chairman, presiding.

COMMISSIONERS PRESENT:

KENNETH M. CARR, Chairman of the Commission
THOMAS M. ROBERTS, Commissioner
KENNETH C. ROGERS, Commissioner
JAMES R. CURTISS, Commissioner
FORREST J. REMICK, Commissioner

NEAL R. GROSS
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

STAFF SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

JOE SCINTO, Office of the General Counsel

JAMES TAYLOR, Executive Director for Operations

JAMES SNIEZEK, Deputy Director, NRR

JAMES RICHARDSON, Director, Division of Engineering Technology, NRR

RICHARD WESSMAN, PD 1-3, Director, NRR

ASHOK THADANI, Director, Division of Systems Technology, NRR

P-R-O-C-E-E-D-I-N-G-S

2:00 p.m.

CHAIRMAN CARR: Good afternoon, ladies and gentlemen.

The purpose of today's meeting is for the staff to brief the Commission on the status of industry's implementation of unresolved safety issues. The Commission was last briefed by the staff on this subject on April 25th, 1989. At that briefing, the Commission requested periodic updates on the progress being made in implementing unresolved safety issues at NRC licensed facilities.

I understand that copies of the briefing slides and the staff's status memorandum are available at the entrance to the meeting room.

Do any of my fellow Commissioners have any opening remarks?

If not, Mr. Taylor, please proceed.

MR. TAYLOR: Good afternoon. With me at the table, to my immediate right, from the Office of NRR, Mr. Jim Richardson, who is the Director of the Division of Engineering Technology and Ashok Thadani, who is Director of the Division of System Technology and the Deputy Director of NRR, Mr. Jim Sniezek and to his left Dick Wessman.

As the Commission is aware, the staff has efforts underway to improve quality assurance in its own operations and the briefing today, which as you indicated covers tracking and assurance of implementation at plants of unresolved safety issues, is an example of this effort to improve the staff's quality control of its own work.

With that brief introduction, I'll turn it to Mr. Sniezek.

MR. SNIEZEK: Good afternoon, Mr. Chairman and Commissioners. Dick Wessman, on my left, was the Branch Chief in NRR who led the staff's effort to determine and document the status of the implementation of the unresolved safety issues. Before Mr. Wessman begins his presentation, I'd like to provide some background information concerning the staff's efforts.

In late April last year, the staff briefed the Commission on the technical resolution of the unresolved safety issues and the generic safety issues. At that time, we advised the Commission that we would provide periodic briefings of the implementation status.

As the Commissioners may recall, about a year ago, Doctor Murley and I briefed the individual

Commissioners on the staff's need to sort out and clearly establish the implementation status of the TMI action items, the unresolved safety issues and the generic safety issues. As Jim Taylor mentioned, this was part of the staff's effort to upgrade the overall quality of the Agency's ongoing activities.

Because of the large resource requirements associated with these staff quality improvement efforts, it was decided to accomplish the TMI task first, then the USI task, to be followed by the generic safety issue task. The staff's efforts cut across all the project managers, the technical branches in NRR and included support from the Office of Research.

I'm pleased to inform the Commission that the TMI implementation status effort was fully completed in December last year and the USI implementation status effort, which you will be briefed on today, will be fully completed in about three weeks.

We are now making plans to definitively establish the implementation status of the approximately 90 generic safety issues which have been technically resolved. We will follow the same basic process as we used for the TMI and USI verification

process. It is expected that the generic safety issue verification process will be completed in about six months.

Equally as important to our reconstruction of the Agency records to ensure we fully understand the implementation status of technically resolved generic safety issues, is the need to have a system in place to ensure we correctly capture the real time implementation status as we move forward in time. That system is in place today.

I would now like to turn the meeting over to Mr. Wessman who will discuss the staff's USI implementation status efforts and will provide a summary of the implementation status of the unresolved safety issues.

Dick?

COMMISSIONER REMICK: Jim, first, you mentioned that all the TMI action items have been implemented?

MR. SNIEZEK: No, the status verification effort has been completed. There are, I believe, 207 TMI items of the original 19,000 some that remain to be implemented.

COMMISSIONER REMICK: All right.

MR. WESSMAN: Good afternoon, Mr. Chairman,

Commissioners.

(Slide) If we could have slide 2, this summarizes the topics that we will cover. As you know, you have the staff paper which we delivered to you on the 7th of this month.

As we start out, I would like to point out that we really have a good status of where USI implementation lies in the industry. I think also that at this point in the effort, we have learned that there are no major surprises. We did find some things where the activity regarding a particular USI may not have been quite what we expected, but certainly no major surprises or what I might call a lost USI.

(Slide) Turning to slide 3, let me comment briefly on the background of our activity.

After the Commission's direction to NRR earlier last year, the NRR staff undertook a pilot plant effort which took place between August and October of last year. Our idea on this particular effort was to establish the scope and the approach to the overall effort, working essentially within the staff itself before issuing a generic letter to the industry and asking direct participation in the effort by the industry. We knew that once we got to working with the industry as a whole, we would be working as a

joint effort by both industry representatives and primarily NRR project managers, as well as assistance from the technical branches, to determine very accurately the status of USI implementation.

So, we did this pilot effort and this involved the Zion facility, Peach Bottom and TMI Unit 1. And you all may recall in October we provided a summary report of that activity to you at that time. After that effort came generic letter 89-21, which we issued to the industry in October of last year, requesting the licensees to provide the implementation status.

(Slide) Turning to slide number 4, I think it's appropriate to define what an unresolved safety issue is and look at its history slightly and then look at a couple of the other terms that occasionally cause us a little confusion when we look at unresolved safety issues.

An amendment to the Energy Reorganization Act, which was passed in 1977, provided early requirements to the NRC to develop a plan and program dealing with unresolved safety issues and required the NRC to make reports to the Congress. At about that time, an unresolved safety issue was defined and I will read that definition which comes out of NUREG-

0510. It goes as follows:

"An unresolved safety issue is a matter affecting a number of nuclear power plants that poses important questions concerning the adequacy of existing safety requirements for which a final resolution has not yet been developed and that involves conditions not likely to be acceptable over the lifetime of the plants it affects."

At this point in time, all 27 unresolved safety issues are resolved. Now, here's an aspect of the definition that we sometimes have a little bit of confusion with and these are the terms "resolution," "imposition," "implementation," or "verification." We started with an issue that was unresolved. Hence, unresolved safety issue. Once a technical resolution has been made, we really have it at the status of where it is a resolved unresolved safety issue.

The next point in the process is the imposition step, where the staff promulgates a directive to the industry that establishes what the requirements are that we want the industry to do to adequately address the concerns that originated in the unresolved safety issue.

You then move to the step called implementation and that's when the licensees have

completed the necessary actions to meet the requirements that were imposed by the staff. Implementation may involve modifications to the plant. It may involve changes to procedures or training to operators. It may require the development of analysis and submission of that analysis to the staff. At the end point of the process is the verification step, and I think that's obvious, speaks for itself.

Sir?

COMMISSIONER REMICK: How do you actually determine when something is resolved and who determines that?

MR. WESSMAN: It's generally a collective judgment of the staff. The process involves both the Office of Research and the Office of Nuclear Reactor Regulation and once we have a technical consensus as to what the steps are to deal with the concerns that were originally raised, we can then determine that it is resolved. Generally, that resolution is then published in a NUREG document or in some cases in a SECY paper that comes to the Commission itself.

COMMISSIONER REMICK: But does the staff make that final decision or does the Commission make the decision? When there is technical resolution, who signs off and says --

MR. WESSMAN: Well, the staff makes that decision. Generally, the information that comes to the Commission comes through the EDO.

MR. SNIEZEK: Some of them, for example, would result even in a rule, like station blackout. That resulted in a rule. So, there's various levels. Some may be resolved with no action necessary as you review that issue further.

COMMISSIONER REMICK: But there's not one person that decides finally, "I agree that they're resolved?"

MR. WESSMAN: No, there is not an unresolved safety issue officer on the staff.

COMMISSIONER REMICK: He's not the EDO or he's not the Director of NRR?

MR. SNIEZEK: The EDO is knowledgeable about all safety issues, unresolved safety issues and how they are dispositioned.

CHAIRMAN CARR: Let me ask you -- I understand those four definitions without any problem, but there is also one in there you mentioned about complete and incomplete. What's the staff's definition of complete?

MR. WESSMAN: Completion is normally -- we consider it a safety issue. They're the

implementation of one of the unresolved safety issues to be complete when the necessary actions have been taken to the satisfaction of the staff and this is consistent with how we defined completion of the TMI action plan items.

CHAIRMAN CARR: So, completion means whatever action was required has been taken?

MR. WESSMAN: Yes, sir.

CHAIRMAN CARR: Okay.

COMMISSIONER REMICK: I still have a little bit of problem on the resolved and the reason being, there have been a number of cases where along the way, I think USIs have been combined or maybe I'm thinking of generic issues or sometimes they've been refocused down this direction or straight off. Sometimes it's very confusing to track that down. If you look at the original statement, this was a statement somewhere along the line that either got narrowed or broadened and so forth and it's sometimes very difficult to track down who made those decisions and therefore is this a resolution of the original unresolved safety issue or is it only a resolution of part of it?

MR. TAYLOR: I think Mr. Minners is here and he can help since some of it passes through Research on then to --

MR. WESSMAN: I think he's familiar with the problem I'm talking about.

MR. MINNERS: Warren Minners, Office of Research.

We have a tracking system and it's been documented in NUREG-0933. The Office of Research has Ron Hernan, a person who actually keeps track of this. If there is an unresolved safety issue officer, he's it. He really makes that decision.

The rules are set forth is that an issue is resolved when the requirement or guidance is sent to licensees. So, if it's a generic letter, when the letter is actually sent then that's the time of resolution. If it's a rule, the time that the rule is published, that would be the time of resolution. For an issue which has no new requirements or guidance for licensees, we document that with a letter to the EDO and that's usually called resolution, although we have gotten responses from the EDO at times that says, "I don't agree with you," and we go back to square one.

COMMISSIONER REMICK: Well, before you actually issue a piece of paper, you're talking about technical resolution, or at least I am. Who in the staff decides that technically we're satisfied that this is resolved? There's not one place that that's

done or depending on the subject? Is it a director of an office, is it EDO or some of EDO's office --

MR. MINNERS: The technical resolution is decided at the technical level by the people who are resolving the issue. But approval of that technical resolution, we go through the process, whatever it may be, the ACRS, the CRGR, and finally when it actually gets issued to licensees and a final approval is given either by NRR or it's put in the *Federal Register*, that's the definition of resolution.

MR. TAYLOR: In almost all cases, it starts in Research and involves NRR in just about every single case that I can think of. And sometimes in the process it becomes evident that there may be some combination. I'm not sure there have been any in USIs, but I can recall some in generic, that they're better treated together. And that decision is really made at the EDO level. I can't recall specific ones, but then the staff proceeds to develop the resolution process, consultation with the ACRS and, if necessary, rule changes or requirements or policy come to the Commission. If it's a straightforward technical resolution and it goes out as a generic letter, it goes through the review process out of both offices, then through the CRGR and so on.

So, there are several different paths that it can finally -- and in numbers of cases has involved the Commission.

COMMISSIONER REMICK: Fine. Thank you.

CHAIRMAN CARR: Just a piggyback on this problem because it's the same problem I had about completeness. If you look at page 3 of your process paper, at the second paragraph, it says, "The second exception involved the licensee's classification of certain USIs as incomplete or complete when the staff may take an opposite view. For example, some licensees consider two USIs incomplete while the staff considered the status of these USIs as complete. This situation occurred on USI A-17 and A-45. Both of these are being implemented as part of the IPE program and no requirements were imposed on licensees as part of the resolution of the USI. Although some licensees consider these to be incomplete, pending submittal of the IPE program, staff views the items as complete, no further action required for purpose of tracking."

So, it looks to me like that complete doesn't really keep score of whether they did anything or not, it keeps score of whether it's no longer tracked or not. That particular area worries me. If we incorporate them into something else, do we then

lose track of them?

MR. SNIEZEK: In those instances that you just mentioned, Mr. Chairman, the decision was made by the staff that if that licensee considered them in the conduct of the IPE, that was sufficient from the staff viewpoint because we saw no specific generic fix that had to come out of them. So, at that time, the staff was satisfied when we turn it over in the IPE that the licensee would look at it. When the licensee comes back with the IPE submittal to us, the results, we will look to see -- to make sure that they actually did consider that issue in the conduct of their IPE.

CHAIRMAN CARR: But if you've quit tracking it, what tickles you to look at it in his IPE submittal?

MR. SNIEZEK: Because it's part of the IPE letter that went out. It's included in there, saying they should evaluate those vulnerabilities --

CHAIRMAN CARR: So, they've all got individual IPE letters?

MR. THADANI: That's correct. There are generic letters that identify specific activities that they must conduct as part of the IPE program. An example would be the unresolved safety issue A-45, which related to decay heat removal system. The

staff's conclusion was that the vulnerabilities are plant specific and that probablistic approach is the reasonable way to uncover those vulnerabilities.

CHAIRMAN CARR: So, the A-45 issue went out to everybody?

MR. THADANI: Went out to everybody through IPE.

CHAIRMAN CARR: That takes care of my problem.

COMMISSIONER REMICK: Were there any other USIs specifically put into the IPE process besides A-45?

MR. THADANI: Yes.

COMMISSIONER REMICK: And those are in that letter also?

MR. THADANI: Yes.

COMMISSIONER REMICK: Okay.

MR. WESSMAN: Yes. On the trail, the trail is established in that generic letter that deals with the IPE and reaches back into the USIs and reaches forward into that which is yet to happen in the IPE. So, I don't think we're going to lose it.

MR. SNIEZEK: There is no question -- when Mr. Wessman read the definition of USI, it's a very weighty definition and we can't lose track of what's

going on.

CHAIRMAN CARR: Complete doesn't really mean implemented, it means tracked somewhere else or implemented or something.

MR. SNIEZEK: Or we don't care if they do anything specifically or not on the issue because as we looked at the issue, it wasn't important enough.

CHAIRMAN CARR: Not applicable, huh?

MR. SNIEZEK: Right.

CHAIRMAN CARR: Okay.

COMMISSIONER CURTISS: On that question, I just had one similar question on that ISAP program. A couple of the issues were identified in the tracking as low priority because they're in SAP or ISAP, A-31 for Haddam and A-1 for Millstone.

If you're an ISAP plant, what impact does that have on the implementation of the USI? How does that interface work?

MR. THADANI: Basically, the ISAP concept was to allow the licensee the opportunity to look at the collective requirements that they have for that specific plant, to look at each requirement in terms of its safety significance and cost considerations and when such changes could be implemented and so on. Some of the modifications, for example the water

hammer issue on Millstone Unit 1, was judged to have very low safety significance.

In view of that conclusion, it gets into the implementation plan fairly low in terms of its priority. So, it would be stretched out because it's not significant enough when compared to the rest of the actions that that utility has to conduct.

COMMISSIONER CURTISS: So that if you have an implementation schedule generally for USIs that contemplates a certain time frame, then for the ISAP plants that can be -- that's subject to further evaluation given the other requirements that that plant has laid on it?

MR. THADANI: That is correct.

COMMISSIONER CURTISS: Okay.

MR. WESSMAN: (Slide) If we can move on to slides 5 and 6, these describe the actions by the utilities and the actions by the staff as to how we actually and how the utilities verify the implementation of the USIs. Once the licensees receive the generic letter, they have 30 days to make a determination at their facility as to which unresolved safety issues were applicable and then make a determination regarding the implementation status at the facility. And this was really the starting point

of this joint effort that involved both the staff and the licensee to make this determination.

In some cases, of course, there'd be USIs that aren't applicable to the facility at all. For example, obviously, the USIs dealing with the Mark I long and short-term program, A-6 and A-7, are not applicable to the PWR. Utilities reviewed their facility records and made a look at physical characteristics of the plant and then reported back to the staff of their completion date for implementation and provided the expected completion dates for those that were unimplemented.

In some cases, there was -- well, actually, in most all cases, there was interface with the project manager as part of making this decision. We found that the effort at reaching back into the records trail required activity by both utilities and the staff. In cases where we may be missing a document back into the mid-'70s or late '70s, maybe the utility had it or vice versa.

Once they had made their determination, the utilities responded to us in accordance with generic letter 89-21 and we had all of the licensee responses by early December. Now, on occasion, there may have been a difference in interpretation regarding a

completion date as far as when the utility made a call regarding whether they had completed a particular unresolved safety issue. For example, the utilities may have pointed at the date that the staff issued a safety evaluation report, rather than pointed at the point of actual implementation. And this interchange with the project manager and the utility allowed us to sort this out.

(Slide) Turning to the next slide, let me summarize some of the staff activities.

As Jim had indicated, I chaired a team of folks in NRR with a little bit of assistance from Research and folks from the technical branches, which became known as the USI team. When you're dealing with 116 reactors and 80 different project managers and seven different technical branches with 27 USIs, you have a lot of data points and you've got a lot of players involved. So, it was important that we have a coordinating body of three or four individuals, headed by myself, to try to be sure that we had a consistent approach and that we worked consistently with all the licensees.

We did do actual training sessions with the project managers and we learned from our pilot plant effort and gave them sample documents to work with so

that we would have consistent reports. Project managers reviewed our file and, as I mentioned earlier, there was interface with the utilities and exchange of documents to work finally to the point where we felt we had a good implementation status summary.

We had the technical branches involved, reviewing the results of the project managers and the utilities' work and then we went back through the process a second time, really as a verification process, to be sure that once we had this database that listed unimplemented USIs, that we had a staff consensus and a sound understanding of exactly where we are. I think we were very concerned that we have a database integrity and we have quality of the database so that we really know exactly where we were.

Now, as we indicated in the paper to you, and I think as Jim mentioned, we are in the last steps of database verification and this is a second step back with the project managers before they actually sign a memo to file with their summary of the implementation status. And, in fact, we've had one change to the database since we provided the paper to you on one facility and this is on the Summer facility where they completed implementation actions on A-31

dealing with RHR shutdown in late January.

Nonetheless, I believe the statistical tally of what we have is all but there and once we finish the final steps we have a high confidence in that record of implementation. If there was a doubt regarding the implementation of a particular USI, we chose to call it unimplemented. And let me offer you a couple of examples.

USI A-49 deals with pressurized thermal shock. And this is the situation where over plant lifetime the neutron irradiation of the reactor vessel may, with age, subject that reactor vessel to increased risk. At the Palisades facility, they will actually exceed the criteria for pressurized thermal shock in the year 2002. They do not today. However, there is additional submittals to be received by the utility and evaluation by the staff. We chose to call that unimplemented.

Another example involved A-9, which is the ATWS rule. There are questions regarding the diversity of certain components in trip systems. Licensees may feel that they are complete and, in fact, the reports that they sent to the project managers may have actually made the determination that in their mind it was complete. Because the staff has

not completed its work in that area, we chose to call it unimplemented.

So, I think we have been conservative in the determination of which ones are unimplemented.

(Slide) Turning to page 7, let me offer you a few numbers as far as the total tally of the unresolved safety issues. I think the numbers speak for themselves and you can start with around 3,000 total possible USIs. And once we eliminate those that may not be applicable because of plant type primarily, the BWR and PWR types, and determine those that are implemented, we come finally to the total unimplemented USIs, which is 426.

(Slide) Now, if we can, let's turn on to the next page and look on with the next two pages where do those 426 USIs primarily lie. Eighty-four percent of them lie in a group that I tend to call the big four. As you can see in two cases, the USIs remain open at all facilities in the industry, A-44 dealing with station blackout and A-47 dealing with safety implications of control systems.

In the case of A-44, this USI was resolved in June of 1988 with a publication of the station blackout rule, 10 CFR 50.63. Licensees' responses were received in the spring of last year and the staff

commenced evaluation of those responses and conducted audits at several facilities. Staff determined that additional guidance was needed and that additional responses from the utilities was going to be required. Supplemental guidance has been developed by the NUMARC and supplemental responses from the utility industry are expected in March of this year. After that comes the staff reviews and ultimately implementation of necessary modifications in the facilities.

In the case of A-47, safety implications of control systems, this was the most recent of the unresolved safety issues that was promulgated to the industry via a generic letter in September of 1989. Licensee responses are due in March of this year.

In the case of A-9 and A-46, about half the industry still has activity to do. In the case of A-9, the ATLAS rule, in many situations, modifications or changes at the plants are largely implemented but not fully complete. We estimate that by the end of this year, about 90 percent of the industry will have implemented the requirements. And as I mentioned earlier, there's about 20 utilities that are still involved in a question over diversity and the dialogue with the staff and an owners group is still ongoing.

In the case of A-46, there are 66 plants

that are applicable under this particular unresolved safety issue. Other plants are not required to have made these modifications specifically pursuant to the USI, but would have done the modifications or installation of the equipment as part of the original licensing process.

The USI was resolved in February of '87 and shortly thereafter a utility owners group, commonly known as SQUG, Seismic Qualification Utility Group, was established to work with the staff to develop plant specific guidance. The guidance has been submitted to the staff and a supplemental safety evaluation report is to be issued in mid-1990. After that point, the implementation process would start with the industry. So, this accounts for about 85, 84 percent of all the unimplemented USIs.

(Slide) Well, if you turn the page, we can look at what's left. You recall the total was around 426. We had 358 of them that were tied up in this group of the big four and that leaves 68. That sort of presents a scattering of different USIs at different plants.

I should point out, there is a typographical error on this particular viewgraph where it says, "The number of other USIs open at an individual plant

varies from two to seven." That should read one to seven.

Let me give you a couple of examples of the situations that are there with this group of 68. Let's take A-10, which deals with boiling water reactor feedwater nozzle cracks. This particular one remains unimplemented at five facilities. At the Brunswick facility, they actually have completed the modifications and they are in the process of collecting data.

At the Peach Bottom 3 facility, we discovered something in the course of the USI verification effort. The utility had completed the modifications required by this particular USI. However, they were unable to locate the documentation for post-modification testing. Consequently, they have to reconduct this test during a future outage and we leave that as unimplemented until those test results are available.

At Browns Ferry 2, modifications are yet to be completed. They are to be done before start-up.

At Hatch 2, they're in the process of evaluating results.

One other example that sort of typifies this group would be A-36, dealing with heavy loads near

spent fuel. It's open at eight facilities and I offer you three examples here. In the case of the Clinton facility, they have procedures yet to finish. At the Sequoyah facility, all of the implementation is complete with the exception of inspecting some welds on several lifting devices. On the Turkey Point units, they are awaiting delivery of a reactor vessel head load cell.

So, in many cases, this group of 68 -- I'm offering you typical examples, but I think we've found in many cases a lot of this group of 68 was, by and large, to a large degree, implemented at the particular facilities where it yet remains unimplemented.

COMMISSIONER CURTISS: Let me ask you a question about a couple of them.

MR. WESSMAN: Sure.

COMMISSIONER CURTISS: If I read your chart in Enclosure 3 correctly, there are two, A-26 and A-31, 11 plants total haven't implemented those. They were resolved in '78. What's the holdup for those 11 plants? It seems to me like those two in particular stuck out because they were resolved so long ago and 11 of your 68 fall in that category.

MR. THADANI: Let me give you an example of

the type of problem. On A-26, which was the --

COMMISSIONER REMICK: Louder, please. Louder.

MR. THADANI: Oh. On unresolved safety issue A-26, over pressure protection, there was an inspection conducted at Calvert Cliffs and the inspection identified that some of the commitments that had been made at one time to resolve this issue at Calvert Cliffs had not been implemented. And that caused the issue to be reopened, so to speak. Currently, we're discussing this matter with Calvert Cliffs and we expect to resolve it shortly.

That causes the issue to be reopened. We didn't know about it until I think it was last year, and that they had made some commitments. They have not followed through on those commitments.

Oconee had -- we found a small error in their technical specification which was not consistent with everything we understood. So, we decided the issue should remain open for that purpose.

It's really consistent with what Dick has been saying. If there is a question about an issue, then we have tended to keep it open. So, you find that in many cases to be the situation.

MR. WESSMAN: I think your other question

was A-31. Is that right, Commissioner?

COMMISSIONER CURTISS: A-26 and A-31.

MR. WESSMAN: A-31, dealing with RHR shutdown requirements. In that case, it's open on four plants. I mentioned earlier the Summer facility recently completed implementation on that, so it's really down to three. Haddam Neck remains open to complete some insulation of interlocks. The evaluation of that plant specific activity would be done as part of the ISAP program. The other two plants are Watts Bar and that is part of the overall licensing process for Watts Bar. Now, you may have noticed, Watts Bar actually has a total of ten USIs that are incomplete at that facility. As we work forward in the licensing process, those will be largely completed.

Yes, sir?

COMMISSIONER REMICK: On A-36, when was that declared resolved, the one on the heavy loads near spent fuel? It's been some time ago, I think.

MR. WESSMAN: July 1980.

COMMISSIONER REMICK: '80? But there are eight plants? The examples you gave didn't seem very compelling to justify ten years of not implementing.

MR. WESSMAN: It is true, it seems a little

untidy as to why someone might not be able to finish a procedure. In the case of the Turkey Point facility purchase of a load cell to measure something that's, what, 100 tons or something like that apparently is a difficult procurement issue.

COMMISSIONER REMICK: Ten year difficult?

MR. WESSMAN: It's hard to understand, I agree.

COMMISSIONER CURTISS: I guess I would-- obviously, we ought to focus on the most safety significant of these and that's what ought to drive our priorities and the licensees' resources. But on some of the ones that are really quite old, we went through that same sort of focused discussion and somewhat painfully with the TMI action items. And to the extent that some of the older ones can be cleaned up, if nothing else for the sake of cleaning up the older ones and avoiding the perception that we've let these hang around for ten or 12 years, I think that would help.

CHAIRMAN CARR: I think that's the purpose of the whole drill, the reconciliation of where we are. How many iterations have we done with you? Are we and the utilities in agreement on this list, as far as this is what we're still looking at?

MR. WESSMAN: I cannot assert with certainty that the entire list for every facility has been discussed by each PM with each facility. That's part of the reconciliation process. I expect within the next couple of weeks, once the staff has finished and satisfied itself with our reconciliation, that we will issue -- we'll have the project managers communicate with their utility to be sure they understand which ones the staff views as incomplete and why so that together the utilities and the Agency can be working, just like on TMI items, towards completing the chore. And we own this plant specific letter to those utilities.

MR. TAYLOR: I think to clear up a lot of these old ones takes a utility and plant by plant specific look and then you have to make sure you're not forcing them to do that when they've got a lot of other things. It's that old balance. It would be nice to force closure on a lot of these, but you may indeed not be serving safety. So, it's that balance of trying to see that they get the work done.

CHAIRMAN CARR: We're still in that part of the process to try to find out what part of the stable is dirty --

MR. TAYLOR: Right.

CHAIRMAN CARR: -- so we can clean it up.

MR. TAYLOR: That's right. We want to be sure we're talking from the same menu and that we really know and that's what this is. That's what this project will attempt to do.

MR. SNIEZEK: But we're getting very close. About three more weeks and we should, say, declare victory on that part of it.

MR. TAYLOR: At least we have the same differences.

CHAIRMAN CARR: Hopefully with the modern age of computerization, we'll be able to keep up with it from here on out.

MR. TAYLOR: That's the program.

MR. WESSMAN: Yes, that's right. That's part of the future work, of course, is the care and feeding to be sure that we do not fall into a state of disrepair again.

MR. SNIEZEK: We've got to make sure that our successors ten years from now don't have to go through this same thing.

MR. TAYLOR: That's why you have funded your tracking system.

COMMISSIONER REMICK: Let's look at A-44, which is, in my mind, an extremely important one. How

extensive will be the staff reviews necessary there? Is that resource intensive? Have we planned on it? Have we budgeted it? Will we do it internally or will we be contracting it out? Have those questions been looked at?

MR. SNIEZEK: We have looked at it. It is resource intensive. We will be doing in-house. Part of it will be contracted out using a combination of all our resources and Mr. Thadani can tell you a little bit more about the details.

MR. THADANI: Let me -- I agree with you completely, Commissioner Remick, that station blackout is one of the most important issues we have resolved in the last several years. From our earlier experience of the number of iterations, we tend to go in terms of coming to agreement as to what's acceptable resolution in terms of hardware, so to speak. We chose a different approach. We thought one that would lead to early agreements and, more importantly, early implementation of the improvements. We worked with NUMARC at the outset to develop guidance as to what was required by the rule, what kinds of considerations should go into designs, how one should analyze a set of common assumptions so that we don't have to go through this process with each

licensee. That has worked, I'd say, to a moderate level.

When we conducted our audits last year, we found that -- we conducted six audits. We found results were mixed. Some of the licensees had not utilized consistent assumptions, ones that we had collectively agreed to up front, and that raised a big flag. Some of the assumptions they had made were rather serious in terms of the impact on what they might do.

So, we have had subsequent discussions with NUMARC and we've sent out another document that NUMARC and NRC have agreed is appropriate way to revolve this issue. We hope that that approach will still save time in terms of long-term resolution of this issue.

We have also prioritized our review by saying, "First we're going to look at those facilities where station blackout is most important," and we have that information and those are the facilities that get early attention.

So, we're mindful of the need to move on this issue because it's important, try to get to that resolution as early as possible.

MR. TAYLOR: I think this is a good example where the staff appreciated the extreme importance.

We did at the EDO level and as soon as the staff did its audit, we asked to see the results. I was personally gone in and I was upset that some of the techniques used in the coping analyses and so forth were not what had been expected and we moved rather rapidly to get that resolved because of the significance of this. So, I think -- and as Ashok points out, we're worrying about those that have-- some of the plants have excellent coping capability, from want of a better word. Others may not, redundant AC power supplies and redundant diesels and so forth.

So, that's how we approach this one and I believe the utilities have responded, NUMARC is working and we intend to continue to pursue this.

COMMISSIONER REMICK: Am I correct? We've targeted for about a year for us to complete our reviews, from what you've said. Is that correct?

MR. THADANI: We had expected to complete our evaluations by the end of this fiscal year, but because of the difficulties we ran into, we expect some utility responses to be different than what they had submitted initially. And that's going to delay for those facilities implementation, I expect, by about six months.

MR. SNIEZEK: I think both Jim and Ashok are

being very kind in their words. I think, to say the least, the staff was very disappointed with some of the responses. Instead of purchasing additional battery power, additional batteries, well, we'll turn off the annunciators in the control room to conserve on battery power and trip off ECCS components if they're not needed right then to conserve on power. That's not the approach to solve station blackout, to put yourself in greater extremis when you've got a problem already.

MR. THADANI: This is serious.

MR. SNIEZEK: And we talk very -- we let the industry know that we were unhappy, and I think they're taking it seriously now.

COMMISSIONER REMICK: The point of my question I asked, we're prepared to do our part in a reasonable period of time, the reviews, is that right?

MR. SNIEZEK: We will not be the critical path.

COMMISSIONER REMICK: We're not going to be a critical path. Okay.

COMMISSIONER CURTISS: A question on the schedules. Do the dates that are listed here in the attachment reflect current projections given the submittals in March that are coming in? These are the

current dates, based upon the NUMARC guidance and the expected submittals in March, or when we would expect implementation?

MR. WESSMAN: The dates that you're referring to for A-44? Is that correct, sir?

COMMISSIONER CURTISS: Right, in the detailed handout.

MR. WESSMAN: Yes.

COMMISSIONER CURTISS: Clinton, December 31st of '92.

MR. WESSMAN: Yes. Those dates are built upon the delay of six months and the expected sequence of review by the staff -- this is a small number of people -- to complete the safety evaluation reports, and then for the utility to complete implementation.

COMMISSIONER CURTISS: So these dates reflect your prioritization of what you think are the more risk significant plants?

MR. WESSMAN: They are based upon our prioritization and allowing for the maximum time that the utility has under the rule, which is two years after the issuance of our SER, and then we arrive at an expected date for a given facility.

MR. SNIEZEK: But there are some that go beyond the two years, and I think Mr. Wessman will

mention one of them.

MR. WESSMAN: That's right.

MR. SNIEZEK: Procurement of new diesels.

MR. WESSMAN: (Slide) An example -- as a matter of fact, if we turn to the last viewgraph, page 10, let me summarize a couple of the things we learned on it and let me just reach to A-44, because we've been talking about that. If you look at the last two bullets on the last viewgraph, we did identify what I would call some minor surprises and some things that we were not aware of until we went down the path on this USI verification effort.

In the case of A-44, there was a great deal of work going on between the technical staff and the utilities at the same time that the USI verification effort was going on, so we can't say that just because we were looking at USIs we turned up some of these particular issues.

But the interesting story that comes with A-44, as far as which facility is the furthest out as far as completing its implementation, happens to be the Calvert Cliffs facility. Their expected dates are 1995, and that's built around the need to procure diesels and to do what appears to be relatively comprehensive modifications to the station electrical

system. I think until we see the next submittal and we're able to assess the entire program that that utility is doing, we're not really able to make a determination on whether that's a date that can and should be accelerated.

A couple other things that we learned from the USI effort as far as things that were quite as we expected, another example dealt with A-9, the ATWS rule. We found, purely as part of the verification effort, that as licensee responses came back they were advertizing implementation dates that were, in a number of cases, maybe six months or more later than we had expected from previous dialogue with those utilities. Many of those were due to changes in the refueling outage schedule, but it allowed us to have a better picture of when they do expect to complete a modification.

In the case of both A-48, which deals with hydrogen control, or A-49, which deals with pressurized thermal shock, we really, in looking into our own closet, discovered that our review priorities were a little lower than we really felt they should be and we made adjustments accordingly.

In the case of the ice condenser plants, the licensees believe that they have completed all of the

requirements of that USI. However, the staff had given the review effort a relatively low priority. We've moved that up. We'll look at the material that they have submitted and try and complete our work on that by the end of this year.

In the case of the pressurized thermal shock situation, we found two facilities where the review plans were given quite a low priority. In reality, it was not a significant low priority, because the facilities involved were Byron and Braidwood. They have relatively new reactor vessels and the potential risk of challenge due to the ageing, due to neutron irradiation, is relatively low. Nonetheless, because we have a tracking system and we've clearly looked at all these things, we went ahead and we've raised the priority on that review and expect to complete it in April of this year.

In summary, we think we are all but there in having an implementation status listing that both the licensees and the staff have a high degree of confidence in. And in general, most of the USIs are implemented, and the unimplemented USIs appear not to pose any immediate safety issues. And we've focused our efforts such that both the licensees and the staff are moving towards getting the job done and closing

the remaining USIs.

CHAIRMAN CARR: Realistically, those dates are within cycles, or at the most three, the extended dates back there for, say, station blackout, because this is '90 already. By the time you buy a diesel, do all the planning, get all the material ready and make sure you've got it so when you shut down you're trying to get it in, that's somewhat reasonable, probably.

MR. WESSMAN: It's not always easy to get a safety grade diesel and all of the associated equipment on a short lead time.

MR. TAYLOR: You're right.

CHAIRMAN CARR: -- and redo the electrical drawings, and it doesn't do to have 95 percent of the parts.

MR. THADANI: I might comment that roughly half the plants on station blackout have chosen the coping approach.

CHAIRMAN CARR: The what?

MR. THADANI: Coping approach.

CHAIRMAN CARR: Coping.

MR. THADANI: That is, they would demonstrate that the plant can withstand X hours of duration of station blackout. And that was an option, certainly, offered in the rule.

CHAIRMAN CARR: That takes more study.

MR. SNIEZEK: But we like the other approach better, put in more power supply.

CHAIRMAN CARR: It's the easiest.

COMMISSIONER REMICK: How many, if any, are putting in gas turbines for this purpose?

MR. THADANI: Six either already have gas turbines or are planning to put them in. There are eight plants which have proposed adding large size diesel generators. And then, I think it's six units that have proposed a smaller fire protection type diesel generator.

COMMISSIONER REMICK: Now these must be safety grade diesels?

MR. THADANI: Not the six. Appendix R type would be non-safety grade. The other eight would be safety grade.

CHAIRMAN CARR: All right.

MR. SNIEZEK: That concludes Mr. Wessman's presentation.

I'd just like to wrap up by saying that I mentioned earlier that in about six months we should be in a position to brief the Commission on implementation status of generic safety issues. If the Commission so desires, at that time we could bring

you up to date on the then current status of the USI implementation as it stands at that time.

CHAIRMAN CARR: We'd be happy to take it.

MR. TAYLOR: That concludes the staff presentation.

CHAIRMAN CARR: Any questions, Commissioner Remick?

COMMISSIONER REMICK: The database that you're referring to, I think you indicated that that would be up and running completely by March? Is that the current status?

MR. WESSMAN: The database that we have--and behind me here is Ray Scholl, who has done a lot of work on database for both TMI and the USI work--we have a database, I might call it a private database, that we are using to track the USI activities. The ultimate goal is to get the material in this database in the overall Agency database, the Safety Issues Management System, such that private databases go out of existence. We want one Agency database.

MR. SNIEZEK: It will go in the SIMS, that's correct.

MR. WESSMAN: It will ultimately end up there, but we'll have to maintain this in parallel

perhaps for a period of time until we are satisfied with our track record and the SIMS track record before you extinguish your own database.

MR. SNIEZEK: Let me mention, Commissioner Remick, that one of the things in the quality improvement in the offices that's under the auspices of Mr. Taylor is that we have a quality function in NRR that all data comes to a central point. And before we update the SIMS database, it gets closely quality checked to make sure everything can track and so we don't put any erroneous data in the Agency database. And sometimes it takes a bit longer than we want to do that, but we have to make sure that when the Agency is called upon to say what is your data, we give data that won't change over time, that on any date that data is truthful data and it remains the same and it's trackable back to any changes after that, why did the changes occur.

So we've got that for the TMI system. We have it for the USI system, the generic safety issue, licensing actions, so we always know where we're at. And we're not completely there yet, as far as the Agency database is concerned.

CHAIRMAN CARR: Commissioner Rogers?

COMMISSIONER ROGERS: Just to say that I'm

very pleased with what I've heard about this kind of activity in straightening out our records and databases. Very good.

CHAIRMAN CARR: Commissioner Curtiss?

COMMISSIONER CURTISS: No questions, but I thought it was a good presentation and I'm pleased to see the progress that you've made on this issue. I do think it would be helpful to have a briefing when we get to the GSIs, when you reach the stage where you've got a comparable presentation to make. This has been very helpful.

CHAIRMAN CARR: I've got one question. What percentage would you say of the status of implementation ends up being checked on-site with an actual look to see if what says is done is done? So far, we're a paperwork reconciliation, primarily, or talking back and forth, but I -- when do we get down and -- what percentage of them do we actually look at?

MR. WESSMAN: Let me try and offer some round numbers to offer you a feel, because I cannot give you an exact percent.

CHAIRMAN CARR: I won't hold you to it.

MR. WESSMAN: Of the 27 USIs, typically around half of them end up being applicable at a particular facility, just by virtue of plant type or

when the facility was licensed or something of this nature. So there you have maybe 12 or 15 or 18 or so.

The Agency found that four of them were specifically needed to be inspected, and so we wrote TIs, temporary instructions requiring inspection of four of those during the time frame in which the USIs were resolved and imposed upon the industry. This involved A-7, Mark I Long-Term Program; A-9, the ATWS Program; A-24, the equipment qualification; and A-26, reactor vessel pressure transient. Most of the inspection activity on these four has been complete.

So this gets you to maybe one-third of the USIs that might be applicable, just playing games with numbers, or probably in the category that we deliberately felt merited follow-up inspection. In most cases, these are largely complete and the inspection activity has been largely complete.

You have to remember, some of the USIs may not involve something that's inspectable. It may involve development of an analysis and submittal of that analysis to NRR. In such case, we would not elect to -- there's nothing to inspect.

COMMISSIONER ROGERS: In terms of the on-site inspection question, to what extent is the resident inspector involved in this process? They are

on-site. They presumably are aware of all the paperwork that's being exchanged with the licensee, so they know when the licensee has declared that they've done something. Are they in the loop in some formal way on this?

MR. SNIEZEK: Let me address it. The resident inspectors are in the loop, but we don't put our eggs in that resident inspector basket. They're the generalists out there to keep the pulse on the day to day operational activities.

We issue the TI to the regional office, and the regional administrator determines who on the staff, whether it be the resident, because of that resident's expertise in that specific area and background, or someone from the regional office would do that inspection.

As we get into, for example, A-44, station blackout, I envision we will have teams of electrical people go out comprised both of NRR and the region to go out -- if not at all the plants, a good portion of them -- to look at what physically was done, because that is such an important USI that we're resolving. So much safety is dependent upon that USI. And so it varies, depending upon the issue, and there's no one set person that would do it.

MR. WESSMAN: There is a TI that is planned and in the development stage on that A-44. I failed to mention that.

CHAIRMAN CARR: All right. Well, I'd like to thank the staff for an informative briefing. I think this is a very valuable effort, and I'm sorry it's -- we're now catching up with the problem, but sometime you've got to.

We now seem to have a clearer picture of the current status of implementation and schedules for completion of the currently outstanding unresolved safety issues. I'd urge the staff to continue efforts to develop acceptable resolution for those issues still outstanding and to continue tracking the implementation.

For those plants with a relatively large number of open unresolved safety issues, staff should insure licensees meet their schedules for closure. And as we've already said, we continue to be interested in a periodic briefing on the status of these issues.

Are there any further comments from my fellow Commissioners? If not, we stand adjourned.

(Whereupon, at 2:59 p.m., the above-entitled matter was concluded.)

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON STATUS OF INDUSTRY'S IMPLEMENTATION OF UNRESOLVED SAFETY ISSUES

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: FEBRUARY 14, 1990

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.

Carol Lynch

Reporter's name: Peter Lynch

COMMISSION BRIEFING
ON
STATUS OF IMPLEMENTATION OF UNRESOLVED SAFETY ISSUES (USIs)

FEBRUARY 14, 1990

JAMES SNIEZEK
RICHARD WESSMAN
ASHOK THADANI
JAMES RICHARDSON

CONTACT: RICHARD WESSMAN, NRR
PHONE: 492-1433

PURPOSE: TO PROVIDE THE COMMISSION A STATUS REPORT ON THE IMPLEMENTATION OF UNRESOLVED SAFETY ISSUES (USIs)

BRIEFING OUTLINE

- BACKGROUND
- LICENSEE ACTIONS
- STAFF ACTIONS
- USIs TO BE IMPLEMENTED AT MOST PLANTS
- SUMMARY OF OTHER UNIMPLEMENTED USIS
- RESULTS OF USI VERIFICATION EFFORT

BACKGROUND

-STAFF BRIEFED THE COMMISSION ON APRIL 25, 1989 ON STATUS OF USIs AND GSIs

-ON MAY 2, 1989 COMMISSION REQUESTED A STATUS REPORT AND PERIODIC UPDATES

-USI PILOT PLANT EFFORT - AUGUST-OCTOBER 1989

-GENERIC LETTER 89-21 ISSUED OCTOBER 19, 1989, REQUESTED LICENSEES TO PROVIDE USI IMPLEMENTATION STATUS

UNRESOLVED SAFETY ISSUE

- AFFECTS A NUMBER OF PLANTS
- RAISES QUESTIONS REGARDING ADEQUACY OF EXISTING SAFETY REQUIREMENTS
- RESOLUTION NOT YET DEVELOPED
- INVOLVES CONDITIONS NOT LIKELY TO BE ACCEPTABLE OVER PLANT LIFETIME

LICENSEE ACTIONS

-VERIFY APPLICABILITY OF USI TO FACILITY

-REVIEW FACILITY RECORDS AND PHYSICAL CHARACTERISTICS

-PROVIDE COMPLETION DATES AND SUPPORTING REFERENCES

-PROVIDE EXPECTED COMPLETION DATES OF UNIMPLEMENTED USIs

-INTERFACE WITH PROJECT MANAGER

STAFF ACTIONS

- ISSUE GENERIC LETTER 89-21
- REVIEW AGENCY RECORDS
- INTERFACE WITH LICENSEE
- EVALUATE LICENSEE RESPONSE TO GENERIC LETTER 89-21
- PREPARE IMPLEMENTATION STATUS SUMMARY AND DATA BASE INPUT
- REVIEW BY TECHNICAL BRANCHES
- VERIFY DATA BASE

- WHERE DOUBT EXISTED, THE USI WAS CONSIDERED AS "UNIMPLEMENTED"

USIs STATISTICAL BREAKDOWN

TOTAL POSSIBLE USIs AT 116 REACTORS (27 USIs X 116 REACTORS)	3132
USIs THAT ARE NOT APPLICABLE	-1205
APPLICABLE USIs TO BE IMPLEMENTED	1927
USIs THAT ARE IMPLEMENTED	-1501
UNIMPLEMENTED USIs	426

USIs TO BE IMPLEMENTED AT MOST PLANTS

USI		PLANTS OPEN
A-9	ANTICIPATED TRANSIENT WITHOUT SCRAM	60
A-44	STATION BLACKOUT	116
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	66
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	116
	TOTAL	358

THESE FOUR USIs ACCOUNT FOR 84% OF ALL UNIMPLEMENTED USIs

OTHER UNIMPLEMENTED USIs

-12 "OTHER" UNIMPLEMENTED USIs THAT AFFECT 47 PLANTS

-TOTAL OPEN ISSUES ARE 68

-NUMBER OF OTHER USIs OPEN AT INDIVIDUAL PLANTS VARIES FROM 2 TO 7.

RESULTS OF USI VERIFICATION EFFORT

-MOST USIS ARE IMPLEMENTED

-UNIMPLEMENTED USIs POSE NO IMMEDIATE SAFETY ISSUES

-BOTH THE LICENSEES AND THE STAFF HAVE CONFIDENCE IN USI IMPLEMENTATION STATUS

-LICENSEES AND STAFF MOVING SATISFACTORILY TOWARDS CLOSING UNIMPLEMENTED USIs

-STAFF IDENTIFIED TWO USIs WHERE REVIEW ACTIONS WERE GIVEN TOO LOW A PRIORITY (A-48 FOR ICE CONDENSER PLANTS, A-49 FOR BYRON & BRAIDWOOD)

-STAFF IDENTIFIED INSTANCES WHERE LICENSEES HAVE AN IMPLEMENTATION SCHEDULE THAT MAY NOT MEET STAFF EXPECTATIONS (A-9 AND A-44)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FEB 07 1990

MEMORANDUM FOR: Chairman Carr
Commissioner Roberts
Commissioner Rogers
Commissioner Curtiss
Commissioner Remick

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: THE IMPLEMENTATION STATUS OF UNRESOLVED SAFETY ISSUES

This report provides the current implementation status of unresolved safety issues (USIs). It is based on licensee responses to a generic letter and NRR staff review of USIs applicable to each power reactor licensee. NRR's findings indicate that, in general, most USIs have been implemented and that unimplemented USIs are being addressed on a schedule satisfactory to the staff. While NRR has concluded that the unimplemented USIs pose no immediate plant safety issues, the NRR staff will aggressively pursue their closure.

A USI was defined in NUREG-0510, "Identification of Unresolved Safety Issues Relating to Nuclear Power Plants - A Report to Congress," dated January 1979. The report provides the following definition of an unresolved safety issue:

> An unresolved safety issue is a matter affecting a number of nuclear power plants that poses important questions concerning the adequacy of existing safety requirements for which a final resolution has not yet been developed and that involves conditions not likely to be acceptable over the lifetime of the plants it affects.

Technical resolution of all 27 USIs has been completed by NRC. Because many USIs are applicable to specific reactor types, only about one half apply to any particular power reactor.

On April 25, 1989, the staff briefed the Commission on the status of USIs as well as generic safety issues (GSIs). At this briefing the staff agreed to provide a periodic report on industry's implementation of both types of issues. A staff requirements memorandum (SRM) dated May 2, 1989, asked the staff to prepare periodic reports updating industry's implementation of USIs and GSIs, including implementation schedules. Because of the large number of issues encompassed within the scope of this request, the staff determined that the most efficient way to proceed was to first determine the implementation status of the USIs and report to the Commission before addressing the GSIs. The USI project was initiated in August 1989 with a pilot plant effort. Five representative plants situated at three sites were examined and their USI implementation status was reported to the Commission on October 17, 1989. Subsequently, the staff initiated action to determine USI implementation status at all power reactors.

Contact: R. Wessman, NRR
492-1433

On October 19, 1989, Generic Letter (GL) 89-21, "Request for Information Concerning Status of Implementation of Unresolved Safety Issue (USI) Requirements," was issued to all holders of operating licenses and construction permits (Enclosure 1). GL 89-21 requested that licensees and construction permit holders review and report the status of implementation of USIs which were applicable to their facility. In cases where implementation had not been completed, licensees were asked to project implementation dates and identify remaining work. Licensees and construction permit holders were given 30 days from the date they received the letter to respond.

NRR project managers and technical review staff were also required to make a determination of USI implementation status by reviewing Agency records and documents. GL 89-21 requirements, coupled with the NRR staff review, resulted in a joint effort by both licensees and the staff to establish a consolidated history, documentation trail, and implementation status relating to each USI at each power reactor. Documents were shared between the staff and licensees where gaps in the records trail existed.

All licensee replies to GL 89-21 were received by early December 1989. The staff evaluated these replies and compared them with the Agency's status and understanding of USI implementation. In some cases, the staff's conclusion differed from the licensee's conclusion as a result of such factors as staff reviews still in progress, incorrect implementation assessment by the licensee, or a licensee's misunderstanding of the requirements imposed by the resolution of a particular USI. Where doubt existed, the USI was considered to be "unimplemented." Consequently, an unimplemented USI may be where no implementation action has yet been taken or where all but one part of the requirements have been implemented to the satisfaction of the staff.

The NRR staff then prepared an implementation status summary for all applicable USIs at each facility and provided input to the USI data base being developed by NRR. The staff is now conducting verification checks of the data base and expects to complete this effort in about 1 month.

USI implementation status has been developed for 116 power reactors. Facilities undergoing decommissioning (LaCrosse and Fort St. Vrain) have been excluded. Facilities whose ultimate status may be less clear (Shoreham and Rancho Seco) have been included in the data base. Facilities expected to receive a license in the near term (Comanche Peak and Watts Bar) have also been included. Enclosure 2 provides the number of unimplemented USIs at each plant. Enclosure 3 shows the number of plants where each USI remains unimplemented.

As can be seen from Enclosure 2, the number of unimplemented USIs at any given facility is relatively small. As shown in Enclosure 3, implementation of four USIs remains to be accomplished at many facilities. These USIs are A-9, "Anticipated Transient Without Scram"; A-44, "Station Blackout"; A-46, "Seismic Qualification of Equipment in Operating Plants"; and A-47, "Safety Implications of Control Systems."

USI A-9 requirements are now being implemented. About two-thirds of the plants have implemented operational ATWS systems and about 90 percent are scheduled to have implemented systems by the end of the year. However, in addition to those plants that have not yet installed ATWS systems, plants are also listed as incomplete if questions on the adequacy of the installed system remain or additional modifications need to be made to fully conform the systems to Commission guidance.

USI A-44 requirements will be implemented by licensees after the staff completes its review of submittals received in the spring of 1989 and the supplemental submittals to be provided by licensees by March 30, 1990. The supplemental submittals result from guidance recently approved by the staff and issued to the industry by Nuclear Management and Resources Council (NUMARC). Completion of the last A-44 review will be in March 1991.

USI A-46 was initiated to confirm the adequacy of certain plant components to perform their function under a design-basis earthquake. This required the development of a comprehensive experimental data base which has recently been completed by the industry and is undergoing staff review. USI A-46 will be implemented by the industry after the staff completes the final supplement to the generic safety evaluation report (SER). The supplement is expected in mid-1990.

USI A-47 was recently issued to the industry and industry responses are due in March 1990.

In summary, there is a total of 1,927 USIs which are applicable and must be implemented. Of this group 1,501 are implemented, leaving 426 which remain to be implemented. Of the 426 unimplemented USIs, the majority are part of the group of four discussed above (A-9, A-44, A-46, and A-47). A complete listing of the unimplemented USIs at each facility is provided in Enclosure 4.

The details of the process used by the staff to verify USI implementation and establish a data base are described in Enclosure 5. The USI data base will then be integrated into the Safety Issues Management System (SIMS). The USI status will be maintained current as issues are implemented.

Although final data base verification remains to be completed, the staff now has a comprehensive record of the USI implementation status at U.S. power reactors. Staff attention is focused on assuring implementation of these important safety issues. Staff work is proceeding on USIs that are dependent on staff action prior to licensee implementation.

Based on our work to date, the staff believes that licensees are proceeding satisfactorily towards implementation of all USIs. No facilities appear to have an unacceptable number of unimplemented USIs.

James M. Taylor
Executive Director
for Operations

Enclosures:
1. Generic Letter 89-21
2. Number of Unimplemented USIs per Plant
3. Number of Plants per Unimplemented USI
4. Unimplemented USIs at Each Reactor
5. Implementation Verification Process

cc: ~~SECY~~
OGC

ENCLOSURE 1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

October 19, 1989

TO: ALL HOLDERS OF OPERATING LICENSES AND CONSTRUCTION PERMITS FOR NUCLEAR POWER REACTORS

SUBJECT: REQUEST FOR INFORMATION CONCERNING STATUS OF IMPLEMENTATION OF UNRESOLVED SAFETY ISSUE (USI) REQUIREMENTS (GENERIC LETTER 89-21)

As part of our continuing effort to validate staff understanding regarding implementation of significant regulatory issues, the staff is conducting a comprehensive review of the implementation status of unresolved safety issues (USIs). An important aspect of this effort is to ensure that the licensee and NRC agree on the status of USI resolution implementation at each facility. The purpose of this letter is to request your review and reporting of the status of implementation of USIs for which a final technical resolution has been achieved and which are applicable to your facility.

To assist you in this effort, I have enclosed a table of USIs for which a final technical resolution has been achieved (Enclosure 1). This table indicates other information, such as multiplant action (MPA) number, generic letter number, applicability, and reference NUREG number. For your facility, determination of requirements for a particular USI may necessitate review of applicable generic letters, NUREG documents, or plant-specific correspondence. For your information, a summary of the resolution of each USI is provided in Enclosure 2.

As in the case of our earlier correspondence related to the status of implementation of TMI Task Action Plan items, implementation should be considered complete when activities have been performed necessary to satisfy the requirements (or assumptions) made in the staff's technical resolution of the particular USI. If you have not fully completed an item, we ask you to mark up the enclosure to reflect your projected implementation date. You should add a short note identifying remaining work (e.g., hardware, procedures, training, technical specifications). More explicit instructions are provided as part of Enclosure 1.

Your NRC Project Manager is developing data sheets that identify significant plant-specific correspondence between each licensee and the staff relating to a particular USI. Once we have researched agency files we will provide this information to your staff. This will ensure we both have a clear record of major actions regarding the USI. The Project Manager can provide additional clarification which may be of assistance to you and will work with your staff to identify plant-specific references.

We request that this information be provided within 30 days of receipt of this letter. The information we are requesting will be utilized to validate and update our existing databases so that we will have an accurate and complete understanding of the status of USI implementation at each nuclear power plant.

This request is covered by Office of Management and Budget Clearance Number 3150-0011, which expires December 31, 1989. The estimated average burden hours is 80 person hours per plant, including searching data sources, gathering and analyzing the data, and preparing the required letter. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Records and Reports Management Branch, Division of Information Support Services, Office of Information Resources Management, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; and to the Paperwork Reduction Project (3150-0011), Office of Management and Budget, Washington, D.C. 20503.

Sincerely,

James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. USI Table
2. USI Issues Summary
3. List of Most Recently Issued NRC Generic Letters

ENCLOSURE 1

UNRESOLVED SAFETY ISSUES FOR WHICH A FINAL TECHNICAL RESOLUTION HAS BEEN ACHIEVED

USI/MPA NUMBER	TITLE	REF. DOCUMENT	APPLICABILITY	STATUS/DATE*	REMARKS
A-1	Water Hammer	SECY 84-119 NUREG-0927, Rev. 1 NUREG-0993, Rev. 1 NUREG-0737 Item I.A.2.3 SRP revisions	All		
A-2/ MPA D-10	Asymmetric Blowdown Loads on Reactor Primary Coolant Systems	NUREG-0609 GL 84-04, GDC-4	PWR		
A-3	Westinghouse Steam Generator Tube Integrity	NUREG-0844 SECY 86-97 SECY 88-272 GL 85-02 (No requirements)	W-PWR		
A-4	CE Steam Generator Tube Integrity	NUREG-0844, SECY 86-97 SECY 88-272 GL 85-02 (No requirements)	CE-PWR		
A-5	B&W Steam Generator Tube Integrity	NUREG-0844, SECY 86-97 SECY 88-272 GL 85-02 (No Requirements)	B&W-PWR		
A-6	Mark I Containment Short-Term Program	NUREG-0408	Mark I-BWR		

* C - COMPLETE
NC - NO CHANGES NECESSARY
NA - NOT APPLICABLE
I - INCOMPLETE

USI/MPA NUMBER	TITLE	REF. DOCUMENT	APPLICABILITY	STATUS/DATE*	REMARKS
A-7/ D-01	Mark I Long-Term Program	NUREG-0661 NUREG-0661 Suppl. 1 GL 79-57	Mark I-BWR		
A-8	Mark II Containment Pool Dynamic Loads	NUREG-0808 NUREG-0487, Suppl. 1/2 NUREG-0802 SRP 6.2.1.1C GDC 16	Mark II-BWR		
A-9	Anticipated Transients Without Scram	NUREG-0460, Vol. 4 10 CFR 50.62	All		
A-10/ MPA B-25	BWR Feedwater Nozzle Cracking	NUREG-0619 Letter from DG Eisenhut dated 11/13/80 GL 81-11	BWR		
A-11	Reactor Vessel Material Toughness	NUREG-0744, Rev. 1 10 CFR 50.60/ 82-26	All		
A-12	Fracture Toughness of Steam Generator and Reactor Coolant Pump Supports	NUREG-0577, Rev. 1 SRP Revision 5.3.4	PWR		
A-17	Systems Interactions	Ltr: DeYoung to licensees - 9/77 NUREG-1174, NUREG-1229, NUREG/CR-3922, NUREG/CR-4261, NUREG/CR-4470, GL 89-18 (No requirements)	All		
A-24/ MPA B-60	Qualification of Class 1E Safety-Related Equipment	NUREG-0588, Rev. 1 SRP 3.11 10 CFR 50.49 GL 82-09, GL 84-24	All		

USI/MPA NUMBER	TITLE	REF. DOCUMENT	APPLICABILITY	STATUS/DATE*	REMARKS
A-26/ MPA B-04	Reactor Vessel Pressure Transient Protection	DOR Letters to Licensees 8/76 NUREG-0224 NUREG-0371 SRP 5.2 GL 88-11	PWR		
A-31	Residual Heat Removal Shutdown Requirements	NUREG-0606 RG 1.113, RG 1.139 SRP 5.4.7	All OLs After 01/79.		
A-36/ C-10, C-15	Control of Heavy Loads Near Spent Fuel	NUREG-0612 SRP 9.1.5 GL 81-07, GL 83-42, GL 85-11 Letter from DG Eisenhut dated 12/22/80	All		
A-39	Determination of SRV Pool Dynamic Loads and Pressure Transients	NUREG-0802 NUREGs-0763,0783,0802 NUREG-0661 SRP 6.2.1.1.C	BWR		
A-40	Seismic Design Criteria	SRP Revisions, NUREG/CR-4776, NUREG/CR-0054, NUREG/CR-3480, NUREG/CR-1582, NUREG/CR-1161, NUREG-1233, NUREG-4776 NUREG/CR-3805 NUREG/CR-5347 NUREG/CR-3509	All		
A-42/ MPA B-05	Pipe Cracks in Boiling Water Reactors	NUREG-0313, Rev. 1 NUREG-0313, Rev GL 81-03, GL 88	BWR		

USI/MPA NUMBER	TITLE	REF. DOCUMENT	APPLICABILITY	STATUS/DATE*	REMARKS
A-43	Containment Emergency Sump Performance	NUREG-0510, NUREG-0869, Rev. 1 NUREG-0897, R.G.1.82 (Rev. 0), SRP 6.2.2 GL 85-22 No Requirements	All		
A-44	Station Blackout	RG 1.155 NUREG-1032 NUREG-1109 10 CFR 50.63	All		
A-45	Shutdown Decay Heat Removal Requirements	SECY 88-260 NUREG-1289 NUREG/CR-5230 SECY 88-260 (No requirements)	All		
A-46	Seismic Qualification of Equipment in Operating Plants	NUREG-1030 NUREG-1211/ GL 87-02, GL 87-03	All		
A-47	Safety Implication of Control Systems	NUREG-1217, NUREG-1218 GL 89-19	All		
A-48	Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment	10 CFR 50.44 SECY 89-122	All, except PWRs with large dry containments		
A-49	Pressurized Thermal Shock	RGs 1.154, 1.99 SECY 82-465 SECY 83-288 SECY 81-687 10 CFR 50.61/ GL 88-11	PWR		

GUIDE FOR UPDATING USI STATUS

(1) Enclosure 1 lists all unresolved safety issues (USIs) for which a final technical resolution has been achieved. Please review the entire listing for each licensed reactor unit. Where an item is not applicable for your facility, mark "NA" in the status column.

(2) Where an item is applicable to your facility, but no changes were necessary, mark "NC" in the status column.

(3) Where an item is applicable to your facility and changes are complete, mark "C" in the status column and indicate month and year implementation was complete, including reference to any supporting documentation.

(4) Where an item is applicable to your facility and is not fully implemented, provide your projected implementation date (month and year) and a short note identifying the outstanding item (e.g., hardware, procedures, training, Technical Specifications). Mark "I" for incomplete.

(5) Where a USI resolution was only recently issued, such as A-40 and A-47, and you are evaluating your response, identify expected response date and indicate "E" in the status column.

ISSUES SUMMARIES FOR UNRESOLVED SAFETY ISSUES

1. USI NO. A-1 TITLE: Water Hammer

This Unresolved Safety Issue (USI) was resolved in March 1984, with the publication of NUREG-0927, "Evaluation of Water Hammer in Nuclear Power Plants-Technical Findings Relevant to Unresolved Safety Issue A-1." Also on March 15, 1984, the EDO sent the Commissioners SECY 84-119 titled, "Resolution of Unresolved Safety Issue A-1, Water Hammer."

In SECY 84-119, the staff concluded that the frequency and severity of water hammer occurrences had been significantly reduced through (a) incorporation of design features such as keep-full systems, vacuum breakers, J-tubes, void detection systems, and improved venting procedures; (b) proper design of feedwater valves and control systems; and (c) increased operator awareness and training. Therefore, the resolution of USI A-1 did not involve any hardware or design changes on existing plants. It did involve Standard Review Plan (SRP) changes (forward fits) and a comprehensive set of guidelines and criteria to evaluate and upgrade utility training programs (per TMI Task Action Plan Item I.A.2.3). In addition, the assumption was made that for BWRs with isolation condensers (ICs) a reactor-vessel high water-level feedwater pump trip was in place or being installed. This was necessary because calculated values had postulated an IC failure by water hammer that opened a direct pathway to the environment.

2. USI NO. A-2 TITLE: Asymmetric Blowdown Loads in Reactor Coolant System

This USI was resolved in January 1981 with the publication of NUREG-0609, "Asymmetric Blowdown Loads on PWR Primary Systems."

In October 1975, the NRC notified each operating PWR licensee of a potential safety problem concerning the fact that asymmetric LOCA loads had not been considered in the design of any PWR piping system. In June 1976 the NRC informed each PWR licensee that it was required to reassess the reactor vessel support design of its facility. The staff expanded the scope of the problem in January 1978 with a request for additional information to all PWR licensees. NUREG-0609 provided guidance for these analyses. For operating PWRs, Multi-Plant Action (MPA) Item D-10 was established by NRC's Division of Licensing for implementation purposes.

During the course of the work on USI A-2, it was demonstrated that there were only a very limited number of break locations which could give rise to significant loads. Subsequently, after substantial new technical work, it was demonstrated that pipes would leak before break and that new fracture mechanics techniques for the analyzing of piping failures assured adequate protection against failures in primary system piping in PWRs (Generic Letter 84-04). This was reflected in a revision of General Design Criteria (GDC)-4 (Appendix A to 10 CFR Part 50) published in the Federal Register in final form on April 11, 1986, and in a subsequent revision to GDC-4 published in the Federal Register

on July 23, 1986. In addition, it has also been satisfactorily demonstrated in the course of the A-2 effort that there is a very low likelihood of simultanec pipe loading with both LOCA and safety shutdown earthquake (SSE) loads. Therefore, the last revision of GDC-4 represented the final technical action of NRC regarding the issue of asymetric blowdown loads issue in PWRs primary coolant main loop piping.

3. USI NO. A-3,4,5 TITLE: Steam Generator Tube Integrity

USIs A-3, 4, and 5, were resolved in September 1988 with the publication of NUREG-0844 "NRC Integrated Program for the Resolution of Unresolved Safety Issues A-3, A-4, and A-5 Regarding Steam Generator Tube Integrity." USIs A-3, A-4, and A-5 did not result in new generic requirements for industry in view of the small potential for reducing risk.

Steam generator tube integrity was designated an unresolved safety issue in 1978 after it became apparent that steam generator tubes were subject to widespread degradation, frequent leaks, and occasional ruptures (i.e., gross failures). USI Task Action Plans A-3, A-4, and A-5 were established to evaluate the safety significance of these problems for Westinghouse, Combustion Engineering, and Babcock & Wilcox steam generators, respectively. These studies were later combined into a single effort because PWR vendors were all experiencing many of the same problems.

NUREG-0844 provides a generic risk assessment that indicates that risk from steam generator tube rupture (SGTR) events is not a significant contributor to the total risk at a given site, nor to the total risk to which the general public is routinely exposed. This finding is considered indicative of the effectiveness of licensee programs and regulatory requirements for ensuring steam generator tube integrity in accordance with 10 CFR Part 50, Appendices A and B.

NUREG-0844 also identifies a number of staff-recommended actions that can further improve the effectiveness of licensee programs in ensuring the integrity of steam generator tubes and in mitigating the consequences of a SGTR. As part of the integrated program, the staff issued Generic Letter 85-02 encouraging licensees of PWRs to upgrade their programs, as necessary, to meet the intent of the staff-recommended actions; however, such recommended actions do not constitute NRC requirements. The staff's assessment of licensee responses to Generic Letter 85-02 was provided to the Commission in SECY 86-97.

4. USI NO. A-6 TITLE: Mark I Containment Short-Term Program

This USI was resolved in December 1977 with the publication of NUREG-0408, "Mark I Containment Short-Term Program Safety Evaluation Report."

The objectives of the Mark I short-term program were: (a) to examine the containment system of each BWR facility with a Mark I containment design to verify that it would maintain its integrity and functional capability when subjected to the most probable hydrodynamic loads induced by a postulated

design-basis LOCA, and (b) to verify that licensed Mark I BWR facilities could continue to operate safely, without undue risk to the public health and safety until such time as a methodical, comprehensive long-term program is conducted.

The NRC staff used a safety factor of at least two to failure for the weakest structural or mechanical component in the Mark I containment system in judging that containment integrity and functions would be assured under most probable design-basis LOCA-induced hydrodynamic loads.

As indicated in NUREG-0408, the staff required full implementation of the calculation of the hydrodynamic loads and structural analysis as an interim measure until complete implementation of the long-term program had been achieved. In NUREG-0408 the staff concluded that the objectives of the Short-Term Program had been satisfied, thus documenting the basis for resolving this safety issue. This issue is considered complete for all affected BWRs.

5. USI NO. A-7 TITLE: Mark I Long-Term Program

This USI was resolved in August 1982 with the publication of Supplement 1 to NUREG-0661, "Safety Evaluation Report, Mark I Containment Long-Term Program" and Standard Review Plan Section 6.2.1.1.C. For operating BWRs, MPA D-01 was established for implementation purposes.

The focus of this USI was the suppression pool hydrodynamic loads, associated with a postulated LOCA, which had not explicitly been included in the original Mark I containment design. The issue was identified during large-scale testing of a Mark III containment design. The staff addressed this issue in NUREG-0660 published in July 1980, and in Supplement 1 to NUREG-0661, published in August 1982.

The objective of the long-term program (LTP) was to establish the design-basis loads that are appropriate for the anticipated life of each Mark I BWR facility and to restore the originally intended design-safety margins for each Mark I containment system. The principal thrust of the LTP was the development of generic methods for defining suppression pool hydrodynamic loadings and the associated structural assessment techniques for the Mark I configuration. On the basis of experimental and analytical programs conducted by the Mark I Owners Group, it was determined that the hydrodynamic load definition procedures, with some modifications defined in NUREG-0661, provided a conservative estimate of these loading conditions. Thus, the requirements associated with this USI were concerned with the structural assessment of Mark I containments and related structures to the hydrodynamic loads defined by the staff in the LTP.

In January 1981, the staff issued "Orders For Modification of License and Grant of Extension of Exemptions" to each licensee of a Mark I plant. The orders required the licensees to assess the suppression pool hydrodynamic loads in accordance with General Electric documents and NUREG-0661 on a defined schedule. For some plants, the implementation schedule was extended by a subsequent order.

6. USI NO. A-8 TITLE: Mark II Containment Pool Dynamic Loads

This USI was resolved in August 1981 with the publication of NUREG-0808, "Mar II Containment Program Load Evaluation and Acceptance Criteria," and Standard Review Plan (SRP) Section 6.2.1.1C. The requirement is that the 11 BWRs having the Mark II containment shall meet the requirements of GDC 16.

As stated in NUREG-0808, the original design of the Mark II containment system considered only those loads normally associated with design-basis accidents that were known at the time. These included pressure and temperature loads associated with a LOCA, seismic loads, dead loads, jet impingement loads, hydrostatic loads due to water in the suppression chamber, overload pressure test loads, and construction loads. However, since the establishment of the original design criteria, additional loading conditions were identified that must be considered for the pressure-suppression containment-system design.

In the course of performing large-scale testing of an advanced design pressure-suppression containment (Mark III), and during inplant testing of Mark I containments, new suppression-pool hydrodynamic loads were identified that had not been included explicitly in the original Mark II containment-design basis. These additional loads result from dynamic effects of drywell air and steam being rapidly forced into the suppression pool during a postulated LOCA and from suppression-pool response to safety/relief valve (SRV) operation; these are generally associated with plant transient operating conditions. Because these new hydrodynamic loads had not been considered, the NRC staff determined that a detailed reevaluation of the Mark II containment system was required.

The issuance of NUREG-0808, NUREG-0802, "Safety Relief Valve Quencher Loads: Evaluation for BWR Mark II and III Containments," and NUREG-0487, "Mark II Containment Lead Plant Program Load Evaluation and Acceptance Criteria," documented acceptable methods for calculating the hydrodymanic loads associated with plant transient conditions. Specifically, the loads referenced in these NRC staff reports, as modified by the acceptance criteria, constituted the resolution of USI A-8. SRP Section 6.2.1 has been modified to reflect the applicability of these reports to Mark II containment evaluations.

Implementation is believed to be complete for all Mark II BWRS. As part of the licensing process, the staff required that the applicants utilize the new calculation methodology defined in the reference documents before a full power license was issued.

7. USI NO. A-9 TITLE: Anticipated Transient Without Scram (ATWS) per 10 CFR 50.62

ISSUES SUMMARY:

This USI was resolved in June 1984 with the publication of a final rule (10 CFR 50.62) to require improvements in plants to reduce the likelihood of failure of the reactor protection system (RPS) to shut down the reactor following anticipated transients and to mitigate the consequences of an anticipated transient without scram (ATWS) event.

The rule includes the following design-related requirements: 50.62(C)(1), diverse and independent auxiliary feedwater initiation and turbine trip for all PWRs; 50.62(C)(2), diverse scram systems for CE and B&W reactors; 50.62(C)(3) alternate rod injection (ARI) for BWRs; 50.62(C)(4); standby liquid control system (SLCS) for BWRs; and 50.62(C)(5), automatic trip of recirculation pumps under conditions indicative of an ATWS for BWRs. Information requirements and an implementation schedule are also specified.

8. USI NO. A-10 TITLE: BWR Feedwater Nozzle Cracking

This issue was resolved in November 1980 with the publication of NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking." MPA B-25 was established by NRC's Division of Licensing for implementation purposes.

Inspections of operating BWRs conducted up to April 1978 revealed cracks in the feedwater nozzles of 20 reactor vessels. It was determined that cracking was due to high-cycle fatigue caused by fluctuations in water temperature within the vessel in the nozzle region.

By letter dated November 13, 1980, Darrell G. Eisenhut provided licensees with a copy of NUREG-0619. The letter stated that NUREG-0619 provided the resolution of the staff's generic technical activity USI A-10, which resulted from the inservice discovery of cracking in feedwater nozzles and control rod drive return line nozzles. NUREG-0619 describes the technical issues, General Electric and staff studies and analyses, and the staff's positions and requirements. Licensees were required to respond, pursuant to 10 CFR 50.54(f), that they would meet implementation dates indicated in NUREG-0619.

Generic Letter 81-11 was subsequently issued to provide technical clarification to the November 13, 1980 letter, to clarify that it had been sent to PWR licensees for information only, and that no response was required from PWR licensees.

9. USI NO. A-11 TITLE: Reactor Vessel Materials Toughness

This USI was resolved in October 1982 with the publication of NUREG-0744, "Pressure Vessel Material Fracture Toughness.". NUREG-0744 was issued by Generic Letter 82-26 and provided only a methodology to satisfy the requirements of 10 CFR Part 50, Appendix G. No licensee response to Generic Letter 82-26 was required.

Because of the remote possibility that nuclear reactor pressure vessels designed to the ASME Boiler and Pressure Vessel Code would fail, the design of nuclear facilities does not provide protection against reactor vessel failure. Prevention of reactor vessel failure depends primarily on maintaining the reactor vessel material fracture toughness at levels that will resist brittle fracture during plant operation. At service times and operating conditions typical of current operating plants, reactor vessel fracture toughness properties provide adequate margins of safety against vessel failure; however,

as plants accumulate more and more service time, neutron irradiation reduces the material fracture toughness and initial safety margins.

Appendix G to 10 CFR Part 50 requires that the Charpy upper shelf energy throughout the life of the vessel be no less than 50 ft-lb unless it is demonstrated that lower values will provide margins of safety against failure equivalent to those provided by Appendix G of the ASME code. USI A-11 was initiated to address the staff's concern that some vessels were projected to have beltline materials with Charpy upper shelf energy less than 50 ft-lb.

NUREG-0744 provides a method for evaluating reactor vessel materials when their Charpy upper shelf energy is predicted to fall below 50 ft-lb. Plants will use the prescribed method when analysis of irradiation damage predicts that the charpy upper shelf energy is below 50 ft-lb.

10. USI NO. A-12 TITLE: Potential of Low Fracture Toughness and Lamellar Tearing in PWR Steam Generator and Reactor Coolant Pump Supports

This USI was resolved in October 1983 with the publication of NUREG-0577, "Potential of Low Fracture Toughness and Lamellar Tearing in PWR Steam Generator and Reactor Coolant Pump Supports." The resolution contained no backfit requirements; it only applied to plants with a new construction permit issued after October 1983. Standard Review Plan Section 5.3.4 was issued at the same time this USI was resolved.

The concern in this USI, as the title indicates, was the potential of low fracture toughness of some materials selected for fabrication of steam generator (SG) and reactor coolant pump (RCP) supports in operating PWRs. Lamellar tearing was also of concern. Fracture toughness is a measure of a material's resistance to fracture in the presence of a previously existing crack. Generally, a material is considered to have adequate fracture toughness if it can withstand loading to its design limit in the presence of detectable flaws under stated conditions of stress and temperature.

The modifications to address this USI could involve maintaining minimum temperature around the supports above its fracture transition temperature, or total replacement of existing SG and RCP supports with supports fabricated of material grade which has a higher Charpy upper shelf energy and a lower transition temperature. Analysis performed for the resolution of this USI determined that, even with the failure of the SG and RCP supports, the amount of incremental release of radioactivity would not be sufficiently high enough to justify any modification in terms of increasing the toughness of these supports. This conclusion is based on a value-impact analysis documented in Appendix C of NUREG-0577.

11. USI NO. A-17 TITLE: Systems Interactions in Nuclear Power Plants

Generic Letter (GL) 89-18, dated September 6, 1989, was sent to all power reactor licensees and constitutes the resolution of USI A-17. The generic letter did not require any licensee actions.

GL 89-18 had two enclosures which (a) outlined the bases for the resolution of USI A-17, and (b) provided five general lessons learned from the review of the overall systems interaction issue. The staff anticipated that licensees would review this information in other programs, such as the Individual Plant Examination (IPE) for Severe Accident Vulnerabilities. Specifically, the staff expected that insights concerning water intrusion and flooding from internal sources, as described in the appendix to NUREG-1174, would be considered in the IPE program. Also considered in the resolution of this USI was the expectation that licensees would continue to review information on events at operating nuclear power plants in accordance with the requirements of TMI Task Action Plan Item I.C.5 (NUREG-0737).

12. USI NO. A-24 TITLE: Qualification of Class 1E Equipment

This USI was resolved in July 1981 with the publication of NUREG-0588, Revision 1, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment." Part I of the report is the original NUREG-0588 that was issued for comment; that report, in conjunction with the Division of Operating Reactor (DOR) Guidelines, was endorsed by a Commission Memorandum and Order as the interim position on this subject until "final" positions were established in rule making. On January 21, 1983 the Commission amended 10 CFR 50.49 (the rule), effective February 22, 1983, to codify existing qualification methods in national standards, regulatory guides, and certain NRC publications including NUREG-0588.

The rule is based on the DOR Guidelines and NUREG-0588. These provide guidance on (a) how to establish environmental service conditions, (b) how to select methods which are considered appropriate for qualifying the equipment in different areas of the plant, and (c) such other areas as margin, aging, and documentation. NUREG-0588 does not address all areas of qualification; it does supplement, in selected areas, the provisions of the 1971 and 1974 versions of IEEE Standard 323. The rule recognizes previous qualification efforts completed as a result of Commission Memorandum and Order CLI-80-21 and also reflects different versions IEEE 323, dependent on the date of the construction permit Safety Evaluation Report (SER). Therefore, plant-specific requirements may vary in accordance with the rule.

In summary, the resolution of A-24 is embodied in 10 CFR 50.49. A measure of whether each licensee has implemented the resolution of A-24 may therefore be found in the determination of compliance with 10 CFR 50.49. This was addressed by 72 SERs for operating plants issued shortly after publication of the rule and subsequently in operating license reviews pursuant to Standard Review Plan Section 3.11. This was further addressed by the first-round environmental qualification inspections conducted by the NRC.

13. USI NO. A-26 TITLE: Reactor Vessel Pressure Transient Protection

This USI was resolved in September 1978 with the publication of NUREG-0224, "Reactor Vessel Pressure Transient Protection for PWRs," and Standard Review Plan Section 5.2. The licensees of all operating PWRs were requested to

provide an overpressure prevention system that could be used whenever the plants were in startup or shutdown conditions. The issue affected all operating and future plants, and the staff established MPA B-04 for implementing the solution at operating PWRs.

Since 1972, there have been numerous reported incidents of pressure transients in PWRs where technical specification pressure and temperature limits have been exceeded. The majority of these events occurred while the reactors were in a solid-water condition during startup or shutdown and at relatively low reactor vessel temperatures. Since the reactor vessels have less toughness at lower temperatures, they are more susceptible to brittle fracture under these conditions than at normal operating temperatures. In light of the frequency of the reported transients and the associated potential for vessel damage, the NRC staff concluded that measures should be taken to minimize the number of future transients and reduce their severity.

Generic Letter 88-11, "NRC Position on Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations," was published July 12, 1988. This generic letter provides guidance regarding review of pressure-temperature limits and indicates that licensees may have to revise low-temperature-overpressure protection setpoints.

14. USI NO. A-31 TITLE: Residual Heat Removal Shutdown Requirements

This USI was resolved in May 1978 with the publication of Standard Review Plan (SRP) Section 5.4.7. Only those plants expected to receive an operating license after January 1, 1979 were affected by this resolution. The USI involved establishment of criteria for the design and operation of systems necessary to take a power reactor from normal operating conditions to cold shutdown.

SRP Section 5.4.7 stated that, for purposes of implementation, plants would be divided into three classes: Class 1 would require full compliance for Construction Permit (CP) or Preliminary Design Approval (PDA) applications which were docketed on or after January 1, 1978. Class 2 required a partial implementation for all plants for which CP or PDA applications were docketed before January 1, 1978, and for which an Operating License (OL) issuance was expected on or after January 1, 1979. Class 3 affected all operating reactors and all other plants for which issuance of the OL was expected before January 1, 1979. The extent to which Class 3 plants would require implementation was based on the combined staff review of related plant features. In general, the outcome of these evaluations were that only plants receiving an OL after January 1, 1979 were affected by this USI resolution, and there were no backfits to operating plants that had received an operating license before January 1, 1979.

15. USI NO. A-36 TITLE: Control of Heavy Loads, Phases I & II

This USI was resolved in July 1980 with the publication of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," and Standard Review Plan (SRP) Section 9.1.5. The staff established MPAs C-10 and C-15 for the implementation of Phases I and II, respectively, of the resolution of this issue at operating plants.

In nuclear power plants, heavy loads may be handled in several plant areas. If these loads were to drop in certain locations in the plant, they may impact spent fuel, fuel in the core, or equipment that may be required to achieve safe shutdown and continue decay heat removal. USI A-36 was established to systematically examine staff licensing criteria and the adequacy of measures in effect at operating plants, and to recommend necessary changes to ensure the safe handling of heavy loads. The guidelines proposed in NUREG-0612 include definition of safe load paths, use of load handling procedures, training of crane operators, guidelines on slings and special lifting devices, periodic inspection and maintenance for the crane, as well as various alternatives.

By Generic Letters dated December 22, 1980, and February 3, 1981 (Generic Letter 81-07), all utilities were requested to evaluate their plants against the guidance of NUREG-0612 and to provide their submittals in two parts: Phase I (six month response) and Phase II (nine month response). Phase I responses were to address Section 5.1.1 of NUREG-0612 which covered the following areas:

1. Definition of safe load paths
2. Development of load handling procedures
3. Periodic inspection and testing of cranes
4. Qualifications, training and specified conduct of operators
5. Special lifting devices should satisfy the guidelines of ANSI N14.6.6.
6. Lifting devices that are not specially designed should be installed and used in accordance with the guidelines of ANSI B30.9
7. Design of cranes to ANSI B30.2 or CMAA-70

Phase II responses were to address Sections 5.1.2 thru 5.1.6 of NUREG-0612 which covered the need for electrical interlocks/mechanical stops, or alternatively, single-failure-proof cranes or load drop analyses in the spent fuel pool area (PWR), containment building (PWR), reactor building (BWR), other areas and the specific guidelines for single-failure-proof handling systems.

As stated in Generic Letter 85-11, "Completion of Phase II of 'Control of Heavy Loads at Nuclear Power Plants' - NUREG-0612," all licensees have completed the requirement to perform a review and submit a Phase I and a Phase II report. Based on the improvements in heavy loads handling obtained from implementation of NUREG-0612 (Phase I), further action was not required to reduce the risks associated with the handling of heavy loads. Therefore, a detailed Phase II review of heavy loads was not necessary and Phase II was considered completed.

While not a requirement, NRC encouraged the implementation of any actions identified in Phase II regarding the handling of heavy loads that were considered appropriate.

16. USI NO. A-39 TITLE: Determination of Safety Relief Valve Pool Dynamic Loads and Temperature Limits

This USI was resolved with the publication of Standard Review Plan (SRP) Section 6.2.1.1.C, in October 1982. In addition, NUREGs 0763, 0783 and 0802 were issued for Mark I, Mark II, and Mark III containments, respectively.

BWR plants are equipped with safety/relief valves (SRVs) to protect the reactor

from overpressurization. Plant operational transients, such as turbine trips, will actuate the SRV. Once the SRV opens, the air column within the partially submerged discharge line is compressed by the high-pressure steam released from the reactor. The compressed air discharged into the suppression pool produces high-pressure bubbles. Oscillatory expansion and contraction of these bubbles create hydrodynamic loads on the containment structures, piping, and equipment inside containment.

NUREG-0802 presents the results of the staff's evaluation of SRV loads. The evaluation, however, is limited to the quencher devices used in Mark II and III containments. With respect to Mark I containments, the SRV acceptance criteria are presented in NUREG-0661, "Safety Evaluation Report, Mark I Containment and Long-Term Program," and are dealt with as part of USI A-7.

SRP Section 6.2.1.1.C addresses the applicable review criteria, since all Mark II and III containment designs are understood to have completed their operating license (OL) reviews subsequent to resolution of this USI and reflection of the resolution in the SRP.

17. USI NO. A-40 TITLE: Seismic Design Criteria

The staff has resolved USI A-40 as documented in NUREG/CR-5347, "Recommendations for Resolution of Public Comments on USI A-40," issued in June 1989, and NUREG-1233, "Regulatory Analysis for USI A-40," issued in September 1989.

For plants not covered under the scope of USI A-46, "Seismic Qualification of Equipment in Operating Plants," the staff concluded that tanks in plants that were subject to licensing review by the staff after 1984 had been reviewed to current requirements and found acceptable. For tanks in plants reviewed during 1980-1984, the staff identified four plant sites (six units) that were not explicitly reviewed to current requirements. The four plants (Callaway 1/2, Wolf Creek, Shearon Harris 1, and Watts Bar 1/2) are being handled on a plant-specific basis.

USI A-40 originated in 1977. The basic objectives were (a) to study the seismic design criteria, (b) to quantify the conservatism associated with the criteria, and (c) to recommend modifications to the Standard Review Plan (SRP) if changes are justified. Lawrence Livermore National Laboratory (LLNL) completed the study and published its findings in NUREG/CR-1161, "Recommended Revisions to USNRC - Seismic Design Criteria," dated May 1980. The report recommended specific changes to the Standard Review Plan (SRP). NRC staff reviewed the report and developed some other changes that would reflect the present state of seismic design practices. The resulting SRP changes were issued for public comment in June 1988, and the final SRP changes are to be published in October 1989.

The major SRP changes consist of (a) clarification of development of site specific spectra, (b) justification for use of single synthetic time-history by power spectral density function, (c) location and reductions of input ground motion for soil structure interaction, and (d) design of above-ground vertical tanks. Except for item (d), these items do not constitute any additional requirements for current licenses and applications, and thus, no backfitting is being required for these items. However, the revised provisions could be used for margin studies and reevaluations or individual plant examination for external events (IPEEE).

The participant utilities in the Seismic Qualification Utility Group (SQUG) agreed to implement the changed criteria for flexible vertical tanks for thei plants. For the four plants where this issue has to be resolved on an individual basis a 10 CFR 50.54(f) request-for-information letter has been sent to the affected utilities. If the information received indicates that large above-ground vertical tanks do not meet the new criteria, plant-specific backfits will be considered.

18. USI NO. A-42 TITLE: Pipe Cracks in Boiling Water Reactors

This USI was resolved in February 1981 with the publication of NUREG-0313, Revision 1, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping." That NUREG document was issued to all holders of BWR operating licenses or construction permits and to all applicants for BWP operating licenses. The staff established MPA B-05 for implementation of the resolution at operating plants.

Pipes have cracked in the heat-affected zones of welds in primary system piping in BWRs since mid-1960. These cracks have occurred mainly in Type 304 stainless steel, which is the type used in most operating BWRs. The major problem is recognized to be intergranular stress corrosion cracking (IGSCC) of austenitic stainless steel components that have been made susceptible to this failure by being "sensitized," either by post-weld heat treatment or by sensitization of a narrow heat affected zone near welds.

"Safe ends" that have been highly sensitized by furnace heat treatment while attached to vessels during fabrication were found to be susceptible to IGSCC i. the late 1960s. Most of the furnace-sensitized safe ends in older plants have been removed or clad with a protective material, and only a few BWRs still have furnace-sensitized safe ends in use. Most of these, however, are in smaller diameter lines.

Cracks reported before 1975 occurred primarily in 4-inch-diameter recirculation loop bypass lines and in 10-inch-diameter core spray lines. Cracking is most often detected during inservice inspections using ultrasonic test techniques. Some piping cracks have been discovered as a result of primary coolant leaks.

NUREG-0313, Revision 1 provided the NRC staff's revised acceptable methods for reducing the IGSCC susceptibility of BWR code class 1, 2, and 3 pressure boundary piping of sizes identified above and safe ends. In addition, it provided the requirements for augmented inservice inspection of piping with nonconforming materials.

As a result of further IGSCC degradations in larger piping, the staff provided licensees with additional requirements in several NRC communications (i.e., Bulletins 82-03, 83-2, and 84-11). The long-term resolution of IGSCC in BWR piping (including the scope of A-42) was provided in NUREG-0313, Revision 2 which was transmitted to all holders of BWR operating licenses via Generic Letter 88-01.

19. USI NO. A-43 TITLE: Containment Emergency Sump Performance

The resolution of this USI was presented to the Commission in October 1985 in SECY-85-349. NUREG-0897, Revision 1, "Containment Emergency Sump Performance presents the results of the staff's technical findings. These findings established a need to revise current licensing guidance on these matters. RG 1.82 Revision 0 and Standard Review Plan Section 6.2.2, "Containment Heat Removal Systems" were revised to reflect this new guidance. No licensee actions were required.

Initially, an issue existed concerning the availability of adequate recirculation cooling water following a loss-of-coolant accident (LOCA) when long-term recirculation of cooling water from the PWR containment sump, or the BWR residual heat removal system (RHR) suction intake, must be initiated and maintained to prevent core melt.

The technical concerns evaluated under USI A-43 were: (a) post-LOCA adverse conditions resulting from potential vortex formation and air ingestion and subsequent pump failure, (b) blockage of sump screens with LOCA generated insulation debris causing inadequate net positive suction head (NPSH) on pumps, and (c) RHR and containment spray pumps inoperability due to possible air, debris, or particulate ingestion on pump seal and bearing systems.

This revised guidance applies only to future construction permits, preliminary design approvals, final design approvals, standardized designs, and applications for licenses to manufacture. The staff performed a regulatory analysis to determine if this new guidance should be applied to operating plants. The results of this analysis were reported in NUREG-0869 Revision 1, "USI A-43 Regulatory Analysis," issued in October 1985. The staff concluded that the regulatory analysis does not support any new generic requirements for present licensees to perform debris assessments.

20. USI NO. A-44 TITLE: Station Blackout

This USI was resolved in June 1988 with the publication of a new rule (10 CFR 50.63) and Regulatory Guide 1.155.

Station blackout means the loss of offsite ac power to the essential and nonessential electrical buses concurrent with turbine trip and the unavailability of the redundant onsite emergency ac power systems. WASH-1400 showed that station blackout could be an important risk contributor, and operating experience has indicated that the reliability of ac power systems might be less than originally anticipated. For these reasons station blackout was designated as a USI in 1980. A proposed rule was published for comment on March 21, 1986. A final rule, 10 CFR 50.63, was published on June 21, 1988 and became effective on July 21, 1988. Regulatory Guide 1.155 was issued at the same time as the rule and references an industry guidance document, NUMARC-8700. In order to comply with the A-44 resolution, licensees will be required to:

- maintain onsite emergency ac power supply reliability above a minimum level
- develop procedures and training for recovery from a station blackout
- determine the duration of a station blackout that the plant should be able to withstand
- use an alternate qualified ac power source, if available, to cope with a station blackout
- evaluate the plant's actual capability to withstand and recover from a station blackout
- backfit hardware modifications if necessary to improve coping ability

Section 50.63(c)(1) of the rule required each licensee to submit a response including the results of a coping analysis within 270 days from issuance of an operating license or the effective date of the rule, whichever is later.

21. USI NO. A-45 TITLE: Shutdown Decay Heat Removal Requirements

USI A-45 was resolved by SECY 88-260, "Shutdown Decay Heat Removal Requirements (USI-A-45)," issued September 13, 1988, without imposing any new licensing requirements other than the Individual Plant Examination (IPE), as described below. At the same time the staff issued NUREG-1289, "Regulatory and Backfit Analysis: USI A-45." Since all of the significant USI A-45 results have been found to be highly plant specific, the Commission decided it was not appropriate to propose a single generic corrective action to be applied uniformly to all plants.

The Commission is currently implementing the Severe Accident Policy (50 FR 32138) and will require all plants presently operating or under construction to undergo a systematic examination termed the IPE. The reason for this examination is to identify any plant-specific vulnerabilities to severe accidents. The IPE analysis intends to examine and understand the plant emergency procedures, design, operations, maintenance, and surveillance, in order to identify vulnerabilities. The analysis will examine both the decay heat removal systems and those systems used for other related functions. This includes CE plants without power-operated relief valves.

NRC has decided to subsume A-45 into the IPE program as the most effective way of achieving resolution of specific plant concerns associated with A-45.

22. USI NO. A-46 TITLE: Seismic Qualification of Equipment in Operating Plants

USI A-46 was resolved with the issuance of GL 87-02 on February 19, 1987, which endorsed the approach of using the seismic and test experience data proposed b the Seismic Qualification Utility Group (SQUG) and Electric Power Research Institute (EPRI). This approach was endorsed by the Senior Seismic Review and Advisory Panel (SSRAP) and approved by the NRC staff.

The scope of the review was narrowed to equipment required to bring each affected plant to hot shutdown and maintain it there for a minimum of 72 hours. The review includes a walkthrough of each plant which is required to inspect equipment. Evaluation of equipment will include: (a) adequacy of equipment anchorage; (b) functional capability of essential relays; (c) outliers and deficiencies (i.e., equipment with non-standard configurations); and (d) seismic systems interation.

As an outgrowth of the Systematic Evaluation Program (SEP), the need was identified for reassessing design criteria and methods for the seismic qualification of mechanical equipment and electrical equipment. Therefore, the seismic qualification of the equipment in operating plants must be reassessed to ensure the ability to bring the plant to a safe shutdown condition when subject to a seismic event. The objective of this issue was to establish an explicit set of guidelines that could be used to judge the adequacy of the seismic qualification of mechanical and electrical equipment at operating plants in lieu of attempting to backfit current design criteria for new plants.

Generic Letter 87-02 with associated guidance, required all affected utilities to evaluate the seismic adequacy of their plants. The specific requirements and approach for implementation are being developed jointly by SQUG and the staff on a generic basis before individual member utilities proceed with plant-specific implementation.

23. USI NO. A-47 TITLE: Safety Implication of Control Systems in LWR Nuclear Power Plants

USI A-47 was resolved September 20, 1989, with the publication of Generic Letter (GL) 88-19.

The generic letter states:

> "The staff has concluded that all PWR plants should provide automatic steam generator overfill protection, all BWR plants should provide automatic reactor vessel overfill protection, and that plant procedures and technical specifications for all plants should include provisions to verify periodically the operability of the overfill protection and to assure that automatic overfill protection is available to mitigate main feedwater overfeed events during reactor power operation. Also, the system design and setpoints should be selected with the objective of minimizing inadvertent trips of the main feedwater system during plant startup, normal operation, and protection system surveillance. The Technical Specifications recommendations are consistent with the criteria and the risk considerations of the Commission Interim Policy Statement on Technical Specification Improvement. In addition, the staff recommends that all BWR recipients reassess and modify, if needed, their

operating procedures and operator training to assure that the operators can mitigate reactor vessel overfill events that may occur via the condensate booster pumps during reduced system pressure operation."

Also, page 2 of the generic letter provides for additional actions for CE and B&W plants. The generic letter provides amplifying guidance for licensees.

The generic letter requires that licensees provide NRC with their schedule and commitments within 180 days of the letter's date. The implementation schedule for actions on which commitments are made should be prior to startup after the first refueling outage, but no later than the second refueling outage, beginning 9 months after receipt of the letter.

24. USI NO. A-48 TITLE: Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment

The NRC staff concluded April 19, 1989, that USI A-48 is resolved, as stated in SECY 89-122.

USI A-48 was initiated as a result of the large amount of hydrogen generated and burned within containment during the Three Mile Island (TMI) accident. This issue covers hydrogen control measures for recoverable degraded core accidents for all BWRs and those PWRs with ice condenser containments. Extensive research in this area has led to significant revision of the Commission's hydrogen control regulations, given in 10 CFR 50.44, published December 2, 1981.

10 CFR 50.44 requires inerting of BWR Mark I and Mark II containments as a method for hydrogen control. The BWR Mark I and Mark II reactor containments have operated for a number of years with an inerted atmosphere (by addition of an inert gas, such as nitrogen) which effectively precludes combustion of any hydrogen generated. USI A-48 with respect to BWR Mark I and II containments is not only resolved but understood to be fully implemented in the affected plants.

The rule for BWRs with Mark III containments and PWRs with ice condenser containments was published on January 25, 1985. The rule required that these plants be provided with a means for controlling the quantity of hydrogen produced, but did not specify the control method. In addition, the task action plan for USI A-48 provided for plant-specific reviews of lead plants for reactors with Mark III and ice condenser containments. Sequoyah was chosen as the lead plant for ice condenser containments and Grand Gulf for Mark III containments. Both of the lead plant licensees chose to install igniter-type systems which would burn the hydrogen before it reached threatening concentrations within the containment. Final design igniter systems have been installed not only in both lead plants, Sequoyah and Grand Gulf, but in all other ice condenser and Mark III plants as well. The staff's safety evaluations of the final analyses required to be submitted by these licensees by the rule are scheduled for completion in 1989.

Large dry PWR containments were excluded from USI A-48 because they have a greater ability to accommodate the large quantities of hydrogen associated wi a recoverable degraded core accident than the smaller Mark I, II, III and ice condenser containments. However, this issue has continued to be considered and, in 1989, hydrogen control for large dry PWR containments was identified as a high-priority Generic Issue (GI) 121. The resolution of GI 121 is being actively pursued in close coordination with more recent research findings.

25. USI NO. A-49 TITLE: Pressurized Thermal Shock

The final rule (10 CFR 50.61) on pressurized thermal shock (PTS) was approved by the Commission in July 1985. Regulatory Guide 1.154, "Format and Content of Plant-Specific Pressurized Thermal Shock Safety Analysis Reports for PWRs," was later published in February 1987. Thus, this issue was resolved and new requirements were established, applicable to PWRs only. The rule required that each operating reactor meet the screening criteria provided in the rule or provide supplemental analysis to demonstrate that PTS is not a concern for the facility.

Neutron irradiation of reactor pressure vessel weld and plate materials decreases the fracture toughness of the materials. The fracture toughness sensitivity to radiation-induced change is increased by the presence of certain materials such as copper. Decreased fracture toughness makes it more likely that, if a severe overcooling event occurs followed by or concurrent with high vessel pressure, and if a small crack is present on the vessel's inner surface that crack could grow to a size that might threaten vessel integrity.

Severe pressurized overcooling events are improbable since they require multiple failures and improper operator performance. However, certain precursor events have happened that could have potentially threatened vessel integrity if additional failures had occurred and/or if the vessel had been more highly irradiated. Therefore, the possibility of vessel failure due to a severe pressurized overcooling event cannot be ruled out.

LIST OF RECENTLY ISSUED GENERIC LETTERS

Generic Letter No.	Subject	Date of Issuance	Issued To
89-21	REQUEST FOR INFORMATION CONCERNING STATUS OF IMPLEMENTATION OF UNRESOLVED SAFETY ISSUE (USI) REQUIREMENTS	10/19/89	ALL HOLDERS OF OPERATING LICENSES AND CONSTRUCTION PERMITS FOR NUCLEAR POWER REACTORS
89-20	PROTECTED AREA LONG-TERM HOUSEKEEPING	09/26/89	ALL FUEL CYCLE FACILITY LICENSEES WHO POSSESS, USE, OR PROCESS FORMULA QUANTITIES OF STRATEGIC SPECIAL NUCLEAR MATERIAL
89-19	REQUEST FOR ACTION RELATED TO RESOLUTION OF UNRESOLVED SAFETY ISSUE A-47 "SAFETY IMPLICATION OF CONTROL SYSTEMS IN LWR NUCLEAR POWER PLANTS" PURSUANT TO 10 CFR 50.54(f)	09/20/89	ALL LICENSEES OF OPERATING REACTORS, APPLICANTS FOR OPERATING LICENSES AND HOLDERS OF CONSTRUCTION PERMITS FOR LIGHT WATER REACTOR NUCLEAR POWER PLANTS
89-18	RESOLUTION OF UNRESOLVED SAFETY ISSUE A-17, "SYSTEMS INTERACTIONS IN NUCLEAR POWER PLANTS ACCESSION NUMBER IS 8909070029	09/06/89	ALL HOLDERS OF OPERATING LICENSES OR CONSTRUCTION PERMITS FOR NUCLEAR POWER PLANTS
89-17	PLANNED ADMINISTRATIVE CHANGES TO THE NRC OPERATOR LICENSING WRITTEN EXAMINATION PROCESS - GENERIC LETTER 89-17	09/06/89	ALL HOLDERS OF OPERATING LICENSES OR CONSTRUCTION PERMITS FOR PWRS AND BWRS AND ALL LICENSED OPERATORS
89-16	INSTALLATION OF A HARDENED WETWELL VENT (GENERIC LETTER 89-16)	09/01/89	ALL GE PLANTS
88-20 SUPPLEMENT 1	GENERIC LETTER 88-20 SUPPLEMENT NO. 1 (INITIATION OF THE INDIVIDUAL PLANT EXAMINATION FOR SEVERE VULNERABILITIES 10 CFR 50.54(f))	08/29/89	ALL LICENSEES HOLDING OPERATING LICENSES AND CONSTRUCTION PERMITS FOR NUCLEAR POWER REACTOR FACILITIES

Enclosure 2

SUMMARY OF THE UNIMPLEMENTED USIs BY PLANT

PLANT	OPEN	PLANT	OPEN	PLANT	OPEN
Arkansas 1	4	Haddam Neck	4	Quad Cities 1	4
Arkansas 2	4	Harris 1	2	Quad Cities 2	4
Beaver Valley 1	3	Hatch 1	4	Rancho Seco	4
Beaver Valley 2	2	Hatch 2	5	River Bend 1	3
Big Rock Pt	4	Hope Creek 1	2	Robinson 2	3
Braidwood 1	4	Indian Pt 2	3	Salem 1	3
Braidwood 2	4	Indian Pt 3	3	Salem 2	3
Browns Ferry 1	6	Kewaunee	3	San Onofre 1	5
Browns Ferry 2	7	LaSalle 1	4	San Onofre 2	3
Browns Ferry 3	6	LaSalle 2	4	San Onofre 3	3
Brunswick 1	5	Limerick 1	2	Seabrook 1	3
Brunswick 2	5	Limerick 2	2	Sequoyah 1	5
Byron 1	3	Maine Yankee	4	Sequoyah 2	5
Byron 2	4	McGuire 1	3	Shoreham	4
Callaway	2	McGuire 2	3	South Texas 1	2
Calvert Cliffs 1	4	Millstone 1	4	South Texas 2	2
Calvert Cliffs 2	5	Millstone 2	3	St Lucie 1	4
Catawaba 1	3	Millstone 3	2	St Lucie 2	3
Catawaba 2	3	Monticello	4	Summer	3
Clinton	4	Nine Mile Point 1	3	Surry 1	5
Comanche Peak 1	2	Nine Mile Point 2	2	Surry 2	4
Comanche Peak 2	4	North Anna 1	3	Susqehanna 1	2
Cooper	3	North Anna 2	3	Susqehanna 2	2
Crystal River	4	Oconee 1	5	Three Mile Island 1	4
DC Cook 1	4	Oconee 2	5	Trojan	4
DC Cook 2	4	Oconee 3	5	Turkey Point 3	6
Davis-Besse	4	Oyster Creek	4	Turkey Point 4	6
Diablo Canyon 1	2	Palisades	6	Vermont Yankee	4
Diablo Canyon 2	2	Palo Verde 1	3	Vogtle 1	2
Dresden 2	4	Palo Verde 2	3	Vogtle 2	2
Dresden 3	4	Palo Verde 3	3	Waterford	2
Duane Arnold	3	Peach Bottom 2	3	Watts Bar 1	10
Farley 1	3	Peach Bottom 3	4	Watts Bar 2	10
Farley 2	2	Perry 1	3	WNP2	3
Fermi 2	3	Pilgrim	4	Wolf Creek	2
Fitzpatrick	4	Point Beach 1	4	Yankee Rowe	4
Ft Calhoun	4	Point Beach 2	4	Zion 1	5
Ginna	3	Prairie Island 1	4	Zion 2	4
Grand Gulf 1	3	Prairie Island 2	3		

Enclosure 3

SUMMARY OF THE UNIMPLEMENTED USIs AND PLANTS STILL OPEN

USI		PLANTS STILL OPEN
A-1	Water Hammer	1
A-2	Asymmetric Blowdown Loads on Reactor Primary Coolant Systems	3
A-3	Westinghouse Steam Generator Tube Integrity	0
A-4	CE Steam Generator Tube Integrity	0
A-5	B&W Steam Generator Tube Integrity	0
A-6	Mark I-Short-Term Program	0
A-7	Mark I Long-Term Program	3
A-8	Mark II Containment Pool Dynamic Loads Long-Term Program	0
A-9	ATWS	60
A-10	BWR Feedwater Nozzle Cracking	5
A-11	Reactor Vessel Materials Toughness	9
A-12	Fracture Toughness of Steam Generator and Reactor Coolant Pump Supports	0
A-17	Systems Interaction	0
A-24	Qualification of Class IE Safety-Related Equipment	7
A-26	Reactor Vessel Pressure Transient Protection	7
A-31	RHR Shutdown Requirements	4
A-36	Control of Heavy Loads Near Spent Fuel	8
A-39	Determination of Safety Relief Valve Pool Dynamic Loads and Temperature Limits	0
A-40	Seismic Design Criteria - Short-Term Program	2
A-42	Pipe Cracks in Boiling Water Reactor	0
A-43	Containment Emergency Sump Performance	0
A-44	Station Blackout	116
A-45	Shutdown Decay Heat Removal Requirements	0
A-46	Seismic Qualification of Equipment in Operating Plants	66
A-47	Safety Implications of Control Systems	116
A-48	Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment	14
A-49	Pressurized Thermal Shock	5
	Total	426

ENCLOSURE 4

UNIMPLEMENTED USIs AT EACH REACTOR

Notes:

(1) Where an item is applicable to the facility and is not fully implemented, "I" is entered in the status column and the projected implementation date is entered, if known.

(2) Where a USI resolution was recently issued and the licensee's evaluating their response, "E" is entered in the status column and the projected response date is entered, if known.

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: ARKANSAS 1					
A-09	ATWS	12/31/90	I	NEXT REFUEL	
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	08/31/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/01/90	E		NEW REQUIREMENTS
** PLANT NAME: ARKANSAS 2					
A-09	ATWS	04/30/91	I		DEFAS
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	04/30/91	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	02/28/90	E		NEW REQUIREMENTS
** PLANT NAME: BEAVER VALLEY 1					
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: BEAVER VALLEY 2					
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: BIG ROCK POINT					
A-09	ATWS	12/31/90	I	EXEMPTION REQUESTED	
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/90	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	12/31/90	E	RPT DUE 3/90	LIC. IMPL. EST. END 1990
** PLANT NAME: BRAIDWOOD 1					
A-09	ATWS	03/31/91	I		
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
A-49	PRESSURIZED THERMAL SHOCK	04/30/90	I	WAITING NRC REVIEW	RESPONDED 1/17/86
** PLANT NAME: BRAIDWOOD 2					
A-09	ATWS	03/31/90	I		
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
A-49	PRESSURIZED THERMAL SHOCK	04/30/90	I	WAITING NRC REVIEW	RESPONDED 1/17/86

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: BROWNS FERRY 1					
A-07	MARK I LONG-TERM PROGRAM	01/01/95	I	REQ FOR RESTART	
A-09	ATWS	01/01/95	I	REQ FOR RESTART	DIVERSITY
A-24	QUALIFICATION OF CLASS 1E SAFETY-RELATED EQUIPMENT	01/01/95	I	REQ FOR RESTART	
A-44	STATION BLACKOUT	01/01/95	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I	BEFORE CYCLE 7	REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/13/90	E		NEW REQUIREMENTS
** PLANT NAME: BROWNS FERRY 2					
A-07	MARK I LONG-TERM PROGRAM	05/31/90	I	REQ FOR RESTART	
A-09	ATWS	05/31/90	I	REQ FOR RESTART	DIVERSITY
A-10	BWR FEEDWATER NOZZLE CRACKING	05/31/90	I	REQ FOR RESTART	
A-24	QUALIFICATION OF CLASS 1E SAFETY-RELATED EQUIPMENT	05/31/90	I	REQ FOR RESTART	
A-44	STATION BLACKOUT	12/31/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: BROWNS FERRY 3					
A-07	MARK I LONG-TERM PROGRAM	01/31/93	I	REQ FOR RESTART	
A-09	ATWS	01/31/93	I	REQ FOR RESTART	DIVERSITY
A-24	QUALIFICATION OF CLASS 1E SAFETY-RELATED EQUIPMENT	01/31/93	I	REQ FOR RESTART	
A-44	STATION BLACKOUT	01/31/93	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I	PRIOR TO CYCLE 7	REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: BRUNSWICK 1					
A-09	ATWS	12/31/90	I	ATTU CARDS	DIVERSITY
A-10	BWR FEEDWATER NOZZLE CRACKING	03/31/90	I		
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	05/31/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	12/31/92	E	REPORT DUE 3/31/90	NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: BRUNSWICK 2					
A-09	ATWS	02/28/90	I	ATTU CARDS	DIVERSITY
A-10	BWR FEEDWATER NOZZLE CRACKING	03/31/90	I		
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	01/30/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	12/31/92	E	REPORT DUE 3/31/90	NEW REQUIREMENTS
** PLANT NAME: BYRON 1					
A-09	ATWS	03/31/90	I		
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: BYRON 2					
A-09	ATWS	10/31/90	I		
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
A-49	PRESSURIZED THERMAL SHOCK	04/30/90	I	WAITING NRC REVIEW	RESPONDED 1/17/86
** PLANT NAME: CALLAWAY					
A-44	STATION BLACKOUT	06/30/91	I	3 MO AFTER APPROVAL	PROCEDURES OPEN
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: CALVERT CLIFFS 1					
A-26	REACTOR VESSEL PRESSURE TRANSIENT PROTECTION	02/08/90	I		LTOPS
A-44	STATION BLACKOUT	06/30/95	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	06/30/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/17/90	E		NEW REQUIREMENTS
** PLANT NAME: CALVERT CLIFFS 2					
A-09	ATWS	06/01/90	I	RESTART	
A-26	REACTOR VESSEL PRESSURE TRANSIENT PROTECTION	02/08/90	I		LTOPS
A-44	STATION BLACKOUT	06/30/95	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	06/30/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/17/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: CATAWBA 1					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	12/31/90	I	ICE CONDENSER	UNDER NRC REVIEW
** PLANT NAME: CATAWBA 2					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	12/31/90	I	ICE CONDENSER	UNDER NRC REVIEW
** PLANT NAME: CLINTON					
A-36	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	09/30/90	I	PROCEDURES	
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	04/18/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	12/31/90	I	PENDING SER	REVIEWING OG TOPICAL
** PLANT NAME: COMANCHE PEAK 1					
A-44	STATION BLACKOUT	11/30/90	I	OL + 270 DAYS	
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	I		NEW REQUIREMENTS
** PLANT NAME: COMANCHE PEAK 2					
A-09	ATWS	02/28/92	I	FOR FUEL LOAD	FUEL LOAD
A-24	QUALIFICATION OF CLASS 1E SAFETY-RELATED EQUIPMENT	02/28/92	I	FOR FUEL LOAD	
A-44	STATION BLACKOUT	11/30/92	I	OL + 270 DAYS	
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	I		NEW REQUIREMENTS
** PLANT NAME: COOPER					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: CRYSTAL RIVER					
A-09	ATWS	07/30/90	I		
A-44	STATION BLACKOUT	05/30/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	02/28/90	I		NEW REQUIREMENTS
** PLANT NAME: D. C. COOK 1					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	12/31/90	I	ICE CONDENSER	UNDER NRC REVIEW
** PLANT NAME: D. C. COOK 2					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	12/31/90	I	ICE CONDENSER	UNDER NRC REVIEW
** PLANT NAME: DAVIS-BESSE					
A-09	ATWS	05/31/90	I		
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: DIABLO CANYON 1					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: DIABLO CANYON 2					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: DRESDEN 2					
A-09	ATWS	/ /	I		DIVERSITY & T/S
A-44	STATION BLACKOUT	06/30/92	I		SER 6/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: DRESDEN 3					
A-09	ATWS	/ /	I		DIVERSITY & T/S
A-44	STATION BLACKOUT	06/30/92	I		SER 6/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: DUANE ARNOLD					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	09/30/91	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: FARLEY 1					
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: FARLEY 2					
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: FERMI 2					
A-09	ATWS	/ /	I		DIVERSITY
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: FITZPATRICK					
A-09	ATWS	05/31/90	I		DIVERSITY
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL (SQUG)
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: FT. CALHOUN					
A-09	ASYMMETRIC BLOWDOWN LOADS ON REACTOR PRIMARY COOLANT SYSTEMS	03/15/90	I	SCHED DUE 3/15/90	NEED LEAK DETECTION TEST
A-44	STATION BLACKOUT	03/31/93	I	WAITING FOR SER	SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/93	I	WAITING SER SUPP.	REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E	RESPONSE DUE 3/20/90	NEW REQUIREMENTS
** PLANT NAME: GINNA					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: GRAND GULF					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/30/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	09/30/90	I		REVIEWING 06 TOPICAL
** PLANT NAME: HADDAM NECK					
A-31	RHR SHUTDOWN REQUIREMENTS	/ /	I	INTERLOCKS	LOW PRIORITY IN SEP/ISAP
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: HARRIS 1					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: HATCH 1					
A-09	ATWS	12/31/90	I		ARI MODIFICATION NEEDED
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/91	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: HATCH 2					
A-09	ATWS	12/31/91	I		ARI MODIFICATION NEEDED
A-10	BWR FEEDWATER NOZZLE CRACKING	05/31/90	I		
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/91	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: HOPE CREEK 1					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: INDIAN POINT 2					
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: INDIAN POINT 3					
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: KEWAUNEE					
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: LASALLE 1					
A-09	ATWS	06/30/91	I		DIVERSITY & RPT
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	02/01/90	E		
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: LASALLE 2					
A-09	ATWS	03/31/92	I		DIVERSITY & RPT
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	02/01/90	E		
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: LIMERICK 1					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: LIMERICK 2					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: MAINE YANKEE					
A-09	ATWS	01/31/92	I		
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I	LIC SAYS COMPLETE	RE-EVAL LIC SUBMITTAL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: MCGUIRE 1					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	12/31/90	I	ICE CONDENSER	UNDER NRC REVIEW
** PLANT NAME: MCGUIRE 2					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	12/31/90	I	ICE CONDENSER	UNDER NRC REVIEW
** PLANT NAME: MILLSTONE 1					
A-01	WATER HAMMER	/ /	I	ISAP	VOL'Y MODS TO BE SCHED
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	01/31/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: MILLSTONE 2					
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: MILLSTONE 3					
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: MONTICELLO					
A-09	ATWS	/ /	I		DIVERSITY
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: NINE MILE POINT 1					
A-44	STATION BLACKOUT	06/30/93	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: NINE MILE POINT 2					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: NORTH ANNA 1					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/21/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: NORTH ANNA 2					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	06/21/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: OCONEE 1					
A-09	ATWS	08/31/91	I	AMSAC/DSS	
A-26	REACTOR VESSEL PRESSURE TRANSIENT PROTECTION	02/28/90	I	T/S TO BE ISSUED	LTOPS
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: OCONEE 2					
A-09	ATWS	09/19/90	I	AMSAC/DSS	
A-26	REACTOR VESSEL PRESSURE TRANSIENT PROTECTION	02/28/90	I	T/S TO BE ISSUED	LTOPS
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ -/ _	I- _		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: OCONEE 3					
A-09	ATWS	03/17/91	I	AMSAC/DSS	
A-26	REACTOR VESSEL PRESSURE TRANSIENT PROTECTION	02/28/90	I	T/S TO BE ISSUED	LTOPS
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: OYSTER CREEK					
A-09	ATWS	01/31/91	I	UNDER APPEAL	DIVERSITY
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	03/31/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: PALISADES					
A-09	ATWS	12/31/90	I	REFUEL OUTAGE	
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	12/31/90	I	NO LONGITUDINAL SAMP	
A-44	STATION BLACKOUT	12/31/92	I	REFUEL OUTAGE	SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/93	I	REFUEL OUTAGE	REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
A-49	PRESSURIZED THERMAL SHOCK	05/31/90	I		
** PLANT NAME: PALO VERDE 1					
A-09	ATWS	09/30/91	I	PRIOR TO CYCLE 4	DEFAS
A-44	STATION BLACKOUT	03/31/93	I	4 TH REFUELING	SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: PALO VERDE 2					
A-09	ATWS	06/30/90	I	PRIOR TO CYCLE 3	DEFAS
A-44	STATION BLACKOUT	03/31/93	I	4 TH REFUELING	SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: PALO VERDE 3					
A-09	ATWS	08/31/91	I	PRIOR TO CYCLE 3	
A-44	STATION BLACKOUT	03/31/93	I	3 ERD REFUELING	SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: PEACH BOTTOM 2					
A-44	STATION BLACKOUT	04/30/92	I	PECO LTR 4/17/89	SER 4/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	04/30/91	I	PECO LTR 10/6/88	REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: PEACH BOTTOM 3					
A-10	BWR FEEDWATER NOZZLE CRACKING	11/30/91	I		NEW DATA 1/25/90
A-44	STATION BLACKOUT	04/30/92	I	PECO LTR 4/17/89	SER 4/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	11/30/91	I	PECO LTR 10/6/88	REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: PERRY 1					
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	12/31/90	I		REVIEWING OG TOPICAL
** PLANT NAME: PILGRIM					
A-09	ATWS	/ /	I		DIVERSITY
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: POINT BEACH 1					
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	12/31/90	I	BWOG ITEM	< 50 FT-LB
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: POINT BEACH 2					
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	12/31/90	I	BWOG ITEM	< 50 FT-LB
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: PRAIRIE ISLAND 1					
A-09	ATWS	02/11/90	I	CYCLE 13 OUTAGE	SER 8/17/88
A-44	STATION BLACKOUT	03/31/92	I	CYCLE 15 OUTAGE	SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	07/01/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: PRAIRIE ISLAND 2					
A-44	STATION BLACKOUT	03/31/92	I	CYCLE 15 OUTAGE	SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	07/01/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: QUAD CITIES 1					
A-09	ATWS	/ /	I		DIVERSITY & T/S
A-44	STATION BLACKOUT	06/30/92	I		SER 6/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: QUAD CITIES 2					
A-09	ATWS	/ /	I		DIVERSITY & T/S
A-44	STATION BLACKOUT	06/30/92	I		SER 6/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: RANCHO SECO					
A-09	ATWS	/ /	I	DEFERRED	
A-44	STATION BLACKOUT	/ /	I	DEFERRED	SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	/ /	E	DEFERRED	NEW REQUIREMENTS
** PLANT NAME: RIVER BEND					
A-44	STATION BLACKOUT	03/31/93	I		REV 10CFR50.63 RESPONSE
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	09/30/90	I	MK III OWNERS GROUP	REVIEWING OG TOPICAL
** PLANT NAME: ROBINSON					
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: SALEM 1					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: SALEM 2					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: SAN ONOFRE 1					
A-09	ATWS	12/02/90	I	TURBINE TRIP	AFW CAPACITY
A-24	QUALIFICATION OF CLASS 1E SAFETY-RELATED EQUIPMENT	12/02/90	I	JCO ISSUED	ENFORCEMENT
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	11/30/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	01/31/93	E	RFT DUE 3/20/90	NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: SAN ONOFRE 2					
A-09	ATWS	11/30/91	I		DEFAS
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: SAN ONOFRE 3					
A-09	ATWS	11/30/91	I		DEFAS
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: SEABROOK 1					
A-09	ATWS	08/31/90	I		
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	I	WILL DOCUMENT BASIS	REPORT DUE 3/19/90
** PLANT NAME: SEQUOYAH 1					
A-09	ATWS	06/30/90	I		
A-36	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	07/31/92	I		RIGGING
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	/ /	I	ICE CONDENSER	UNDER NRC REVIEW
** PLANT NAME: SEQUOYAH 2					
A-09	ATWS	12/31/90	I		
A-36	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	06/30/91	I		RIGGING
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	/ /	I	ICE CONDENSER	UNDER NRC REVIEW
** PLANT NAME: SHOREHAM					
A-09	ATWS	/ /	I		DIVERSITY
A-36	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	/ /	I	FIRST REFUEL	RIGGING & PROCEDURES
A-44	STATION BLACKOUT	06/30/92	I	DEFERRED	SER 9/30/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: SOUTH TEXAS 1					
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: SOUTH TEXAS 2					
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: ST LUCIE 1					
A-09	ATWS	02/28/90	I		
A-44	STATION BLACKOUT	03/31/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: ST LUCIE 2					
A-09	ATWS	09/30/90	I		
A-44	STATION BLACKOUT	09/30/92	I		SER 9/30/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: SUMMER 1					
A-31	RHR SHUTDOWN REQUIREMENTS	01/15/90	I		SHOW SIMILARITY TO DIAB
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: SURRY 1					
A-09	ATWS	10/31/90	I		
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	02/28/90	I	< 50 FT-LB	LIC RESPONDED 12/1/89
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	02/28/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: SURRY 2					
A-09	ATWS	04/30/91	I		
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	01/31/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: SUSQUEHANNA 1					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: SUSQUEHANNA 2					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: THREE MILE ISLAND 1					
A-09	ATWS	12/31/91	I	GPU LTR 10/4/89	
A-44	STATION BLACKOUT	12/31/91	I	GPUN LTR 4/17/89	SER COMPLETE
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/93	I	GPUN LTR 10/6/88	INTEGRATED SCHEDULE
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/12/90	E		NEW REQUIREMENTS
** PLANT NAME: TROJAN					
A-09	ATWS	07/31/90	I		
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	09/30/92	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/16/90	E		NEW REQUIREMENTS
** PLANT NAME: TURKEY POINT 3					
A-09	ATWS	12/31/91	I		
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	12/31/92	I	< 50 FT-LB	NO CRITERIA
A-36	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	12/31/91	I	LOAD CELL	
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/91	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS
** PLANT NAME: TURKEY POINT 4					
A-09	ATWS	12/31/91	I		
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	12/31/92	I	< 50 FT-LB	NO CRITERIA
A-36	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	12/31/91	I	LOAD CELL	
A-44	STATION BLACKOUT	06/30/92	I		SER 3/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/91	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/20/90	E		NEW REQUIREMENTS

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: VERMONT YANKEE					
A-09	ATWS	/ /	I		DIVERSITY
A-44	STATION BLACKOUT	12/31/92	I		SER 9/30/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	/ /	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: VOGTLE 1					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: VOGTLE 2					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/91
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: WATERFORD 3					
A-44	STATION BLACKOUT	03/31/93	I		SER 3/31/93
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: WATTS BAR 1					
A-02	ASYMMETRIC BLOWDOWN LOADS ON REACTOR PRIMARY COOLANT SYSTEMS	/ /	I	FUEL LOAD	LEAK DETECTION
A-09	ATWS	/ /	I	FUEL LOAD	AMSAC
A-24	QUALIFICATION OF CLASS 1E SAFETY-RELATED EQUIPMENT	/ /	I	FUEL LOAD	
A-26	REACTOR VESSEL PRESSURE TRANSIENT PROTECTION	/ /	E		LTOPS T/S @ FUEL LOAD
A-31	RHR SHUTDOWN REQUIREMENTS	/ /	I	FUEL LOAD	INSTRUMENTATION
A-36	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	/ /	I	FIRST REFUEL	RIGGING
A-40	SEISMIC DESIGN CRITERIA - SHORT-TERM PROGRAM	/ /	I	FUEL LOAD	
A-44	STATION BLACKOUT	/ /	I	OL + 270	
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/13/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	/ /	I		ICE CONDENSER

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: WATTS BAR 2					
A-02	ASYMMETRIC BLOWDOWN LOADS ON REACTOR PRIMARY COOLANT SYSTEMS	/ /	I	FUEL LOAD	LEAK DETECTION
A-09	ATWS	/ /	I	FUEL LOAD	AMSAC
A-24	QUALIFICATION OF CLASS 1E SAFETY-RELATED EQUIPMENT	/ /	I	FUEL LOAD	
A-26	REACTOR VESSEL PRESSURE TRANSIENT PROTECTION	/ /	E		LTOPS T/S @ FUEL LOAD
A-31	RHR SHUTDOWN REQUIREMENTS	/ /	I	FUEL LOAD	INSTRUMENTATION
A-36	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	/ /	I	FIRST REFUEL	RIGGING
A-40	SEISMIC DESIGN CRITERIA - SHORT-TERM PROGRAM	/ /	I	FUEL LOAD	
A-44	STATION BLACKOUT	/ /	I	OL + 270	
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/13/90	E		NEW REQUIREMENTS
A-48	HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT	/ /	I		ICE CONDENSER
** PLANT NAME: WNP 2					
A-09	ATWS	05/31/90	I		RPT MODIFICATION
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/19/90	E		NEW REQUIREMENTS
** PLANT NAME: WOLF CREEK					
A-44	STATION BLACKOUT	10/31/91	I	PROCEDURES	SER 3/31/93
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: YANKEE ROWE					
A-11	REACTOR VESSEL MATERIALS TOUGHNESS	06/30/91	I	REEVAL W/PLEX	
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/93	I		REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
** PLANT NAME: ZION 1					
A-09	ATWS	06/30/91	I	CECO LTR 9/8/89	SER 5/22/89
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/91	I	CECO LTR 10/7/88	REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS
A-49	PRESSURIZED THERMAL SHOCK	12/31/91	I	CECO LTR 9/18/87	SCREEN CRITERIA/RULE CHG

LISTING OF INCOMPLETE USI DATA
FOR INPUT FROM PROJECT MANAGERS

ISSUE NUMBER	ISSUE DESCRIPTIVE NAME	IMPLEMENT DATE	IMPLEMENT STATUS	LICENSEE COMMENT	STAFF COMMENT
** PLANT NAME: ZION 2					
A-09	ATWS	06/30/90	I	CECO LTR 9/8/89	SER 5/22/89
A-44	STATION BLACKOUT	12/31/92	I		SER 12/31/90
A-46	SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS	12/31/92	I	CECO LTR 10/7/88	REQ UNDER DEVEL
A-47	SAFETY IMPLICATIONS OF CONTROL SYSTEMS	03/31/90	E		NEW REQUIREMENTS

Enclosure 5

THE USI IMPLEMENTATION VERIFICATION PROCESS

1. Introduction. This enclosure describes the process used by the staff to verify the implementation of USIs. It also describes some of the particular circumstances surrounding the current status of several noteworthy groups of USIs.

2. Initiation and Scope of the Process. The USI verification process was started in May 1989, shortly after the staff requirements memorandum (SRM) of May 2, 1989, was received. The SRM directed the staff to prepare periodic reports updating industry's implementation of generic safety issues (GSIs) and unresolved safety issues (USIs), including implementation schedules. Because of the large number of issues involved in the Commission's request and the effort necessary to complete the process, the NRR staff made a determination to treat the effort in two parts: USIs and GSIs. The USI portion has been addressed first because of its greater safety importance.

The Office of Nuclear Reactor Regulation (NRR), with the assistance of the Office of Nuclear Regulatory Research (RES), first confirmed the list of USIs that had been resolved and promulgated to the industry. They also determined the particular issues encompassed within the scope of each USI. At that time, the list totaled 25 USIs, as two USIs were not resolved and provided to the industry. These USIs were A-17, "System Interactions in Nuclear Power Plants," and A-47, "Safety Implications of Control Systems." USI A-17 was resolved and provided to the industry on September 6, 1989 and USI A-47 was resolved and provided to the industry on September 20, 1989, by Generic Letters 89-18 and 89-19, respectively. Thus, the complete list of USIs that have been resolved contains 27 USIs. The numbering of the USIs on this list is not sequential and some of the "A-" series issues are not USIs.

3. Pilot Program. In August 1989, the NRR staff undertook a pilot program involving a group of five representative plants at three sites. These plants were Three Mile Island (TMI) Unit 1 (Babcock and Wilcox PWR), Zion Units 1 and 2 (Westinghouse PWR), and Peach Bottom Units 2 and 3 (General Electric BWR). The pilot program was designed to establish an approach to the USI implementation verification effort that was expected to involve extensive interaction among the reactor licensee, the NRR project manager, and the NRR technical branches.

NRR project managers, assisted by RES representatives, NRR technical staff and (to a limited extent) the facility licensee, reviewed technical records to develop a plant-specific implementation status for applicable USIs. Individual data sheets were prepared for each applicable USI and a computerized data base was established.

The results of the pilot effort were reported to the Commission on October 17, 1989. For these five plants, the staff formed several preliminary conclusions regarding the applicable USIs. First, except for USIs that have recently been resolved such as "Station Blackout" (A-44), most USIs that had been resolved were essentially implemented at the five plants and the staff found no significant safety concerns. Second, the licensees for these five plants were addressing the unimplemented USIs on a schedule satisfactory to the staff. Finally, an effort similar to that required for the TMI Action Plan verification effort would be required to update the Regulatory Information Tracking System (RITS) and the Safety Issues Management System (SIMS) data bases to accurately reflect the current plant status.

In conjunction with the pilot effort, NRR established a USI Team to coordinate the USI verification effort. This team was responsible for preparing a generic information request to licensees, providing appropriate training to NRR project managers, collecting and verifying the data, and preparing a report for management.

4. Generic Letter and Industry Response. On October 19, 1989, NRR issued Generic Letter (GL) 89-21, "Request for Information Concerning Status of Implementation of Unresolved Safety Issue Requirements." This GL requested that each power reactor licensee review and report the status of implementation of USIs at its facility. The GL included a table of the 27 USIs and provided reference information, such as applicable NUREGs or generic letters, to assist the licensee in the review process. The GL also provided a summary of the resolution of each USI. Licensees were requested to coordinate their effort with their NRR project manager because it was expected that a joint effort would be necessary to accurately identify relevant items of correspondence regarding a particular USI. Licensee replies to the GL were requested within 30 days of receipt of the GL.

Most of the licensee responses were received early in December 1989. In most cases, the licensees clearly understood the NRC request and provided the USI status information in the form requested by the staff. There were two notable exceptions: the licensee's reported implementation date was incorrectly stated in many situations and some licensees reported status for USIs where no licensee action was required.

Regarding the first exception, some licensees viewed the implementation date for a particular USI as the date the staff issued a safety evaluation report (SER). This was an incorrect interpretation. For nearly all USIs, the implementation date is considered to be the date the licensee completed the actions necessary to meet the requirements of the USI. It may be the date physical plant modifications were complete, the date procedure changes were implemented, or the date an analysis was submitted to NRC. (The latter case may apply when no physical modifications were required for the licensee to comply with the technical resolution of the USI.) Only for USIs requiring a

technical specification change (such as A-26) would the implementation date be the date of the issuance of an NRC license amendment. The confusion over the implementation date resulted in verbal follow-up interaction between the NRR project manager and the licensee. This confusion also caused difficulty in assuring accurate data base entries for some of the dates associated with completed USIs.

The second exception involved the licensee's classification of certain USIs as incomplete or complete when the staff may take an opposite view. For example, some licensees considered two USIs incomplete while the staff considered the status of these USIs as complete. This situation occurred on USIs A-17, "Systems Interaction," and A-45, "Shutdown Decay Heat Removal Require-ments." Both of these USIs are being implemented as part of the Individual Plant Examination (IPE) program and no requirements were imposed on licensees as part of the resolution of the USI. Although some licensees considered these USIs to be incomplete, pending submittal of their IPE program, the staff views the USIs as "complete - no further action required" for purposes of tracking the USI implementation status. Another example involved USI A-9, "Anticipated Transient Without Scram (ATWS)." Some licensees considered this USI as complete as they believed they had implemented all the required modifications. However, for some licensees, the staff views the modifications as incorrectly implemented because all regulatory requirements for diversity have not been met. The staff is considering this USI as incomplete for the facilities in question.

5. The Role of the Project Manager. Even though licensees were asked to provide an implementation status report, the staff wanted to develop a brief summary of the activities relating to the implementation of each USI at each facility and to produce an associated list of relevant documents. A sub-stantive portion of this effort was the records search of NRC files to establish the document trail relating to each USI. Also, the staff expected that a coordinated effort between NRR project managers and the licensees would be required for the project manager to develop the implementation summary.

To assure a consistent approach, the USI team provided training and guidance to the project managers regarding their portion of the verification effort. This process included formal training sessions at the time GL 89-21 was issued and the issuance of guidance memoranda to the project managers. Subjects included the way to approach the records search, the form and substance of the documenta-tion for the verification effort, and the criteria for judging the status of a USI.

Project managers used their own files, the NRC NUDOCS system, and interacted with licensee contacts to identify relevant documents. They examined the history of the USI implementation, considered the licensee's assessment of the implementation, and then reached a conclusion on the implementation status. They also prepared a summary of the implementation process for completed USIs and a status summary for those USIs that were incomplete.

6. Documentation. Each project manager was requested to document the results of the USI verification effort for his or her facility in a memorandum to the docket file. The documentation package followed a prescribed format which included:

-A memorandum to file summarizing the schedular significance of those USIs that were applicable but not implemented
-A copy of the licensee's response to GL 89-21
-Individual data sheets for each applicable USI providing a description of the USI, an implementation status summary, and a significant documents list
-A copy of the staff's data base printout showing the complete USI status for the particular facility

The data sheets were an essential part of the documentation package. On these data sheets the project managers summarized the pertinent actions taken by the licensee and the staff that led to the closure of a USI or, in the case of incomplete USIs, provided the current status and implementation schedule.

7. Technical Branch Involvement. NRR technical branches were asked to review the staff's data base and the project manager's memorandum to file, excluding the enclosures. This review assured that the NRR staff collectively agreed on the status of the USIs, with emphasis on identifying all unimplemented USIs. It also afforded an opportunity to deal with items for which the status may not represent a consensus. This review was similar to the TMI item status review performed in the spring of 1989. Questions raised by the technical staff were reconciled before the project manager completed the memorandum to file.

8. Quality Verification Process. The USI team expended a significant effort to assure an accurate record of the USI implementation status. Twenty-seven USIs at 116 reactors resulted in a data base with about 3,000 individual records. Each record contained multiple data points (fields).

After the project manager reviewed the licensee's reply to GL 89-21 and prepared a draft memorandum to file, the project manager met with the USI team to review the implementation status. This review helped reconcile any inconsistencies in categorization made by the licensee or the project manager. The outcome of this meeting was a revision to the project manager's draft memorandum to file and a set of site-specific data points for the staff data base. The staff data base and the proposed memorandum to file were then reviewed by the appropriate NRR technical branches.

Several additional steps were taken to reduce the potential for error in the staff data base. An independent comparison was made between the project manager's implementation and status summary and the staff data base. For those USIs having an associated lead project manager, the lead project manager was asked to review the data base for the particular USI. Selected USI data base printouts were re-examined by the appropriate technical branch. Finally, the project manager was asked to re-examine his or her memorandum to file and the site-specific data base printout before signing and issuing the memorandum.

Although reconciliation of all potential discrepancies in the data base is not finished the reconciliation effort is 95 percent complete. The USI team believes all unimplemented USIs at operating power reactors have been identified. Remaining reconciliation effort involves assuring accurate completion dates for implemented USIs and correcting minor record discrepancies, such as "complete" or "complete - no action required."

9. USIs for Which a Special Situation Exists. There are several special situations involving completed USIs and USIs that may not be implemented at a certain group of facilities. The circumstances surrounding the status of these USIs merit discussion.

a. USI A-9, "Anticipated Transient Without Scram (ATWS)"

Implementation of USI A-9 is tracked closely by the staff. About two-thirds of the plants have implemented operational systems. By the end of 1990, about 90 percent of all licensees will have implemented operational systems. A few are scheduled for implementation after 1990.

Twenty BWRs that have installed ATWS systems are listed as incomplete since a question remains regarding the diversity of part of the system. Analog trip units (ATUs) manufactured by Rosemount are being used in both the alternate rod insertion (ARI) system and the reactor trip system (RTS), while the ATWS rule (10 CFR 50.62) states that equipment diversity between these two systems must be maintained from the sensor's output up to and including the final actuation device. The NRR staff position does not agree with the Owners Group contention that the ATU is part of the sensor and, thus, the diversity issue does not apply. (The rule permits the use of the same sensor for output to both the ARI and the RTS.) The BWR Owners Group has appealed the NRR position to the EDO. The EDO has instructed the Committee to review Generic Requirements (CRGR) to evaluate the issue and determine if the appeal should be sustained or denied.

Some B&W and Combustion Engineering reactors delayed implementation until completion of the staff review of their system. The staff has recently completed its review and response to questions for these reactors. To date, a few CE licensees have not submitted a design description nor completed installation of the diverse emergency feedwater actuation system (DEFAS). The staff has requested that they expedite implementation. In the case of Palo Verde, the licensee may seek an exemption to the rule regarding the DEFAS.

b. USI A-42, "Pipe Cracks in BWRs"

USI A-42 was resolved in 1981 with the publication of NUREG-0313, Revision 1, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping." This document was issued to the industry by Generic Letter 81-04 on February 26, 1981. Degradation in BWR piping has continued and the staff has issued several items of generic correspondence on the subject. Revision 2 of NUREG-0313 was published in January 1988. Because the issues relating to BWR pipe cracks continue to develop, many licensees were uncertain as to whether or not they had "completed" USI A-42.

The staff made a determination that USI A-42 has been implemented at all BWRs, even though additional pipe crack issues remain. For the 24 BWRs that were operating when Generic Letter 81-04 was issued, the implementation document is the letter to the licensee transmitting the staff's evaluation of the licensee's response to GL 81-04. For BWRs in licensing review at that time, the implementation document is the SER or supple-mental safety evaluation report (SSER) that addressed conformance to NUREG-0313, Revision 1.

c. USI A-44, "Station Blackout"

USI A-44 was resolved in June 1988 with the publication of 10 CFR 50.63, "Station Blackout Rule." Power reactor licensees responded in the spring of 1989 and indicated how they met, or intended to meet, the rule.

In their response to GL 89-21, some licensees stated that they had completed actions relating to USI A-44; however, in nearly all cases, the staff is not ready to conclude that implementation is complete. The staff has determined that implementation of the USI is dependent on the staff's review of licensee submittals. The staff has also determined that, based on several site audits, additional industry guidance is appropriate. This guidance has been approved by the NRR staff and issued by NUMARC. As a result, licensees are expected to provide a supplemental response by March 30, 1990. The NRR technical staff has developed a schedule for the review of licensee submittals and expects the last SERs to be issued by March 1991. In accordance with the provisions of the rule, licensees could take up to 2 years from the date the staff SER is issued to complete implementation. Depending on special circumstances, such as procurement of long-lead time items, a longer schedule may be negotiated.

d. USI A-46, "Seismic Qualification of Equipment in Operating Plants"

USI A-46 was initiated to confirm the adequacy of certain plant components to perform their function under a design-basis earthquake. A-46 was resolved with the issuance of GL 87-02, "Verification of Seismic Adequacy of Mechanical and Electric Equipment in Operating Reactors," on February 19, 1987. This GL endorsed the approach proposed by the Seismic Qualification Utility Group (SQUG) and the Electric Power Research Institute (EPRI). USI A-46 is applicable to licensees of about 70 reactors, all of whom are members of SQUG.

Since the issuance of GL 87-02, the staff and SQUG have determined that a specific set of requirements and an approach for implementation of the generic letter are necessary. This required the development of a comprehensive experimental data base which has recently been completed by the industry and is undergoing staff review. The staff is preparing a supplemental SER that will contain a generic evaluation plan. The supplemental SER should be issued in mid-1990. Subsequent to the issuance of the staff supplemental SER, site-specific schedules for implementation of this USI will be developed.

e. USI A-48, "Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment"

USI A-48 was resolved on April 19, 1989, as stated in SECY 89-122. It is considered fully implemented at BWR Mark I and Mark II facilities, as these facilities use inerting as a method of hydrogen control.

There is a related issue that remains open on several Mark I facilities. This issue is associated with the requirement to have a recombiner capability at all facilities. Generic Letter 84-09, "Recombiner Capability Requirements of 10 CFR 50.44 (c)(3)(22)," provided guidance to those Mark I facilities that elected to rely on inerting in lieu of recombiner capability. The staff is still evaluating the responses to GL 84-09 for compliance with 10 CFR 50.44 at these remaining plants. This action is considered separate from A-48. The facilities involved are Cooper, Millstone 1, Oyster Creek, Dresden, and Quad Cities.

Boiling Water Reactors with Mark III containments have also installed igniter-type systems as a method of hydrogen control. However, the supporting analyses were performed in a preliminary fashion, since all of the experimental programs had not been completed at the time of licensing. These programs are now complete and a program describing the plant specific analyses has been submitted to the staff. The licensees of these facilities (Grand Gulf, River Bend, Clinton, and Perry) are awaiting the staff evaluation of their proposal. The staff plans to publish their findings in the next few months with a schedule to complete all efforts by the end of 1990.

PWRs with ice condenser containments have installed igniter-type systems as a method of hydrogen control. Staff SERs have not been issued for PWRs with ice condenser containments. Although the licensees of these facilities (Sequoyah, Watts Bar, McGuire, Catawba, and D.C. Cook) considered that this installation met the requirements of USI A-48, the staff review is incomplete. Hence, the staff views A-48 as incomplete at these facilities.

Licensees of facilities with PWRs with ice condensers are also linking their analysis to IPE. Complete implementation of A-48 requirements for these facilities may be dependent on IPE reviews.