RAS 5935 50-390-CIVP, et. al. Joint Exhibit 9-Rec'd 9/13/02

March 4, 1992

O. D. Kingsley, Jr., LP 6A-C

MINUTES OF MEETING NO. 137 OF THE SEQUOYAH NUCLEAR SAFETY REVIEW BOARD (NSRB), FEBRUARY 19-20, 1992

Attached for your information are the minutes of the subject meeting. Copies of the minutes are provided for you to forward to the Board of Directors.

T. J. McGrath
Chairman
Nuclear Safety Review Board
LP 3B-C

TJM:RMW
Attachments

3221V

Joint Exh. 9

CF 000104

Template= SECY-028

SECY-02

NUCLEAR REGULATORY COMMISSION

Docket No. 50-390 Official Exh. No. Joint 9

In the matter of TVA

Staff Joint IDENTIFIED

Applicant RECEIVED ✓

Intervenor REJECTED

Other WITHDRAWN

DATE 9-13-02 Witness N/A

Clerk R. DAVIS

SEQUOYAH NUCLEAR SAFETY REVIEW BOARD
MINUTES OF MEETING NO. 137
FEBRUARY 19-20, 1992

EXECUTIVE SUMMARY

Sequoyah Nuclear Safety Review Board (NSRB) meeting No. 137 was held February 19-20, 1992. All members and advisors were present for both days, except L. W. Myers, R. L. Lumpkin, Jr., and G. R. Mullee.

Discussed below are key items from the meeting:

Site Chemistry Program

At the previous NSRB meeting, deficiencies and weaknesses in the Sequoyah Nuclear Plant (SQN) Chemistry Program were discussed, which if not corrected could impact chemistry control. The Plant Manager has approved a plan to prioritize and implement corrective actions to improve the chemistry program. An Institute of Nuclear Power Operations (INPO) assist visit, which began on February 24, 1992, was also arranged. The NSRB noted that these program deficiencies, which included trending analyses, procedures, training, data management, and personnel accountabilities, indicated that corrective actions implemented in response to the pre-restart Operational Readiness Reviews may have decreased in effectiveness and that a review of these actions was warranted. The corrective action plan will be revised as necessary based upon the previous Operational Readiness Review information and the INPO assist visit.

As Low As Reasonably Achievable (ALARA)

SQN had established an objective of reducing outage radiation exposure to 250 man-rem by 1995. The NSRB discussed various radiation exposure reduction approaches to achieve that objective. The recent SQN Unit 1 outage included the effective use of lead shielding to reduce radiation exposure, and the use of additional shielding is not expected to provide further significant dose reductions. Therefore, SQN must look at other means of reducing radiation exposure. Preliminary evaluations indicate that during an outage, the number of man-hours spent performing work under radiation work permits could be reduced. Improvements in this area may produce the most significant short-term reductions in dose. Another major source of exposure reduction can come from reducing source terms. Activities to reduce source terms appear to be going slowly. Overall, there appears to be a lack of a long-term plan to reduce radiation exposures. SQN will develop a long-range dose reduction plan directed toward achieving the 250 man-rem outage goal.

MINUTES

SEQUOYAH NUCLEAR SAFETY REVIEW BOARD
MEETING NO. 137
FEBRUARY 19-20, 1992

Members:	T. J. McGrath, Chairman R. R. Calabro M. A. Cooper R. L. Lumpkin, Jr. (Absent) W. C. McArthur G. R. Mullee (Absent) L. W. Myers (Absent) P. G. Trudel J. L. Wilson
Advisors:	W. R. Cobean, Jr. T. L. Gerber J. N. Grace T. A. Peterson G. Toto
Technical Administrator:	J. M. Pleva
Also in Attendance:	D. A. Nauman (February 20 only) (Senior Vice President, Nuclear Power) M. O. Medford (February 20 only) (Vice President, Nuclear Assurance, Licensing & Fuels) R. D. McWhorter (February 20 only) (Nuclear Regulatory Commission Resident Inspector) S. M. Shaeffer (February 20 only) (Nuclear Regulatory Commission Resident Inspector) P. D. Krippner (February 20 only) (American Nuclear Insurers) R. D. Smith (Nuclear Safety Review Board Support) C. E. Kent (February 20 only) (Sequoyah Manager, Radiological Control) T. A. Flippo (for R. L. Lumpkin) (Acting Site Quality Assurance Manager) R. F. Driscoll (February 20 only) (Manager, Corporate Quality Assurance)
Attachment to the Minutes:	A - Action Items B-F - Subcommittee Reports

CF 000106

Minutes of Nuclear Safety Review Board (NSRB) meeting No. 136 were approved. All members and advisors were present for both days, except R. L. Lumpkin, Jr., G. R. Mullee, and L. W. Myers. D. A. Nauman, Senior Vice President, Nuclear Power, addressed the NSRB on February 20, 1992.

The following topics of interest were discussed.

Site Chemistry Program

At the previous NSRB meeting, deficiencies and weaknesses in the Sequoyah Nuclear Plant (SQN) Chemistry Program were discussed, which if not corrected could impact chemistry control. Both Corporate and Site Chemistry have agreed with this assessment. The Plant Manager has approved a plan to prioritize and implement corrective actions to improve the chemistry program. An Institute of Nuclear Power Operations (INPO) assist visit, which began on February 24, 1992, was also arranged. The NSRB noted that these program deficiencies, which included trending analyses, procedures, training, data management, and personnel accountabilities, indicated that corrective actions implemented in response to the pre-restart Operational Readiness Reviews may have decreased in effectiveness and that a review of these actions was warranted. The corrective action plan will be revised as necessary based upon the previous Operational Readiness Review information and the INPO assist visit. Action item A136-1 remains open.

As Low As Reasonably Achievable (ALARA)

SQN had established an objective of reducing outage radiation exposure to 250 man-rem by 1995. The NSRB discussed various radiation exposure reduction approaches to achieve that objective. The recent SQN Unit 1 outage included the effective use of lead shielding to reduce radiation exposure, and the use of additional shielding is not expected to provide further significant dose reductions. Therefore, SQN must look at other means of reducing radiation exposure. Preliminary evaluations indicate that during an outage, the number of man-hours spent performing work under radiation work permits could be reduced. Improvements in this area may produce the most significant short-term reductions in dose. The site will evaluate work activities in radiologically controlled areas to ensure optimization of worker efficiency (A137-1). Another major source of exposure reduction can come from reducing source terms. Activities to reduce source terms appear to be going slowly. Overall, there appears to be a lack of a long-term plan to reduce radiation exposures. SQN will develop a long-range dose reduction plan directed toward achieving the 250 man-rem outage goal (A137-2).

At the November meeting, it was agreed the site would evaluate the SQN and Westinghouse Radiological Control/ALARA programs to ensure that radiation exposure tasks were effectively managed. The Site Project Engineer evaluated the design change process to ensure that radiological control/ALARA considerations were addressed (S10 910226 800). Further evaluation of the process will be reported on by the Site Vice President at the next meeting. Action item A136-3 remains open.

CF 000107

Discussion with Senior Vice President, Nuclear Power

The Senior Vice President, Nuclear Power, discussed several areas of interest and requested NSRB member insight and experience on each item. Specifically, he suggested that NSRB consider examining the safety evaluation process required by the Code of Federal Regulations to ensure the system is reasonably streamlined while addressing all aspects of safety. In addition, best practices from other utilities' safety evaluation programs should be considered as part of the assessment. He described a problem dealing with individual signoffs and the associated accountability with that signature. The Chairman of the NSRB agreed to follow up on these concerns.

Nuclear Experience Review (NER) Effectiveness

At the November meeting, the NSRB found that a Browns Ferry Nuclear Plant (BFN) incident investigation had not been properly dispositioned during the generic review process. Corporate NER evaluated this item as part of the scheduled NER effectiveness review of the SQN and the BFN Operating Experience (OE) program. The SQN program meets INPO and NRC requirements. However, two areas were found where improvement was needed to ensure program quality and effectiveness. Improvement was needed in the distribution of TVA "information only" OE items to plant personnel and in the screening of incident investigations for generic applicability. Corrective actions are being implemented and Corporate NER will review the effectiveness of implementation. This action item (A136-7) was closed.

Maintenance Rule 10 CFR 50.65

The NSRB was briefed on the NRC requirements for monitoring the effectiveness of maintenance. TVA maintains an active member on the NUMARC AD HOC Advisory Committee for the development of Maintenance Rule Implementation Guidelines. Once developed, these guidelines will be used to establish performance goals, maintenance effectiveness criteria, and monitoring mechanisms at all sites.

Corrective Action Backlog

At the November meeting, the Site Vice President stated that a task force had been formed to improve the implementation of the corrective action program. At this meeting, he reported on task force progress and the actions taken as a result of the NSRB special review of the SQN corrective action program and other reviews. Site management was now devoting more attention and personal time to late items. As a result, there were fewer late items, and personnel assigned the lead for corrective actions were taking more responsibility to assure timeliness. The Site Vice President requested this item remain open to further evaluate the effectiveness of corrective actions. He will advise the NSRB on the continuing progress on this action item at the next meeting. This action item (A136-5) remains open.

CF 000108

Improved Communications During Fuel Inspections

At the November meeting, the NSRB identified the need to improve overall communication of fuel inspection/performance results. A number of corrective actions have been taken to improve communications. For example, fuel assessment reports are distributed to key site management personnel, and Radiological Control has been assigned to ensure contingency planning for leaking fuel is included in all future outages. This action item (A136-6) was closed.

Steam Generator Shot-Peening Equipment

At the November meeting, the NSRB found that poor design of the Westinghouse supplied steam generator shot-peening equipment from a radiological standpoint resulted in appreciable unnecessary personnel radiation exposure. SQN has reviewed and approved the Westinghouse plan to improve radiological control performance. In addition, TVA and the NSRB Radiological Control and Chemistry advisor attended a progress meeting with Westinghouse to review progress on modifications to the shot-peening equipment. This item is being closely monitored by Corporate and Site management. This action item (A136-2) was closed.

Review of Past Engineering Technical Specification Submittals

In the August NSRB meeting, NSRB identified technical errors in technical specification submittals by Site Engineering. A review of past technical specification submittals and the engineering review process was performed. The review of Technical Specification changes 91-03 and 90-01 identified that there was insufficient experience within TVA to challenge the contractor's calculations. In addition, there was insufficient interface review with plant operations. Corrective actions have been taken including: (1) modifying the current review process to require an independent, qualified review prior to submittal to Site Licensing and (2) establishing standard review milestones in the preparation process to ensure reviews have sufficient cycle time. This action item (A133-4) was closed.

Subcommittee Activity Summary

Quality Assurance and Safety Oversight (QASO) Subcommittee

The subcommittee reviewed progress in the Human Performance Enhancement System area. Investigations were thorough; however, part-time participation continued to be a problem. Root cause analysis appeared to be improving but may not always be as thorough as it should. The subcommittee noted that some management deficiencies identified as contributing factors should be recognized as root causes. However, management has initiated some potentially effective programs to motivate and instruct managers on addressing the root causes of the long-standing culture problems at SQN.

CF 000109

A review of the Incident Investigation (II) Program identified that feedback is provided to event managers. Trend reports indicate that the timely issuance of II reports was an area that needed more attention. The need to provide better quality reports to the Plant Manager for review and approval was stressed in trend reports and feedback sessions. Improvement has been noted in the area of timely completion of corrective actions.

Discussions with the Site Quality Assurance (QA) Manager revealed that several current initiatives were being undertaken by QA such as: (1) An audit oversight board was established that is comprised of BFN, SQN, and Corporate QA Audit managers and the QA Programs manager. This board ensures consistency by evaluating audit results prior to being released. (2) Assessments of organizations using a Virginia Electric Power Company and Commonwealth Edison Company (i.e., annunciator window) approach have been accepted as positive and useful to line management as well as Site Engineering.

QA management has informed its staff of an expectation to work closely with other organizations by meeting with them face-to-face rather than sending letters.

Operations and Maintenance (O&M) Subcommittee

The subcommittee met with the Plant Manager to obtain his expectations and concerns for the upcoming Unit 2 outage and lessons learned from the recently completed Unit 1 outage. Lessons learned over the past months are being incorporated into programs and practices to improve technical and financial performance.

Observations in the main control room noted good use of the chain of command and gave the impression of a professional operating team. However, the subcommittee questioned whether there was sufficient direct supervision of the Assistant Unit Operators (AUOs) by Assistant Shift Operations Supervisors (ASOSs). The Plant Manager is taking action to qualify additional personnel as ASOSs, which will provide enhanced supervision of AUOs.

The subcommittee observed Maintenance, Operations and Quality Control personnel conducting three different surveillance instructions on a diesel generator. The subcommittee noted a professional attitude and good attention to detail on a nuclear safety-related maintenance activity.

The subcommittee evaluated the measurement of reactor vessel flow. The measurement of reactor vessel flow was in question because it was dependent upon an accurate measurement of the reactor coolant hot leg temperature. The measurement was uncertain due to thermal streaming within the reactor coolant piping. Because of this uncertainty, a method of determining reactor vessel flow using differential pressure across loop elbows was being implemented. This method was repeatable and consistent. A further review of the impact of the temperature streaming and upper plenum anomaly will be performed by the subcommittee at the next meeting.

The subcommittee was briefed on the fire protection improvement plan and progress made in the last six months. Several improvement initiatives were identified. The subcommittee will review Phase 1 of the TVA fire protection plan submitted to NRC (S10 920207 800) at the next meeting. This action item (A128-2) remains open.

Radiological Control and Chemistry (RAD/CHEM) Subcommittee

Radiological Control (RADCON) management agreed that requisite self-criticism and the timely reporting of deficiencies via the Radiological Awareness Report process have not been adequately communicated within the RADCON organization and requires additional work. RADCON has proposed action in response to A133-1 to correct this problem. This action item (A133-1) remains open to assess the effectiveness of these actions.

About two years ago, Modifications initiated a 4-hour ALARA training program for their first line supervisors and planners. The program has since been dropped. SQN will determine whether this is adequately covered in contractor (Bechtel) training and evaluate reinstituting a program for ALARA training in the planning and executing of modifications work in radiological areas (A137-3).

At the last meeting, it was identified that training on the post-accident sampling system did not recognize the time or radiation exposure constraints that exist when collecting and analyzing post-accident samples. A plan was being developed to verify the capability of each lab shift to obtain and analyze NUREG 0737 post-accident samples in under three hours. The subcommittee will review the plan. This action item (A132-6) will remain open until a plan has been finalized to ensure compliance with the 3-hour post-accident sampling requirement.

Progress on open item A133-9 (the impacts from unmonitored radiation release paths) was not evaluated during this meeting. The site response (S52 911112 062) addressed the concern, and the subcommittee will follow up on actions at the next meeting. This action item (A133-9) remains open.

A concern from a previous NSRB meeting was that the Radiological Assessment Review Committee (RARC) may not be necessary as currently configured. A plan was submitted to revise the procedure and technical specification so that the RARC functions as a subcommittee to the Plant Operations Review Committee. This action item (A133-2) was closed.

Engineering (ENG) Subcommittee

Corporate Engineering developed, with site input and concurrence, a preliminary set of Nuclear Engineering (NE) performance indicators. However, the subcommittee questioned the efforts being made by NE in using or improving the quality of the performance indicator information issued by QA. QA and NE will report their progress in this area at the next meeting. This action item (A133-3) remains open.

Environmental Qualification (EQ) Qualification Deficiency Report backlog has been addressed as part of the bigger issue of reassessing and reducing the backlog of all corrective actions. Resolution of EQ related issues was being accomplished in a responsible manner consistent with procedural requirements. This related NSRB action item (A136-4) was closed.

Pressurizer surge line thermal stratification fatigue concerns identified at other utilities will be eliminated at SQN with shim removal and support modification. In the interim, a justification for continued operation was prepared based on limiting the number of heatup and cooldown cycles.

Safety Assessment/Safety Evaluation (SA/SE) Subcommittee

The subcommittee found no unreviewed safety questions from the SA/SEs reviewed by the subcommittee. The subcommittee identified several minor administrative and technical comments that will be discussed with the preparers and line managers. The subcommittee will follow up on these comments at the next meeting.

A summary of recent QA monitorings, audits and an assessment of the safety evaluation process was reviewed. The subcommittee concluded that QA's oversight of the safety evaluation program remains adequate. Collegial discussion raised a question that safety assessments inappropriately classified as not requiring a safety evaluation could exist in certain areas (i.e., Operations and Maintenance procedures). The subcommittee recommended additional QA overview of safety assessments. The Site QA manager agreed to evaluate this area and report the results at the next SA/SE subcommittee meeting.

Technical Specification Changes

No. 88-03

This change was presented to the NSRB for information. The initial change was submitted to NRC in 1988 as a result of the implementation of the Eagle 21 Reactor Protection System and the new reactor coolant system pressure temperature limits. The NRC subsequently issued Generic Letter 90-06. As part of the approval process, NRC has requested that TVA revise a portion of the change, surveillance requirement 4.4.11.1, regarding power-operated relief valve operability, to wording similar to that contained in the Generic Letter. SQN has made the requested change.

No. 92-01

Change No. 92-01 to increase the spent fuel pool storage capacity was reviewed by the NSRB. This consisted of eight individual technical specification changes required to support the spent fuel pool modification. Changes were related to design capacity, boron concentration surveillances, and movement of heavy loads. Before installation of the new racks, methods to control the movement of heavy loads over the cask loading area would need to be developed (A137-4).

The NSRB approved the change subject to the Chairman's final approval on one unresolved item. The item was the structural effects on rack modules from narrow frequency seismic inputs and the pressure loading on pool walls from in-phase motion of multiple rack modules. Resolution of this item is being coordinated by Nuclear Fuel.

No. 92-02

This change was presented to the NSRB for information and review. An NSRB meeting for approval will be conducted in the near future. The change revises the allowable value for overtemperature, overpower, and reactor coolant system loop differential temperatures. These changes were previously discussed with NRC and were the result of temperature instrumentation calibration inaccuracies.

ACTION ITEMS CLOSED

The following action items were closed:

A133-2 - Actions are planned to make the Radiological Assessment Review Committee function as a subcommittee to the Plant Operations Review Committee (L42 920203 800).

A133-4 - A review of past Problematic Technical Specification submittals was performed by Site Engineering. The root cause was determined to be insufficient experience in TVA. Site Engineering has implemented corrective actions (S10 920226 800).

A136-2 - An extensive ALARA review was performed with Westinghouse by the site RADCON manager and the NSRB RAD/CHEM advisor. Many improvement initiatives are being implemented as a result of this review.

A136-4 - The engineering subcommittee determined that the resolution of EQ related issues was being accomplished in an expeditious manner consistent with procedural requirements (S10 920226 800).

A136-6 - Better communications and increased dissemination of information have been implemented in the fuel integrity area and for outage preparation (L42 920203 800).

A136-7 - An effectiveness review of the SQN operating experience program was performed by Corporate NER. Generic weaknesses were identified and an action plan was being implemented to address identified problems (L33 920210 011).

Next NSRB Meeting

The next NSRB meeting is scheduled for May 21-22, 1992.

CF 000113

Chairman

SEQUOYAH NUCLEAR SAFETY REVIEW BOARD (NSRB)

ACTION ITEMS LIST

Action		Responder	Due
A137-1 -	Evaluate work activities in radiologically controlled areas to ensure optimization of worker efficiency.	J. L. Wilson	05-06-92
A137-2 -	Develop and implement a long-term dose reduction program.	J. L. Wilson	05-06-92
A137-3 -	Evaluate As Low As Reasonably Achievable training in the planning and executing of modifications work in radiological areas including contractor training (e.g., Bechtel).	J. L. Wilson R. R. Rausch	05-06-92
A137-4 -	Before installation of new fuel racks, develop methods to control movement of heavy loads over the cask loading area.	B. R. York	05-06-92
A136-1 -	Develop and implement a Chemistry Improvement Program.	R. J. Beecken	05-06-92
A136-3 -	Assess the Sequoyah and Westinghouse Radiological Control/ALARA programs to ensure radiation exposure tasks are effectively managed.	J. L. Wilson	05-06-92
A136-5 -	Report on corrective action backlog task force results.	J. L. Wilson	05-21-92
A133-1 -	Evaluate the threshold for initiating radiological deficiency reports and related incident investigations.	RAD/CHEM Subcommittee	05-21-92
A133-3 -	Report on the quality and use of Nuclear Engineering performance indicators issued by Quality Assurance.	J. E. Allen J. P. Maciejewski	05-06-92
A133-7 -	Investigate the bypassed and inoperable status indications.	P. G. Trudel	05-06-92
A133-9 -	Conduct a formal review to assess impacts from unmonitored radiation release paths.	RAD/CHEM Subcommittee	05-21-92
A132-6 -	Report on improvements in post-accident sampling training.	R. J. Beecken	05-06-92
A128-2 -	Inform the Nuclear Safety Review Board of progress in resolving fire protection program problems.	J. L. Wilson	05-21-92

CF 000114

SEQUOYAH NUCLEAR SAFETY REVIEW BOARD (NSRB)
QUALITY ASSURANCE AND SAFETY OVERSIGHT (QASO)
SUBCOMMITTEE REPORT

February 18-20, 1992

J. N. Grace
J. M. Pleva
P. G. Trudel

I. Human Performance Enhancement System (HPES) (Contact: S. W. Piercy and others)

The subcommittee has been following progress in the application of HPES. Training classes are ongoing and will soon include site management. Investigations are very thorough; however, part-time participation continues to be a problem. Based on reports we have read, root cause analysis appears to be improving but may not always be as thorough as it should. As an example, the subcommittee inquired about the main steam isolation valve jumper incident. As reported in the Licensee Event Report (LER), electricians were given the task that were inexperienced with the Sequoyah Nuclear Plant (SQN) work process. There were weaknesses in controls and work processes; the work order did not provide detailed information for jumper removal; and the maintenance planner and general foreman did not do their job adequately. In this case, as in many others reported in LERs and incident reports, root cause appears to be attributed to personnel error alone (i.e., craftsmen failure to follow procedure which is followed by disciplinary action). Many management deficiencies are listed as "contributing factors" rather than root causes.

Assessment

Workers who fail to follow procedures must be held accountable despite all the existing handicaps. However, the subcommittee has long believed that the so-called "contributing factors," most of which are management deficiencies, should be recognized and included as root causes. These causes must be aggressively pursued with appropriate corrective actions and followup. In addition, the old "culture" problem with workers and their supervisors still exists and must be addressed and corrected, or the errors will continue to occur as in the past. After they receive HPES training, management should be expected to follow the HPES procedure, as they require workers to follow procedures. Specific performance standards must be continually stressed at all levels and monitored to ensure effective implementation. Accountability for adherence to these performance standards must be enforced at each level of supervision and management. Consideration should be given to requesting an assistance visit from INPO to evaluate implementation of HPES. In addition, management should receive an overview of the HPES methodology to assist in more accurately identifying all root causes.

In a later discussion with R. J. Beecken, a program was described addressing some of these problems which, if well-implemented, should eventually bring about improvement. The subcommittee must continue to follow progress in this important area.

II. Independent Safety Engineering (ISE) (Contact: S. W. Piercy)

The subcommittee was briefed on the ISE quarterly summary of activities at SQN (L86 920214 801). ISE continues to take an active role in assessing important safety activities at the site. These include 20 surveillances and 3 detailed reviews in the last quarter. These activities have resulted in many improvements being made by site organizations.

Assessment

ISE appears to be performing its function well. The subcommittee will continue to maintain cognizance on ISE activities at future NSRB meetings.

III. Status of Incident Investigation (II) Program (Contacts: J. H. Holland and S. W. Piercy)

Feedback is provided to event managers through: (1) distribution of the event report assessment by licensing, (2) regularly scheduled event manager feedback sessions on lessons learned, and (3) distribution of the II monthly trend report, which identifies an organization with a high number of events.

Trend results have identified that the timely issuance of II reports is an area that needs more attention. The need to provide better quality reports to the Plant Manager for review and approval is stressed in trend reports and feedback sessions. Improvement has been noted in the area of timely completion of corrective actions.

Performance related problems still occur. However, systematic classification of IIs into four specific performance areas and the Site Vice President's involvement should reduce the problems. A new category for previous corrective action being ineffective has been added to the classification criteria.

Assessment

The II manager has developed a good feedback process to II preparers, such that, the quality of IIs continues to improve. An area for further improvement would be to develop and use an overall performance indicator such as percent recurrence. The subcommittee will monitor II trend reports and remain cognizant of feedback sessions at future meetings.

IV. Nuclear Experience Review (NER) Effectiveness Review (A136-7) (Contacts: M. J. Fecht and J. D. Smith)

NSRB had been concerned with the effectiveness of the NER program based on a SQN Finding Investigation Report. A similar event had previously been investigated at Browns Ferry Nuclear Plant (BFN) using the II process. The NSRB had concluded that the BFN II was not properly dispositioned through the NER process. As part of the scheduled NER effectiveness review, Corporate NER and an independent consultant performed a sample of IIs to see if they were dispositioned correctly. Six of twenty were not. As a result, the following corrective actions are being taken by NER.

- Six items are being resubmitted for action.
- Do a relook at all 1991 IIs for rescreening.
- Screen categories 1, 2, and 3 IIs instead of categories 1 and 2 only.
- Reinstitute use of significance codes.

Assessment

The committee is satisfied that appropriate corrective actions are being taken and action item A136-7 should be closed. The committee will relook at the program after August, at which time the above corrective actions plus those from a recent self-assessment are to be completed.

V. Discussion with Acting Site Quality Assurance (QA) Manager (Contact: T. A. Flippo)

The committee was informed that the current QA manager has taken another job in the organization and T. A. Flippo is the Acting QA Manager. He described several current initiatives being undertaken by QA at the direction of J. P. Maciejewski.

- Audit oversight board

  The board is comprised of BFN, SQN, and Corporate QA Audit managers and the QA Program Manager. The board reviews audit results prior to their being released. The object is to bring consistency and convey the right message.

- Inspector of the day

  An inspector of the day is set up to look at routine areas on a daily basis that might not ordinarily be looked at because of other pressing activities. Different people rotate at this duty so fresh eyes do the looking.

- Quarterly Assessments

  Assessments of organizations using the annunciator window approach as used at Virginia Electric Power Company and Commonwealth Edison Company helps both the organization and QA to focus on weaknesses. It was noted that this was being accepted as a positive program useful to line management including Site Engineering.

It was reported that approximately 200 monitoring activities were undertaken during the last outage. T. A. Flippo will give a sample of these to the committee for review.

In response to a concern from NSRB about passing paper on corrective action reports versus solving problems, QA management has given its people the management expectation to work more closely with other organizations, meeting with them face-to-face rather than sending letters. When problems arise, they escalate them quickly rather than letting them fester.

CF 000117

Assessment

The committee had no special concerns in this area. Discussions with the Site QA manager will continue as a regular subcommittee agenda item.

VI. Communications/Accountability (Contact: R. J. Beecken)

The subcommittee met with R. J. Beecken on a variety of topics ranging from communications strategy to the management improvement action plan.

An overview committee on communications strategy, also called the effectiveness committee, has had several meetings and has initiated some worthwhile actions. However, the activity has dropped off due to the loss of several key members and the impact of the U1C5 outage. Mr. Beecken plans to restart the committee before the next outage.

A monthly management meeting is held at the training center which covers the previous month's activities and the upcoming agenda, focusing on big-picture items. This meeting is well attended and has been very effective in facilitating communications vertically and horizontally. A QASO member should attend one of these meetings in the near future.

The subcommittee asked what management is doing to address personnel errors and their root causes, usually called "contributing factors." The subcommittee was pleased to learn of several initiatives that have been undertaken. The SQN improvement action plan includes more comprehensive management appraisals and many training programs. For example, management action responsibility checklist training instructs managers as to how to deal with people problems (culture) including responsibility, accountability, counseling, discipline, record keeping, etc., which have not been adequately addressed in the past.

Assessment

It appears that management has initiated some potentially effective programs to motivate and instruct managers and supervisors on addressing the root causes of the long-standing, deep-rooted culture problem at SQN. The proof of their success should eventually be evident in performance.

The subcommittee will continue to monitor this area.

CF 000118

SEQUOYAH NUCLEAR SAFETY REVIEW BOARD (NSRB)
OPERATIONS AND MAINTENANCE (O&M)
SUBCOMMITTEE REPORT

February 18-20, 1992

W. R. Cobean, Jr.
T. A. Flippo
G. Toto

I. Interview with Plant Manager and Lessons Learned from U1C5 Outage (Contact: R. J. Beecken)

The subcommittee met with the Plant Manager to obtain a measure of his expectations and concerns for the upcoming Unit 2 outage and several incidents that had occurred. The committee specifically was interested in any issues he may have that would have an adverse impact on reactor safety in the shutdown or in the operating unit.

The committee discussed a number of incidents occurring over the past 5-6 months where personnel performance and the contents of several inspection and assessment reports were less than adequate.

The Plant Manager indicated that there were sufficient resources to do the work planned and operate safely without compromise. However, he pointed out that the outage work schedule is completely filled. Any expanded scope would have a schedule and cost impact. He pointed out that the work planned would fulfill requirements. No upgrades or work that could be postponed is being performed. He said the work list and scope had been scrubbed to eliminate all but necessary work. He also pointed out several actions to be taken to improve performance such as establishing a weekly management outage meeting with the Site Vice President, Plant Manager, key staff, Westinghouse, and the Bechtel representative. The specific topics to be reviewed are:

- Schedule Performance
- ALARA Performance
- Budget Performance
- Resource Performance
- Quality Issues
- Regulatory Issues
- Project Management

To improve the performance of maintenance and modifications personnel, a formal training and orientation program will be given. Among the topics to be covered is "verification and the meaning of your signature" and work documents.

Assessment

The post outage critiques and reports are candid and had reasonable corrective actions. The committee noted that lessons learned over the past months are being translated into programs and practices aimed at improving technical and financial practices and performance.

CF 000119

The subcommittee endorsed and encouraged the Site Vice President and Plant Manager to document and quickly identify scope expansion with funding needs to avoid dislocations and surprises.

II. Observation of Operations in the Main Control Room (Contact: H. A. Tirey)

A review of the conduct of operations and the use of the chain of command in the main control room was conducted by two members of the subcommittee.

In general, the impression was given of a professional team operation. There were numerous alarms received with the operator at the controls responding quickly, announcing the alarm, receiving a response from the Assistant Shift Operations Supervisor (ASOS) and discussing the cause or the corrective action to be taken. There were a series of preventive maintenance tests being performed and most of the alarms were expected from that source.

There is an ASOS assigned to each unit in the main control room and one floater was assigned to Unit 1 main feed pump repair. There was no one to supervise the Assistant Unit Operators (AUOs), who seem to need more supervision than they are getting. Some of the people in the control room didn't seem to be aware that they had elevated tail pipe temperatures and the degree (gallons per hour) of leakage they were experiencing via the pressurized code safeties. They further did not know the amount of waste water per day they were generating (they knew the volume of radwaste but not of total waste water). Institute of Nuclear Power Operations says the Sequoyah Nuclear Plant (SQN) generates twice the industry average of waste water. This doesn't seem like a concern of the watch standers.

Assessment

The subcommittee found no issues that would indicate a compromise of safety for production or cost. There is room for the improvement of standards of the SQN watch standers that can most efficiently be impacted "by management walking around" by the Plant Manager, Operations Manager, and Operations Superintendent.

III. Review a Safety-Related Maintenance Work Activity (Main Contact: L. S. Bryant)

Two members of the subcommittee visited the diesel while 15 maintenance, operations, and Quality Control personnel conducted three different surveillance instructions (SIs) on the diesel simultaneously. One of the mechanical maintenance persons was identified as the "work coordinator" and was acting the role of foreman even though there were mechanical maintenance and instrument maintenance workers involved. The "work coordinator" announced from time to time when it was necessary to protect the hearing of the persons in the room. People were using the step-by-step procedure for each of the SIs as they were performing the tests called for.

CF 000120

Assessment

This was a professional display of careful nuclear safety-related maintenance.

IV. T_{Hot} Streaming and Reactor Vessel Flow (Contacts: J. R. Willis, R. M. Mooney, and J. E. Staub)

The subcommittee was interested in the progress being made to determine reactor vessel flow since the measurement of T_{Hot} is uncertain due to thermal streaming.

Calorimetric and heat balances were recently completed. It was said that the heat balance accounted for all but 1.6 MWe. It was noted that steam pressure is slightly lower than previously observed for similar plant conditions.

This may indicate that T_{avg} (actual) is less than T_{avg} (indicated).

Because of the uncertainty in measuring T_{Hot}, a method of determining reactor vessel flow using dP across loop elbows is being implemented. It was said that dP is repeatable and consistent.

The phenomena of upper plenum anomaly was discussed. This effect is evidenced by T_{Hot} increasing and decreasing about 5°F in about 45 second oscillations and then shifting between loops. It was reported that other plants have shown similar excursions.

The subcommittee wanted to know if there were an analysis, limit, or operation that is impacted by our inability to measure and define a bulk T_{Hot}. None were identified.

Assessment

The committee wants to follow this issue and would like a definitive and more indepth review of impact of the T_{Hot} streaming and upper plenum anomaly at the next NSRB meeting.

V. SQN Long-Term Integrated Reliability Centered Maintenance (RCM) Program (Contacts: I. Dibiase and C. R. Favreau)

SQN has implemented a RCM program with the following objectives.

- o Reduce maintenance cost
- o Target use of maintenance resources
- o Increase equipment reliability

Approximately 19 of 84 systems have been through the RCM process. Generating a total of 181 recommendations, 11 of these are not yet assigned (10 design changes and 1 preventive maintenance action). The remaining 170 RCM action items are assigned, of which 79 are complete and 91 are not complete. Scheduled completion of the projects is March 1, 1994.

CF 000121

Examples of short-term accomplishments are as follows:

- o Control air compressor seal installation problem was resolved with procedure revision and craft training.
- o Provided an improved PM schedule for the chemical volume and control system.
- o Recommended use of predictive maintenance (vibration analysis) on auxiliary feedwater pumps and motors to determine the need for maintenance.

In addition, there is currently not a formal risk centered maintenance program. Work control process is the main system in place to reduce risk. This link should be developed when the maintenance rule is implemented.

Assessment

A plan and schedule have been developed for the RCM program. Implementation is still at an early stage, and the long-term benefits of the program cannot be measured at this time. The subcommittee will follow up on this subject in six to twelve months.

VI. Flooding of Manholes and Handholes for 1E Cables (Contact: J. H. Miller)

The subcommittee was concerned that inadequate attention was given to manholes and handholes subject to flooding.

New preventive maintenance instructions have been written to measure water level on the manholes and handholes on a monthly basis. In addition, power receptacles for the manholes and handholes containing a sump pump have been moved to the highest possible location to prevent the shorting out of the sump pumps.

Site Quality performed an effectiveness review of the issue and concluded that corrective actions have not been adequately implemented to prevent water from standing in manholes and handholes for long periods of time. This is based on the fact that manhole and handhole preventive maintenance activities are not being performed in a timely manner when water is discovered in the manholes and handholes. Site Quality is following up on the issue.

Assessment

The subcommittee will monitor Site Quality Assurance followup on this issue.

VII. Fire Protection Improvement Plan (A128-2) (Contact: T. Ryan)

The subcommittee continues to maintain interest in the resolution of fire protection issues.

The improvement plan has been in progress for approximately six months and recently completed items include:

CF 000122

- System hydraulic performance was verified for System 26.
- Training for Nuclear Engineering (NE) and general employees was revised.
- Auxiliary Building/Shield Building seal was qualified as a fire seal.
- The functional responsibilities/program was updated in NE for maintenance of the Fire Protection Program.

It was also noted that the special reports dealing with fire protection have decreased over the last six months. This is a positive sign the plan is beginning to work.

Assessment

Based on the current status of the plan and that Phase I is scheduled for completion in late April 1992, this action item (A128-2) should remain open.

CF 000123

SEQUOYAH NUCLEAR SAFETY REVIEW BOARD (NSRB)
RADIOLOGICAL CONTROL AND CHEMISTRY (RAD/CHEM)
SUBCOMMITTEE REPORT

February 18-20, 1992

W. C. McArthur
T. A. Peterson

Sequoyah Nuclear Plant (SQN) NSRB RAD/CHEM Subcommittee met on February 18-20, 1992, to review various aspects of SQN's Radiological Control (RADCON) and chemistry programs. These reviews included as low as reasonably achievable (ALARA) issues, the upcoming Unit 2 outage shot-peening, chemistry improvement program, and reactor coolant system (RCS) filtration. The following observations/recommendations are offered:

I. Radiation Protection (A133-1, A137-1, A137-2) - (Contacts: C. E. Kent, R. P. Reed, C. G. Hudson, M. F. Halter, and J. J. Johnson)

A. The subcommittee agrees with RADCON management's observations that the issue of "higher expectations" with regard to self criticism and the timely reporting of deficiencies via the Radiological Awareness Report (RAR) process has not been adequately communicated within the RADCON organization and requires additional work (A133-1). This was evidenced by: (1) the need to require the generation of an RAR when out of calibration pocket dosimeters are found in use, and (2) the failure to recognize that potential problems such as not taking air samples in the steam generator channel heads and backfit or document appropriate MPC-hr assignments once alpha airborne activity was discovered which warranted an RAR.

Assessment

RADCON has proposed action (response to A133-1) to correct this problem. The subcommittee recommends that A133-1 be accepted as written but remain open so that the subcommittee can closely monitor progress in this area until improvement is seen.

B. Site exposure and the ALARA program was reviewed with the following observations:

1. Shielding - The subcommittee considers that the current level of temporary shielding (175,000 lbs) used during outages is nearing the point where additional substantial savings in dose may not be achieved and that other alternatives to dose reduction need to be aggressively pursued.

2. Time Radiation Work Permit (RWP) Man-hours - There is some evidence to suggest that SQN is high relative to other plants with respect to RWP man-hour expenditure. In one case (V. C. Summer Nuclear Plant), SQN was approximately a factor of two higher for a recent comparable outage. This would suggest that SQN has not achieved optimum efficiency in accomplishing work in radiation areas. This may be a primary area to achieve significant improvement in SQN's ALARA performance in the short term.

CF 000124

Assessment

Consideration should be given to evalua[illegible] work activities in radiologically controlled areas (RCAs) [illegible] nsure optimization of worker efficiency (A137-1).

3. Source Team Reduction - The subcommittee [illegible] iewed the various source term reduction activities currently [illegible]derway. It appears that many are going slowly and that [illegible]real dose reduction will be realized for sometime unle[illegible] aggressive approach is taken. The subcommitt[illegible] .ers that the objective of a 250 man-rem outage is in [illegible], for 1995 unless a much more aggressive approach is ta[illegible] on this issue. There are pressurized water reactors (PWRs) [illegible]th relatively high source terms that have already done sub[illegible]tem decontamination with better than a decontami[illegible]on factor of 10 and are doing detailed planning for full syst[illegible] decontamination. SQN, with an unfavorable 3-y[illegible] average (primarily 1990) of collective dose in the indu[illegible] should implement detailed plans to support such efforts [illegible]37-2).

Assessment

Consideration should be given to recommending that deta[illegible] subsystem and full system decontamination plans be developed with specific milestones (e.g., subsystem decontamination in cycle 6 and full system decontamination in cycle 7 with appropriate intermediate milestones).

4. Solid Radwaste - SQN generated solid radioactive waste that was within the Institute of Nuclear Power Operations (INPO) best quartile limits. The yearly total for 1991 was 72.6 m^3/unit compared to the INPO 1990 best quartile 3-year average of 94 m^3/unit.

The SQN contaminated area percentage to total area is decreasing and approaching 5 percent, which is well in line with other PWRs.

Assessment

The subcommittee believes that SQN is aggressively involved in minimizing solid radwaste and contaminated areas.

II. Modifications ALARA Program (A137-3) (Contact: K. D. Flora)

Some of the ALARA initiatives which the modifications group was undertaking were discussed. About two years ago, modifications initiated a 4-hour training program for their first line supervision and planners. This program was designed to help these individuals successfully plan and execute work in radiological areas. This was considered important since the modification group had been receiving a significant portion of the outage exposure, but the program has since b[illegible]n dropped.

CF 000125

Assessment

Consideration should be given to reinstituting a program for training at least first line supervisors and planners in the planning and executing of work in radiological areas for the U2C5 outage. RADCON management was planning to perform training for U2C5. J. L. Wilson has agreed to look at this item. The subcommittee will review this area at the next meeting.

III. Shot-Peening (A136-2) (Contacts: C. E. Kent, C. G. Hudson, R. P. Reed, and J. D. Stamey)

The action being taken to address radiological deficiencies in the shot-peening equipment was discussed. In general, these actions appear adequate to reduce exposure significantly. The goal for the job is approximately 54 man-rem (Westinghouse portion is 36) which is aggressive but considered achievable.

Assessment

One action item which appeared not to have been addressed was level control on the dust cup. It was recommended that action be taken to ensure that the dust cup does not overfill. RADCON agreed to pursue this matter.

IV. Chemistry (A136-1, A132-6) (Contacts: G. E. Fiser, R. E. Richie, and W. F. Jocher)

A. Chemistry Corrective Action Plan - The subcommittee reviewed the SQN chemistry corrective action plan (dated January 17, 1992). The plan has been approved by the Plant Manager and is presently being implemented. There was a difference of opinion between SQN and Corporate Chemistry regarding the seriousness of chemistry problems at SQN. It was decided that a review of the previous findings including the Operational Readiness Review results, status of corrective actions, and the current corrective action plan and the INPO assisted visit recommendations be reviewed together and a comprehensive plan developed.

Assessment

The following steps are being taken:

1. An INPO assist visit is scheduled for week of February 24, 1992.

2. Combine current corrective action plan, results from the INPO visit and the pre-restart ORR reviews into a comprehensive corrective action plan.

3. Quarterly reviews by SQN Chemistry, Corporate Chemistry, and the Plant Manager will be held to review status of corrective actions and to identify any new issues.

The subcommittee will continue to monitor progress on the development and implementation of a chemistry improvement program. Action item A136-1 remains open.

CF 000126

B. Post-Accident Sampling - Item A132-6 has been on the agenda since May, 1991. The subcommittee recommended that this item be resolved as soon as possible. Both SQN Chemistry and Corporate Chemistry committed to addressing and resolving the issue promptly. One issue developed during discussions pointed out the potential for not satisfying the 3-hour requirement for taking and analyzing samples. A plan has been developed to verify the capability of each lab shift to draw and analyze NUREG 0737 samples in under three hours. The plan consists of scheduled demonstrations for all technicians to show compliance with 3-hour sample requirements. This item will remain open until the 3-hour post accident sampling requirement is demonstrated for all shifts.

C. Submicron Filtration - The 25 micron reactor coolant letdown filter between the demineralizers and volume control tank has been replaced on both units with a 5 micron nominal filter. The seal water injection filters on the A and B trains of both units have been replaced with 5 micron nominal filters. The seal water injection outlet filters are 25 micron nominal.

Unit 2 will be started up initially with 2 micron absolute filters. The filters on Unit 1 will be changed out at the same time. Both units will run until there are excessive dP or dose rate problems, at which time the filters will be changed out and replaced with 1 micron absolute filters. The goal is to run three months, at which time the filter size will be reduced to 0.5 micron absolute filters. This process will be repeated until all filters are 0.2 micron absolute.

V. Raw Service Water Task Force (Contact: G. L. Pitzl)

The Raw Water Corrosion Control program enhancement effort at BFN was reviewed and the overall scope and direction appears to be going in the right direction. It will be completed about May 15, 1992, at which time SQN will be evaluated.

Assessment

The subcommittee will continue to monitor progress in this area.

CF 000127

SEQUOYAH NUCLEAR SAFETY REVIEW BOARD (NSRB)
ENGINEERING (ENG)
SUBCOMMITTEE REPORT

February 18-20, 1992

R. R. Calabro
M. A. Cooper
T. L. Gerber

I. Nuclear Engineering Performance Indicators (A133-3)* (Contact: F. C. Prawlocki)

Corporate Engineering (CE) has developed with site input and concurrence a preliminary set of Nuclear Engineering (NE) performance indicators with associated indicator goals. These indicators include open corrective actions, overdue corrective actions, engineering change notices/design change notices (ECN/DCNs) open more than 60 days, unincorporated primary and secondary drawing changes, and the ratio of field change requests/field design change notices per ECN/DCNs. A December performance report has been issued and a January report is in preparation. Additional indicators will be defined and tracked over time.

Assessment

An indicator program responsive to NE needs has been initiated. Program effectiveness will depend in part on adequate resources at the site to investigate and understand trends and missed goals. At this time, there has been no attempt to utilize and/or improve NE performance/quality related information generated by Quality Assurance (QA). Consequently, NSRB action item 133-3 should remain open.

II. Resolution of Environmental Qualification/Qualification Deficiency Report (EQ QDR) Backlog (A136-4) (Contact: P. G. Trudel)

Resolution of EQ QDR backlog issues was discussed with the Sequoyah Nuclear Plant (SQN) Project Engineer and a written response to NSRB action item A136-4 was reviewed. These issues had been captured by the corrective action program and, when required, justification for continued operations written. But progress on resolution was slow and completion dates were inaccurate. As part of an extensive effort to scope, fund, and schedule backlog issues, and in response to a related employee concern issue, EQ QDR backlog issues have recently been reassessed. Additional resources are being applied and resolution of some issues rescheduled so that corrective action plans can be accomplished in a manner consistent with resources.

Assessment

Consistent with a subcommittee suggestion made last meeting, EQ QDR backlog has been addressed as part of the bigger issue of reassessing and reducing the backlog of all corrective actions. Resolution of EQ related issues is being accomplished in a responsible manner consistent with procedural requirements and fiscal policy. It is recommended that A136-4 be closed.

*J. L. Gerber and J. N. Grace (NSRB advisors) discussed this topic with F. C. Prawlocki (CE) on February 18, 1992.

CF 000128

III. Unit 1 Annunciator Upgrade Including Overview of Lit Annunciator Reduction Effort - (Contacts: S. Z. Barkofski, D. L. Lundy, J. M. Campbell, and S. S. Long)

Mr. Barkofski described the Unit 1 annunciator upgrade in terms of project initiation, approval, and implementation. The upgrade constituted a significant initiative because it was implemented within a compressed schedule as a result of a management decision to expedite implementation a cycle earlier than originally planned. Several problems occurred during implementation resulting from a combination of interface definition weaknesses, software deficiencies, and the magnitude of the project relative to the vendor's (Beta) experience. These problems resulted in real time annunciator system reliability problems for the operators and an NRC violation. There were three primary problem areas: (1) CRT lockup (resolved by jumpering the input to the CRT), (2) hardware compatibility with Foxboro triac inputs (due to leakage currents which were resolved by installation of resistors), and (3) system anomalies caused by a combination of ground installation problems and software deficiencies. Lessons learned from Unit 1 have been incorporated into the Unit 2 upgrade to be implemented during the upcoming cycle 5 refueling outage.

The factory acceptance test for the Unit 2 hardware is ongoing and is expected to be completed on February 21, 1992. Seven TVA individuals are at the factory observing the testing. No significant problems have been identified to date. Two additional activities involve a third party review of the 1.14 software (to be completed February 19, 1992) and electromagnetic interference (EMI) testing to be conducted by Beta. The EMI testing is a contract requirement but a schedule has not been established by Beta.

With regard to lit annunciators, an interdiscipline team consisting of Maintenance, Technical Support, Operations, and NE meets weekly to address status of actions being taken to eliminate lit annunciators. The number per unit hovers in the 4-10 range with fixes involving such things as work requests, permanent disablements, setpoint changes, or other design changes. The listing is very dynamic as issues are resolved and new problems are identified. Accordingly, the schedule for achieving a "black board" was not provided. The weekly meetings and management emphasis continue to focus priority to this effort.

Assessment

Problems encountered with the Unit 1 annunciator upgrade have been addressed with near-term fixes and evaluation of long-term resolutions are under way. Lessons learned during installation of the Unit 1 system are being utilized to improve the Unit 2 annunciator upgrade installation and performance. The subcommittee noted that complex modification projects involving many parties continue to be a challenge and compressed schedules may contribute to interface problems. The subcommittee will continue to track the lit annunciator reduction effort.

IV. Thermal Stratification in Piping Systems (Contacts: K. A. House and T. A. Greer)

Pressurizer surge line thermal stratification fatigue concerns (IEB 88-11) at SQN were not resolved by Westinghouse Owners Group (WOG) generic efforts. Further, the NRC would not accept leak-before-break as a basis for removing shims from a pipe whip support to improve piping flexibility and its ability to accommodate thermal loads. Consequently, a Unit 1 plant specific piping analysis was carried out to show that pipe breaks could be accommodated with the shims removed with only minor strengthening of supports. A similar analysis will be done for Unit 2 following gap measurements during the next outage. Until modifications are made, justification for continued operation (JCO) is based on not exceeding a limited number of heatup and cooldown cycles.

Funding is being pursued to investigate the potential for thermal stratification in other piping systems (IEN 91-38). Feedwater line walkdowns planned for the Unit 1 outage were not done due to high radiation caused by the steam generator shot-peening.

Assessment

Surge line thermal stratification concerns will be eliminated with shim removal and support modifications. In the interim, JCO is based on a conservative fatigue analysis.

Thermal stratification in other lines is more speculative (less likely to be a real concern). A simple screening exercise to identify potential problem areas based on experience of other plants and inspection for evidence of thermal stratification induced pipe movement is recommended to scope this concern (as opposed to a more extensive analytical or experimental effort).

V. Breaker Coordination Events (Contacts: J. M. Campbell, B. A. Kimsey, and R. J. Mages)

The subcommittee discussed their questions related to Incident Investigation (II) II-S-91-120, "Inadequate Circuit Breaker Coordination," with the NE personnel noted above. The incident involved entry into a limiting condition for operation when Technical Specification 3.8.3.3.b could not be demonstrated due to the failure of the normal feeder circuit breaker on the 2 B1-B diesel generator auxiliary board to pass Surveillance Instruction SI-275-1. All Westinghouse DS-206 circuit breakers having an LS amptector with a discriminator circuit were declared inoperable when it was determined that for low current applications, the breaker opened instantaneously on a fault rather than delayed, potentially causing lack of a coordination between board feeder breakers and downstream branch breakers.

While looking for other applications of breakers with discriminator circuits, a breaker was identified that appeared not to have been considered in a coordination study. The discrepancy had been identified in the design baseline verification program and a Significant Condition Adverse to Quality Report (SCAR) had been written. The SCAR had subsequently been closed but the basis for closure could not be located at the time the subcommittee talked with NE.

CF 000130

Assessment

The discriminator circuit related problem is discussed in detail in II-S-91-120. The engineering subcommittee would like to review the II and associated Licensee Event Report on the missed breaker coordination evaluation when available.

VI. Engineering Calculation Improvement Program, Structural (Contact: M. G. Maxwell)

The engineering subcommittee met with Mr. Maxwell to discuss the status of the engineering calculation improvement program in the Civil Engineering area. This effort began after restart and encompassed 24,000 calculations. The program is almost complete with 2000 man-hours of work remaining, mainly in the seismic qualification area. TVA has in-house all the calculations and is in the process of cataloging (~15 percent completed) the calculations. All computer programs used by the vendor for these calculations have been transferred to TVA. A training program for new design engineers is in place. QA has sampled the calculations; however, the Condition Adverse to Quality Report is still open and will not be closed until the calculations are completed. Stone and Webster is now performing over 50 percent of the work, and TVA's current program is to sample 10 percent of the analyses. All recent calculations have been adequate. SCAR dated May 1991 (SQSCA 91009) indicated that six out of ten calculations were found inadequate. These, however, were performed prior to the start of the improvement effort.)

Assessment

In the civil/structural area, the calculation improvement program is essentially complete. The work currently being performed by the vendor is well controlled. No further action by the subcommittee is planned.

VII. Engineering Calculation Improvement Program, Electrical (Contacts: J. M. Campbell, B. A. Kimsey, and L. M. Begley)

The engineering subcommittee met with John Campbell, Barry Kimsey, and Larry Begley in the Electrical and the Instrument and Control (I&C) area. The backlog of recalculations is still substantive, over five man-years of effort. A project has been set up and funding provided to work off this backlog. Corporate Engineering is in the process of revising the standard for I&C calculations and currently reviewing 50 to 70 percent of all safety-related calculations. QA feedback on calculation quality was not judged to be very useful by NE.

Assessment

The subcommittee will continue to follow this area and pursue the division of responsibilities between corporate and site electrical I&C groups.

CF 000131

SEQUOYAH NUCLEAR SAFETY REVIEW BOARD (NSRB)
SAFETY ASSESSMENT/SAFETY EVALUATION (SA/SE)
SUBCOMMITTEE REPORT

February 18-20, 1992

The subcommittee met on February 7, 1992, to complete its review of safety assessments and evaluations. Attendance at the meeting was as follows:

Members Present

Chairman, J. M. Pleva, NSRB Administrator
C. W. Burrell, Sequoyah Nuclear Plant (SQN) Engineering
V. D. McAdams, SQN Independent Safety Engineering
R. A. Jarrett, Corporate Engineering
S. R. Taylor, SQN Training
M. L. Hellums, Corporate Licensing
A. L. Varner, SQN Quality Assurance (QA)
D. M. Brown, Corporate Nuclear Fuel

Members not present

D. J. Gibbs, SQN Operations

Others Participating

K. C. Heck, BFN NSRB Administrator
D. F. Jaquith, SQN Quality Assurance
K. C. Weller, SQN Licensing

The minutes of meeting No. 26 (L42 911212 800) were approved. M. A. Skarzinski and D. M. Brown were appointed to the subcommittee by the NSRB Chairman (L42 920205 800).

The following items were discussed:

I. Recent NRC 50.59 Inspection (M. L. Hellums, K. C. Weller)

The results of the January 13-17 NRC inspection were discussed (S10 920123 800). NRC concluded that the SQN 50.59 program was satisfactory.

II. Status of TVA Position on Equipment Upgrades From Analog to Digital (R. A. Jarrett)

The status of the changeout of analog to digital instrumentation was discussed. The NRC Generic Letter on this subject is awaiting signature by the commissioners. The scope of the Generic Letter covers all safety-related applications. Modifications will require advance NRC review and approval prior to installation. Corporate Engineering is developing standards to verify and validate commercial software to address analog to digital upgrades. Corporate and Browns Ferry Nuclear Plant (BFN) Site Engineering have also met with NUMARC and EPRI concerning this issue.

Assessment

The subcommittee will continue to follow this issue.

CF 000132