

CERTIFIED

12-29-87

SUMMARY/MINUTES OF THE
ACRS SUBCOMMITTEE MEETING ON
GENERIC ITEMS
DECEMBER 16, 1987
WASHINGTON, DC

ACRS-2543
PDR 1/29/88

INTRODUCTION

The ACRS Subcommittee on Generic Items held a meeting on Wednesday, December 16, 1987, at 1717 H Street, N.W., Washington, D.C., to continue its discussion on the effectiveness of the NRC Staff process that deals with Generic Issues and Unresolved Safety Issues (USIs). The entire meeting was open to public attendance. Mr. Sam Duraiswamy was the cognizant ACRS Staff Engineer for this meeting. A list of documents submitted to the Subcommittee is included in Attachment A, and a copy of the presentation schedule for the meeting is included in Attachment B.

ATTENDEES

ACRS: C. J. Wylie (Acting Subcommittee Chairman), J. C. Ebersole, C. Michelson, F. J. Remick, and D. A. Ward.
Sam Duraiswamy (Cognizant ACRS Staff Engineer)

Principal
NRC Speaker: H. Pastis

Principal
Duke Power Co.
Speakers: N. Rutherford, J. Thomas, R. Gill, P. Guill, and R. Sharpe

EXECUTIVE SESSION

Mr. Wylie, Acting Subcommittee Chairman, convened the meeting at 12:15 p.m. and stated that the purpose of the meeting was to hear presentations from and hold discussion with representatives of the Duke Power Company with respect to:

- Various steps involved in implementing the resolution of Generic Issues and/or USIs.
- Current status of implementation of generic and plant-specific issues, or other NRC requirements at the Duke plants.

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- Factors that have contributed to delays in implementing the resolution of issues.
- Duke Power Company's position on the Integrated Safety Assessment Program (ISAP) and Integrated Living Schedule.
- Interaction between the Duke Power Company and the NRC project managers.
- Duke Power Company's opinion on the effectiveness of the overall process of dealing with Generic Issues and USIs.
- Contribution to plant safety resulting from the implementation of the resolution of Generic Issues and USIs.

He stated that based on the discussion of the above items, the Subcommittee will gather information for use by the ACRS in responding to a request by the NRC Chairman Zech on the effectiveness of the NRC Staff's process that deals with Generic Issues and USIs. He said that the Subcommittee had received neither written comments nor requests for time to make oral statements from members of the public.

DUKE POWER COMPANY PRESENTATION

Discussion of the History of Selected USIs - Mr. J. Thomas

Mr. Thomas discussed briefly the history associated with the origination and resolution of certain Generic Issues and USIs.

- Generic Issue A-24, Qualification of Class 1E Safety Related Equipment:

The history associated with this issue is included in Attachment C, Pages 1 and 2. Mr. Thomas stated that based on some concerns raised by the Union of Concerned Scientists (UCS) in November 1977, the NRC Staff initially issued IE Circular 78-08 in April 1978 requesting the licensees to perform a review of the status of the environmental

qualification of equipment in their plants. Subsequently, the NRC Staff issued several bulletins and NUREG documents, providing clarification and informing the licensees about the criteria to be used by the Staff in reviewing this matter. In February 1983, 10 CFR Part 50, Paragraph 50.49 was issued, establishing requirements for environmental qualification of electrical equipment important to safety. Also, in June 1984, Regulatory Guide 1.89, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants," was issued to describe qualification methodology acceptable to the NRC Staff. In February 1987, SECY-87-32 was issued to explain how the NRC policy will be applied to deficiencies associated with equipment qualification.

Mr. Thomas stated that it took about ten years to resolve this issue. There are several factors, such as the following, contributed to the delay in resolving this issue:

- Lack of communication between the industry and the Staff.
- Lack of communication among the industry as well as among the NRC Staff.
- NRC Staff's inability to provide clear guidance as to what is expected of the industry to deal with this issue.
- Misinterpretation of the NRC requirements by the industry due to ambiguity.

Mr. Thomas stated that the industry is still facing some problems in implementing the resolution of this issue due to lack of communication and understanding. Consequently, the Nuclear Utility Group arranged periodic meetings with the NRC Staff responsible for equipment qualification to discuss various factors. Such meetings had been helpful in understanding what needs to be done to comply with the requirements delineated in 10 CFR 50.49.

Stating that when issuing requirements the NRC Staff sometimes deliberately makes it ambiguous so as to preclude the possibility of being overly specific, Mr. Ebersole asked whether the industry feels that the NRC criteria should have been more prescriptive. Mr. Thomas responded that early guidelines provided by the Staff were very prescriptive. However, they were developed by the Staff without much contribution from the industry. As a result, industry had misinterpreted the Staff guidelines. He believes that the industry as well as the NRC Staff had to share the blame for lack of communication and understanding. Lack of coordination within the industry also contributed to the problems in effectively dealing with the equipment qualification issues. Proper interaction between the NRC Staff and the industry would have avoided several problems, especially those on communication and understanding. He believes that they are making real progress in dealing with this issue as a result of improved interaction between the NRC Staff and the industry groups. However, they still have problems that need to be dealt with.

Mr. Ebersole asked what sort of problems that they still have to deal with. Mr. Thomas responded that some of the auditors have difficulty in understanding the documents in the file associated with some old plants and some utilities have difficulties in explaining what is in the file or producing proper documentation because the personnel who used to deal with those files had left or reassigned. Further, he believes that they are spending a lot of money and time in resolving paper issues and not safety issues. He believes that audit follow-ups and enforcement activities are on issues associated with documentation rather than on actual safety issues.

• USI A-46, "Seismic Qualification of Equipment in Operating Plants":

Mr. Thomas discussed the issues associated with USI A-46 and the efforts taken by the industry in resolving them (Attachment C, pages 3-11).

Mr. Thomas stated that based on the valuable experience gained in dealing with the Generic Issue A-24, "Qualification of Class 1E Safety Related Equipment," the industry decided to get together and try to work with NRC Staff to resolve USI A-46 rather than just react to the actions proposed by the Staff. As a result, Seismic Qualification Utility Group (SQUG), represented by 40 utilities, was established to assess this issue and to determine a practical and cost-effective way to achieve a resolution. High-level management of the NPC Staff has been very cooperative and has been a major contributor/participant in SQUG activities since its inception. SQUG completed a pilot program to evaluate the seismic performance of eight classes of equipment. This program was reviewed by the NRC, its consultants, and an independent panel of earthquake experts. After extensive work, SQUG concluded that the seismic qualification issue is not a significant safety concern as perviously thought. However, the NRC Staff had difficulty in accepting this conclusion. Consequently, the Senior Seismic Review and Advisory Panel (SSRAP), consisting of seismic experts who were agreed upon and chosen by the NRC and SQUG, was formed to review the conclusions reached by SQUG. Based on its review, SSRAP supported the findings of SQUG for the first eight classes of equipment. Subsequently, the SQUG approach has been more or less documented as being the resolution to USI A-46. He said that early involvement by the industry and good communication between the Staff and the industry had contributed in achieving a realistic resolution to this issue.

Mr. Thomas stated that prior to the formation of SQUG, several issues, such as cable tray hangers, pipe hangers, snubbers, etc., had been implemented without actually understanding the issues. Such an approach is not good for the safety of the plants. Even though it takes some time for implementing certain issues, he believes that the technical aspects of the issues should be understood clearly prior to implementation. If it is not understood thoroughly, they may not know whether it has been done right.

Mr. Michelson commented that USI A-46 resolution requires that licensees walk through their plants to ensure that nonseismically qualified equipment are anchored properly and will not fall on essential equipment during a seismic event. However, if it falls on a water source and releases the water, the licensees are not required to trace the water path to make sure that it will not affect the electrical instrumentation and control systems. He believes that USI A-46 resolution is very narrow. He suggested that utilities take some initiatives on their own and try to trace the water path to make sure that it will not have adverse effects on electrical and control systems. Mr. Thomas responded he believes that a lot of work is being done to look at the consequences of water intrusion on electrical systems. To achieve a timely resolution of an issue, the scope of an issue should be defined realistically. He believes that USI A-46 resolution is realistic.

Mr. Michelson commented that spurious actuation of fire protection system during a seismic event and its consequences have also not been addressed by SQUG. He believes that it is still an open issue and needs to be looked into.

Mr. Michelson commented that several operating incidents indicate that equipment qualified to withstand water environment has been really ineffective when subjected to such an environment. These incidents raise some concerns and questions on the adequacy of the qualification of the equipment. Mr. Thomas responded that there had been some incidents associated with water at Duke plants. However, none of them were serious enough to cause any common-mode problems.

Mr. Michelson asked whether the walk-through performed so far in certain plants show that such a process is effective and worthwhile. Mr. Thomas responded that one of the things that is essential to make the walk-through process successful and effective is proper training of the personnel who perform the plant walk-through. Without a successful

training program, he does not believe that the process will be effective.

Mr. Michelson asked whether they have found any surprising things during the plant walk-through that has been completed so far. Mr. Thomas responded that during the walk-through at the Zion nuclear plant, they have found that some safety-related equipment were not anchored.

Mr. Michelson commented that the approach being used by SQUG in plant walk-through seems to place more emphasis on structurally oriented problems than on equipment functional problems. Mr. Thomas responded that it was a conscious decision made by SQUG. If the equipment is anchored properly, it is not expected to fall down and get damaged during a seismic event. If it stays up during a seismic motion, they expect that it will perform its intended function.

- Station Blackout

Mr. Thomas stated that USI A-44, "Station Blackout," is another issue where the industry has involved extensively to achieve a realistic and fast resolution. They have major efforts under way in resolving this issue. They have been interacting extensively with the NRC Staff on this matter. This is another indication that major issues could be resolved realistically and faster with proper communication and better coordination between the industry and the NRC.

- Reactor Trip Switchgear

Mr. Thomas stated that in July of 1987, the reactor trip switchgear at the McGuire plant failed to trip during testing. This type of breaker is widely used in the nuclear industry. Realizing the significance of this problem, the NRC sent an investigation team to analyze the problem. Subsequently, Information Notice 87-35 was issued to inform the licensees about this problem. An agreement between the NRC Staff and the industry was reached on the approach to be used to investigate this

problem. Investigations were performed by Westinghouse and also by the Franklin Institute. During these investigations, there has been extensive interaction with the NRC Staff. This issue was resolved within about 6 months, and NRC issued a Bulletin recently requiring the licensees what needs to be done to take care of this problem.

Mr. Thomas stated that extensive coordination and communication between the industry and the Staff contributed to the faster resolution of this issue. Also, the Staff did not try to force a resolution for implementation prior to giving a chance to the industry to understand the problem.

Current Status of Implementation of Issues at Duke Plants -
Mr. N. Rutherford

Mr. Rutherford discussed the status of implementation of Generic Issues, USIs, TMI Action Plan Items, and plant-specific issues at the Duke Power Company's plants (Attachment C, pages 12-16).

Mr. Rutherford stated that they plan to implement the resolution of USI A-9, "Anticipated Transients Without Scram," by 1989 in McGuire and Catawba. For Oconee, they have submitted to the NRC Staff a generic design concept for approval. Once approved, it will be implemented. He does not believe that implementation of the resolution of the ATWS issue will have significant benefit to plant safety. He believes that implementing the provisions (i.e., improving the reliability of the reactor trip switchgear) of the generic letter that was issued as a result of the Salem ATWS incident might result in more benefit than implementing the overall ATWS resolution.

Stating that for Oconee Units 1-3 the implementation of the TMI Action Plan item associated with the control room design is scheduled for 1990, Dr. Remick asked why it takes such a long time for implementing this issue. Mr. Rutherford responded that they have prioritized all the modifications to be

done at Oconee and attempted to implement first those that are expected to provide more benefits. Mr. Thomas stated that any modification to a control room should be performed such that it will not interfere with the plant operation. Making too many changes in the control room during plant operation may have some impact on the safe operation of the plant.

Mr. Ebersole asked whether they have to update the drawings, procedures, etc., when making modifications. Mr. Rutherford responded that they have to update the drawings, operating procedures, training manuals, etc., as appropriate, when making changes to a plant.

Mr. Ward asked when prioritizing the modifications, how they decide which items receive the high priority. Mr. Rutherford responded that several factors are considered when assigning priority rankings; he is not sure of all the details. One of the significant factors considered in the prioritization process is the contribution to plant safety. If a modification is expected to improve plant safety, it will definitely receive a high priority.

Mr. Ward asked whether Duke thinks that sharing control rooms and other facilities between units is a good idea. Mr. Rutherford responded that there are some advantages as well as disadvantages in sharing certain systems and facilities among units. One of the advantages is that they will have an experienced operating crew available who could be used to relieve other crew, if necessary. One of the disadvantages is that if there is a malfunction in a shared system, it will affect both units that are sharing the same system.

In response to a question from Mr. Michelson regarding the instrumentation for detection of inadequate core cooling, Mr. Rutherford stated that Duke Power disagrees with the importance of this instrumentation. Based on the results of the PRA, they believe that this instrumentation is not necessary. They believe that proper training of the operators and the use of subcooling

core-exit thermocouples would be sufficient to deal with the inadequate core cooling issue.

Mr. Michelson commented that he does not believe operators could be trained to deal with the events that have not yet foreseen. Inadequate core cooling instrumentation will definitely help the operators to detect this problem early so as to prevent severe consequences.

Dr. Remick asked why Oconee Units are far behind in implementing several of the TMI Action Plan issues and also the resolution of some other Generic Issues and USIs. Mr. Rutherford responded that Oconee being an older plant and also a B&W plant has to make a large number of modifications. As a result, it is slightly behind in implementing certain modifications. Ms. Pastis, NRC Project Manager for Oconee, stated that Oconee being an older plant has to backfit all of the modifications. On several issues, the Staff has to meet with the licensee on several occasions to come up with a mutually agreed upon approach to implement these issues. Things of this sort have contributed to the delay in implementing certain issues at the Oconee plant.

Mr. Ebersole commented that several plants extend sensitive circuits, using extension cords, from the control room terminal boards to various regions of the plants to provide remote shutdown capability. These extension cords are vulnerable to fire, and it is very difficult to provide adequate protection for these extensions. He believes that it is a bad practice and the licensees should eliminate such extensions. Mr. Thomas responded he believes that there should be a plant-by-plant evaluation to determine whether these extension cords have really degraded the plant safety. If they are found to be detrimental to plant safety, they should be eliminated.

Factors That Have Contributed to Delays In Implementing the Resolution of
Issues - Mr. R. Gill

Mr. Gill discussed briefly various factors that have contributed to delays in implementing the resolution of generic issues and/or USIs (Attachment C, pages 17-24). Some of the factors contribute to delays in implementing resolved issues are:

- Communication
- Post-Implementation Review
 - changes in NRC interpretation of requirements
 - changes in NRC reviewers
 - backfit considerations
- Pre-Implementation Review
 - establishing acceptable solution
 - minimizing backfit concerns
- Utility Modification Process
 - design
 - review
 - scheduling
 - resource requirements
 - outage planning
 - post-implementation testing
- Interaction With NRC Project Managers

Mr. Gill stated the proper communication within the industry, within the NRC Staff, and between the industry and the NRC Staff plays an important role in successfully implementing the resolution of issues. Lack of proper communication had resulted in poor implementation history.

Misinterpretation of the original NRC requirements had also resulted in delays in implementing the changes.

Changes in the NRC technical reviewers also contributed to implementation delays. New reviewers ask different questions and raise different issues. Responding to these new concerns is a time-consuming process.

Changes to the original NRC requirements after mutually accepted by the industry and the NRC Staff had resulted in delays.

Mr. Michelson asked whether the situation is getting better or worse. Mr. Gill responded he believes that it is getting better. Mr. Rutherford stated that the number of issues to be dealt with now is more manageable than it was three or four years ago. Consequently, the industry as well as the NRC Staff are able to do a better job in dealing with these issues.

Mr. Michelson commented that he is surprised to see that the industry has not formed a group to interact with the NRC so as to deal with various generic issues and USIs. Mr. Rutherford responded that in the future NUMARC is expected to provide more leadership to deal with these issues.

Mr. Ebersole asked whether Duke Power thinks that more prescriptive NRC regulations would help the industry. Mr. Rutherford responded that he is not in favor of prescriptive regulations. He believes that the NRC and the industry should work together and define the issues clearly so as to have a better understanding of what needs to be done.

With reference to a statement made by Mr. Gill that good interaction with the NRC Project Managers plays an important role in successful implementation, Mr. Wylie asked whether the interaction between the Duke Power Company and the NRC Project Managers associated with Duke plants is effective. Mr. Gill responded he believes that the interaction with the NRC Project Managers has been effective.

Comments on the Effectiveness of the Resolution Process of Dealing With
Generic Issues and USIs - Mr. Rutherford

Mr. Rutherford provided the following comments on the resolution process associated with Generic Issues and USIs:

- Solve a limited number of issues at one time so that they can be handled effectively. Do not repeat the "wish-list" approach used after the TMI-2 accident.
- Maintain good communication between the NRC and industry to define issues properly and develop an optimum solution.
- Use best-estimate methods, where appropriate, to define problems and achieve solutions.
- Ensure that all parts of proposed resolutions provide real contribution to plant safety.
- Ensure timely Staff review in accordance with the defined resolution.

Contribution to Plant Safety Resulting From the Implementation of the
Resolution of Generic Issues and USIs - Mr. Rutherford

Mr. Rutherford stated that implementation of the following has clearly contributed to plant safety:

- Appendix R to 10 CFR Part 50 (Standby Shutdown Facilities).
- High/Low Pressure System Interface (Event V).
- Generic Letter 83-28 associated with reactor trip switchgear reliability.
- Emergency operating procedure improvements.
- Training improvements.

- Analysis and disseminations of operating experience

He stated that implementation of the following has provided questionable improvements to plant safety:

- ATWS.
- Reactor vessel water level instrumentation.
- Portions of Regulatory Guide 1.97.
- Portions of equipment qualification.

Mr. Wylie asked whether any of the issues implemented at Duke plants were detrimental to plant safety. Mr. Rutherford responded that the approach used in handling TMI-2 Action Plan Items had the potential for an adverse effect on plant safety. They spent major resources and time on implementing the changes resulting from the resolution of TMI-2 Action Plan Items; during that period, they were not able to spend adequate resources on preventive maintenance, etc. Also, issues associated with pipe hangers, snubbers, and plant security have some adverse effect on plant safety.

Duke Power Company's Position on ISAP and Integrated Living Schedule -
Mr. Rutherford

Mr. Rutherford stated that Duke does not believe that an ISAP for Oconee Units 1-3 would be beneficial for the following reasons:

- Necessary modifications have been made to take care of the deficiencies identified in the PRA conducted for Oconee plants.
- Resolutions of the TMI-2 Action Plan Issues and other Generic Issues/USIs have been more or less implemented.
- Standby Shutdown Facility has been added.

- Self-initiated audit is being conducted on systems at the Oconee units.
- Recommendations of the B&W Owners Group Safety and Performance Improvement Program are being implemented.

He mentioned that currently Duke Power is having some discussions with NRR to determine whether certain elements of ISAP will be beneficial.

Mr. Rutherford stated that in response to Generic Letter 85-07, Duke noted that they were developing integrated schedules for internal use only; since the number of regulatory related modifications have been declining, they did not plan to submit such a schedule to the NRC. However, currently Duke is reexamining that previous decision to determine if there are benefits in developing and submitting to the NRC a formal integrated living schedule.

Mr. Wylie thanked all participants and adjourned the meeting at 4:08 p.m.

NOTE: Additional meeting details can be obtained from a transcript of this meeting available in the NRC Public Document Room, 1717 H Street, N.W., Washington, D.C., or can be purchased from Heritage Reporting Corporation, 1220 L Street, N.W., Washington, D.C. 20555, (202) 628-4888.

LIST OF DOCUMENTS SUBMITTED TO THE
SUBCOMMITTEE ON GENERIC ITEMS
DECEMBER 16, 1987 MEETING

1. Presentation Schedule
2. Memorandum from NRC Chairman Zech to D.Ward, dated September 18, 1986
3. Minutes of the September 30, 1987 Generic Items Subcommittee Meeting
4. Information Associated with the Resolution of USI A-46, Seismic Qualification of Equipment in Operating Plants
5. 10 CFR 50.49, Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants
6. Transcript of the Commission Meeting held on October 21, 1987
7. Presentation Material Provided by the Duke Power Company During the Meeting

- PRESENTATION SCHEDULE -

ACRS SUBCOMMITTEE MEETING ON GENERIC ITEMS
 DECEMBER 16, 1987
 ROOM 1046, 1717 H STREET, N.W.
 WASHINGTON, D.C.

ACRS CONTACT: SAM DUPAISWAMY
 202-634-3267

- NOTE:
- Presentation time should not exceed 50% of the total time allocated for a specific item. The remaining 50% of the time is reserved for Subcommittee questions and answers by the Staff.
 - Number of copies of the presentation materials to be submitted to the Subcommittee: 25 copies

ITEM	PRESENTER	TOTAL PRESENTATION TIME	ACTUAL TIME
1. <u>Executive Session</u>	---	15 mins.	12:00N - 12:15p
2. <u>Presentation by the Duke Power Company</u>			
2.1 <u>Steps Involved in Implementation Process/ISAP</u>	DUKE POWER	180 mins.	12:15p - 3:15p
<p>a. By means of specific examples selected as described below, illustrate and discuss the nature and duration of the several steps involved in implementing the resolution of Generic Issues and/or USIs. To the extent possible, select examples involving: (1) long vs. short times for implementation, (2) difficult vs. easy to implement, and (3) hardware fixes vs. procedural changes.</p> <p>The number of examples should be selected to fit within the time allotted for presentation.</p> <p>b. • What is the current status of implementation of generic and plant-specific issues, or other NRC requirements, at the Duke plants.</p> <p>• Discuss the factors that have contributed to delays in implementing the resolution of issues.</p>			

ATTACHMENT B

ITEM	PRESENTER	TOTAL PRESENTATION TIME	ACTUAL TIME
2.1 (cont'd)			
c. What is Duke Power Company's position on Integrated Safety Assessment Program (ISAP) and Integrated Living Schedule			↑
----- BREAK -----		15 mins.	3:15p - 3:30p
2.2 <u>Interaction with NRC/Effectiveness of the Process</u>	DUKE POWER	45 mins.	3:30p - 4:15p
a. How effective is your interaction with the NRC project managers in establishing schedules for implementation, reviewing licensee proposals, etc.?			
b. Do you think that the overall process, (identification, prioritization, resolution, imposition, implementation, and verification) of dealing with generic issues and USIs is effective? If not, what could be done to improve it?			
2.3 <u>Contribution to Plant Safety</u>	DUKE POWER	30 mins.	4:15p - 4:45p
Do you have any evidence (based on quantitative risk assessments) or opinions (based on judgment) relating to the increase in safety that can be attributed to the implementation of the fixes, resulting from the resolution of Generic Issues and USIs?			
3. <u>Subcommittee Remarks</u>	---	30 mins.	4:45p - 5:15p
----- ADJOURN -----			5:15p

HISTORY OF EQUIPMENT QUALIFICATION ISSUE

- o NOVEMBER 4, 1977 UCS FILES A PETITION FOR EMERGENCY AND REMEDIAL RELIEF CONCERNING FIRE PROTECTION AND ENVIRONMENTAL QUALIFICATION OF ELECTRICAL COMPONENTS
- o APRIL 13, 1978 NRC DENIES UCS REQUESTS, BUT ORDERS STAFF TO TAKE CERTAIN ACTIONS
- o JUNE 2, 1978 IE CIRCULAR 78-08 ISSUED REQUESTING A REVIEW OF EQUIPMENT QUALIFICATION STATUS - NO RESPONSE REQUIRED
- o FEBRUARY 8, 1979 IE BULLETIN 79-01 ISSUED WHICH RAISED IEC 78-08 TO BULLETIN STATUS THUS REQUIRING A RESPONSE
- o JANUARY 13, 1980 IE BULLETIN 79-01B ISSUED WHICH EXPANDED THE SCOPE OF IEB 79-01 AND SET FORTH THE NRC'S REVIEW CRITERIA (DOR GUIDELINES AND NUREG 0588)
- o FEBRUARY 29, 1980
SEPTEMBER 30, 1980
OCTOBER 24, 1980 NRC ISSUES SUPPLEMENTS TO IEB 79-01B FOR CLARIFICATION
- o MAY 23, 1980 NRC ISSUES MEMORANDUM AND ORDER ESTABLISHING DOR GUIDELINES AND NUREG 0588 AS REQUIREMENTS FOR MEETING GDC-4
- o AUGUST 29, 1980 ALL OPERATING LICENSES MODIFIED REQUIRING IEB 79-01B COMPLETE RESPONSES BY 11/01/80

ATTACHMENT C

HISTORY OF EQUIPMENT QUALIFICATION ISSUE (CONTINUED)

- o OCTOBER 24, 1980 ALL OPERATING LICENSES MODIFIED REQUIRING:
1) ALL SAFETY-RELATED EQUIPMENT TO BE QUALIFIED TO DOR GUIDELINES OR NUREG 0588 BY 06/30/82, AND
2) ESTABLISHMENT OF A CENTRAL QUALIFICATION RECORDS FILE BY DECEMBER 1, 1980

- o JUNE, 1981 NRC COMPLETES ISSUANCE OF SER'S

- o JULY 7-10, 1981 NRC CONDUCTS INDUSTRY WORKSHOP

- o FEBRUARY 22, 1983 SECTION 50.49 OF 10CFR PART 50 RULE FOR ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT IMPORTANT TO SAFETY

- o JUNE, 1984 REG. GUIDE 1.89 DESCRIBES QUALIFICATION METHODOLOGY ACCEPTABLE TO THE NRC STAFF FOR INDUSTRY COMPLIANCE WITH 10CFR 50.49

- o OCTOBER 15, 1984 PILOT AUDIT PROGRAM INITIATED

- o MAY 22, 1985 IE INFORMATION NOTICE 85-40 DEFICIENCIES IN EQ TESTING AND CERTIFICATION PROCESS

- o SEPTEMBER 22, 1986 GENERIC LETTER 86-15 - ADDITIONAL GUIDELINES ON LICENSEE ACTIONS AND NRC POLICY WITH REGARD TO ENFORCEMENT OF 10CFR 50.49

- o FEBRUARY 6, 1987 SECY-87-32
EXAMPLES OF HOW POLICY APPLIED TO EQ DEFICIENCIES

- o APRIL 10, 1987 J.M. TAYLOR MEMORANDUM TO REGIONAL ADMINISTRATORS - FURTHER GUIDANCE ON APPLICATION OF ENFORCEMENT POLICY

USNRC UNRESOLVED SAFETY ISSUE (USI) A-46

ADDRESSES SEISMIC QUALIFICATION OF OPERATING

NUCLEAR PLANT EQUIPMENT

- o SAFE SHUTDOWN MUST BE ASSURED FOLLOWING A DESIGN BASIS EARTHQUAKE.
- o SAFE SHUTDOWN (HOT OR COLD) MUST BE MAINTAINED FOR A DETERMINED LENGTH OF TIME (PLANT SPECIFIC).
- o IT IS ASSUMED THAT THE EARTHQUAKE DOES NOT CAUSE A LOCA.
- o IT IS ASSUMED THAT A LOSS OF OFF-SITE POWER OCCURS.
- o USI A-46 APPLIES TO PLANTS WITH CP APPLICATIONS DOCKETED BEFORE OCTOBER, 1972. IT APPLIES TO 72 UNITS.
- o USI A-46 ADDRESSES SPECIFICALLY ONLY ACTIVE MECHANICAL AND ELECTRICAL EQUIPMENT (NOT PIPING, CABLE TRAYS, HEAT EXCHANGERS).

THE GOAL OF THE SQUG PROGRAM HAS BEEN TO
MAKE THE BEST POSSIBLE USE OF ACTUAL
EARTHQUAKE EXPERIENCE DATA TO RESOLVE USI A-46

- o DEVELOP A HISTORICAL DATA BASE ON THE PERFORMANCE OF EQUIPMENT IN CONVENTIONAL POWER AND INDUSTRIAL FACILITIES DURING AND AFTER STRONG EARTHQUAKES.

- o SHOW THAT THE EQUIPMENT IN THOSE PLANTS IS THE SAME AS EQUIPMENT FOUND IN NUCLEAR POWER PLANTS.

- o SHOW THAT THE DATA BASE EQUIPMENT WAS SUBJECTED TO STRONGER GROUND MOTION THAN SSEs FOR PLANTS OUTSIDE CALIFORNIA.

- o DETERMINE WHAT EQUIPMENT OR EQUIPMENT FEATURES PRESENT SIGNIFICANT RISKS IN AN EARTHQUAKE.

THE FUNCTIONS OF THE SEISMIC EXPERIENCE DATA BASE ARE:

- o TO PROVIDE A REALISTIC ASSESSMENT OF THE EARTHQUAKE RISK TO POWER FACILITIES

- o TO DETERMINE WHAT TYPES OF SEISMIC DAMAGE TYPICALLY OCCUR IN POWER FACILITIES

- o TO DETERMINE TENDENCIES FOR SEISMIC DAMAGE TO VARIOUS TYPES OF FACILITIES AND THEIR STRUCTURES, SYSTEMS, EQUIPMENT, AND COMPONENTS

- o TO DETERMINE WHAT IS TYPICALLY NOT DAMAGED

SGUG CONCLUSIONS

- o SEISMIC RESISTANCE OF STANDARD POWER PLANT EQUIPMENT, WHEN PROPERLY ANCHORED, WAS VERIFIED DURING THE PILOT PROGRAM.

- o EXPLICIT, SEISMIC QUALIFICATION OF THIS EQUIPMENT IS NOT JUSTIFIED.

- o SEISMIC QUALIFICATION IS NOT A SIGNIFICANT SAFETY CONCERN, THEREFORE, FURTHER ACTION IS NOT REQUIRED.

FORMATION OF THE SENIOR SEISMIC REVIEW

AND ADVISORY PANEL (SSRAP)

- o PURPOSE OF SSRAP REVIEW:
 - o PROVIDE AN INDEPENDENT ASSESSMENT BY EXPERIENCED SEISMIC EXPERTS OF SQUG RESULTS AND CONCLUSIONS.
 - o PROVIDE APPROPRIATE RECOMMENDATIONS FOR USE OF THE SQUG RESULTS
- o MEMBERS OF SSRAP WERE AGREED UPON AND CHOSEN BY SQUG AND NRC

AN EXTENSIVE REVIEW BY AN INDEPENDENT PANEL,

THE SSRAP, SUPPORTED THE FINDINGS OF SQUG FOR

THE FIRST EIGHT CLASSES OF EQUIPMENT

- o EQUIPMENT INSTALLED IN NUCLEAR POWER PLANTS IS GENERALLY SIMILAR AND AT LEAST AS RUGGED AS THAT INSTALLED IN CONVENTIONAL POWER PLANTS.

- o THIS EQUIPMENT, WHEN PROPERLY ANCHORED AND WITH SOME RESERVATIONS, HAS AN INHERENT SEISMIC RUGGEDNESS AND HAS A DEMONSTRATED CAPABILITY TO WITHSTAND SUBSTANTIAL SEISMIC MOTION WITHOUT STRUCTURAL DAMAGE.

- o FUNCTIONALITY AFTER THE STRONG SHAKING HAS ENDED HAS BEEN DEMONSTRATED; THE ABSENCE OF RELAY CHATTER DURING STRONG SHAKING HAS NOT BEEN DEMONSTRATED.

- o WITH SEVERAL IMPORTANT CAVEATS AND EXCLUSIONS, IT IS THE SSRAP JUDGMENT THAT BELOW CERTAIN SEISMIC MOTION BOUNDS IT IS UNNECESSARY TO PERFORM EXPLICIT SEISMIC QUALIFICATION OF EXISTING EQUIPMENT.

- o THE EXISTING DATA BASE REASONABLY DEMONSTRATES THE SEISMIC RUGGEDNESS OF THIS EQUIPMENT UP TO THESE SEISMIC MOTION BOUNDS.

REFERENCE: SENIOR SEISMIC REVIEW AND ADVISORY PANEL (SSRAP), "USE OF PAST EARTHQUAKE EXPERIENCE DATA TO SHOW SEISMIC RUGGEDNESS OF CERTAIN CLASSES OF EQUIPMENT IN NUCLEAR POWER PLANTS" (FEBRUARY, 1984).

A GENERIC IMPLEMENTATION PLAN IS

BEING DEVELOPED TO RESOLVE A-46

ON A PLANT SPECIFIC BASIS IT INCLUDES:

- o DEVELOP LIST OF EQUIPMENT REQUIRED FOR SAFE SHUTDOWN.
- o COMPARE WITH SQUG GENERIC EQUIPMENT LIST.
- o REVIEW EQUIPMENT DETAIL:
 - o EQUIPMENT LOCATION
 - o PHYSICAL DATA
 - o ANCHORAGE DETAIL
- o IDENTIFY EQUIPMENT WHICH CAN BE SCREENED USING EXPERIENCE DATA.
- o IDENTIFY EQUIPMENT WHICH CAN BE SCREENED USING OTHER MEANS.
 - o TEST DATA
 - o ENGINEERING JUDGMENT
 - o EXCLUSIONARY RESTRICTIONS WHICH CAN BE OVERCOME
- o REDUCE PLANT EQUIPMENT LIST TO:
 - o EQUIPMENT THAT IS POTENTIALLY VULNERABLE
 - o EQUIPMENT THAT FALLS OUTSIDE THE LIMITS OF THE SQUG DATA BASE
 - o EQUIPMENT WITH FUNCTIONALITY IN QUESTION
- o DETERMINE PROCEDURES FOR QUALIFYING EQUIPMENT THAT CANNOT BE SCREENED
 - o ANALYSIS
 - o SHAKE TABLE TESTING
 - o REPLACEMENT
 - o STRUCTURAL MODIFICATION
- o DOCUMENT THE RESULTS

SQUG PROGRAM OUTLINE

- o SCREEN ESSENTIAL EQUIPMENT LIST
 - o COVERED IN SQUG PROGRAM
 - o OTHER DATA AVAILABLE (EXPERIENCE, TEST)
 - o ENGINEERING JUDGMENT

- o DOCUMENT SEISMIC RUGGEDNESS OF EQUIPMENT
 - o ASSIGN RUGGEDNESS LEVELS WHICH CAN BE JUSTIFIED
 - o IDENTIFY EXCEPTIONS/VULNERABILITIES FOR EACH EQUIPMENT CLASS
 - o DEFINE DATA NEEDS, IF ANY

- o COMPLETE/REVIEW EPRI PROGRAMS, DEVELOP ANCHORAGE INSPECTION GUIDELINES
 - o ANCHORAGE
 - o TEST DATA ASSIMILATION

- o DEVELOP SIMPLIFIED APPROACH FOR DETERMINING REQUIRED SEISMIC RUGGEDNESS IN NUCLEAR PLANTS
 - o ELEVATIONS LESS THAN 40 FEET
 - o HIGHER ELEVATIONS

- o ATTEMPT TO LIMIT SCOPE OF RELAY FUNCTIONALITY REQUIREMENTS ON GENERIC BASIS

- o DEVELOP PLANT WALK-THROUGH GUIDELINES AND TEAM

- o PERFORM "TEST" WALK-THROUGH

- o DEVELOP PLANS FOR SQUG MEMBER IMPLEMENTATION
 - o SEMINARS
 - o GENERIC SQUG TEAM APPROACH
 - o SSRAP/NRC AUDIT

UNRESOLVED SAFETY ISSUES STATUS

<u>ITEM</u>	<u>STATUS</u>
A-3, 1-5 STEAM GENERATOR TUBE INTEGRITY	OCONEE - TECH SPECS TO CLARIFY TUBE LEAKAGE LIMITS TO BE SUBMITTED MCGUIRE - COMPLETE CATAWBA - COMPLETE
A-9 ATWS	OCONEE - AWAITING NRC STAFF APPROVAL OF GENERIC DESIGN CONCEPT MCGUIRE - IMPLEMENTATION BY 1989 CATAWBA - IMPLEMENTATION BY 1989
A-46 SEISMIC QUALIFICATION	OCONEE - ADOPTING SQUG PROGRAM IN RESPONSE TO GENERIC LETTER 87-02 MCGUIRE - NOT APPLICABLE CATAWBA - NOT APPLICABLE

TMI ACTION PLAN ITEMS STATUS

<u>ITEM</u>	<u>STATUS</u>
I.D.1 CONTROL ROOM DESIGN REVIEW	OCONEE - UNIT 1 63% COMPLETE, UNIT 2 45% COMPLETE, UNIT 3 60% COMPLETE - IMPLEMENTATION COMPLETE BY 1990 MCGUIRE - UNIT 1 98% COMPLETE, UNIT 2 94% COMPLETE CATAWBA - UNIT 1 COMPLETE, UNIT 2 WILL BE COMPLETED FIRST REFUELING OUTAGE
I.D.2 SAFETY PARAMETER DISPLAY SYSTEM	OCONEE - SYSTEM INSTALLED, NRC STAFF REVIEW TO BE COMPLETED MCGUIRE - SYSTEM INSTALLED, NRC STAFF REVIEW IDENTIFIED SEVERAL MINOR MODIFICATIONS TO BE IMPLEMENTED CATAWBA - SYSTEM INSTALLED, NRC STAFF REVIEW IDENTIFIED SEVERAL MINOR MODIFICATIONS TO BE IMPLEMENTED
II.B.1 RCS VENTS	OCONEE - VENTS INSTALLED, AWAITING NRC STAFF APPROVAL OF TECH SPECS. MCGUIRE - COMPLETE CATAWBA - COMPLETE
II.D.1 RELIEF AND SAFETY VALVES	OCONEE - TESTING COMPLETE, RESPONSES TO SECOND ROUND OF STAFF QUESTIONS TO BE SUBMITTED 02/88 MCGUIRE - TESTING COMPLETE, AWAITING NRC STAFF SER CATAWBA - TESTING COMPLETE, RESPONSES TO NRC STAFF QUESTIONS TO BE SUBMITTED 01/88

TMI ACTION PLAN ITEMS STATUS
(CONTINUED)

<u>ITEM</u>	<u>STATUS</u>
II.F.1 ACCIDENT MONITORING	OCONEE - MONITORING INSTALLED, AWAITING NRC STAFF APPROVAL OF TECH SPECS MCGUIRE - COMPLETE CATAWBA - COMPLETE
II.F.2 INSTRUMENTATION FOR DETECTION OF ICC	OCONEE - INSTRUMENTATION INSTALLED, PROCEDURES FOR RX VESSEL WATER LEVEL TO BE IN PLACE EARLY 1988, TECH SPECS TO BE SUBMITTED EARLY 1988 MCGUIRE - COMPLETE CATAWBA - COMPLETE
II.K.3.5 AUTO TRIP OF RCP's	OCONEE - GENERIC ANALYSIS APPROVED, PLANT SPECIFIC INFORMATION SUBMITTED TO STAFF FOR REVIEW MCGUIRE - COMPLETE CATAWBA - COMPLETE
II.K.3.31 COMPLIANCE WITH 10 CFR 50.46	OCONEE - SBLOCA ANALYSIS SUBMITTED TO STAFF FOR REVIEW MCGUIRE - COMPLETE CATAWBA - COMPLETE
III.A.1.2 EMERGENCY SUPPORT FACILITIES	OCONEE - INTERIM EOF IN USE, PERMANENT EOF AVAILABLE IN LATE 1988 MCGUIRE - COMPLETE CATAWBA - COMPLETE

TMI ACTION PLAN ITEMS STATUS

(CONTINUED)

ITEM

STATUS

III.D.3.4
CONTROL ROOM
HABITABILITY

OCONEE - CERTAIN MODIFICATIONS
REMAIN TO BE IMPLEMENTED
MCGUIRE - COMPLETE
CATAWBA - COMPLETE

R.G. 1.97

OCONEE - STAFF REVIEW RECEIVED (5
ITEMS STILL UNDER REVIEW),
MODIFICATIONS TO BE
INSTALLED BY 1990
MCGUIRE - STAFF SER RECEIVED (2 ITEMS
STILL UNDER REVIEW),
MODIFICATIONS TO BE
INSTALLED BY 1989
CATAWBA - STAFF SER RECEIVED (ITEM
STILL UNDER REVIEW),
REMAINING MODIFICATIONS ARE
INSTALLED

SUMMARY OF TYPICAL OPEN ITEMS

0 GENERIC LETTERS

- 83-28 GENERIC IMPLICATIONS OF SALEM EVENT
- 87-06 PERIODIC VERIFICATION OF LEAK TIGHT
INTEGRITY OF PRESSURE ISOLATION VALVES
- 87-12 LOSS OF RHR WHILE RCS IS PARTIALLY FILLED

0 IE BULLETINS

- 85-03 MOV TORQUE SWITCH SETTINGS
- 87-01 THINNING OF PIPE WALLS IN NUCLEAR POWER
PLANTS
- 87-02 FASTENER TESTING TO DETERMINE CONFORMANCE
WITH APPLICABLE MATERIAL SPECIFICATION

0 PLANT SPECIFIC

TECHNICAL SPECIFICATION REVISIONS ISI/IST PROGRAMS

ISI/IST RELIEF REQUESTS APPENDIX R EXEMPTION
REQUESTS

COMMITMENTS IN LICENSEE EVENT REPORTS

FACTORS CONTRIBUTING TO DELAYED

IMPLEMENTATION OF ISSUES

- o COMMUNICATION IS THE KEY
- o POST-IMPLEMENTATION REVIEW
 - o CHANGES IN NRC INTERPRETATION OF REQUIREMENTS
 - o CHANGES IN NRC REVIEWERS
 - o BACKFIT CONSIDERATIONS
- o PRE-IMPLEMENTATION REVIEW
 - o ESTABLISHES ACCEPTABLE SOLUTION
 - o MINIMIZES BACKFIT CONCERNS
 - o TIMELY
- o UTILITY MODIFICATION PROCESS IS EXTENSIVE
 - o DESIGN
 - o REVIEW
 - o SCHEDULING
 - o RESOURCE REQUIREMENTS
 - o OUTAGE PLANNING
 - o POST-IMPLEMENTATION TESTING
- o INTERACTION w/NRC PROJECT MANAGERS

RCS VENTS

TMI ACTION PLAN II,B.1

- o ORIGINAL DESIGN DESCRIBED DURING McGUIRE LICENSING PROCESS
- o NRC REVIEWED DESIGN AND OPERATING PROCEDURES DURING LICENSING PROCESS (COMPLETE 02/83)
- o GL 83-37 DATED 11/01/83 PROVIDED MODEL TECHNICAL SPECIFICATIONS
- o VERIFICATION OF FLOW REQUIRED BY MODEL TECHNICAL SPECIFICATIONS
- o TECHNICAL REVIEWER QUESTIONS PIPING DESIGN, FLOW LOSS, PRESSURE DROPS
- o DUKE DEVELOPED METHOD TO VERIFY FLOW w/o HARDWARE CHANGE
- o LICENSE AMENDMENT ISSUED OCTOBER 1987

POST-ACCIDENT SAMPLING SYSTEM

TMI ACTION ITEM II.B.3

- o DUKE DESIGNED THE SYSTEM TO PROVIDE THE ABILITY TO OBTAIN REACTOR COOLANT SAMPLES IN THE EVENT OF A DEGRADED CORE ACCIDENT
- o NOT INTENDED TO BE ABLE TO RELIABLY DEMONSTRATE ACCURATE SAMPLE RESULTS UNDER NORMAL PLANT OPERATING CONDITIONS
- o ORIGINAL DESIGN DESCRIBED DURING MCGUIRE LICENSING PROCESS
- o NRC DETERMINED ACCEPTABLE APRIL 1981
- o POST-IMPLEMENTATION INSPECTION - APRIL 1984
- o REGION DECLARED SYSTEM NOT OPERABLE -
 - o NOT CAPABLE OF PERFORMING FUNCTION
 - o LACK OF OPERATIONAL TEST DATA
- o DUKE MODIFIED SYSTEM DESIGN TO ALLOW VERIFICATION OF OPERATION WITH NORMAL REACTOR COOLANT SAMPLES

SAFETY PARAMETER DISPLAY SYSTEM

MAY, 1980 - NUREG-0660 - IDENTIFIED NEED FOR SPDS

JULY, 1980 - NUREG-0696 - FUNCTIONAL CRITERIA FOR SPDS

NOVEMBER, 1980 - NUREG-0737 - SPECIFIED SPDS

EARLY 1981 - MNS-1 OL

SEPTEMBER, 1981 - NUREG-0835 - SPECIFIED ACCEPTANCE CRITERIA KEYED
TO NUREG-0696

DECEMBER, 1982 - SUPPLEMENT 1 TO NUREG-0737 - EXPANDED CRITERIA FOR
SPDS

EARLY 1983 - MNS-2 OL

MARCH 28 AND 29, 1984 - DUKE SUBMITTED THE DESCRIPTION OF THE
CATAWBA AND MCGUIRE SPDS

JULY 1984 - CNS-1 OL

NOVEMBER, 1984 - SPDS IMPLEMENTED ON BOTH MCGUIRE UNITS AS REQUIRED
BY A JUNE 15, 1984 CONFIRMATORY ORDER

DECEMBER 18, 1984 - RAI ON CATAWBA SPDS PARAMETER SELECTION

JANUARY 23, 1985 - RESPONSE TO DECEMBER 18, 1985 RAI SUBMITTED

APRIL 1, 1985 - SPDS IMPLEMENTED ON CATAWBA UNIT 1 PER NPF-35

MAY 14 AND 15, 1985 - ONSITE SPDS AUDIT BY NRC

SEPTEMBER 10 AND OCTOBER 31, 1985 - RESULTS OF AUDIT TRANSMITTED FOR
CATAWBA UNIT 2

NOVEMBER 7, 1985 - RESULTS OF AUDIT TRANSMITTED FOR MCGUIRE

NOVEMBER 27, 1985 - RESPONSE TO AUDIT RESULTS SUBMITTED (PARAMETER SELECTION)

FEBRUARY 26, 1986 - SPDS SER RECEIVED ON MCGUIRE

FEBRUARY, 1986 - SSER - 5 ISSUED FOR CATAWBA. BOTH OF ABOVE SER'S GO BEYOND PREVIOUS NUREG & SRP CRITERIA; CNS-2 OL

MARCH 25, 1986 - BACKFIT IDENTIFIED BY DUKE

JUNE 13, 1986 - BACKFIT CLAIM REJECTED BY THE NRC

MARCH 26, 1987 - APPEAL OF BACKFIT DENIAL SUBMITTED

MAY 7, 1987 - LETTER FROM J. H. SNIEZEK ACKNOWLEDGES BACKFIT APPEAL

JUN 29 - JULY 1, 1987 - MCGUIRE SITE VISIT

SEPTEMBER 4, 1987 - NRC LETTER DENIES BACKFIT APPEAL

DUKE OWES RESPONSE TO NRC

RC PUMP TRIP

TMI ACTION PLAN II.K.3.5

- o INITIAL EFFORT PERFORMED BY WESTINGHOUSE OWNERS GROUP

- o GL 83-10d TRANSMITTED CRITERIA FOR RESOLUTION OF RC PUMP TRIP

- o DUKE RESPONDED APRIL 1983 AND MARCH 1984

- o GL 85-12 TRANSMITTED CRITERIA FOR IMPLEMENTATION OF RC PUMP TRIP

- o DUKE RESPONDED IN LETTERS DATED AUGUST 1985, JUNE 1986, NOVEMBER 1986

- o NRC COMPLETED REVIEW AUGUST 1987

RG 1.97

POST-ACCIDENT MONITORING INSTRUMENTATION

- o NUREG-0737 SUPPLEMENT 1, GL 82-33, DECEMBER 1982
- o DUKE RESPONSE MARCH 1984
- o INTERIM TER ISSUED FEBRUARY 1986
- o DUKE RESPONSE PROVIDED APRIL 1986
- o TER ISSUED JULY 1986
- o SFR ISSUED MARCH 1987
- o TWO OPEN ITEMS TO BE RESOLVED BY STAFF
- o DUKE REQUIRED TO UPGRADE WR STEAM GENERATOR LEVEL
- o DUKE IS INSTALLING ALL RG 1.97 INSTRUMENTS IN 1988 EXCEPT SG W/R WHICH WILL BE INSTALLED BY 1989

ATWS/AMSAC

- o JULY 1984, 10 CFR 50.62 ISSUED

- o GL 85-06 "QUALITY ASSURANCE GUIDANCE FOR ATWS" DATED APRIL 1985

- o WCAP-10858 "AMSAC GENERIC DESIGN PACKAGE" SUBMITTED JULY 1985

- o STAFF SER ISSUED JULY 1986

- o DUKE SPECIFIC DESIGN SUBMITTED JANUARY 1987 WITH SUPPLEMENTAL INFORMATION PROVIDED IN APRIL, JUNE, SEPTEMBER, OCTOBER 1987

- o NRC SER ISSUED NOVEMBER 1987

- o DUKE IMPLEMENTATION SCHEDULE -

McGUIRE BY 1989
CATAWBA BY 1989