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SEQUOYAH NUCLEAR SAFETY REVIEW BOARD  
MINUTES OF MEETING NO. 136  
NOVEMBER 20-21, 1991

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OFFICE OF THE SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

EXECUTIVE SUMMARY

Sequoyah Nuclear Safety Review Board (NSRB) meeting No. 136 was held November 20-21, 1991. All members and advisors were present for both days, except L. W. Myers who was present on November 20.

It was noted during the meeting that a number of site responses were incomplete, inaccurate, or did not address the specific NSRB concerns. A technical specification change submitted for NSRB concurrence was also technically deficient. Site management concurred with this assessment and agreed that future submittals would be improved to provide thorough and accurate information for NSRB consideration.

Discussed below are key items from the meeting:

Site Chemistry Program

Recent findings by Site Quality Assurance and Corporate Chemistry indicated that significant problems existed in the Sequoyah Chemistry Program which, if not promptly corrected, could impact plant chemistry control. For example, required data trend analyses were not being performed, chemicals were purchased to incorrect specifications, some training was delinquent, and several procedure preparation and use deficiencies were identified.

The Plant Manager and the Technical Programs Manager are working together to develop a corrective action plan. Corporate Chemistry personnel have been assigned to assist the site.

Radiological Controls

The NSRB found that the poor design of the Westinghouse-supplied steam generator shot-peening equipment from a radiological standpoint has resulted in appreciable unnecessary personnel radiation exposure. For example, the design did not adequately consider crud traps, source shielding, or quick changeout capability for components requiring maintenance. For instance, a dust cover, with the potential for exposure of 100 R/hour, must be changed out by hand. In addition, the Westinghouse fuel inspection equipment was more contaminated than expected, resulting in excessive radiological concerns during equipment setup, including "hot particle" problems.

The following action items resulted from this review: (1) the Westinghouse steam generator shot-peening equipment design should be reevaluated and actions taken to reduce radiation exposure and improve overall radiological design prior to the shot-peening for the Unit 2 outage and (2) the Sequoyah Nuclear Plant and Westinghouse radiological control/As Low As Reasonably Achievable programs should be assessed to identify and correct the weaknesses that led to these problems.

The Site Vice President and the Engineering Manager concur with this assessment and the associated corrective action.

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Joint Exh. 3

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SECY-02

FEDERAL REGULATORY COMMISSION

Docket No. 50-390 Official Ex. No. Joint-3

In the matter of TVA

Staff Joint IDENTIFIED

Applicant Joint RECEIVED

Intervenor \_\_\_\_\_ REJECTED \_\_\_\_\_

Other \_\_\_\_\_ WITHDRAWN \_\_\_\_\_

DATE 4/24/02 Witness \_\_\_\_\_

Clerk BHM

The minutes of Nuclear Safety Review Board (NSRB) meeting No. 133 and special meetings 134 and 135 were approved.

It was noted during the meeting that a number of site responses to NSRB concerns were inadequate. Some responses were incomplete, inaccurate, or did not address the specific NSRB concerns. A technical specification change submitted for NSRB concurrence was also technically deficient. Site management concurred with this assessment and agreed that future submittals would be improved to provide thorough and accurate information for NSRB consideration.

The following topics of interest were discussed:

#### Site Chemistry Program

Recent findings by Site Quality Assurance (QA) and Corporate Chemistry indicated that significant problems existed in the Sequoyah Nuclear Plant (SQN) Chemistry Program which, if not promptly corrected, could impact plant chemistry control. Among the deficiencies noted were: inadequate procedures, failure to follow procedures, unauthorized changes to QA records, lack of management oversight in laboratory operations, failure to perform required analyses, poor data trending, and some training was delinquent.

The Plant Manager and the Technical Programs Manager are working together to develop a corrective action plan. In addition, the Chemistry Improvement Program being considered by the Chemistry staff should be promptly and aggressively developed and implemented (A136-1).

#### Radiological Controls

The NSRB Chairman noted that TVA and Westinghouse were "Partners in Performance." However, it appeared that Westinghouse may have provided less than expected services (in regard to As Low As Reasonably Achievable (ALARA)) during the UIC5 outage. The NSRB found that the poor radiological engineering design of the Westinghouse-supplied steam generator shot-peening equipment had resulted in appreciable unnecessary personnel radiation exposure. For example, the design did not adequately consider crud traps, source shielding, or quick changeout capability for components requiring maintenance. For instance, a dust cover, with the potential for exposure of 100 R/hour, must be changed out by hand. In addition, the Westinghouse fuel inspection equipment was more contaminated than expected, resulting in excessive radiological concerns during equipment setup, including "hot particle" problems.

The following action items resulted from this review: (1) the Westinghouse steam generator shot-peening equipment design should be reevaluated and actions taken to reduce radiation exposure and improve overall radiological design prior to the shot-peening for the Unit 2 outage (A136-2) and (2) the SQN and Westinghouse radiological control/ALARA programs should be assessed to identify and correct the weaknesses that led to these problems (A136-3).

These corrective actions should include assessing the performance of Radiological Engineering, as well as the extent of early management involvement in the ALARA process.

### Corrective Action Backlog

The NSRB found that the site was taking action to reduce the previously identified backlog of corrective actions. For instance, the site has an established Tier 2 goal to achieve specific backlog reductions for actions opened before February 15, 1991, and to preclude additional backlog accumulation during fiscal year 1992. In addition, the Site Vice President had created a task force to improve the implementation of the Corrective Action Program. However, the NSRB noted that the progress on closure of outstanding environmental qualification-related items is slow, and innovative approaches to correct the problem are not being considered. Interviews indicated this situation was being attributed to a lack of funding or resource allocation. The NSRB did not agree that funding is the issue, and the Engineering Manager agreed to review this item and report his results at the next NSRB meeting (A136-4). In addition, the Site Vice President will report on the results of the task force actions at the next meeting (A136-5).

### ULC5 Fuel Inspection

The NSRB discussed the results of the fuel inspection that was conducted following off-load of the SQN ULC5 core. The fuel inspection had identified three fuel rods with open defects and several assemblies with grid damage. NSRB noted that fuel inspection results and reactor coolant chemistry conditions resulting from expected defects could have been better communicated to the affected organizations. QA inspectors were unaware of the loose parts, and Radiological Control (RADCON) management indicated they were unaware of the magnitude of the leaks and the potential for "fuel fleas." There is a need to improve overall communications of fuel inspection/performance results (specifically in outage preparation) to all affected organizations (A136-6).

### Threshold for Radiological Deficiency Reports (A133-1)

There was an NSRB concern that the threshold for identification of radiological deficiencies and investigation of incidents appear to be too high. While the NSRB review found that Site RADCON management understands the importance of high standards and thorough incident investigations, the formal site response to the NSRB was unsatisfactory. The response merely noted the existence of relevant site procedures. The Site Vice President agreed to pursue this item further.

### Post-Accident Sampling Training (A132-6)

The NSRB was concerned that training on the post-accident sampling system did not recognize the time or radiation exposure constraints that exist when collecting and analyzing samples. The NSRB reviewed the site response on this item and discussed it with the Site and Corporate Chemistry managers. It was found that Corporate Chemistry did not agree with the site response, and it remained questionable whether the sampling time requirements specified in the procedure could be met. The NSRB also pointed out that Corporate Chemistry should have been involved earlier with the site in addressing this concern. This item remains open.

Unmonitored Radiation Release Paths (A133-9)

The response from the site incorrectly indicated that no unmonitored pathways existed at SQN. However, four unmonitored pathways had been identified by Corporate Chemistry, and actions were being taken to provide monitoring and additional procedural control. (These pathways only exist if there is primary to secondary leakage.) This issue remains open pending final site management review and approval.

Review of Past Engineering Technical Specification (TS) Submittals (A133-4)

SQN Engineering had not yet taken action to address this concern. In addition, SQN Engineering, along with Site Licensing, agreed to assess the reasons that one of the technical specification changes submitted for NSRB concurrence at this meeting contained technical deficiencies. This item will remain open.

Subcommittee Activity SummaryQuality Assurance and Safety Oversight (OASO) Subcommittee

The site recently implemented a number of actions that are in line with the TVA quality theme. A new Overview Committee meets regularly on communication strategy, and a mid-level management meeting is held to review recent events and issues. These initiatives are expected to result in improved communications.

A review of usefulness of trend reports noted that a Corporate Engineering Task Force developed a new program on self-monitoring for Site Engineering which had been coordinated with Corporate QA. However, Site Engineering needs to continue to work with QA to ensure QA reports accurate trends. The subcommittee will continue to monitor progress on this item (A133-3).

The Site Quality Manager reported that he expects to make a shift to more emphasis on audits versus monitoring over the next several months and is expecting to achieve a new balance by summer 1992. The subcommittee cautioned that the new balance not lose the advantage of monitoring where more prompt results are desirable. This area will receive continuing overviews by the subcommittee as plans develop and are executed.

Operations and Maintenance (O&M) Subcommittee

During the subcommittee control room observation, several operators and one shift technical advisor (STA) were questioned on their expectation of the heat-up rate that would result due to a loss of residual heat removal flow with the coolant level in the mid-nozzle region (i.e., reduced inventory). None could give an engineering estimate of the heat-up rate or the time to boiling. However, the STA indicated that these calculations could be made, and one unit operator knew the heat-up rate for normal inventory. Immediate corrective actions to address this concern were being aggressively pursued by the Plant Manager.

The Fire Protection Improvement Program is comprehensive, but the NSRB is concerned regarding the timeliness of the plan (1994 scheduled completion date). It was noted that the NRC had a similar concern. In addition, the long-term ownership and management of the Fire Protection Program had not been identified. The site will report on this open action item at the next NSRB meeting (A128-2).

During the observation of a maintenance activity on a motor operated valve (MOV), poor ALARA practices were observed. The work was being performed about eight feet above grade in a C-zone. Also in the space, there was a pipe about knee high used to discharge spent radioactive resin. The survey map indicated the pipe had radiation levels of about five times background, but was not posted as a hot spot or marked in any way. A step-off pad for the valve work was located where the pipe makes a 90-degree turn. The workers indicated "the step-off pad was always" in a low radiation area and they were using the pad as a waiting/sitting area. However, the area experienced a shine from two directions from the resin discharge pipe. The Corporate Radiological Controls Manager is bringing this concern to the attention of Site RADCON for action.

This observation also noted that while the procedures were being used to control the work, the discipline of making procedure entries and logging pertinent information was not always being made. This limited observation was brought to the attention of the Plant Manager.

#### Radiation Control and Chemistry (RAD/CEEM) Subcommittee

Corporate Chemistry and Corporate RADCON will continue to evaluate elimination of the Radiological Assessment Review Committee (RARC) at both SQN and Browns Ferry Nuclear Plant (BFN). This item will be addressed at the next meeting (A133-2).

The NSRB found a BFN incident investigation that was not properly dispositioned as part of the generic review process. Nuclear Experience Review (NER) had forwarded the incident investigation to Training instead of SQN, and Training's disposition of the incident investigation was incomplete. After the currently underway internal review of the NER program is completed, the Corporate NER Manager should examine the findings and determine if further assessment and actions are required. NER will provide assessment and actions to the NSRB for review (A136-7).

#### Engineering, Construction, and Modification Subcommittee

Testing performed on MOVs during the ongoing UIC5 refueling outage had yielded significant information regarding the feasibility of the currently defined testing schedule, behavior of valves (predictability and similarity), and adequacy of thrust calculations. With regard to differential pressure (dP) testing results, in all cases valves performed well and the thrust required for valve function under differential pressure (dP) flow conditions was less

## ATTACHMENT D (Continued)

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These corrective actions should include assessing the performance of Radiological Engineering, as well as the extent of early management involvement in the ALARA process.

Chemistry Program Review

The subcommittee reviewed with Site Chemistry, Corporate Chemistry, and Quality Assurance (QA) recent weaknesses identified in chemistry by QA and Corporate Chemistry. Among the deficiencies noted were: inadequate procedures, failure to follow procedures, unauthorized changes to QA records, lack of management oversight in laboratory operations, training deficiencies, failure to perform required analyses, and poor data trending. Corporate Chemistry, the Site Chemistry Manager, and the subcommittee are in agreement that there is an apparent lack of technical strength in key areas within the Chemistry staff. The subcommittee concurs with Chemistry management that the series of QA findings point to programmatic deficiencies that need prompt attention.

The Chemistry Improvement Program being considered by the Chemistry staff should be promptly and aggressively developed and implemented. A joint effort with Corporate Chemistry and QA should be utilized (A136-1).

To address the lack of adequate data analysis, trending, and review, the Technical Programs Manager is considering providing an individual to assist Site Chemistry in this area.

Review of Nuclear Experience Review (NER) Process on Browns Ferry Nuclear Plant (BFN) Chemistry Problem

During the review of the Chemistry Program Finding Identification Reports (FIR), an answer to a FIR implied a lack of understanding on the part of Chemistry supervision on the meaning of their signature on a QA record. This has similarities to an event that occurred at BFN which resulted in an incident investigation and a notice of violation. When following this through the NER process with the Corporate NER manager, it was found that:

- The incident investigation was never sent to SQN but, instead, sent to Training.
- Training action was inadequate.
- The Notice of Violation and response, which did not discuss some of the pertinent issues, was sent to the site for information only and no action required.

After the currently underway internal review of the NER program is completed, the Corporate NER Manager should examine the findings and determine if further assessment and actions are required. NER will provide assessment and actions to the NSRB for review (A136-7).

## ATTACHMENT D (Continued)

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RADCON Preparation for Outage

In a discussion with RADCON management relative to the high contamination levels being experienced during the outage, it was determined that RADCON had never been told to expect "fuel fleas." It is noted that these "fuel fleas" are substantially more radioactive than the standard "hot particle" (10-1,000 times higher), and several have been reported as high as 30-50 R/hour. Several organizations within TVA were aware of either a high probability that these would be present or had actual evidence that they existed, but this was not communicated to the organization defining radiological controls for the outage. This is being addressed in A136-6. It is noted that, once discovered, RADCON took aggressive action to mitigate worker exposure from these.

Raw Cooling Water System Corrosion and Chemistry Upgrade

The Raw Cooling Water Task Force activities and the Chemistry Upgrade Program were reviewed. With regard to the task force, preliminary action plans are being developed, and the Chemistry Upgrade Program is only at the stage of asking for study funding. The subcommittee will continue to follow these activities.

Subcommittee Recommendations on Closure of Open NSRB Items

A133-1 Threshold for initiating radiological deficiency reports.

This item was discussed at length with the RADCON Manager and Corporate RADCON. The subcommittee review found the procedures to be adequate. Interviews indicated that RADCON management understands the need to maintain high expectation and to be increasingly self-critical in order to improve. Additionally, the subcommittee discussed the observation that corrective actions often did not address the root cause or were insufficient to prevent recurrence. This item will remain open pending a revised response. The response only noted the existence of site procedures but did not address the NSRB concern relating to Radiological Incident Report threshold.

A133-2 Elimination of Radiological Assessment Review Committee (RARC). Elimination of RARC will require a revision to SQN's technical specifications. Corporate Chemistry and Corporate RADCON continue to evaluate elimination of RARC at both SQN and BFN, and this item should be completed by the next meeting.

A133-8 Environmental Lab Quality.

Corporate Chemistry, with Site Chemistry Support, has taken action to increase the monitoring of vendor performance which has shown no problems in 1991. In addition, a second vendor is being considered. The subcommittee considers this action sufficient and recommends closure.



## ATTACHMENT D (Continued)

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## A133-9 Unmonitored Pathways.

The response from the site indicated that no unmonitored pathways existed at SQN. However, pathways have been analyzed by Corporate Chemistry (four were found but deemed not to be significant at present), and actions are being taken to provide monitoring and additional procedural control. The subcommittee believes that the issue is complete but is awaiting site management review and approval. Action on this item will be deferred to the next meeting.

## A133-10 Excessive Radiation Exposure System (REXS) downtime.

The REXS is now operating at 98.8 percent availability. This item should be closed.

## A132-6 Post-Accident System Training.

The subcommittee reviewed the site response and discussed it with the Site and Corporate Chemistry managers. Corporate Chemistry had not reviewed this item, and the Site Chemistry Manager withdrew the response until the question as to whether all individuals could meet the NUREG 0737 sampling requirements had been addressed. This item will remain open.