



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA ST., N.W.  
 ATLANTA, GEORGIA 30323

Report Nos.: 50-327/87-75 and 50-328/87-75

Licensee: Tennessee Valley Authority  
 6N38 A Lockout Place  
 1101 Market Street  
 Chattanooga, TN 37402-2801

Docket Nos.: 50-327 and 50-328

License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah 1 and 2

Inspection Conducted: December 14-18, 1987

Inspector: B. Breslau 1/21/88  
Date Signed

Accompanying Personnel: R. Baldwin  
 S. Bitter  
 M. DeGraff  
 P. Kellogg

Approved by: M. Shymlock 2-4-88  
Date Signed  
 M. Shymlock, Chief  
 Operational Programs Section  
 Division of Reactor Safety

SUMMARY

Scope: This routine, announced inspection was conducted in the areas of licensed and non-licensed operator training and licensed requalification training.

Results: No violations or deviations were identified.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*H. A. Arnold, Manager Non-License Operator Training
- \*C. T. Benton, Simulator Section Supervisor
- \*M. S. Blackburn, Management Training
- \*D. L. Conner, Chief, Engineering and Technical Training
- \*T. E. Cribbe, Licensing Engineer
- \*T. O. Frizzell, Chief, Quality & Management Systems Branch
- \*R. A. Hamrick, Assistant to Division Director
- \*T. L. Howard, Operations Quality Surveillance Supervisor
- \*R. J. Johnson, Director, Division of Nuclear Training
- \*C. D. Kelley, Internal Assessment
- \*G. B. Kirk, Compliance Licensing Manager
- \*M. J. Lorek, Group Manager
- \*W. A. Nevins, Management Controls Section Supervisor
- \*C. H. Noe, Chief, Operations Training Branch
- \*W. G. Payne, Requalification Section Supervisor
- \*L. H. Sain, Assistant Division Director
- \*E. K. Sliger, Manager of Projects

Other licensee employees contacted included operators, office personnel, training supervisors and instructors.

#### NRC Resident Inspector

\*P. Harmon

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on December 18, 1987, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Licensed Operator Training

The Reactor Operator (RO) hot license program training records were examined to ensure completeness and accuracy in accordance with the requirements of Nuclear Training Procedure 0202.05, Rev. 0, Nuclear Plant Operator Training Program. The following discrepancies were noted:

- a. In several student records, some of the comment sheets (individual sheets for each of the 16 weeks in the license certification training segment) did not have the weekly test scores recorded. However, in all cases, the missing scores are recoverable because the weekly quizzes have been retained in the same file.
- b. By letter dated February 24, 1987, from the NRC, all Reactor Operator and Senior Operator license's for the Sequoyah Nuclear Plant issued prior to resumption of power operations will be limited to operation in Modes 5 and 6. These limitations will be in effect until such time that the individuals have completed five significant reactivity manipulations. In cases where the aforementioned requirements are applicable, individual records should be annotated indicating the license is conditional based on completion of the required reactivity manipulations.
- c. Nuclear Plant Operator Training Program, 0202.05, Rev. 0 should be revised to clarify that the criteria for removal of a candidate from the hot license training program is not applicable during the pre-license training segment. Currently 0202.05 does not specify when the removal criteria does and does not apply. This change is necessary because there is no requirement to document pre-license examination grades. Without documented grades, individual grade point averages can not be determined and subsequently compared to the minimum required averages specified in 0202.05.

The inspectors conducted interviews with licensee personnel who have completed RO/SRC license training within the last year. The individuals provided to the inspectors their perception on the effectiveness of the licensed training program. No negative comments were received during the interviews. The individuals indicated the instructors, during both the

classroom and simulator segments of the training program, were knowledgeable about the subjects being taught and presented the material at a level which was consistent with the knowledge level of the students. The lesson material utilized during the training was usually of the latest revision, however if a change was necessary, the material was provided to the students during the class by the instructors. The individuals indicated the instructors, when they could not answer a question during class, always researched the problem and answered the question in a timely fashion.

The inspectors conducted interviews with SRO licensed instructors. Although no negative comments were received, general comments indicated the licensee should consider increasing the size of the training staff. Currently, the training staff consists of six licensed individuals, two at the supervisory level and the remaining four involved in licensed requalification training and RO/SRO license training. Although the licensee's program is effective in training individuals to be safe, competent operators, considering the substantial work load, i.e., class preparation time, preparation and grading of examinations, review and revision of lesson plans, and instructor participation in licensed requalification training, an increase in the the training staff could only enhance the current program. Additionally, it appears that with the size of the current training staff, only one simulator instructor per class can be provided. A single simulator instructor reduces the effectiveness of simulator instruction, as it is very difficult to closely monitor the performance of all the students at one time.

NRC Inspection (50-327,328/86-17) conducted in February of 1986 identified a need to increase the course length of the Sequoyah hot license certification program. The licensee has increased the length of the certification program from 12 weeks to 16 weeks. Additionally, the licensee indicated the additional four weeks would allow 40 hours of training in mitigation of core damage, as well as additional training in integrated technical specifications. The licensee has established sufficient lesson plans to cover both technical specification training and mitigation of core damage. Although the program for mitigation of core damage training does not provide exactly 40 hours of training, the lesson plans were reviewed by the inspector and after discussion with the licensee the inspector determined that approximately 30 hours of quality instruction were provided. The licensee should revise the mitigation of core damage schedule to more clearly define under which lesson plans the material is taught.

No violations or deviations were noted in this area.

#### 6. Instructor Certification

The inspector reviewed the licensee's program as outlined in Nuclear Training Procedure 0202.05, Rev. 0, for implementing and tracking the certification of SRO licensed instructors. Specifically, the inspector checked for compliance with the requirements for these instructors to be

SRC licensed, to participate in the requalification program, and to meet the requirements of Nuclear Training Procedure 0202.05, Rev. 0. No discrepancies were noted.

Additionally, the inspector reviewed the licensee's program for instructor certification as outlined in Nuclear Training Procedure 0202.03, Instructor Certification, Rev. 0, and TCT-16, Certification of all Instructors, dated 9-30-86. Initial certification requires that 180 hours of classroom instruction be completed within 18 months of initial teaching assignment. Following initial certification, recertification as specified in TCT-16, must be accomplished on an annual basis. Recertification consists of classroom evaluation while instructing and formal classroom training. Various instructor records for individuals currently teaching in the Nuclear Operator Training Program (NOTP) were reviewed. For the records reviewed all had completed the initial certification as well as being current in the recertification process.

Institute of Nuclear Power Operations (INPO) document, 86-026, Guidelines for Simulator Training states that to maintain knowledge of routine plant operations, instructors should participate periodically in shift operations. Prior to the revision to 10 CFR 55, licensed instructors at the POTC were not only participating in requalification training, but were maintaining active license by standing eight hours of watch per month. With the revision to 10 CFR 55 the licensed instructors were going to maintain an inactive license by only participating in the requalification program. This situation is in conflict with the INPO guidelines. Conversations with the licensee indicate that while the plant is in Mode 5, the training staff time can be more effectively utilized in training. When the plant returns to normal operation, the licensee intends to return licensed instructors back to on shift rotation to maintain plant familiarity. In the INPO accreditation summary report, dated December 1983, under the Staff Development and Evaluation Section, to maintain plant familiarity, instructors are required to spend a total of three or four weeks per year in the plant. The implementation of this requirement could not be found in any of the licensee's documents.

No violations or deviations were noted in this area.

#### 7. Industry Experience

The inspectors reviewed the licensee's program through which information from plant design changes, industry experience, and significant event reports, could be reviewed. If the information is applicable it would be incorporated into lesson plans for the NOTP as well as the reactor operator/senior reactor operators license course. The licensee has in place procedure TAC-52, Nuclear Experience Review (NER), dated 07/22/87

which delineates requirements pertaining to this review and incorporation of the aforementioned material. The following events were reviewed to insure the licensee adequately addressed them within the requirements and timeframe specified by the procedure:

- ° INPO Operating Experience Report (OER) 87-2141 was reviewed by the licensee, and although the event was applicable to boiling water reactors, the actions leading up to the event were attributed to personnel error. The licensee initiated no action; however, existing lesson plans were reviewed to verify they covered the need for operational compliance with instructions and checklists.
- ° NRC Information Notice 87-040, Backseating Valves Routinely to Prevent Package Leakage was reviewed. In this case the licensee revised existing lesson plans to inform operators of the potential for valve damage when routinely backseating motor operated valves.
- ° IE Notice 87-001 (NER 870043) and LER 87-013 (NER 870350) were selected as examples of plant-specific experience that should be incorporated into the licensee's prelicense and certification training programs. In both cases, the time frame specified in TCA 52, for completing NER items was met. The lessons learned from IE Notice 87-001 were incorporated, as Revision 1, into the Operator Certification Lesson Plan: Residual Heat Removal System, OPL 271C023, and were also addressed in week 5 of the 1987 Requalification Program. The lessons learned from LER 87-013 have been addressed in week 3 of the 1987 Requalification Program and are currently being incorporated, as Revision 1, into the Operator Certification Lesson Plan - Plant Operating Procedure SOI 74-1.

In all cases reviewed, the licensee initiated action in a prompt fashion and adequately addressed the subject matter. No violations or deviations were noted in this area.

#### 8. Licensed Operator Requalification Training

The inspectors reviewed the licensed operator requalification training program contained in the Nuclear Program Manual (Program Area 2) and the Training Center implementing instructions. The procedures and instructions reviewed were:

PMP 0202.01	Training Development and Utilization, Rev. 0
PMP 0202.03	Instructor Certification, dated 12/16/86
PMP 0202.05	Nuclear Plant Operator Training Program, Rev. 0
TCT-12	Internal and External Evaluation, dated 5/8/87



TCT-15 Training Development and Utilization, dated 10/15/86

TCT-16 Certification of all Instructors, dated 9/30/86

These procedures and instructions were reviewed to verify they contained administrative controls for the following:

- a. Provision for instruction in the areas of heat transfer, fluid flow, thermodynamics, and mitigation of core damage.
- b. Requalification examinations require 80% overall and 70% in each category.
- c. Licensed personnel are removed from licensed duties and placed in an accelerated requalification program if annual requalification exam results are less than 80%.
- d. An annual comprehensive requalification exam is given to all NRC licensed personnel.
- e. The results of the requalification exam are utilized in scheduling the following year requalification program and exam preparation.
- f. Instructors and backup licensee's are included in the requalification program.
- g. Instructors and staff are included in proficiency training on the plant by cycling onto shift on a regular basis.

During this inspection, the annual requalification program was in its final stages for 1987 and no simulator sessions were being held. The inspectors observed requalification classroom training sessions. The lesson plans used were EGT 222.017, Small-Breaks LOCAs with no High Head Injection and EFT 006.2, Core Thermal Limits. The lesson plans for these classes were up to date and free of handwritten notes. The instructor followed the lesson plans and appeared to be effective in his presentation. Student participation was encouraged by specific questioning by the instructor and students questions were answered effectively. A handout, consisting of the class lesson plans was provided to each student for note taking. Classroom facilities were adequate.

The inspector reviewed specific lesson plans and conducted personnel interviews with two SROs and two ROs to determine that current operational events (LERs, SOERs, etc.) and design changes were being incorporated into the requalification program. Four operational events, LER 86-001-00 Boration Flow Path Verification, LER 86-041-00 Diesel Starts, LER 87-001, Error in Borations Flow Path Verification Checklist, and SOER 85-2 Human Error in Valve Positioning were verified to have been incorporated in the requalification program and that training had been conducted. Design

Change ECN L5197 Reactor Vents and ECN L5106 Reactor Vessel Level Indications System were reviewed to verify their incorporation in the requalification program training and the modifications had been installed in the simulator. ECN L5106 had been physically installed but was not functional due to simulator modeling problems.

Based on these reviews and interviews the training program administrative controls appear adequate to ensure operational events and plant system changes are incorporated into the requalification program and simulator. Interviews with personnel having participated in the requalification program indicated the programs for incorporation of operational events and design changes were effective.

No violations or deviations were noted in this area.

9. Requalification Exams and Security of Question Banks

The inspector reviewed two RO and five SRO comprehensive examinations administered during the 1987 requalification program. These exams were reviewed to determine adequate depth of subject knowledge and that all areas of the 1987 program were covered. The exams appeared to be adequate to test the subject areas and all required areas were covered. Exam security is administratively controlled by TCT-19 Control of Examination, Quizzes and Question/Answer Banks. This instruction provides administrative controls for examination preparation, reproduction and security. The examination bank is currently being revised and placed on a computer to allow for random question selection for future exams. Random selection is currently being performed by the instructor preparing the exam. The computer files, which are password protected as well as having physical security, i.e., locked files and locked room, provide adequate security for the examination banks.

No violations or deviations were noted in this area.

10. Training Records

Training records for four SROs and two ROs were reviewed to verify requalification attendance, remedial training for examinations failed, required procedure reviews, and annual examination performance. Two operators' records that failed either a weekly examination or a final examination were evaluated. Operators that have failed one week of requalification or the final requalification examination were removed from license duties once the examination was graded. This was accomplished by a letter from the training department to the operations department. Retraining started from the point when the operator was removed from licensed duties. This retraining entailed taking the requalification course again for the week failed and retaking the examination for that week, or in the case of failing the final, the whole examination was



retaken. Once another examination is given and passed a letter is generated from the training department to the operations department stating that the operator has received a satisfactory grade on the examination and is ready for license duties.

NRC examination results were reviewed for the 1986 requalification examination. These results indicate the adequate quality of the training program.

Records concerning required procedure reviews indicated that periodic review of procedures were carried out in a timely manner. Since these procedures are the target of periodic examination during the requalification cycle it appears that adequate controls do exist to ensure the procedures are reviewed sometime during the cycle.

During the review of records for two licensed SRO instructors, it was noted that the Training Evaluation - POTC/PWR Simulator Manipulation Record Sheet for all control manipulations was lined out and a statement inserted stating that the instructor had "instructed and directed" the simulator activity during their week of simulator requalification training. It was the consensus of these individuals when interviewed that this was an acceptable method to handle the instructors simulator requalification due to the fact that they had to have the same knowledge and performance level that the instructors were expecting from training the requalification students. This concept was initiated because of limited manpower resources. By using this method, the requalification training work load could be spread more evenly between the instructors and not tie up another instructor when one was already in the simulator. It was the consensus of the licensee instructors interviewed that with two additional license operator instructors the instructor during the week of requalification training could participate as a student. However, they did not feel that they would benefit by doing so. Following review by Regional Management, it was determined the system as it exists provides adequate training during requalification training of license instructors during the simulation phase of requalification training.

No violations or deviations were noted in this area.

#### 11. Procedure Reviews

A review of procedures used in the simulator was conducted to ensure consistency between the procedures used in the plant and in the simulator. All Abnormal Operating Instruction (AOIs), Functional Restoration Guidelines (FRGs), Emergency Contingency Actions (ECAs), and Emergency Instructions (EIs) in the simulator were reviewed to the current plant revision. No discrepancies were noted. In addition, a random selection of plant drawings were reviewed to the current plant revision. No discrepancies were noted. It appears that adequate controls exists for maintaining procedures as well as plant drawings in the simulator.

No violations or deviations were noted in this area.

## 12. Non-Licensed Operator Training

The inspector reviewed the implementation of the non-licensed operator training programs. The licensee's training (licensed and non-licensed operator) are INPO accredited, eight of ten programs were accredited in January 1984, the remaining two, which are Mechanical and Electrical training programs, were implemented in April 1987. The licensee is preparing for its second INPO accreditation assessment in March 1988.

The Division of Nuclear Training (DNT) publishes a Standard Practices Manual which promulgates requirements for procedure content, records management and training programs for the entire Division. Each DNT section publishes section instruction letters to implement the standard practice within its area of training.

Academic training is conducted by Chattanooga State Technical Community College and by Georgia Institute of Technology. The licensee controls course content and monitors the quality of instructions. System training and specialized training is developed and implemented by the licensee.

The inspector reviewed the non-licensed operator training by reviewing training records, interviewing students, instructors, and supervisors. Additionally, the following administrative instructions were also reviewed:

- PMP 0201.04 Training Reports and Performance Measures, Rev. 0
- PMP 0202.01 Training Development and Utilization, Rev. 0
- PMP 0202.03 Instructor Certification, dated 12/16/86
- PMP 0202.04 General Employee Training (GET), Rev. 1
- PMP 0202.05 Nuclear Plant Operators Training Program, Rev. 0
- PMP 0202.08 Electrical and Mechanical Maintenance Craft Training, Rev. 0
- TCA - 50 Distribution, Control, and Auditing of Controlled Documents, dated 4/16/87
- TCA - 50A Internally Originated Controlled Documents, dated 6/2/87
- TCA - 52 Nuclear Experience Review, dated 7/22/87
- TCA - 56 Commitment Management and Tracking, dated 4/13/87
- TCA - 77 Quality Assurance Records, dated 8/17/87
- TCA - 78 Training Schedule, dated 8/12/86

TCA - 80 Training Program Records, dated 12/15/85  
 TCA - 84 General Employee Failure Policy, dated 12/26/85  
 TCT - 12 Internal and External Evaluation, dated 5/8/87  
 TCT - 15 Training Development and Utilization, dated 10/15/86  
 TCT - 16 Certification of all instructors, dated 9/30/86  
 AI - 14 Sequoyah Training Program, Rev. 38

The inspectors observed the following non-licensed operator training sessions:

Heat and Work, EGT 013.002

Emergency Services Technical Training, Reactor Core Cooling, FPT507.11SQ, Rev. 0

Electrical Print Reading, ICT 017.002, Rev. 0

General Employee Training, RADCON Retraining, 2.3 Combined Level I and II Retraining, GET 002.300, Rev. 1

The lesson plans for these sessions were up to date and free of hand written notes. The instructors followed the lesson plans except as noted below. The instructors appeared to be effective in their presentation and encouraged student participation. Specific questions asked by the student were answered effectively and questioning of the students was conducted. A handout of specific class objectives was provided to the students for their use and for note taking. Classroom facilities appeared adequate.

The inspector noted during the training session on Reactor Core Cooling the instructor did not utilize the approved lesson plan, instead, the instructor taught from the reference material. The instructor stated that he doesn't use that lesson plan and always teaches from the lesson material. Further investigation and discussion with the instructor and his supervisor revealed that the intent of the lesson was met and adequate instruction was provided to the students. This appears to be an isolated incident; the licensee stated this incident would not occur again.

The inspector determined from his review that the licensee is employing an effective systematic training program.

No violations or deviations were noted in this area.