



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

Report No.: 50-395/87-32

Licensee: South Carolina Electric and Gas Company
Columbia, SC 29218

Docket No.: 50-395

License No.: NPF-12

Facility Name: V. C. Summer

Inspection Conducted: November 16-20, 1987

Inspectors: Robert D. Starkey for 12-23-87
S. D. Stadler Date Signed
L. Lawyer
R. D. Starkey

Approved by: Candle Julian for 12/31/87
M. Shymlock, Chief, Operational Date Signed
Programs Section
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was conducted in the areas of licensed and non-licensed staff training.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *D. Nauman, Vice President, Nuclear Operations
- *O. Bradham, Director, Nuclear Plant Operations
- *K. Woodward, Manager, Nuclear Operator Training
- *F. Zander, Manager, Nuclear Technical Education/Training
- *W. Higgins, Associate Manager, Regulatory Compliance
- *G. Sault, Manager, Operations
- *F. Miller, Jr., Associate Manager, Inspection and Training Records
- M. Williams, Group Manager, Nuclear Regulatory and Developmental Services
- R. Ruff, Supervisor, Nuclear Operations Training
- T. Matlosz, Associate Manager, Nuclear Operations Training

Other licensee employees contacted included training staff, engineers, technicians, operators, mechanics, quality assurance and office personnel.

NRC Resident Inspectors

- *R. Prevatte, Senior Resident Inspector
- *P. Hopkins

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on November 20, 1987, with those persons indicated in paragraph one above. The inspectors 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 material provided to or reviewed by the inspector 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 Requalification Training (Module 41701 and Revised 10 CFR 55). No violations or deviations were identified in this area.

The results of this inspection, including a review of programs and procedures, observation of classroom and simulator training, interviews with operations and training personnel, and a review of training materials, examinations, and records, indicated the licensed operator requalification training to be very effective. Since the licensee was still in a transition process of fully implementing performance based training, a number of deficiencies or concerns were identified by the inspectors. The licensee was extremely responsive in attempting to resolve or commit to resolve each of these deficiencies or concerns. In some cases, the licensee was already aware of problems identified and had established corrective action or plans for corrective action.

- Program and Procedures - The licensee Licensed Operator Program has been INPO accredited. This program is implemented by Administrative Procedure II.B.4, Requalification Program for USNRC Licensed Operators and Senior Operators, and Nuclear Education and Training Instruction (NTCI)-305, Licensed Operator Requalification Program. Administrative Procedure II.B.4 was significantly revised in April of 1987 to reflect the performance based training program and to include the requirements of the revised 10 CFR 55. Signing and implementation of this procedure was significantly delayed by the licensee, however, due to a continuing staff and program reorganization. Several of the more important changes in the revised procedure include:
 - an annual operating examination for licensed operators (revised 10 CFR 55 requirement)
 - increased number of control manipulations required to be performed annually versus once every two years (revised 10 CFR 55 requirement)
 - all active licensed personnel shall be required to stand at least five 12-hour or seven 8-hour watches per calendar quarter in the control room as a licensed operator or senior operator (revised 10 CFR 55 requirement)
 - increased record keeping requirements
 - requirements for retraining of inactive licensee prior to assuming licensed duties
 - deletion of the exemption from participation in requalification training based on an 80 percent score on the annual requalification examination
 - annual requalification examination (written) changed to once per 24 months (revised 10 CFR 55 requirement)

The inspectors expressed a concern to the licensee over the long delay in implementing this revised program. The training staff indicated that they were essentially following this new program including the revised requirements of 10 CFR 55, but were also concerned with the delay of procedure implementation. This delay placed the training staff in the position of having approved procedures in place which were not being fully implemented and which were not in compliance with new requirements.

In response to these concerns, the licensee indicated to the inspectors at the exit that the revised II.B.4 procedure would be signed and implemented. A telecon with the licensee on November 30, 1987, indicated that Regualification Program Procedure II.B.4 would be issued by the end of the week. Further administrative type changes which occur as a result of the reorganization effort will be addressed by the licensee through later revisions to II.B.4.

One area that did not change with the revision to the regualification program was Section 7.F which allows waivers or exemptions from regualification training for licensed individuals. This section allows the Associate Manager, Nuclear Operations Training or the Manager, Operations to excuse licensed individuals from a specific lecture or series of lectures due to work load or other reasons.

In lieu of attending a lecture or full regualification cycle, the licensed individual is required to self-study and to pass the examination associated with the training cycle. The inspectors do not consider the waiving of an entire regualification cycle to be a necessary option, particularly with a five shift regualification cycle. A licensed individual who is too busy to be released for regualification cycle as scheduled would have the opportunity to attend one of four other identical training cycles. The substitution of self-study for regualification lectures and simulator training is detrimental to the concept of performance based training and detracts from the intent of 10 CFR 55 to be enrolled in a continuous regualification program.

The inspectors noted that although the licensee has implemented these waivers to excuse licensed personnel, particularly staff members, from entire regualification training cycles, the option had not been utilized to excess. This practice of exempting licensed personnel from regualification training due to plant and administrative work loads has in the past been abused at other facilities and resulted in degradation of the effectiveness of the regualification program. Under the performance based training criteria, many facilities have eliminated such exemptions by waiver, at least for more than a single lecture, and require all licensed personnel to attend all regualification training through regular schedules or makeup. The licensee was not prepared to commit to removal of this waiver option

from II.B.4., or to place additional restrictions on the number of lectures that could be missed or the number of times a particular individual could be exempted during a two-year requalification cycle.

- License Maintenance - The revised 10 CFR 55.53(e) requires that to maintain an active license, a licensed person shall actively perform the functions of an operator or senior operator on a minimum of seven 8-hour or five 12-hour shifts per calendar quarter. If this requirement is not met, an individual's license shall be considered "inactive". Prior to resumption of licensed duties an inactive licensee shall be certified by the facility licensee to the NRC that:
 - (1) The qualifications and status of the licenser are current and valid; and,
 - (2) The licensee has completed a minimum of 40 hours of shift functions under the direction of an operator or senior operator as appropriate and in the position to which the individual will be assigned. The 40 hours must have included a complete tour of the plant and all required shift turnover procedures.

Training Procedure III.A.4, Revision 4, Requalification Program for USNRC Operators, Licensed Operators, and Senior Operators, which was in place at the time of the inspection did not reflect this upgraded license maintenance requirement. This requirement was reflected, however, in the revised requalification program procedure II.B.4 which was to be approved. The inspectors verified that all active licensed operators and senior operators were meeting this license maintenance requirement. The inspectors identified two concerns in the active license maintenance area. Section 5.6 of Procedure III.A.4, Revision 4 indicated that the Manager, Nuclear Operations Education and Training, is responsible for tracking this on-shift time and for notifying the Station Manager should any licensed operator fail to satisfy the requirement and to include that the individual is no longer eligible to perform licensed duties. The manager of training was not cognizant of licensed personnel status in this area which was actually being tracked and documented by the Operations Group under Station administrative procedure SAP-200, Conduct of Operations. This is one of several examples of the licensee's lack of attention to detail in adherence to training procedure requirements. The licensee's procedure should be revised to reflect actual plant practices. The second concern identified involved seven licensed senior operators who, in conjunction with the facility, had decided to allow their licenses to lapse at renewal. These individuals were not performing their required on shift licensed duties making their licenses "inactive", but were also not

attending any requalification training. Regular attendance in an approved requalification training program is required for all licensed individuals including "inactive" under 10 CFR 55. 10 CFR 55.53h lists the completion of a requalification program as described by 10 CFR 55.59 as a "condition of license". 10 CFR 55.59 requires that the requalification program be approved by the Commission and be conducted for a continuous period not to exceed 24 months in duration. NUREG 1264, Question 286 also indicates that an inactive licensee is required to participate in a requalification program to the same extent as a licensee maintaining an active license.

In a telecon on December 1, 1987, the Section Chief of Operator Licensing notified the licensee that it is recommended that they notify the NRC when a license is no longer required and the individual is not meeting the conditions of that license, i.e.; attending requalification training. This area is also addressed indirectly under 10 CFR 50.74, Notification of Change in Operator or Senior Operator Status. 10 CFR 50.74 requires the licensee to notify the Commission within 30 days in regards to a licensed operations or senior operator who is permanently assigned from the position for which the licensee certified a need for a license. In most of these particular cases the licensee instead determined that the individuals no longer required a license for their original position. This determination and the potential need to notify the NRC were addressed in a letter from the Training Manager to the Operations Manager dated May 21, 1987, but the NRC was not yet officially notified.

- Classroom Training - The inspectors observed a requalification training lecture on emergency operating procedures on November 17, 1987. The class was presented by a senior instructor and appeared excellent in both technical content and technique. The instructor clearly stated the objectives and followed the lesson plan closely. Every step of each EOP was read and discussed in detail. The licensee had just recently employed this method of covering the EOP's on an annual basis and licensed operators interviewed expressed strong support for this new format. The instructor also discussed the basis behind each note and caution, and was very effective in involving students in questions covering EOP related areas such as flow path color codes and symptoms of a ruptured steam generator. The instructor also integrated a review and discussion of the Davis Besse loss of auxiliary feedwater event while covering the associated EOP. In summary, the classroom training observed appeared very effective and the licensee's method of classroom review of the details of each EOP on an annual basis appears to be a definite improvement over just required reading of the EOPs.

- Simulator Training - The inspectors observed several sessions of simulator requalification training, initial simulator training, and simulator team training. In each case there were at least two instructors on the simulator, and they appeared very knowledgeable of the simulator, plant, procedures, and Technical Specification requirements. The simulator time was utilized efficiently, scenarios were carried far enough to ensure individual proficiency, and the post-evaluation critiques were in-depth. Interviews with licensed personnel indicated that they consider the simulator to be the most effective requalification training they receive. Most individuals expressed a desire for an increased amount of simulator training time, an option the licensee is considering once the size of the training staff is increased.

The inspectors reviewed several simulator lesson plans which have recently been revised as part of a training materials upgrade program. This upgrade program for lesson plans and training texts is being conducted primarily by a vendor and was approximately 20 percent completed at the time of the inspection. The revised lesson plans were among the most comprehensive that the inspectors had observed anywhere. Each lesson plan included enabling and terminal objectives, malfunction descriptions, an instructor operations plan, and operating performance measures for evaluating both reactor operator and senior reactor operator performance. At the present time the operating performance measures are related to a specific single malfunction and during operating examinations the operators are graded satisfactory or unsatisfactory. The licensee plans to further expand these performance measures to cover the level of performance on a scenario encompassing several different malfunctions. In addition, more grading levels would be provided for each performance measure other than just satisfactory or unsatisfactory. Other features of these upgraded lesson plans included the identification of related tasks from the job task analysis (JTA) and of related skills and knowledge requirements for ROs and SROs. The instructors' operation plan for each simulator lesson plan required the following:

The simulator session shall be conducted with questions concerning plant conditions, plant safety, mitigating accident conditions, and team building techniques being asked of students. The importance of procedural adherence, and the need to request correction or upgrade of incorrect or inadequate procedures should be emphasized. The bases for normal and emergency operating procedures and the limits associated with simulated casualties, with emphasis on reactivity effects and reactivity control shall be routinely stressed. The need to maintain the plant within the design bases for operation and the potential effect of special testing should also be stressed.

The specific objectives for each malfunction shall be presented during the critique. The instructor will also inform the students of the objectives that were satisfactorily completed.

Another major improvement to the licensee's simulator training program has been the recent addition of the "team training" concept. With the operators absent from the control room, the instructors place the simulator in a transient or accident situation and then "freeze" the simulator at an appropriate point. Several non-related instrument or equipment failures and alarms are also inserted to simulate real life situations and to make the root causes of the transient or accident less obvious.

After freezing the simulator, the shift team is allowed to re-enter the simulator. The team consists of the licensed shift of operators and senior operators as well as the shift technical advisor (STA). The team is then given 15 minutes to review indications and plant status, to determine what transient or accident may be in progress, and to determine a course of action and select the procedures necessary to place the plant in a safe condition.

The inspectors observed a session of this training and it appeared not only to build the team concept, but also to improve communications, the knowledge of plant procedures and Technical Specifications, and the ability to diagnose and react to a given plant abnormal condition. The operators involved were quick to identify all unusual alarms and plant conditions and parameters. These conditions and parameters were discussed as a team along with several potential scenarios. The ROs, SROs and STA gradually eliminated the non related indications and alarms, and determined what they believed to be the actual transient and problem. The interaction between the team members in analyzing the plant condition and in planning the corrective actions was excellent. The team members also discussed related emergency and abnormal operating procedures, Technical Specifications, and emergency plan notifications. After the 15 minutes in freeze, the instructor briefly determined the team's conclusion and plan of action. The simulator was then re-initialized and the team was required to manipulate the controls to place the plant in a safe condition. This training is excellent in that it provides the time not always available during simulator and plant ongoing events, for the entire shift team to stop and analyze conditions and discuss a proper course of action. Reactor operators are made to feel that they are contributing to analyzing the situation, SROs become better listeners, and STAs have an opportunity to contribute engineering expertise as intended. This training should then enable the shift team to more quickly analyze plant conditions during an actual event, and to ensure safe shutdown of the plant as required.

As part of the simulator evaluation, the inspectors also verified that all licensed personnel, with the exception of the seven who have decided to allow their licenses to expire, were documented as having completed the annual and two year plant/simulator manipulations required by 10 CFR 55.

- Instructors' Training - Procedure 1.B.8, Instructor Certification, provides the requirement for instructor training, certification, and evaluations. In addition to adequate technical expertise in the area to be taught, the licensee's instructors are required to complete 40 hours in the fundamentals of instruction. In addition, 80 hours of advanced instructional methods are required to be completed by each instructor within 18 months of certification. The inspectors reviewed several licensed instructors' training records and verified that the basic and advanced training had been completed. The advanced courses were completed at a local university, and, although less than 80 hours in duration, were certified by the university to cover all required areas, and to be equivalent to the 80 hours. One area of concern was that 1.B.8 allowed the licensee to waive this instructor training based on previous education and training. Under performance based training, waivers granted for previous education and experience should be supported by a performance evaluation designed to demonstrate both retention and equivalency.

In 1986 licensed instructors were exempted from nearly all requalification training due to the work load and involvement in development, preparation, and teaching. Under the revised program in 1987, the licensee has implemented an instructors' requalification week immediately preceding each requalification cycle. This represents a major improvement in that all licensed instructors now attend requalification training. In addition, this instructors' requalification week allows the instructors to "rehearse" the requalification presentation, and provides an opportunity for other instructors to critique technical content and methodology.

Licensed instructors were previously procedurally required to spend at least eight hours per quarter on shift to maintain their licenses active. With the new 10 CFR 55 requirement for five 12-hour or seven 8-hour shifts per quarter, the licensee has removed this requirement from the training procedures. Due to staff limitations, the licensee is not attempting to maintain instructors' licenses active through the five 12-hour shifts per quarter. The Training Department is, however, attempting to maintain instructor plant proficiency by placing instructors on shift for three 8-hour shifts per quarter. This requirement is not addressed in training procedures, and most licensed operators interviewed felt that some instructors needed more in-plant time. All licensed individuals interviewed indicated that the licensed instructors were all technically competent and very dedicated.

One concern expressed during interviews of licensed instructors, reactor operators, and supervisors was an apparent shortage of operations instructors. This shortage of instructors, which the licensee intends to resolve in 1988, decreases the time available for the instructors to study and prepare for class, for the development of new courses and materials, for maintaining plant proficiency, and for the revision of training tests and lesson plans. This shortage of training staff also appeared to be the major contributor to two deficiencies noted by the inspectors. One of the deficiencies involved a class which was taught with an out-of-date lesson plan. The plant had revised a Technical Specification and a system alignment but the lesson plan had not been revised prior to class to reflect these changes. This deficiency was identified by a licensee Quality Assurance (QA) audit of training. The inspectors noted that the QA training audits were very comprehensive and included performance evaluation in the classroom and simulator. The licensee's present method of updating lesson plans appeared to be primarily a reliance on an instructor to review all areas covered prior to teaching a class, and then incorporating any changes to procedures, Technical Specifications, systems, setpoints, etc. This places heavy reliance on an already understaffed training staff, and also does not ensure lesson plans already in use are current. Changes to Technical Specifications, procedures, drawings, and plant/system modifications should be incorporated into lesson plans as they occur through pen and ink changes or some other acceptable methodology. These changes could then be permanently incorporated into the lesson plans during annual or semi-annual revisions.

The other deficiency identified by the inspectors was in the area of required reading. Required reading, or operational experience feedback, is a NUREG-0737 requirement and is designed to help licensed personnel maintain awareness of areas such as plant modifications, Technical Specification and procedure revisions, and operating events at the facility or at other facilities. The licensee's procedures require licensed personnel to complete the required reading within 30 days of issuance. The inspectors noted that licensed instructors were severely delinquent in this area; in some cases as much as 5 months. It is essential that instructors of licensed personnel be aware of changes and events and they should, in fact, set the example for other licensed personnel in this area. The shortage of instructors appears to have contributed to this problem, but this is another example of the licensee's inattention to detail in adherence to training procedures. In addition, the licensed instructors were listed under required reading for both Training and Operations sign off lists. The Operations list needs to be updated to remove personnel who have transferred to Training or who are no longer licensed. The Training required reading books should be a subject of the QA training audits. The inspectors did verify that the Operations required reading was current with the exception of

personnel no longer assigned to Operations. Resolution of the instructors' delinquent required reading and the revision of the Operations required reading check list will be an inspector follow up item (395/87-35-01).

- Requalification Examinations - The inspectors reviewed the last annual requalification examination administered by the licensee. The scope and level of the examination appeared adequate to ensure comprehension of the requalification material, and to meet the intent of licensed requalification training. The inspectors also reviewed the grading of several of these examinations. The grading appeared to be both reasonable and consistent. It was noted that the instructors did not, however, always comply with the licensee's procedural requirements in the color coding of original grading and regrading. This is still another example of a general lack of attention to detail in the area of procedure adherence. A review of the reactor operator annual requalification examination results for 1984, 1985, and 1986 indicated success rates of 91, 89, and 84 percent respectively, or an overall rate of 89 percent.

The senior operator examinations for the same period indicated success rates of 90, 85 and 92 percent or an overall rate of 89 percent also. Considering the scope and depth of the examinations, this success rate indicates the licensee's requalification training program to be effective.

One area of concern identified by the inspectors was a high level of repeat questions on makeup examinations for failed requalification cycle examinations. It appeared in some cases that the repeatability exceeded 90 percent. The licensee promptly responded to this concern by revising Training Procedure II.B.4 to require 75 percent new questions on remedial examinations.

The licensee has placed their requalification examination question bank on a computer which is not accessible to licensed personnel other than instructors and training staff. The inspectors verified the security of assembled requalification examinations for the week of November 16, 1987. These examinations were in locked cabinets with the key under control of a senior instructor.

- Requalification Training Records - The licensee has established a computer program (NET) to track records of training and performance. In addition to computer records, the licensee has also elected to maintain hard copy training files for each individual. While the computer program provides ready access to a specific training record such as a test or attendance sheet, the hard copy files allow the licensee to ensure an individual's entire training file is complete. The hard copy records also allow the training staff to review an individual's entire training file and to determine trends or

weaknesses. The licensee has revised the training record maintenance section of Training Procedure II.B.4 to reflect the new record requirements of 10 CFR 55. II.B.4, Section 14 requires records of an individual's requalification performance such as documentation of participations in requalification training, examinations, evaluations, and required control manipulations, to be maintained as long as an individual is employed by the company, plus two years. Other requalification program records such as documentation of required reading and program evaluations are required to be maintained for at least six years. The inspectors noted that this list did not contain records of remedial training for deficient areas as required by 10 CFR 55. The inspectors reviewed the training files for two individuals who had been removed from licensed duties for failure of the annual requalification examination. These individuals were promptly removed from licensed duties, provided with remedial training, and re-examined as required. Their training records did not, however, reflect the type or duration of remedial training provided as required. The licensee responded promptly to this deficiency by revising II.B.4, Section 14 to require retention of records of remedial training. During review of these training files the inspectors also noted that they did not contain the letters of removal from licensed duties as required by II.B.4, Section 14.A.7. This is another example of the licensee's inattention to detail in adherence to the requirements of training procedures. Ensuring completeness of requalification records will be an inspector follow up item (395/87-32-02).

- On-site Degree Program - In cooperation with the University of Maryland, the licensee has established an off-campus/on-site degree program. Successful completion of this program allows an individual to obtain a four year Bachelor of Science Degree. Most of the course work can be completed on computers, and the utility has divided the cost of the individual computers with each participant. Professors from the university are normally on-site once a month for question and answer sessions, and written examinations are administered on-site. As an added convenience, students can complete course work at home with the purchase of a modem which allows their telephone to communicate with the main computer. The licensee's objectives in the establishment of the degree program include to improve professionalism, satisfy career progression potential, and to meet the intent of proposed NRC rules. This last objective references the proposed requirement for all Shift Supervisors (SROs) to have a four year degree by the year 1991. This appears to be an excellent program which allows shift workers to obtain a degree despite difficult and rotating work schedules. It also allows operations personnel an opportunity to progress into levels of management requiring a degree and should eventually increase the operations experience in the licensee's management chain.

6. Licensed Operator Training (Module 41701). No violations or deviations were identified in this area.

Initial (replacement) license training is conducted in accordance with Nuclear Education and Training Group Manual, Section III.A.3, Revision 3, Licensed Operator Training Program. The reactor operator and senior reactor operator training programs each consist of five courses: 1) technical training, 2) operating practices training, 3) simulator training, 4) on-the-job training and 5) audit examinations and review. These courses prepare the trainee for the NRC examinations and performance of licensed activities.

The inspectors reviewed the Licensed Operator Training Program, to verify conformance with the commitments and requirements specified in 10 CFR 55, NUREG 0737, and FSAR section 13.2. In addition to this verification, a comprehensive review of selected training records of plant personnel who participated in recent licensed operator classes was conducted to verify the following items:

- . training record content
 - . examination grading
 - . attendance requirements
 - . instructional contact hour requirements
 - . completion of required OJT
 - . remedial training and re-examination
- Training Records - During inspection 85-07, the inspectors commented that practical factors were normally completed by the trainee and signed off by the shift supervisor over an extended period, resulting in the qualification card becoming too soiled to be included in the training record. Shift Supervisors typically transferred that data to a clean copy prior to forwarding the qualification card to training. Since plant practice required the transferrer to enter the current date, this resulted in loss of the correct date of accomplishment and the appearance that the trainee accomplished an impossible number of tasks in one day. During this inspection the inspectors confirmed that procedure III.A.3, Revision 3, has been changed to require the person making the transfer to note the original date of the check-out, and to indicate that he is making a transfer. The personnel record review confirmed that this procedural requirement was being adhered to.
- Training Materials and Examinations - The reactor operator licensee examination pass rates for 1984, 1985, and 1986 were 67, 38, and 89 percent respectively, with an overall rate for the three years of 65 percent. For senior reactor operators the three rates were 87, 57, and 100 percent with an overall rate of 82 percent. Considering the scope and depth of the replacement operator examinations, this success rate indicates the licensee's program is effective.

The inspectors also reviewed licensed operator training materials including normal and emergency operating procedures, lesson plans, Technical Specifications, emergency plan, and drawings. Of particular note was the current effort toward updating and correcting the plant specific job task analysis for Summer Nuclear Station, and the subsequent incorporation of these identified job task designations into the lesson plans. During the assessment period, replacement operator license classes were not being conducted by the licensee; therefore, an assessment of classroom instruction adequacy was not made.

- Simulator Training - A review of the V. C. Summer simulator training program indicates that simulator training for both initial licensing and requalification meets all of the current requirements of 10 CFR 55 and NUREG 0737. The simulator was well maintained and was representative of the plant control board. Simulator lesson plans incorporated enabling objectives and referenced plant specific tasks. Simulator instruction for requalification and management and engineering training was observed to be effective and included a very candid and well received critique at the conclusion.

The inspectors reviewed with licensee personnel the area of the maintenance of the simulator control boards. While the intent was to ascertain whether plant modifications, where applicable, were being incorporated into the simulator control panels in a timely manner, it was found that the licensee exceeds this requirement. An annual control board audit is performed by comparing detailed photographs of the plant and simulator control panels. Any discrepancies noted are then tabulated and evaluated as to whether the simulator panel or the plant control panel needs to be corrected. The 1987 audit identified approximately 300 items, including very minor differences such as differences in line width on meters. These 300 items have been reviewed and evaluated, and either resolved or identified in Simulator Discrepancy Report 87-74. One-hundred and eight items remain to be resolved with a desired completion date of March 31, 1988.

A review of the simulator curve book, as compared to the curve book being used in the plant, revealed that the simulator is utilizing cycle 3 material while cycle 4 is currently applicable to the plant. The impact of this discrepancy upon operator training has not been evaluated by the licensee. The inspectors encouraged the training staff to make such an evaluation, and to revise training materials and curves if necessary.

- Instructor Certification and Evaluation - Instructor certification and evaluation is governed by Nuclear Education and Training Group

Manual, Section I.B.8, Instructor Certification and NTCI-502, Revision 0, Instructor Evaluations. Documentation of technical expertise, qualifications and SRO licenses or certifications are contained in the individual instructor qualification files. The licensee provides periodic seminars to upgrade instructor skills, and includes this information as part of the official qualification record.

Instructor evaluations are required on a semi-annual basis for both classroom and simulator instruction. Review of records indicated that the licensee had complied with these required evaluations.

Recent revisions to NTCI-502 were made to correct three specific evaluation form weaknesses identified during inspection 85-07 dated March 13, 1985. These three weaknesses were:

- a. The classroom form lacked a requirement for the evaluator to sign the form acknowledging its existence and contents.
- b. The classroom and simulator forms were lacking any requirement for the evaluator's supervisor to sign the form acknowledging its existence and contents.
- c. The classroom and simulator forms lacked a requirement and also lacked an appropriate space for documenting the action taken for unsatisfactory performance.

The inspectors confirmed, by record review, that these three provisions of NTCI-502 were being implemented.

7. Non-Licensed Staff Training (Module 41400). No violations or deviations were identified in this area.
 - Management and Engineer Training - Managers and engineers presently attend a four week (160 contact hour) program to broaden their technical knowledge and understanding of nuclear power plant systems, and principles of reactor plant operation and administration. The current program is a revision to the Nuclear Education and Training Group Manual, and replaces the former 7-day course entitled "Nuclear Plant Systems and Processes for Managers and Engineers", III.A.7, Revision 0. The current program is governed by Nuclear Education and Training Group Manual procedure III.A.7, Revision 1, Nuclear Training for Technical Staff and Managers and instruction NTCI-308, Revision 2, by the same title.

Inspection 85-07 dated March 13, 1985, identified that mitigating core damage training for managers had been given initially but no retraining had been provided for nonlicensed managers in the operations chain nor had the licensee committed to provide these nonlicensed managers with such training. A review of mitigating core damage training revealed that this training is regularly taking place for selected managers and engineers. Specifically, management duty supervisors are receiving annual requalification in mitigating

core damage which includes core cooling mechanics, accident analysis, and actions for mitigating core damage. While this training has been completed for management duty supervisors in both 1986 and 1987 as evidenced by review of selected individual's files, no procedural commitment has been made by the licensee, and therefore the inspector follow up item (395/85-07-05) cannot be closed at this time.

- Quality Assurance (QA) and Quality Control (QC) Training - Quality assurance training is implemented by the following procedures:

- . Administrative Instruction (AI) -206, Departmental Required Reading
- . Administrative Instruction (AI) -205, Quality Assurance Personnel Indoctrination and Training

Quality control training is implemented by the following procedures:

- . Administrative Instruction (AI) -206, Departmental Required Reading
- . QC procedure A-NQCP-8 (QPS-807), Qualification and Certification of Nuclear Quality Control Inspection Personnel
- . Administrative Instruction (AI) -204, Inspector Training

The inspectors reviewed the above procedures to determine that they establish a formal program to train a new hire to become a QC or QA inspector. Although a training program has been established, there has been no opportunity for full utilization of the program since only previously qualified personnel have been hired. As in other training areas, under performance based training the licensee needs to establish performance based evaluations as a basis for granting qualifications for previous training or experience.

- Non-licensed Operator Training - The Auxiliary Operator (AO) Training Program consists of four courses: 1) basic academic training, 2) shift familiarization, 3) basic plant systems, and 4) AO watch qualification. Approximately 24 months is required to complete all four courses. During this time both oral and written examinations are periodically administered to determine a student's progress. Additionally, the trainee is provided with a listing of practical factors which must be completed prior to qualification as a watch stander.

A requalification program for auxiliary operators, as described in Procedure III.A.2, Revision 3, Requalification Program for Auxiliary Operators, is established "to provide a means for maintaining the proficiency of auxiliary operators in plant operations and particularly in maintaining competence in response to abnormal, and

emergency situations". The program provides for a minimum of 80 total contact hours of instruction annually for each AO. Presently, AOs attend requalification training with the same frequency as licensed operators and therefore exceed the minimum requirement of 80 hours.

Auxiliary operators are required by Procedure III.A.2 to undergo a continuous on-the-job training program. This program includes: 1) participation in start up, operation, and shutdown of various systems, 2) walk through of emergency or abnormal operations pertinent to his watch station, and 3) standing of at least one proficiency watch per calendar quarter on each watch station for which he is qualified. Performance of these tasks is documented on an "AO Requalification Practical Factors" sign off sheet. The requalification practical factors are required to be completed annually. The sign off sheets are maintained in the main control room in a separate book for each operating shift.

The inspectors reviewed the practical factors books for each of the five on shift crews. One of the five shift books was not being maintained to reflect the current status of practical factors completed. SAP-200, Revision 4, Conduct of Operations, section 6.14.1 states that "the reactor operator for each shift is responsible for maintaining the shift's practical factors book and coordinating with the Shift Supervisor to ensure practical factors are being documented". This is another example of an inattention to detailed procedural requirements. Operations management initiated prompt corrective action in response to the identified deficiency.

Station Administrative Procedure (SAP)-200, Conduct of Operations, Revision 4, section 6.13.4 states that "all nonlicensed operators should also review the Required Reading Book" (licensed operator Required Reading Book). At present this procedural requirement is not being performed by non-licensed operators. They, instead, are periodically briefed by shift management concerning relevant plant and industry events, but no required reading program has been established. The inspection team recommended that a separate required reading book be implemented for nonlicensed operators, or that existing procedural requirements be enforced.

A sampling of AO training files was inspected for content and completeness. Generally, the files appeared to be well maintained. The inspectors did note that several files contained copies of interoffice memorandums from the Training Department to an AO, or his Shift Supervisor, concerning the need to makeup or retake an examination. In some cases the examination had never been taken due to shift manning requirements in the plant. Even when the missed examination was eventually taken, a lengthy period of time (months) often elapsed. In one case at least three memos were sent to the

same individual over a three month period. It was apparent from these memorandums that several AOs have missed one or more training module examinations and that these missed examinations were never made up. Procedure III.A.2, Revision 3, "Requalification Program for Auxiliary Operators" should be revised to include provisions for mandatory makeup of missed requalification lectures and examinations with a maximum allowable time established.

One of the training files reviewed contained a retake examination from an AO requalification module. The inspectors discovered that on this particular retake examination 64 percent of the questions also appeared on the original examination. The licensee, prior to the end of the inspection, had revised Procedure II.B.4 to require that retake examinations contain no more than 25 percent of the questions asked on the original examination. A review of the procedures for auxiliary operator training and requalification program for auxiliary operators revealed that different passing grades are stated for these two training programs. A grade of 75 percent is passing for the initial AO training, while 80 percent is the passing grade for any requalification examination. Standardized grading criteria should be established for these two phases of AO training, and ideally would be the same 80 percent as licensed operator training.

The inspectors attended an AO requalification class where the topic covered was the main generator stator cooling water system. The lesson plan utilized was part of the Turbine Building System, Chapter TB-4, Turbine and Generator Auxiliaries. Those AOs in attendance were all fully qualified AOs, and the instructor had also been a qualified AO with several years of in-plant experience. The class was well conducted with good student participation. The instructor handled the class and lecture material very professionally. The lesson material appeared to give sufficient detail and was adequate.

The inspectors conducted interviews with randomly selected AOs concerning the adequacy of various phases of nonlicensed operator training including classroom and on-the-job training. All comments from the AOs were positive in nature. Each AO interviewed expressed satisfaction with the level of instruction received.

- Maintenance Training - The inspection team reviewed the Maintenance Training Program currently used for the electrical, instrumentation and control (I&C), and mechanical maintenance specialties. Several areas related to maintenance training were inspected and are discussed separately. It should be noted that a great deal of effort has been expended by the licensee in recent months in preparation for the INPO accreditation of maintenance training. The accreditation board is scheduled to meet November 23, 1987.

The inspectors reviewed maintenance operating experience feed back, the method by which LERs and I&E notices are reviewed for possible incorporation into the training program. Nuclear Technical Education

and Training Instruction (TI-6), Revision 2, Review of Licensee Event Reports (LERs), Operating Experience Reports (OERs), Off-Normal Occurrence Reports (ONOs), and Similar Reports, details the review flow path through which these documents go before incorporation into training material. This instruction appeared to provide a thorough and adequate review process.

The inspectors reviewed the follow-up training which occurred as a result of LER 87-024, Negative Rate Reactor Trip Due to Technician Deenergizing Rod Control Power Supply. This event involved an I&C technician personnel error which resulted in a reactor trip. All I&C personnel were subsequently trained on the circumstances surrounding this event and instructed in preventative actions.

Each maintenance discipline is required by procedure to maintain a "Periodic Required Reading Book". Required reading books for each maintenance shop and the one for maintenance instructors were inspected as to the individual sign off status. In each case, personnel were found to be delinquent in reading and signing off the required reading. This deficiency was brought to the attention of the Manager, Nuclear Technical Education and Training. Prior to the completion of this inspection, action had been taken to correct this deficiency.

The inspectors were given a tour of existing maintenance laboratory facilities and discussed with Training management plans for future construction. Currently, only electrical maintenance has a classroom laboratory. That laboratory consists of Lab-Volt System equipment and provides modular stations, AC and DC motor controllers, disectable motors, reactor trip breakers, and a Limitorque valve operator mockup on wheels.

The licensee has tentative plans to renovate an existing building and convert it to a mechanical maintenance laboratory. These plans have not been finalized and at present there is no projected completion date. I&C also does not have a classroom laboratory. Equipment for such a laboratory has been budgeted for 1988 and a purchase order for the equipment has been submitted. It should be noted that maintenance training occupied a new classroom building approximately three months ago. The electrical laboratory is located in this building as will be the I&C laboratory when that equipment arrives on-site.

In the absence of laboratory facilities, the majority of maintenance hands-on training is, of necessity, accomplished via on-the-job training in the plant. The licensee expects the I&C and Maintenance training programs to be INPO accredited without the training laboratory facilities available. The inspectors, however, encouraged the licensee to expedite its development of these training facilities emphasizing the advantages of such facilities for performed based training including:

- increased training capabilities and efficiency
- controlled training conditions
- standard performance evaluations
- immediate student performance feedback
- reduced radiation exposures
- reduction in inadvertent plant trips, ESF initiations, etc.

The inspectors attended a "Corrosion Concepts" class, lesson plan number AQA 16-001, Revision 5, and found the class to be well conducted and the instructor to be very knowledgeable in the subject area. The class consisted of mechanical and electrical technicians. Class participation was good. The material was presented in a clear and concise manner and at a level commensurate with the knowledge level needed by the student. The lesson plan appeared to adequately address the topic of corrosion.

The inspector reviewed Station Administrative Procedure (SAP) -108, Guidelines for Controlling Station Work Activities, Revision 2, which covers training requirements for contract personnel. In addition to requiring that contract personnel shall be properly trained and qualified in accordance with ANSI N18.1 and applicable codes, the procedure also requires that specific personnel may be required to participate in additional training courses. One such example of additional training occurred during November, 1985, when contract personnel were given three hours of classroom training followed by three hours of laboratory training on steam generator tube plugging. The particular training session and associated lesson plan appeared to be adequate.

Procedure I.B.8, Revision 2, Instructor Certification, provides guidelines for instructor continuing training. This program is designed to maintain, improve, and advance both the technical competence and instructional skills of qualified instructors. Training attendance records were reviewed to determine compliance with this procedure. Continuing training is being conducted on a periodic basis for the maintenance training facility staff with several sessions having been taught by a local university. Also, three instructors have recently attended the INPO "Principles of Training System Development" course.

Procedure I.B.8, Revision 2, requires that instructor performance be evaluated at least semiannually to verify that certified staff instructors are maintaining performance at the level at which they are certified. This evaluation should include a review of actual training presentations. Due to a plant outage during early 1987 and instructors' involvement in lesson plan development for the upcoming INPO accreditation, not all instructors were evaluated during the first half of 1987. This procedural variation was apparently unavoidable, since opportunities for classroom observation were limited during this period.

The method for providing security for examinations and the examination question bank was reviewed. This material is kept in a locked file cabinet with access to the file being limited. Once a graded examination has been reviewed by the student, he acknowledges his review by signing the examination cover sheet. The cover sheet is retained in the students training file and the actual examination is destroyed. Examination security appeared to be adequately maintained.

At least one training file from each of the maintenance disciplines was inspected. Record keeping appeared to be adequate and no discrepancies were noted.

The inspectors selected for examination the training records of those five individuals who were assigned fire brigade duties during a specific day of this inspection. Attention was directed to the area of attendance at quarterly fire training meetings, attendance at the 2-year refresher training, and participation in the required two drills per year for each brigade member. Training for those five fire brigade members was found to be current. The inspectors also noted that the fire training records were very well maintained.

I&C technicians are required by NUREG 0737, Item II.B.4 to receive training in mitigating core damage. The licensee presently teaches a 2-day annual course, lesson plan number LP# AIA05-002, Revision 0 for all I&C personnel. For 1987, only one person remained to complete the annual course.

Requalification/refresher training is addressed for each of the three maintenance disciplines in the Nuclear Education and Training Group procedures III.B.2, III.B.3, and III.B.4, sections 7.1 and 7.2. These procedures state that courses will normally be selected from the initial training program along with any major changes or modifications to applicable plant procedures, equipment and systems. Requalification training occurs at different intervals for each discipline, however, all three disciplines appear to rotate through training on a regular basis. Several classes were being conducted during the inspection with a published training schedule available for the week's classes.

Each maintenance area maintains task qualification records for each of its technicians. Each appropriate discipline maintenance training manual states requirements concerning what tasks apprentice personnel may perform. An apprentice not signed off as qualified in a specific area can only perform a job function under the direct supervision of a qualified person. Even if signed off, it is the licensee's policy to require supervision of the apprentice during task performance.

The inspectors conducted interviews with personnel from all three maintenance disciplines. There was a general consensus that the training being provided is very adequate. There appeared to be good

rapport between the maintenance personnel and Training. All those interviewed were complimentary of the Training Department effort. Additionally, two maintenance training instructors were interviewed. Each indicated that good support was being received from the maintenance shops, that adequate lesson preparation time was given, and that classroom teaching schedules were posted well in advance of the actual class. Also commented upon was the enthusiastic response of the trainees to the training program. The Manager, Nuclear Technical Education and Training pointed out the need for additional instructors. Two additional instructors are planned to be hired during 1988 (1 I&C instructor and 1 mechanical maintenance instructor).

8. Natural Circulation Cool Down (TI 2515/86, Inspection of Licensee's Actions to Implement Generic Letter 81-21, Natural Circulation Cooldown). No violation or deviations were identified in this area.

The inspectors reviewed the portion of the licensee's actions to implement Generic Letter 81-21, Natural Circulation Cooldown, which entail training. This training is presented to licensed operators as a part of their requalification program, and to prospective licensed operators in the Licensed Operator Training Program. These training programs are conducted in accordance with the procedures cited in the Licensed Operator (paragraph 6) and Requalification (paragraph 5) sections of this report.

The inspectors verified that the training programs include both classroom and simulator training on natural circulation cooldown. The records of selected licensed operators were reviewed to confirm their successful completion of this training. Curricula and training materials were reviewed to insure inclusion of a review of appropriate IE bulletins and power reactor event reports; in particular the St. Lucie event discussed in Generic Letter 81-21. Instructors were interviewed to assure that the training includes discussions of the temperature difference between different areas of the reactor coolant system (RCS) during natural circulation, as well as a review of subcooling margin and its calculation.

Licensee actions other than training necessary to implement Generic Letter 81-21 will be inspected during a future inspection.