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MINUTES OF HEETING NO. 138 MAY 21-22, 1992

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EXECUTIVE SUMMARY

Sequoyah Nuclear Safety Review Board (NSRB) meeting No. 138 was held on May 21-22, 1992.

Key items from the meeting are discussed below:

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Assessment of Performance Problems at Sequovah

Before the meeting, the President, Generating Group, requested NSRB's insight concerning operational performance problems at Sequoyah.

Causes of the Sequoyah problems and related examples were discussed by the NSRE and the President, Generating Group. Causes identified by the NSRE include:

- Establishment and enforcement of performance standards, unfocused expectations, and lack of accountability.
- * Ineffective communications both upward and downward.
- = A perceived tightrope between quality, safety, resources, and schedule.
- · Poor change management in both personnel and program areas.

To address these concerns and to improve Sequoyah performance, aggressive ownership and problem resolution at the lowest level, coupled with effective two-way communication, are needed. The Vice President, Nuclear Operations, will prepare an action plan to address the NSRB assessment of Sequoyah problems.

Site Chemistry Program

Template=SECY-028

At the previous NSRB meeting, weaknesses in the Sequoyah Chemistry Program were discussed which, if not corrected, could impact chemistry control. The Plant Manager approved a comprehensive plan to prioritize and implement corrective actions to improve the chemistry program. The Corporate Chemistry Manager was assigned as the Site Chemistry Manager at Sequoyah to manage daily activities and implement the Chemistry Improvement Program. It is too early to determine if the short- and long-term corrective actions will be effective. The NSRB noted that chemistry procedures are cumbersome, and there is a lack of discipline and motivation of people to follow procedures completely. The Chemistry Manager was aware of this concern and is taking actions to correct the problem. In addition, he considers the laboratory analyst training program, including post-accident sampling training, to be marginal. Corporate Operations Services will assist Site Chemistry in assessing the adequacy of the laboratory analyst training program. NSRB will continue to follow progress in these areas.

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		SEQUOYAH NUCLEAR SAFETY REVIEW BOARD
		HAY 21-22, 1992
\smile	Hembers:	T. J. McGrath, Chairman
		R. R. Calabro
		H. A. Cooper
		T. A. Flippo
		W. C. HCATLRUF
		G. K. MUIIBE
		J. L. Wilson (Absent)
	Advisors:	W. R. Cobean, Jr. (Hay 21 only)
		T. L. Gerber
		J. N. Grace
-		T. A. Peterson
		G. Toto
	Technical Administrator:	J. H. Pleva
	Also in Attendance:	O. D. Kingsley, Jr. (May 22 only)
	•	(President, Generating Group)
		J. R. Bynum (May 22 only)
		(Vice President, Nuclear Operations)
		D. R. Keuter (Hay 22 only)
		(Vice President, Operations Services)
\smile		R. J. Beecken
		(Plant Manager, Sequoyah Nuclear Plant)
		J. E. Carignan (Hay 22 only)
		(Manager, Nuclear Safety Review Board Support)
-	-	R. F. Driscoll (May 22 only)
		(Manager, Quality Programs)
		W. Holland (May 22 only)
		(Nuclear Regulatory Commission Resident Inspector)
	and a second	J. N. Ward (May 22 only)
		(Engineering and Modifications
		Manager, Sequoyah Nuclear Plant)
	Attachment to Minutes:	A - Action Items
		B-F - Subcommittee Reports

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Minutes of Nuclear Safety Review Board (NSRS) meeting Nos. 137 and 137.1 were approved. All members and advisors were present for both days except J. L. Wilson. W. R. Cobean was present on May 21. O. D. Kingsley, Jr., President, Generating Group, met with the NSRB on May 22, 1992.

It was noted that a number of site responses (especially Radiological Control and Chemistry) to NSRB action items were incomplete, inaccurate, or did not address the specific NSRE concerns. This concern had been previously expressed by the NSRB to the Site Vice President in meeting No. 136 on November 21, 1991. Future responses will be improved to provide thorough information for NSRB consideration (A138-1).

The following topics of interest were discussed:

Assessment of Performance Problems at Secuovah

Before the meeting, the President, Generating Group, requested NSRB member insight concerning operational performance problems at Sequoyah. The NSRB's assessment of site problem areas is as follows: (1) problem solving, correction, and recurrence prevention, (2) lack of ownership and buy-in by site personnel, and (3) a compliance mentality.

Causes of the Sequoyah problems and related examples were discussed by the NSRE and the President, Generating Group. Causes identified by the NSRE include:

- Establishment and enforcement of performance standards, unfocused expectations, and lack of accountability.
- Ineffective communications both upward and downward.
- A perceived tightrope between quality, safety, resources, and schedule.
- · Poor change management in both personnel and program areas.

To address these concerns and to improve Sequoyah performance, aggressive ownership and problem resolution at the lowest level, coupled with effective two-way communication, are needed. The Vice President, Nuclear Operations, will prepare an action plan to address the NSRE assessment of Sequoyah Filmer

- problems (A138-2).

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Site Chemistry Program

At the previous NSRB meeting, weaknesses in the Sequoyah Chemistry Program were discussed which, if not corrected, could impact chemistry control. The Plant Manager approved a comprehensive plan to prioritize and implement corrective actions to improve the chemistry program. The Corporate Chemistry Manager was assigned as the Site Chemistry Manager at Sequoyah to manage daily activities and implement the Chemistry Improvement Program. After interviewing the new Chemistry Manager and Site Quality Assurance (QA) Monitoring Manager, the NSRB considers that the problems are understood and corrective actions identified. However, it is too early to determine if the short- and long-term corrective actions will be effective. The NSRB noted that the chemistry procedures are cumbersome, and there is a lack of discipline and motivation of people to follow procedures completely. The Chemistry Manager was aware of this concern and was taking actions to correct the proplem. In addition, he considers the laboratory analyst training program, including post-accident sampling training, to be marginal. Corporate Operations Services will assist Site Chemistry in assessing the adequacy of the laboratory analyst training program (A138-3). The NSRE will continue to follow these concerns. 14000085 CC000117

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Corrective Action Backlog

At the November meeting, the Site Vice President advised the NSRE that a task force had been formed to improve the implementation of the corrective action program. At the February meeting, he reported on task force progress and the actions taken as a result of the NSRE special review of the Sequoyah corrective action program and other reviews. Site management continues to devote more attention and personal time to late items. As a result, there are fewer late items, and personnel assigned the lead for corrective actions are taking more responsibility for timeliness. Site Quality Assurance is currently reviewing all Finding Identification Reports and Significant Corrective Action Reports (SCARs) with corrective actions extending past September 1992 to determine if any items can be closed (with appropriate buy-in and justification). Action item Al36-5 remains open to continue to follow performance in this area.

It was also noted that there are many corrective actions resulting from some incident investigations. The Sequoyah in-house plant assessment being conducted on site May 26-June 5, 1992 will evaluate this area.

Fire Protection Improvement Program

At the November meeting, it was noted that the Fire Protection Improvement Program was comprehensive, but timely implementation and long-term ownership were of concern to the NSRE. At the February meeting, NSRE reviewed progress on phase one of the Fire Protection Plan submitted to Nuclear Regulatory Commission (NRC). A recently completed NRC inspection and QA audit were discussed. Continuing overall improvements have been noted in procedures and training. A status report will be presented to the NSRE at the August meeting. Action item Al28-2 remains open.

Bypassed and Inoperable Status Indicators (BISI)

During the August 1991 meeting, a reactor operator stated that the EISI system appeared to provide incorrect information. The site response to the NSRS indicated that Site Engineering discussed this issue with operations training and found that the system is limited. Work requests to fix problems receive low priority, and Operations personnel seldom use the system because they have little confidence in it. The Site Engineering Manager acknowledged that the resolution of this item was inadequate because Engineering did not involve Operations management. He agreed to get a coordinated response on specific corrective actions required and to report on it at the next NSRB meeting. Action item A133-7 remains open.

Operations Improvements

The Sequoyah Plant Manager stated that increased attention is being directed to Operations to obtain needed improvements (e.g., getting buy-in, accepting more accountability, admitting mistakes, and increasing teamwork within crews). Several special meetings between various Operations personnel (i.e., Assistant Shift Operations Supervisors (ASOSS), individual crews, etc.) are being conducted to ensure problems are identified from within Operations and that there is an appropriate buy-in from Operations personnel to fix their own problems.

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· Independent Safety Engineering (ISE)

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The Size JSE Manager was requested to provide the results of ISE's incident investigation review to Nuclear Reviews for inclusion in the follow-up review on preventing problem recurrence. Ten of twenty-six reports reviewed had problems with corrective action inadequacies, particularly with major root or contributing causes not being addressed. The site had not received this information, and the ISE Manager agreed to meet with Site Licensing to discuss the results. The ISE Manager also agreed to provide future ISE quarterly reports to the NSRB for review.

Subcommittee Activity Summary

This section summarizes subcommittee activities not addressed previously in these minutes.

Quality Assurance and Safety Oversight Subcommittee

Incident Investigations continue to improve, but many are being completed late. Once late, people tend to be in a reactive mode. Both the people involved and the Plant Manager stated that the process promotes a more complete investigation that probes for the root cause. The Plant Manager indicated that he used the investigations to get solutions to problems, and he does not approve them until they are right. An assessment should be made to determine if time reporting requirements for incident investigations should be extended or if additional measurements should be developed to more accurately reflect management expectations for completion (A138-4).

The subcommittee noted that there appears to be no systematic assessment of corrective action effectiveness. The method of assessment does not appear to be satisfactory. Site management should evaluate the method of assessing effectiveness of corrective actions and report at the next NSRB meeting (A138-5).

The Sequoyah ISE Manager discussed the results of the review of reactivity management programs at Browns Perry, Sequoyah, and Corporate. It was found that Sequoyah had not fully implemented the program. Sequoyah Reactor Engineering did not have a qualified program, as required by the plan. In addition, training had not been completed and some personnel had not seen the training video. The NSRE will conduct an assessment in this area late in 1992.

Operations and Maintenance Subcommittee

The subcommittee met with the Site QA Monitoring Manager to discuss the frequency and nature of incidents and lapses in conduct of operations. The guarterly QA assessment for operations and fire protection for the first guarter of 1992 showed a significant decline in performance. This assessment showed a noticeable decline in the conduct of operations in two areas: (1) system status clearance/configuration control and (2) compansatory measures. Trosion in performance included loss of systems status control, failure to follow procedures, and documentation errors.

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The subcommittee met with the Operations Manager to discuss declining operations performance and actions being taken to reverse this trend. The plan to reverse the negative performance trend has reasonable assurance of success; however, the issues cannot be resolved overnight. The subcommittee considers the assignment of an ASOS to coach Assistant Unit Operators (AUOs) as a positive step, but it may not be sufficient to accomplish the needed change since AUOs have traditionally functioned as an adjunct element of operations.

The subcommittee met with Maintenance personnel concerning the discovery of an inflatable rubber-type plug floating in loop three hot leg piping during an inservice inspection. Plugs had been inserted in the notiles of check valves by a contractor to serve as foreign material barriers during maintenance activities. Inadequate accounting of materials resulted in loss of the plug. Foreign materials control procedures in effect at the time were not used. Both the procedure and inspection for cleanliness before restoring the valve internals were inadequate to detect the dislodged or missing plug. The contractor's performance was inadequate even though he had performed this activity before. The subcommittee agreed with the proposed corrective actions and suggested methods to improve and reinforce system cleanliness and plug control practices. The subcommittee will provide a cleanliness control procedure used at other facilities for possible inclusion of ideas and practices into TVA methods.

Radiological Control and Chemistry Subcommittee

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> The subcommittee noted that good water chemistry had been maintained during the Unit 2 outage. Total exposure for the outage was 381 man-rem, which was less than the goal of 450 man-rem. Shot peening exposure was reduced from 208 to 36 man-rem.

At the last meeting, it was identified that about two years ago, Modifications initiated a four-hour as low as reasonably achievable (ALARA) training program for their first-line supervisors and planners. The program was dropped, and Sequoyah was asked to determine whether this was adequately covered in contractor (Bechtel) training and also to evaluate reinstituting a program for ALARA training in the planning and performing of modification work in radiological areas. The Modifications response to this action item stated that the previous training had been expanded from first-line supervisors and planners to the workers themselves, which includes contractors. The subcommittee concurred with this response. Action item A137-3 was closed.

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. The ability of each lab analyst to obtain and analyze NUREG 0737 post-accident samples in under three hours was evaluated. Testing of the chemistry technicians, completed in March 1992, concluded that none of the technicians could obtain and analyze samples in the required time. It was noted that some of the technicians had recently completed training on this specific subject. A SCAR was generated, corrective actions were identified, remedial training was provided, and shift assignments were made to ensure that a minimum of three PASS-qualified technicians are on shift at any given time. Corrective actions were concurred with by the subcommittee. The related action item (Al32-6) was closed.

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At the last meeting, Radiological Control (RADCON) management agreed that requisite self-criticism and the timely reporting of deficiencies via the Radiological Awareness Report (RAR) process had not been adequately communicated within the RADCON organization and required additional work. RADCON had proposed actions to correct this problem. The subcommittee assessed the effectiveness of these actions. Management is actively involved in this process, and the threshold for report generation is adequately sensitive. The related action item (A133-1) was closed.

NSRB action item A133-9 regarding the impacts from unmonitored radiation release paths remains open. The subcommittee will review the adequacy of the site's actions at the next NSRB meeting.

Action item A137-1 requested the site to evaluate work activities in radiologically controlled areas to ensure optimization of worker efficiency. Action item A137-2 requested the site to develop a long-range dose reduction plan. Both the site responses and additional information found during subcommittee activities revealed that these action items were in progress, but specific actions and completion dates were not included. Action items A137-1 and A137-2 remain open.

Engineering Subcommittee

Before the last meeting, Corporate Engineering developed, with site input and concurrence, 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.

Communication has significantly improved between Corporate QA and NE and has resulted in better quality and use of NE performance indicators. This action item (A133-3) was closed.

Recent feedwater nozzle cracking problems and corrective actions were reviewed. In 1988, analysis showed that cracks could be expected. As a result, the inspection scope was expanded. The cracks would have been detected if the inspectors had understood the nature and expected location of these cracks and the limitations of ultrasonic techniques. Future inspections will have an owner/inspector which should identify limitations before each augmented inspection.

System engineer development and training were reviewed. System engineer responsibilities and training requirements are consistent with INPO Good Practice TS-413. Certification includes classroom, cral and written examinations, and system walkdowns. Thirty percent of the engineers have received some classroom training, but none have been certified. All system engineers are to be certified by fall of 1993. Early examination and certification of clearly qualified system engineers should be performed first while focusing training resources on those individuals most in need (A138-5). In addition, recognition should be considered for completed certification and for exemplary system ownership by system engineers.

Safety Assessment/Safety Evaluation (SA/SE) Subcommittee

No unreviewed safety questions were identified 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. A comparison of the extent of detail in safety evaluations between Sequoyah and Browns Ferry was requested by the NSRB Chairman to ensure consistency between sites (A138-7).

Inappropriate inclusion of unnecessary special requirements was noted in several of the safety evaluations. Many of these items addressed as special requirements are routinely handled by controlled procedures and therefore should not be included as special requirements. The subcommittee will discuss possible improvements for use of special requirements in safety evaluations with Sequoyah Licensing.

Technical Specification Changes

No. 92-03

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Change No. 92-03 reduces the administrative burden associated with tracking surveillance interval extensions by deleting the 3.25 times limitation on the extension of three consecutive surveillance intervals. It is endorsed as a technical specification improvement by Generic Letter 89-14. The NSRS approved the change.

No. 92-04

Change No. 92-04 added a new action to Technical Specification 3.6.5.3 and also added discussions to Technical Specification Basis 3.6.5.3 to address required actions for one or more ice condenser inlet doors blocked closed. This change addressed the potential condition of inlet doors being physically restrained from opening and, therefore, becoming incapable of providing their primary safety function. The NSRB noted an editorial clarification. The NSRB approved the change as amended.

No. 92-05

Change No. 92-05 added the interpretation for both continuous and hourly fire watches. It also more clearly defined requirements on a specific area for continuous fire watches. This change will reduce the number of fire watches by more efficient use of personnel. The NSRS noted an editorial clarification. The NSRS approved the change as amended.

No. 97-06

Change No. 92-06 revised the administrative section of the technical specifications to reflect the current Nuclear Power organization and the Nuclear QA Plan. The NSRE approved the change.

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The following action items were closed:

- AL32-6 SCAR SQSCA920004 and PER SQPER920142 were written by Site Chemistry to formulate corrective actions regarding inadeguacies in post-accident sampling training required by NUREG 0737 and NRC IE Bulletin 80-10.
 - A123-1 The effectiveness of the RAR process has been assessed. Management is actively involved in this process and the threshold for RAR generation is at proper sensitivity level.
 - A133-3 Significant improvement has been observed in the communication between Corporate QA and Nuclear Engineering (NE) which has resulted in better quality and use of NE performance indicators.
 - Al37-3 Previous ALARA training for modifications personnel has been expanded to include all workers, including contractors (S02 920429 810).

Next NSRB Meeting

The next NSRB meeting is scheduled for August 19-20, 1992.

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ATTACHMENT A Page 1 of 2

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SEQUOYAE NUCLEAR SAFETY REVIEW BOARD

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ACTION ITEMS

Action		Responder	Due		
A138-1 -	Improve the quality of site responses to Nuclear Safety Review Board (NSRB) action items.	J. L. Wilson	07-31-92		
A138-2 -	Prepare action plan to address NSRB assessment of Sequoyah problems.	J. R. Bynum	07-31-92		
<u>д138-3</u> -	Review with Sequoyah Chemistry Manager the Institute of Nuclear Power Operatic accredited chemical laboratory analyst training program for adequacy and modif accordingly.	D. R. Keuter ons	07-31-92		
<u> </u>	Determine if time frames for completion of incident investigations should be extended.	R. J. Beecken	07-31-92		
A138-5 -	Develop a systematic assessment of corrective action effectiveness of incident investigations.	X. A. Cooper	07-31-92		
<u> 1138-5 -</u>	Assess the schedule and priority for qualification of system engineers first	· R. J. Beecken	07-31-92		
A138-7 -	Compare extent of detail in safety evaluations prepared at Sequoyah and Browns Ferry.	J. E. Carignan	06-30-92		
_ A137-1 -·	Evaluate work activities in radiologica controlled areas to ensure optimization of worker efficiency.	lly J. L. Wilson	07-31-92		
A137-2 -	Develop and implement a long-term dose reduction program.	J. L. Wilson	07-31-92		
A137-4 -	Before installation of new fuel racks, develop methods to control movement of heavy loads over the cask loading area.	B. R. York	07-31-92		
A136-1 -	Develop and implement a Chemistry Improvement Program.	R. J. Beecken	07-31-92		
A136-3 -	Assess the Sequoyah and Westinghouse Radiological Control/ALARA programs to ensure radiation exposure tasks are effectively managed	J. L. Wilson	07-31-92		
		СС000	CC000124		
A136-5 -	Report on corrective action backlog task force results.	J. L. Wilson	07-31-92		
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Action		Responder	Due
A133-7 -	Investigate the bypassed and incperable status indications.	P. G. Trudel	07-31-92
λ133-9 -	Review site actions based on an assessment of impacts from unmonitored radiation release paths.	RAD/CHEM Subcommittee	07-31-92
A128-2 -	Inform the NSRB of progress in resolving Fire Protection Program problems.	J. L. Wilson	07-31-92

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ATTACHMENT D

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

T. A. Peterson May 21-22, 1992

W. C. McArthur

The Sequoyah Nuclear Safety Review Board (NSRE) RAD/CHEM Subcommittee met on May 21-22, 1992, to discuss various aspects of Sequoyah's radiological and chemistry. programs. Included in the discussions were QA activities relative ' to chemistry, the program to improve chemistry during the outage, results of the Unit 2 Cycle 5 (U2C5) outage, shot peening, feedwater notice work, and responses provided to previously raised NSRE issues. The following assessment is provided:

I. Radiological Control (Contacts: C. E. Kent R. P. Reed. and J. A. Leamon)

A. U2C5 Outage Exposure

The U2CS outage was completed with a total exposure of 380 man-rem against a goal of 450 man-rem. Not only does this represent an overall improvement over the ULCS outage exposure of 672 man-rem, tasks such as shot peening, steam generator maintenance, notzle dam installation, and refueling showed substantial improvements over past performance due to heightened management attention, improved as low as reasonably achievable (ALARA) tecnniques, and improved training and selection of personnel. Of particular note was exposure during shot peening, which dropped from 208 man-rem on U1C5 to 36 man-rem on UZC5. The cooperative efforts developed with Westinghouse are being implemented in all service areas.

E. Radiological Awareness Reports (RARs) Generation - NSRB Action Item A133-1 (no written response provided)

As of May 21 approximately 70 RARs were generated for deficient radiological conditions. From this, it appears that management's direction to document deficient conditions and adopt corrective actions is being followed. Both Corporate Radiological Control and the subcommittee will continue to review this area for effectiveness of corrective actions.

C. Open NSRE Items

The subcommittee reviewed written responses provided to NSRS action items A137-1, A137-2, A137-3, and found them too nonspecific as to actions taken to resolve the issues raised. Upon discussion, it was found that, in fact, actions are underway but were not included in the responses. The subcommittee recommends that these action items remain open until they reflect actions being taken and expected dates for completion.

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ATTACHMENT D (Continued)

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C. ALARA Goals

Discussions were held on the U2CS outage goal of 450 man-rem and the U1CS outage goal of 355 man-rem being considered. It was indicated that the U2CS goal was achievable if corrective actions proved successful. If TVA is to achieve its objective of 250 man-rem for outages in 1995, aggressive goals must be set and aggressive actions taken to achieve them.

Assessment

As the UICS outage work scope is refined, the ALARA goals should be reexamined to ensure they are aggressive and will support the longer term 1995 objective. This issue will be followed by the subcommittee.

- II. <u>Chemistry (Contacts: W. F. Jocher, R. E. Richie, D. J. Bodine,</u> <u>G. E. Fiser, W. A. Pruett, and J. E. Mullinex</u>)
 - A. Chemistry Improvement Program

The status of the chemistry improvement program was discussed with Chemistry management. As reported previously, the plan is comprehensive and additional items have been identified for inclusion. The subcommittee is encouraged with the initiatives underway by the new Sequoyah Chemistry Manager, but notes that some issues cannot be resolved immediately and may require reassignment of resources and the active support of other organizations. Although not specifically highlighted (but addressed) in the plan are three principle vulnerabilities identified by the new Sequoyah Chemistry Manager, which should be closely examined to determine if additional resources are required.

- Deficient Procedures A high percentage of procedures are identified as complex, difficult to follow, or cannot be complied with verbatim. It is estimated that by using current resources, it will take over four years to revise all of these procedures. The subcommittee considers that this condition should not exist for an extended period.
- Lack of discipline in following written and verbal instructions - Item 1 above, has some bearing on this issue, but there appears to be a general attitude that compliance is not mandatory. Contributing to this problem is an apparent lack of knowledge of procedural content.

Set fam. dist. Training - Chemistry management considers the accredited training program to only marginally meet accreditation requirements and, from a performance-based standpoint, is inadequate. Lack of procedure knowledge and the inability to operate the Post-Accident Sampling System (PASS) (see Item III) operate the Post-Accident Sampling System (PASS) (see Item III) operate the Post-Accident Sampling is over supplemental charter cited as examples. To correct this operational weakness, charter charter is considering establishing its own supplemental charter charter is item will continue to be monitored by the subcommittee. AA0000101

ATTACHMENT D (Continued)

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Assessment

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Size management should examine the procedure, performance, and training weaknesses and determine if additional actions/resources are needed to address the issues in a timely manner.

III. PASS Operation - NSRB Action Item A132-6 (Contacts: W. F. Jocher, R. E. Richie, D. J. Bodine, G. E. Fiser W. A. Pruezz, and J. B. Mullinex)

This item was discussed with Chemistry management, although no written response was provided. Testing of the chemistry technicians, completed in March 1992, concluded that <u>none</u> of the technicians could obtain and analyze samples in the required time. It was noted that some of the technicians had recently completed training on this specific subject. A Significant Corrective Action Report (SCAR) was generated, corrective actions were identified, remedial training was provided, and shift assignments were made to ensure that a minimum of three FASS-qualified technicians are on shift at any given time.

Assessment

Corrective actions taken were considered appropriate. The SCAR should be sent to the NSRB for review.

ATTACHMENT E

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SEQUOYAH NUCLEAR SAFETY REVIEW BOARD ENGINEERING (ENG) SUBCOMMITTEE REPORT

May 21-22, 1992

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

I. Feedwater Nozzle Cracking (Contacts: D. F. Goetcheus, M. L. Turnbow, L. A. Budlong, K. A. Horse, and D. J. Horris)

The Engineering Subcommittee reviewed in some detail the background, circumstances, investigations, and corrective actions associated with the feedwater nottle-cracking problem experienced at Sequoyah. Subsequent to these discussions, the subcommittee was provided with the Incident Investigation report that was recently issued. Of particular interest to the subcommittee was the level of understanding and appreciation for the potential of feedwater nottle cracking and the adequacy of steps taken to minimize its occurrence, along with the methods used to provide early detection should cracking occur.

The cause of cracking was confirmed to be thermal cycling and is consistent with industry experience. Early response to the potential for this type of cracking (IE Bulletin 79-13) was consistent with Nuclear Regulatory Commission requirements and that of other utilities. In 1988 TVA showed by analysis that feedwater nozzle cracks could be expected during the operational life of the plant. At that time, the inspection scope was expanded to include each nozzle at each outage, a modification was initiated to reduce thermal cycling during mode 3 operation, and replacement nozzles were ordered. Inspectors were aware of the significance and likelihood of cracking but due to a combination of circumstances failed to detect it. These circumstances arose in part from an interface breakdown (failure to communicate) between those assessing the potential for cracking and those responsible for inspection and detection.

Assessment

In retrospect it seems likely that feedwater notile cracks would have been detected if inspectors had had a more detailed understanding of the nature and location of expected cracks (fatique cracks at stress risers, possibly within welds (predominately at 3 and 9 o'clock)), and/or if the assessors had understood the limitations of the ultrasonic testing (UT) inspection (which is the difficulty of identifying cracks within a weld using one-sided examinations and of identifying cracks at locations with geometric reflectors). The subcommittee endorses the plan for all augmented inspections to have technical owners and for meetings to be held between owners and inspectors prior to the inspections to review and evaluate evolving technical concerns, inspection methods and limitations, and the scope of the inspections.

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ATTACHMENT E (Continued)

Ice Condenser Door Blockage (Contacts: J. F. Casev. J. R. Willis, P. G. Studer, and H. G. Maxwell)

The subcommittee met with Technical Support (John Casey and John Willis), Corporate Engineering (Pete Studer), and Civil Engineering (Hel Maxell) regarding ice condenser door blockage. In Unit 1 the wear slab beneath the inlet doors had moved upward, and eleven doors had opening forces greater than allowed by technical specifications. Subsequent investigations found similar conditions in Unit 2. The subcommittee reviewed the root cause of these conditions. During defrosting operations, water accumulated on the floor. The upward movement of the floor was caused by heaving as ice expanded within the floor system. It was determined that the cause of water seepage below the floor was incomplete installation of floor seals during construction. Although construction was similar to Watts Bar and other nuclear plants (Duke Power), the other plants do not defrost. Sequoyah's defrosting operations were reported to have contributed to the problem.

Transducers have been installed on the floor in front on each door to continuously measure the vertical floor displacement. Clearance is measured for each door. Revised technical specifications require shutdown if any door becomes blocked, thereby ensuring safe plant operation. Some floor movement has been measured, but it is within tolerance.

Assessment

Preliminary data, showing Unit 1 floor movement during operation, suggest that the root cause of the door blockage is not yet fully understood. The subcommittee would like to review operational data, updated root cause conclusions, and long-term solutions when available.

III. System Engineering Training (Contacts: H. R. Rogers and S. R. Tavlor)

The subcommittee discussed the development of the System Engineer program with the Technical Support Manager and Technical Support Training Director. There are currently 63 engineers in the Technical Support organization, 58 of whom are System Engineers. System engineering responsibilities and training requirements are defined by SSP-5.50. Responsibilities and training prescribed by this document were reported to be consistent with Institute of Nuclear Power Operations (INFO) guidance as prescribed by INFO document TS-413. System engineering certification involves classroom system training and required reading followed by oral, written, and system-walkdown examinations. Approximately 30 percent of the engineers performing system engineering duties have completed classroom courses. No engineer has been examined or certified. SSP-8.50 does not require certification for personnel to perform system engineering duties. The goal is to certify incumpents by the fall of 1993. The relative levels of experience, effectiveness, and challences facing System Engineers were also discussed.

ATTACHMENT E (Continued)

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Assessment

The subcommittee strongly supports the development of an effective and strong System Engineer program, consistent with INPO guidance and current TVA plans. Consideration should be given to early examination and certification of those clearly gualified while focusing training resources on those most in need. Certification should be made a tool for improvement and a means for recognizing accomplishment. Additional means of recognition and rewarding exemplary system ownership should be considered.

The subcommittee will periodically meet with selected System Engineers in the process of exploring system or hardware concerns or for system tours, in part, to generate a sense of System Engineer effectiveness.

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ATTACHMENT F

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

Hay 21-22, 1992

The subcommittee met on May 8, 1992, to complete its review of safety assessments and evaluations through April 17, 1992. Attendance at the meeting was as follows:

Members Present

Chairman, J. H. Pleva, NSRB Administrator
C. W. Burrell, Sequoyah Engineering
D. J. Gibbs, Sequoyah Operations
M. L. Hellums, Corporate Licensing
R. A. Jarrett, Corporate Engineering
V. D. McAdams, Sequoyah Independent Safety Engineering
A. J. Sanislo, Corporate Nuclear Fuels
S. R. Taylor, Sequoyah Training
A. L. Varner, Sequoyah Quality Assurance (QA)

Hembers. not present

K. A. Skarzinski, Sequoyah Technical Support

Others Participating

J. E. Carignan, NSRB Support Manager (Part-time)

A. J. Sanislo was appointed to the subcommittee by the NSRE Chairman (L42 920428 800).

The following items were discussed:

I. Overview of Secuovah 50.59 Procram Adecuacy

The subcommittee reviewed the results of reviews of the Sequoyah

- 10 CFR 50.59 program conducted since November 1990. Each of the reviews identified minor problems, but collectively did not impact plant safety or compliance with 10 CFR 50.59 license requirements. The problems identified can be characterized as insufficient detail, weak technical bases, and administrative errors. These problems are similar to the ones found by the subcommittee in its review of selected safety evaluations. Problems identified by the subcommittee are sent to the originating organization to improve the overall SA/SE process as well as the individual evaluations.
- 12. Status of TVA Position on Oberades From Analog to Dicital Instrumentation

The issue of replacement of analog with digital instrumentation as a potential unreviewed safety question was discussed. The NRC is reevaluating its position on this issue, and it is getting the attention of senior NRC management. A joint working group, consisting of the Nuclear Management and Resource Council (NUMARC) and Electric Power Research Institute (EPRI) is establishing guidelines for instrumentation changeout. Mike Hellums is the TVA representative, and he will advise the subcommittee on significant issues.

AA000106

Site OA Responsibilities in 50.59 Process

At the last meeting, the subcommittee requested Site QA to evaluate the possibility of extended oversight of SAs that conclude SEs are not required. This review has been delayed due to Unit 2 outage activities. QA will report on its evaluation at the next meeting.

. IV. Results of SA/SE Review

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The subcommittee found no unreviewed safety questions. Twenty-nine of the 87 SA/SEs selected for review were discussed collegially by the subcommittee. All 87 SA/SEs identified were reviewed. The subcommittee identified seven potential administrative weaknesses and nine potential technical weaknesses. These weaknesses do not appear to be significant and will be discussed with the preparers and line managers.

Inappropriate inclusion of unnecessary special requirements was noted on several of the SIs. Many of these items addressed as "special requirements" are routinely handled by controlled procedures and should not have been included as special requirements in the evaluations. The subcommittee will discuss possible improvements for use of special requirements in safety evaluations with Site Licensing.