



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

Report No.: 50-424/88-07

Licensee: Georgia Power Company
P. O. Box 4545
Atlanta, GA 30302

Docket No.: 50-424

License No.: NPF-68

Facility Name: Vogtle 1

Inspection Conducted: January 25-29, 1988

Inspector: *P. Moore*
P. Moore, Team Leader

3/23/88
Date Signed

Team Members: M. Lewis
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3/29/88
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SUMMARY

Scope: This routine, announced inspection was conducted in the areas of licensed operator training, non-licensed operator training, maintenance training, and natural circulation cooldown emergency operating procedures.

Results: One deviation was identified wherein the licensee deviated from commitments made in their NRC approved Procedure Generation Package (PGP) in writing their Emergency Operating Procedures for natural circulation cooldown.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *R. Bellamy, Plant Manager
- *G. Bockhold, General Manager
- *C. Cross, Nuclear Production Supervisor
- *W. Kitchens, Operations Manager
- *G. Lee, Operations Supervisor
- *W. Mundy, QA Supervisor
- *W. Nicklin, Regulatory Compliance Supervisor
- *J. Schwartzwelder, Nuclear Safety Compliance Manager
- *D. Smith, Nuclear Operations Manager
- *R. Spinnatu, Independent Safety Engineering Group Supervisor

Other licensee employees contacted included engineers, technicians, operators, mechanics, instructors, and office personnel.

NRC Resident Inspectors

- *J. Rogge
- *C. Burger
- *R. Schepens

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 29, 1988, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection. No dissenting comments were received from the licensee.

<u>Item Number</u>	<u>Status</u>	<u>Description/Reference Paragraph</u>
424/88-07-01	Open	DEVIATION - Failure to follow Procedure Generation Package commitments in writing Emergency Operating Procedures for natural circulation cooldown (paragraph 10.a.)
424/88-07-02	Open	Inspector Followup Item (IFI) - Required reading program inadequacies (paragraph 8.b.)
424/88-07-03	Open	IFI - Cover use of Technical Specification cooldown limits curve in regular training for licensed operators (paragraph 10.b.)

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Licensed Reactor Operator (RO) and Senior Reactor Operator (SRO) Training Programs (41701)

Inspectors evaluated the licensee's RO and SRO training program by reviewing programs and records, and conducting interviews with operators and instructors pertaining to the training curriculum, simulator, and requalification program.

a. RO and SRO Candidate Training Program

The licensee's RO training program is described in procedure 60602-C, Reactor Operator Training Program, Rev. 3, and the SRO training program in procedure number 60601-C, Senior Reactor Operator Training Program, Rev. 3. These procedures cover initial, specialty, and requalification training for licensed operators. In addition to these, procedure 10010-C, Operator Qualification Program, Rev. 6, delineates the qualification requirements for licensed candidates.

The inspectors performed a complete review of the records for initial training for an RO and SRO candidate. The candidates' NRC Form 398, Personnel Qualifications Statement Licensee, was also reviewed to determine the accuracy of the information contained on the forms.

The review of training records for the two licensed operators indicated that the operators successfully completed all required training in accordance with procedures 60601-C and 60602-C. The inspectors also determined that licensed operators met the qualification and experience requirements delineated in procedure 10010-C. The information contained on NRC Form 398 accurately reflects the training provided to the candidates, including the completion of the required number of reactivity manipulations.

Interviews with licensed operators further verified the accuracy of training records, qualifications of candidates, and information contained on the NRC Form 398.

In reviewing walkthrough training checklists which are signed by trainees to document completion of independent plant systems and area walkdowns, the inspectors noted that one RO had lost more than half of his training module checklists. In particular, modules 3, 4, 6, 8, and 9, had been lost. The RO obtained new checklists and indicated on them that the original cards had been lost, and that the walkthroughs had been completed during the training process. Credit is taken for the walkthrough training program on the RO's Form 398 in the area of control room operations. The inspectors

discussed the lost checklists with the licensee's training management to determine if the lost checklists were handled in accordance with department policy. It was determined that the licensee had not formulated a policy on measures to be taken when checklists are lost. The licensee committed to develop a policy in this area.

No violations or deviations were identified in this area.

b. RO and SRO Requalification Training

The licensee's RO and SRO requalification training programs are described in procedure number 00715-C, License Requalification Program, Rev. 2. This procedure provides the criteria for the content and conduct of the requalification program, including the conditions of a license as specified in 10 CFR 55.31.

The inspectors reviewed the licensed operator requalification program to determine its compliance with 10 CFR 55. In addition, the inspectors performed a complete examination of the records for requalification training for both a licensed RO and SRO. Interviews were conducted with the licensed operators to verify their participation and completion of the requalification training program as documented in the training records.

The inspectors determined that the requalification program as outlined in procedure 00715-C appeared to be consistent with the requirements of 10 CFR 55. In addition, the review of the training records for the two licensed operators indicated that the records were complete, and requalification training was conducted in accordance with procedures. The record review included an examination of classroom and simulator attendance records and examinations, as well as documentation of on the job training and procedure reviews. Interviews with the licensed operators further verified the accuracy of the requalification training records.

No violations or deviations were identified in this area.

c. Instructor Training and Qualification Program

The training and qualification requirements for instructors involved in licensed operator training are delineated in procedure 60100-C, Training Department Training and Qualification Procedure, Rev. 6. This procedure establishes the process for determining and verifying that individuals meet the instructional capability and the technical qualifications for specific instructor positions.

The inspectors reviewed the qualifications and training records for two licensed operator instructors. It was determined that the instructors met the selection criteria, qualification, and training

requirements of the procedure. Interviews of instructors verified the accuracy of the training records.

No violations or deviations were identified in this area.

d. System Master Plans

The licensee has formalized their various training curriculums for each discipline into documents called System Master Plans (SMPs). The inspectors reviewed SMPs for Licensed Operator, Non-Licensed Operator, Mechanical Maintenance, Electrical Maintenance, and Instrumentation and Control personnel.

The SMPs serve as the central document for each discipline's training and qualification requirements. The Licensed Operator SMP introduction lists: the experience requirements for SROs, ROs and STAs; the applicant screening tests; the union agreements; and the basic training course requirements. The SMP details the training curriculum outline. This outline contains an overview section, a description of the topics covered, general objectives, student learning activities, and student evaluation forms. The curriculums defined in the SMPs, like the rest of the training programs, are still being modified to incorporate changes that are being implemented as a result of Job Task Analysis.

The committee log, which is the last section of the SMP, contains the meeting minutes wherein the course outlines or curriculum changes were made, and the reasoning behind them. This should prove very useful in the implementation of Job Task Analyses, as well as providing a readily accessible document detailing the history of the curriculum development. The inspectors noted that the SMP is well established and maintained and is responsive to the needs of the trainees.

e. Observation of Classroom and Simulator Training

An inspector observed a classroom training session on the Nuclear Service Cooling Water (NSCW) system for SROs, and simulator requalification training on reactor power increases. The instructors appeared competent in the areas of instruction, and used question and answer methods effectively to keep students alert. Both classroom and simulator training sessions appeared adequate.

No violations or deviations were identified in this area.

f. Plant/Simulator Modifications

Procedure 60005-C, Incorporation of Changes in Training Material and Simulator, Rev. 3, describes the program for incorporating plant design changes into training programs and the simulator. This procedure requires that the Document Review Coordinator review all

plant design changes, enter action items in a computer tracking system called Training Response to Analyzed Significant Events (TRASE), and disseminate the TRASE forms to appropriate training and simulator supervisors. Upon receipt of the TRASE forms, the training supervisor assigns an instructor to determine the training materials that may need revisions, and then assigns an individual to implement corrections to affected training materials. Corrective measures are documented on a corrective action assignment sheet. Similarly, proposed changes to the simulator are documented on Simulator Change Notices (SCN) consistent with procedure 60200-C, Simulator Maintenance Procedures, Rev. 1.

The inspectors reviewed two plant design modification to determine if appropriate simulator and lesson plan changes were implemented in accordance with the training procedures. These plant modifications included change control packages (CCP) B10130M approved September 22, 1986, and CCP B102345 approved June 26, 1986. The former CCP contained logic and time delay setpoint changes, and valve midpoint open settings for the Nuclear Service Cooling Water (NSCW) normal and bypass valves. The latter CCP removed installed instrumentation on the Boron Injection Tank (BIT) recirculation system.

SCN 297 dated May 27, 1987, documents the simulator changes made as a result of NSCW system change control package. In addition, lesson plan LO-LP-06101-04-C, Nuclear Service Cooling Water, Rev. 4, provides training information related to the NSCW normal and bypass valves.

The inspectors reviewed SCN 297 and lesson plan LO-LP-06101-04-C to determine if the appropriate changes had been made. Walkdowns of the simulator panels were also conducted to verify, to the extent possible, that the modifications were made. The simulator modifications and lesson plan changes appeared adequate and complete.

SCNs 183 and 266, dated March 4, 1986, and January 12, 1987, respectively, document simulator changes made as a result of the BIT recirculation system CCP. The following lesson plans and student handout contain information pertaining to the BIT recirculation system:

- LO-LP-13001-01-C, ECCS Overview/Introduction, Rev. 2;
- LO-LP-13101-02, ECCS - Part II, Rev. 2;
- LO-LP-13301-00, Low Head SI and ECCS Recirc, Rev. 0;
- LO-LP-09202-01, CVCS - Alternate Flowpaths, Rev. 1;
- LO-HO-13001-00-002, Emergency Core Cooling Overview, Rev. 0.

The inspectors reviewed the above listed simulator change notices, lesson plans, and student handouts for the BIT recirculation system. Walkdowns of the simulator panels were conducted to verify that the appropriate modifications were made. The simulator modifications were adequately completed. However, several of the lesson plans and

a student handout relating to the BIT recirculation system had not been completely revised. In particular, drawings located in lesson plans LO-LP-13101-02 and LO-LP-13301-00, and in student handout LO-HO-13001-00-002 were not appropriately revised to reflect the proper valve positions in the BIT recirculation system CCP.

The inspectors discussed these drawing discrepancies with the licensee, and determined that the oversight was due to an incomplete review of the lesson plans by the responsible individual. A training feedback form, identifying the incorrect training materials, was immediately issued and the lesson plans and student handouts were revised.

No violations or deviations were identified in this area.

g. Status of Simulator

The status of outstanding simulator deficiency reports (DRs) was discussed with individuals responsible for simulator modifications, and with the training management. The training management remains cognizant of the outstanding simulator DRs, and provided the inspectors with a list identifying each outstanding DR and a graph trending the number of opened and closed DRs. In reviewing this data, the inspectors noted that the licensee prioritizes completion of simulator modifications into three categories. Category 1 is emergency DRs, category 2 is non-emergency DRs, and category 3 is testing/upgrades. The data indicated that the licensee has about 65 outstanding workable DRs with no outstanding category 1 items. A decrease in the number of DRs was noted.

No violations or deviations were identified in this area.

6. Non-Licensed Operator Training (41400)

Inspectors performed a review of the licensee's non-licensed operator training program. Areas included in the review were curriculum, training records, employee interviews, instructor interviews, and exam content.

Non-licensed operators at Vogtle are called Plant Equipment Operators (PEOs). There are four PEOs per unit, per shift: Turbine Building Operator; Auxiliary Building Operator; Outside Area Operator; and Rover.

a. Training Program

The inspectors reviewed the following procedures pertaining to the training of PEOs:

- 10010-C, Operator Qualification Program, Rev. 6;
- 11957-C, Basic Non-Licensed Operator Training Qualification Checklist, Rev. 1;

- 11958-C, Auxiliary Building Operator Training Qualification Checklist, Rev. 2;
- 11959-C, Turbine Building Operator Training Qualification Checklist, Rev. 2;
- 11960-C, Outside Area Operator Training Qualification Checklist, Rev. 2;
- 60605-C, Non-Licensed Operator Training Program, Rev. 2.

Candidates for the non-licensed operator training program are selected through an Edison Electric Institute Plant Operator Selection Series Exam. Selected personnel attend a Basic ten-week course to ensure familiarity with nuclear power plant components and general operational theory.

Following the ten week basic course, the PEOs must complete basic Non-Licensed Operator cluster Requirements per procedure 11957-C. A cluster is defined as "a unique and distinct operator responsibility area which is made up of those knowledges and/or skills necessary for an operator to master, to enable him to perform important tasks in that area." The basic requirements include those area considered necessary to perform the PEO's basic duties. After completion of the basic clusters, the PEO is then required to complete those cluster associated with the specific area in which they will be working (i.e. Auxiliary, Turbine, etc...).

The inspectors reviewed lesson plans for Reactor Theory, Electrical Distribution, Heat Transfer, and PWR Systems. The lesson plans were comprehensive in their coverage of the topics.

No violations or deviations were identified in this area.

b. Requalification Training

Requalification training for PEOs is limited to "annual training or exemption testing to ensure adequate awareness of important changes to plant emergency procedures, radiation protection procedures, security procedures, and respirator procedures." The inspectors review of the requalification training program indicated that it met all applicable regulatory guidance but was somewhat basic in light of recent industry trends toward a more comprehensive program. Some utilities have implemented more extensive requalification training that includes review of the initial topics taught: Systems; Reactor Theory, Thermodynamics etc. . . as well as participation in simulator training.

No violations or deviations were identified in this area.

c. Training Records

The inspectors reviewed the training records of four PEOs. This included classroom attendance records, examination scores and examination content, as well as consistency with established lesson plans. This was made difficult by the fact that the licensee has made major improvements over the past two years to their training programs. Some of these changes consolidated or broke up a training cluster. The inspectors did not detect any instances where the program under which an individual PEO did not meet the requirements of the program that was established at the time of their respective training. All of the selected individuals met the criteria for passing their courses.

Inspectors reviewed selected plant LERs that were attributed to operator error on the part of PEOs. None of the individuals' records that were selected based upon personal involvement in plant events exhibited training deficiencies in the area where the operational events occurred.

No violations or deviations were identified in this area.

d. Instructor/PEO Interviews

The inspectors interviewed a non-licensed operator instructor to evaluate the quality of the entry level personnel as well as the improvements made to the program over the past two years. The instructor was very positive about the present state of the program and the direction in which it was headed. The instructor related that with the implementation of Job Task Analysis, the paperwork load for instructors was very heavy at times, but this was expected with the developmental status of the program at present. Every six months, instructors are required to spend one week on shift in the plant performing tasks and duties with PEO's. The instructor felt that this was a good practice in that it fostered a better rapport with the students. Overall the instructor, who had been at the plant for more than three years, expressed satisfaction with the training program.

Two PEOs were interviewed on their impressions of the training program and its relevancy to the tasks that they perform in the plant. They considered the instructors to be competent and well qualified. Neither of them responded in such a manner as to indicate problems with the training program.

No violations or deviations were identified in this area.

7. Maintenance Training (41400)

The inspectors reviewed the programs established for the training of Mechanical Maintenance, Electrical Maintenance, and Instrumentation and Control. This included interviews with selected personnel and instructors, review of classroom attendance records and exam performance

for selected personnel, and a review of the curriculum requirements and waiver policy.

a. Training Program

The inspectors reviewed the following procedures regarding the training program for maintenance technicians:

- 20011-C, Electrical Maintenance Personnel Training and Qualification, Rev. 6;
- 60606-C, Electrical Maintenance Training Program, Rev. 2;
- 20013-C, Instrument and Control Maintenance Personnel Training and Qualification, Rev. 4;
- 60608-C, Instrument and Controls Maintenance Training Program, Rev. 2;
- 20012-C, Mechanical Maintenance Personnel Training and Qualification, Rev. 4;
- 60607-C, Mechanical Maintenance Training Program, Rev. 2;
- 00709-C, Training Review Boards and Working Committees, Rev. 2.

The training program is divided into three major areas: Initial Training, Basic Qualification Training, and Specialty Training. Initial training consists of General Employee Training and the basic courses necessary for the trainee to "possess the fundamental skills and knowledge required to safely perform maintenance at the plant." Qualification Training is designed "to supplement Initial Training and . . . to increase the students ability to perform specific job tasks." Specialty Training is given to a limited number of technicians to enable them to perform more specialized tasks.

The inspectors review of the curriculum for the training program indicated that it satisfactorily provided for a complete and comprehensive maintenance training program.

The inspectors reviewed the licensee's policy for granting waivers from required training courses. The policy is contained in procedure 00709-C referenced above and delineates the following two criteria for waivers:

- a. A previous course of instruction must have been completed which contained the same topics and was at least the duration of the course being waived. The course must have been completed within the last three years;
- b. The trainee completed an exam which is equivalent to a course comprehensive final exam. The exam may be written or oral and must be retained as a record of satisfactory course completion.

No violations or deviations were identified in this area.

b. Training Records

Improvements made to the maintenance training program over the past few years have created a situation where maintenance personnel had qualified under seemingly different programs. The training records of individuals selected from all three maintenance departments were reviewed for consistency with the training programs under which they qualified. In each case, the personnel met the requirements that were in place at the time they qualified. This review of training records did not reveal any inconsistencies between personnel qualifying at different times under the same discipline.

A review of maintenance personnel class attendance records exhibited no instances where individuals had received credit for a class they had not attended. Exam content accurately reflected the course material being taught.

No violations or deviations were identified in this area.

c. Classroom Observations

The inspectors observed classroom training on pH measurement for I&C personnel. The course material was well presented although the math aspects appeared to be overemphasized in regards to the abilities of the trainees. The instructor used his fingers instead of a pointer on the overhead projector. The nature of the material did not require a pointer, however, a pointer is always preferable. The instructor answered all questions and made sure that the students understood the material before proceeding on.

The inspectors toured the licensee's mockup laboratories for Mechanical, Electrical, and I&C maintenance. The labs reflected recent industry-wide commitments to improve training through the use of mock-ups. Instructors and trainees alike expressed the view that the use of mockups greatly enhanced the quality of training as well as the degree of preparation for performing job tasks in the plant.

No violations or deviations were identified in this area.

d. Technician/Instructor Interviews

Technicians were selected for interviews in order to get a wide range of experience and qualification levels for feedback on the effectiveness of the training program. All of those interviewed expressed satisfaction in that the program adequately prepared them for the job tasks they had to perform.

Interviews with the instructors revealed that again, the paperwork at times was more extensive than their preparation for their classes, but they understood that this was a part of the continuing improvement of the training program and should abate as the program became more established.

Overall, the maintenance training program was determined to be satisfactorily fulfilling its objectives and meeting the applicable regulatory requirements.

No violations or deviations were identified in this area.

8. Operational Experience Feedback

The inspectors reviewed the licensee's operational experience feedback program to assess how well the licensee had implemented the requirements of NUREG 0737, item I.C.5.

The inspectors reviewed the following procedures relating to the licensee's operational experience feedback program:

- 00414-C, Operating Experience Program, Rev. 4;
- 10017-C, Operations Reading Books, Rev. 2;
- 20025-C, Maintenance Experience Assessment Report, Rev. 2;
- 60005-C, Incorporation of Changes in Training Material and Simulator, Rev. 3,

and the following instruction:

- NOI-3-330, Operating Experience Program, dated June 26, 1987.

a. Training Response to Analyzed Significant Events (TRASE)

The inspectors selected several pertinent IE Notices from the past five years as well as several recent LERs generated by the licensee in the past year to assess their incorporation into the training program.

TRASE is a computerized tracking system used within the training department to track action items. The Document Review Coordinator (DRC) is responsible for the initial review of action items, feedback form and change material from Regulatory Compliance, and

the subsequent generation of TRASE forms and its implementation into the TRASE tracking system. The DRC reviews the following material:

- INPO SERs, SOERs, OM&Rs;
- Vogtle Plant and industry LERs;

- NRC Investigation and Enforcement Bulletins, Notices, Circulars, NUREGs, and Generic Letters;
- Temporary and permanent changes to plant procedure;
- Design changes;
- Training feedback forms.

The DRC is responsible for rendering judgement on the importance of the material with respect to training. The DRC decides if the material is pertinent to EOPs; Emergency Plan Implementation Procedures; Operations, Plant, or HP and Chemistry training; Simulator Modifications; or if it could be covered in a reading assignment package. The DRC then fills out a TRASE form with the identity of the package, the type of information contained therein, and the supervisor routing, along with comments concerning the attached information. If no action is required, the DRC will complete a Change Material Review Form and the data will not be entered into the TRASE system.

The Training Center Clerk records the initial response and analysis due dates on the TRASE form and logs them into the computer. The supervisors (training and simulator) then review the information and make initial recommendations. The training center clerk logs these recommendations and assigns an analysis due date - this is the date that the supervisor has to return the training recommendations to the training center clerk. The supervisor then assigns an instructor to do an in-depth analysis to develop a plan of action. A Corrective Action Assignment Sheet is generated delineating the implementation of the material into the training course as well as all training materials (by identification number) affected by the information.

The inspectors performed a walk-through of the TRASE system with the DRC. The inspectors chose IE Notices, IE Bulletins, and recent plant LERs to assess the programs expediency in reviewing and implementing operational experience. The DRC was able to document the requested information with either an evaluation which dispositioned the item or a lesson plan that had incorporated it. Recent LERs and IE Notices were reviewed to gain a dynamic perspective of the program in process. The program appeared satisfactory in regards to the incorporation of operating experience into the training programs.

No violations or deviations were identified in this area.

b. Required Reading Program

The inspectors assessed the required reading program for the Operations Department. Procedure 10017-C, Operations Reading Books,

Rev. 2 was reviewed. Also, an inspection of selected completed required reading routing sheets was conducted. The following licensee commitments in this area were reviewed: the FSAR, page 13.5.1-2; paragraph C; Procedure for Feedback of Operating Experience, Amendment 29; and NUREG-0737, page 3-47, Paragraph I.C.5, Procedures for Feedback of Operating Experience to Plant Staff.

An inspection of seven completed required reading routing sheets, which routed a total of 44 LERs and Information Notices, was performed. This inspection revealed a situation where several (more than ten) licensed operators had not signed for reading material that had been routed to them as long as seven months ago. This material was safety significant and included several of the licensee's own LERs. Also, many of these same licensed operators (at least six) had stood operating watches regularly during the past seven months. Every item of required reading for which routing completion was checked revealed one or more licensed operators, and a number of non-licensed operators, who had failed to indicate reading of the material.

The safety significance of this required reading is that it functions to provide a means to assure that affected personnel become aware of important operating information in a timely manner. This requirement is delineated in NUREG 0727, which the licensee has committed to in the FSAR.

The licensee's procedure titled Operations Reading Books states that the objective of using the Operations Required Reading Book (ORRB) is to disseminate current important operating information in a timely concise manner to licensed and non-licensed operators, to ensure safe and reliable plant operation.

The Operations Reading Books procedure states that:

- (1) Licensed operators should read the ORRB material within seven days of the time it is placed in the ORRB.
- (2) The Senior Clerk will review the ORRB every two weeks, identify individuals who are delinquent, and send them ORRB Reading Reminder Notices.
- (3) For sign-off sheets more than four weeks overdue, the Senior Clerk will send a memo to the Operations Superintendent notifying him of the delinquent readers.

The Senior Clerk stated that, each time a Required Reading Notice or memo to the Operations Superintendent was sent, a checkmark was placed next to the delinquent name on the routing sheet. Following that procedure, names that were delinquent by more than four weeks should have had two or three checkmarks. A review of the seven completed routing sheets (all over four months old) revealed that

next to the licensed operator names who had not signed: many had no checkmarks; many had one checkmark; many had two checkmarks; and a few had three checkmarks.

The licensee indicated to the inspectors that all licensed operators who were delinquent in required reading would be promptly brought up to date.

The requirements related to required reading in the FSAR and NUREG-0737 apply to non-licensed operators as well as licensed operators. While non-licensed operators are included on the ORRB routing sheets, many of them have not signed the seven completed routings that were reviewed. Further, the "Operations Reading Books" procedure does not address requirements for non-licensed operators to read the ORRB. The licensee has not assured that non-licensed operators have received safety significant required reading.

All of the above deficiencies constitute an apparent violation. However, the licensee showed the inspectors that the weakness in the Operations Department required reading program had recently been identified (January 1988) by them, and that corrective actions were intended. In view of the NRC position in encouraging licensee self-identification and correction of problems (10 CFR Part 2, Appendix C, Section V), a violation will not be cited.

NUREG 0737 includes requirements for other departments, such as maintenance, health physics, and training, to also have programs for assuring that important information is reviewed by affected personnel in a timely manner. Employee interviews indicated that some of these departmental required reading programs may not include departmental procedures, routing of information, or the actual reading of routed material. The licensee made a commitment to the inspectors to conduct a QA department audit of the required reading program of all departments. This audit should include comparison of written procedures against commitments (FSAR, NUREG 0737) and a check that the required reading was being routed and read in a timely manner.

Required reading program deficiencies will be inspector followup item 424/88-07-02. This followup will include a review of the following:

- 1) The "Operations Reading Books" procedure has requirements included for non-licensed operators to read the ORRB.
- 2) All licensed and non-licensed operators are reading the required reading.
- 3) The QA department audit of the required reading programs of all departments has been completed and inadequacies found by that audit are being corrected.

A violation was not cited and no deviations were identified in this area.

9. Institute of Nuclear Power Operations (INPO) Accreditation

The licensee submitted the training programs for Health Physics and Chemistry to INPO in January 1987 for review and accreditation. The training programs for SRO, RO, NLO, and STA were submitted in July 1987. The maintenance and technical staff training programs were submitted in January 1988.

INPO performed an on-site audit of the submitted programs in November 1987. The INPO board will be meeting in May 1988 for accreditation of the above programs. The licensee expects all to go well with the accreditation board. The inspectors reviewed with the licensee the open items from the INPO inspection in November 1987. None of the items indicated regulatory concerns or significant deficiencies in the program.

No violations or deviations were identified in this area.

10. Natural Circulation Cooldown (25586)

Inspectors evaluated the licensee's Emergency Operating Procedures (EOPs) for performing Natural Circulation Cooldown in accordance with Temporary Instruction 2515/86.

a. Procedures

The inspectors reviewed the following EOPs for natural circulation cooldown:

- 19002-C, ES-0.2 Natural Circulation Cooldown, Rev. 3;
- 19003-1, ES-0.3 Natural Circulation Cooldown with Steam Void in Vessel (With RVLIS), Rev. 2;
- 19004-1, ES-0.4 Natural Circulation Cooldown with Steam Void in Vessel (Without RVLIS), Rev. 2.

The licensee has an NRC approved Procedure Generation Package (PGP). In that PGP, the licensee has committed to write EOPs that incorporate the Westinghouse Owners Group (WOG) Emergency Response Guidelines (ERG), Rev. 1. The inspectors compared the licensee's three natural circulation cooldown EOPs to the WOG ERG, Rev. 1 and found that the licensee's procedures follow the ERG very closely. Plant specific setpoints and equipment appeared to be properly incorporated into these EOPs.

The three EOPs appeared to contain all of the prevention and mitigation measures for reactor vessel head bubble as set forth in the WOG ERG. These measures include the use of core exit

thermocouples for monitoring vessel head temperatures, checks for unexpected large variations in pressurizer level, instructions on the mitigation of void formation, and limits on cooldown rate and subcooling margin.

The PGP requires licensee justification of all steps in the EOPs, including justification of any difference from the ERG. The inspectors reviewed the licensee's EOP Step Documents for these three EOPs. The EOP Step Documents appeared to be complete and to satisfy the PGP requirements.

The PGP also includes requirements for verification and validation of EOPs. The licensee's documents indicated that those requirements were satisfied for the three natural circulation cooldown EOPs.

During the review of these three EOPs, the inspectors did find one feature that was not sufficiently clear. Each of these EOPs direct the operator to maintain reactor coolant system (RCS) temperature and pressure within the limits of Technical Specification 3.4.9.1 Figure 3.4-3 (cooldown limitations curve). But Figure 3.4-3 is not labelled as to which temperature instruments should be used for comparison to the curve, nor does this information appear in the EOPs. Four licensed operators (3 SROs and 1 RO) were shown Figure 3.4-3 and asked what temperature instruments they would use to comply with it as required by these EOPs. Two stated they would use T hot or core exit thermocouples, one said T cold or T average, and one didn't know.

The licensee demonstrated to the inspectors how these EOPs would have led the operator to the needed information:

- (1) The EOPs direct the operator to "perform other actions required to take the unit to cold shutdown by initiating 12006, Unit Shutdown to Ambient."
- (2) On page 12 of procedure 12006, the operator is directed to "commence RCS/Pressurizer pressure and temperature trending at 30 minute intervals using Data Sheet 1 and Emergency Response Facility computer (Technical Specification 4.4.9.1)."
- (3) Technical Specification 4.4.9.1 refers to the cooldown limits curve, figure 3.4-3.
- (4) Data Sheet 1 of procedure 12006 specifies recording of RCS temperature by using the lowest channel of T cold indication.

While the procedures could have led the operator to the needed information, the inspectors found the path difficult to follow and not suitable for emergency procedures.

The licensee's PGP includes a writers guide for EOPs, which has requirements on level of detail:

- (1) Details should be given for operators with the minimum expected skill level and experience.
- (2) The operator should have all of the information required for the task available to him.

The PGP writers guide also has requirements on printed operator aids, including graphs:

- (1) Printed aids must be self-explanatory and legible.

The lack of adequate direction on the use of the cooldown limitations curve, in all three of the natural circulation cooldown EOPs, is a deviation 424/88-07-01.

One deviation and no violations were identified in this area.

b. Training

The inspectors interviewed three licensed operators, reviewed their training records, and reviewed lesson plans. Adequate training in natural circulation cooldown, including classroom and simulator was verified. The training program did include a review of the St. Lucie event, and a review of temperature difference in different areas of the reactor coolant system during natural circulation. Simulator training included natural circulation cooldown operations with a void in the reactor vessel.

A commitment was made by the licensee to cover the use of the Technical Specification cooldown limits curve (including temperature and pressure instruments to be used) in requalification training for licensed operators. This is inspector followup item 424/88-07-03.

No violations or deviations were identified in this area.