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

Report Nos.: 50-413/93-01 and 50-414/93-01

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Docket Nos.: 50-413 and 50-414 License Nos.: NPF-35 and NPF-52

Facility Name: Catawba 1 and 2

Inspection Conducted: January 4-8, 1993

Inspector: Laurence Lawyer 1/14/93
L. Lawyer, Team Leader Date Signed

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Approved by: Michael T. Peebles 1-15-93
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Operations Branch
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SUMMARY

Scope: This was a routine announced inspection in the area of training and qualification effectiveness of non-licensed operators, ROs, SROs, licensed operator requalification, and STA training programs. Its purpose was to ensure that personnel have qualifications commensurate with the performance requirements of their jobs, to ensure training improvement programs were effective, and to ensure that active and inactive license control ensures reactor control manipulation by properly licensed personnel.

Results: The NRC team identified one strength and six weaknesses in the training programs reviewed. The strength was the SRO licensing of STAs and their integration into the operating shift (paragraph 6). The weaknesses were in the areas of instructor continuing training (paragraph 2), operator communications (paragraph 3), operator knowledge level (paragraph 3), hot license candidate screening (paragraph 3), STA knowledge level (paragraph 6), and STA Job Task Analysis (paragraph 6).

REPORT DETAILS

1. Persons Contacted

K. Abshire, Instructor
*W. Barron, Director of Operations Training
*S. Bradshaw, Shift Operations Manager
*M. Brady, Operations Training Coordinator
*R. Bugert, Training Consulting Specialist
S. Broer, Director, Maintenance Training
*J. Cox, Regulatory Compliance
S. Frye, Operations Support Manager
K. Green, Instructor
J. Humphries, Instructor
R. Katalinich, Instructor
C. Kiker, Instructor
*J. Lowery, Regulatory Compliance
*W. Mc Collum, Station Manager
D. McIntosh, Instructor
*W. Miller, Work Control Supervisor
C. Modine, Instructor
K. Phillips, Instructor
D. Phillips, Instructor
T. Ranseur, Instructor
E. Roberts, Instructor
G. Tower, Lead Shift Manager
J. Trofilak, Nuclear Production Engineer
P. Von Staden, Instructor
A. Williams, Instructor
G. Winkel, Instructor
*J. Wylie, Training Manager

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

NRC Representatives

W. Orders, Senior Resident Inspector
*J. Zeiler, Resident Inspector

*Attended Exit Interview

A listing of abbreviations used in this report is contained in Appendix A.

A listing of procedures reviewed is contained in appendix B.

2. Non-licensed Operator Training Program Review

The team observed five training sessions, interviewed two NLO instructors, interviewed eight NLOs, and observed NLOs while performing their normal duties.

Based on the results of the above observations, the team concluded that evaluation of the SAT process, as applied to the NLO program, was not warranted. Furthermore, they concluded that Catawba plant NLOs have qualifications commensurate with the performance requirements of their job.

The team also reviewed the operations instructor certification and continuing training program required by COTG-07, Initial Instructor Certification and Requalification Administration. The team noted several deficiencies with the instructor continuing training program. These deficiencies included incomplete records documenting required continuing training, lack of management reviews for 1991, and instructor failure to complete the continuing training OJT requirements for 1992. The team identified these deficiencies in instructor continuing training as a weakness.

Based on the results of the above reviews and discussions, the team concluded that evaluation of the SAT process, as applied to instructor training, retraining, and certification, is not warranted. Furthermore, they concluded that Catawba plant operations instructors have qualifications commensurate with the performance requirements of their job.

No violations or deviations were identified.

3. Reactor Operator Training Program Review

The team interviewed several ROs and training instructors. The team also observed the performance of normal duties by two ROs while they were on shift. The team reviewed and verified that the station policy concerning the authority of shift management, requirements for use of procedures and crew communications guidelines had been revised. The team also reviewed documentation regarding operations management involvement concerning the requalification training program.

Weaknesses were identified in examination report 50-414/92-300 concerning procedure usage, crew communications, EOP content, and training methodology. Station management had developed a revised policy which delineated the authority of shift management. This policy stated the requirements for the use of procedures and crew communications. The facility stated that deviation from approved emergency operating procedures will not be allowed except for situations covered by 10CFR50.54X.

The facility developed the following corrective measures to ensure these expectations were clearly communicated to the appropriate operations and training personnel:

a. Operations management will conduct training with all licensed personnel and training personnel to convey management expectations for use of procedures and crew communications.

b. Selected operations management personnel will participate in licensed operator requalification simulator training sessions to ensure and reinforce conveyed management expectations.

c. A team of senior site management, operations, and training management will periodically observe and document crew performance in the Simulator Management Observation Book, located in the simulator, during simulator training sessions. They will also participate in crew critiques to ensure and reinforce conveyed management expectations. This process will be evaluated by the licensee in July, 1993.

The team observed two ROs performing their normal duties in the control room. The overall quality of work in the control room was consistently meeting or exceeding at least the minimum standards as delineated in NUREG 1220. However, operators rarely used repeat backs, as identified in the above mentioned report, which was not in keeping with procedure OMP 1-8 or the way they are trained in the simulator.

Furthermore, both operators displayed weaknesses in the relationship between permissives P-10, P-13, and P-7, the reactor coolant loop flow detection system, the effects of an idle reactor coolant pump on the reactor coolant system, and main turbine, feed, and condensate thermodynamics. This basic reactor operator knowledge was weak. It was evident that periodic reinforcement was not occurring during the requalification cycle to ensure that Catawba plant licensed operators possessed the knowledge and qualifications commensurate with the performance requirements of their job. Specifically, the remedial training given in segment 6 as a result of NRC comments in examination report 92-300 was not totally effective. Review of segment 6 showed that no testing to ascertain operator comprehension was performed. The team identified poor communications and the above mentioned shortcomings in operator knowledge as continuing weaknesses.

The NRC generally observes a 90 to 95 percent pass rate on initial examinations. In the case of the October 1992 initial RO examination, the pass rate was only 20 percent (1 of 5). The team reviewed the study that was performed by the operations training group. This study was to determine any differences in the way the October class was conducted from previous classes. Early in the October class, the HLP examination bank was given to the class as a study aid. This was the first hot license class to receive the examination bank as a study tool. An analysis was performed by the facility on the last three regular classroom, audit, and NRC examinations which compared the pass rate on new versus old examination items. The analysis showed that many of the students used the bank as their primary means of examination preparation. The training department determined that they should have been more aggressive at modifying the examination bank earlier in the hot license class and increasing the discrimination ability of the examination items used in examinations that

are given prior to the NRC administered examination. Efforts were made in this area beginning in July 1992, during HLP examination 9 of 11, which yielded a drop in the class average. The training department also determined that had this been done earlier in the course, during the time frame of HLP examination one, the weaker individuals could have been afforded the necessary attention they needed to pass. Two of the ROs failed the facility audit examination. Another candidate was within two percent of the pass/fail criteria. The operations department had the overall authority to override any recommendations that were made by the audit team. This authority was exercised for the class of ROs who took the examination in October 1992. The operations department's decision to send up ROs who did not pass the audit examination was not in keeping with the audit team's recommendation. The team found it to be questionable at Catawba whether individuals who train the operating staff have sufficient organizational freedom to ensure their independence from operating pressures. The team identified HLP candidate screening as a weakness.

Several differences were identified by the facility between the conduct of the HLP 10/92 class and previous hot license classes. These differences were delineated in a memorandum by R.E. Kimray (CN-940.00) dated December 12, 1992. Several corrective action recommendations were made to the operations department by the training department in this memorandum. These recommendations have not been fully implemented yet. This open item is identified as IFI 50-413,414/93-01-01: Corrective action implementation to prevent a repeat of the 10/92 initial examination high written failure rate.

Based upon the results of the above reviews and observations, the team concluded that evaluation of the SAT process as applied to the RO program was not warranted. Furthermore, they concluded that Catawba plant ROs, while exhibiting the noted weaknesses, had qualifications commensurate with the performance requirements of their job.

No violations or deviations were identified.

4. Senior Reactor Operator Training Program Review

The team reviewed the SRO training program using the guidance in NUREG 1220 to evaluate lectures, simulator sessions, and JPM administration. The team also observed SROs performing their normal duties and interviewed SROs, their instructors, and the Training Supervisor.

In addition, the team reviewed the training of IAE personnel who support the SRO in his performance of EOP. EP/1/A/5000/2C1, Loss of Secondary Heat Sink, Enclosure 2, step 1 requires IAE to bypass the feedwater isolation signals. Interviews with IAE personnel and a review of Maintenance Training revealed that IAE technicians were not receiving training on Emergency Procedure steps they are expected to perform nor are these steps addressed in the IAE JTA.

Based upon the results of the above reviews and observations, the team concluded that evaluation of the SAT process as applied to the SRO program was not warranted. Furthermore, they concluded that Catawba plant SROs have qualifications commensurate with the performance requirements of their job.

No violations or deviations were identified.

5. Licensed Operator Requalification Training Program Review

The team reviewed the licensee's Operations Management Procedure 1-7, Revision 4, Emergency/Abnormal Procedure Implementation Guidelines, to ensure that inappropriate performance could be identified during the simulator and JPM observations. No violations of the procedures were noted during the team's observation of the simulator scenarios.

The team observed a simulator scenario for two separate shifts that included a loss of power to an essential bus followed by a loss of feedwater, an ATWS, and a loss of heat sink. The scenario was well planned, and during the course of the scenario, the instructor froze the simulator at several points to provide instruction. The instructor covered all areas in which the operators needed improvement. The instructor was well prepared. The team observed that the trainees acting in the shift supervisor position did not display a command presence. They did not display an authoritative manner while acting in this position. The team also observed that while the instructor was briefing the shift on the observed weaknesses from the past and how they should be improved, the shift supervisor in charge conducted himself in an unprofessional manner. This adversely influenced the rest of the shift and detracted from the message the instructor was trying to convey. The team identified this as another example of the previously identified weakness in operator communications.

Examination report 50-413/92-300 described training that the licensee had committed to perform in segments six and seven. The team verified that requalification segments six and seven had included training on the committed subjects.

The team reviewed the LERs for 1991 and 1992 to determine which LERs might have been avoided by increased training. The team also reviewed the training program to ensure that these LERs had been selected for increased training. An example of this was LER 413/91-06, Technical Specification Violation When Nuclear Service Water Valves Were Left Without an Emergency Power Supply Due to Inappropriate Action. The operators used the Operator Aid Computer graphics and misread the graphic to conclude that the Nuclear Services Water Valves were left with an emergency power supply. The licensee committed in the LER to provide training on the OAC graphics. The team determined by a review of the licensee training plan that this was included in training. A discussion was held on OMP 2-23, Valve and

Breaker Position Verification and Valve Operation, section 6.1.5 and 6.1.6 which states that procedures should not be completed by determining a valve's position from the OAC indication or graphics unless the procedure specifies to do so and that OAC electrical graphics should not be used as the only means of ensuring a safety-related position for procedure verification.

Based upon the results of the above reviews and observations, the team concluded that evaluation of the SAT process as applied to the LOR program was not warranted. Furthermore, they concluded that Catawba plant licensed operators have qualifications commensurate with the performance requirements of their job.

No violations or deviations were identified.

6. Shift Technical Advisor Training Program Review

The STA position was filled by the Shift Manager during normal operations and the Shift Manager assumed the duties of STA during abnormal and emergency situations. The Shift Manager/STA received all of the required SRO training. During their development of the STA training program, the licensee identified 28 tasks and 101 knowledge/skills for the STA position. The licensee determined that these were all included in the SRO training program and elected to include the STA in the SRO training program in lieu of an STA specific training program. The team considered the inclusion of the STA in the entire SRO training program and their integration into the operating shift as a strength.

The team reviewed the STA training TS requirements, FSAR commitments, and NUREG 0737 requirements. The team also interviewed STAs and their supervisors and trainers and observed STA tasks in progress. They found that all commitments were being met but observed some weaknesses.

a. Simulator Training

The team observed STA's under requalification instruction on the simulator. The team evaluated the STA trainee and instructor work practices and technical knowledge. Some deficiencies were noted in STA performance; instructor performance was found to be adequate.

The team observed the performance of a crew mitigation of an ATWS scenario on the simulator. Two of the STA identified tasks related to this scenario were Task T020, which required the STAs to monitor the critical safety function status trees emergency procedure and Task T019, which required the STA to monitor the nuclear power generation/ATWS emergency procedure. The team reviewed the same scenarios performed by two different crews with two different STAs. The evaluation of the scenario performances were as follows:

The first STA was unfamiliar with the procedure that required the monitoring of CFST parameters with a potentially unreliable SPDS. The STA did not continuously monitor the red path (heat sink). The STA did not identify the required switch in priorities when the heat sink path changed from red to yellow following CA flow recovery. At this point in the Core Cooling, an orange path became the dominant path. During the simulator scenario critique, the STA trainee told the instructor that he was unfamiliar with the procedure steps he was performing. The balance of the STA functions were performed adequately. On the second run of the scenario, the STA functions were performed adeptly.

The scenario tasks being performed by the two foregoing STAs involved monitoring and evaluating rapidly changing and misleading CFST parameters. This scenario comprehensively challenged the STA's skills. The team concluded that the STA training had not completely prepared inexperienced STAs for these difficult tasks as evidenced by their requalification performance. The training program for the STAs contained no training beyond the scope of SRO training. The team identified the incomplete preparation of STAs for difficult Tasks as a weakness.

b. On the Job Training

The team observed the conduct of training JPMs for STA trainees from the current STA requalification class. The team evaluated trainee and instructor work practices and technical knowledge. The team concluded the STA's performance on JPMs was adequate.

c. Job Task Analysis

NUREG 1220 describes a SAT based training program as a program that contains five basic elements. The team reviewed the STA training program as it related to these five basic elements.

The first element of a SAT based program is analysis. The licensee accomplished this by developing an STA JTA. The current STA JTA has not been maintained up-to-date with current changes in organizational procedures and changes in the STAs tasks. The JTA was conducted by analyzing the two documents existing in 1984 that itemized STA responsibilities. Twenty-eight STA specific tasks were identified; nineteen involving CFST and nine from OMP 1-11. At the time the JTAs were written, STAs were required to hold an active SRO license. The JTAs had not been updated since OMP 1-11 was deleted (1988). In addition, STAs were no longer required to keep an active license (1990). The result of this was a set of JTAs that did not accurately reflect the current STA position requirements. The team concluded the licensee met the intent of the analysis element, although the documentation had not been appropriately maintained. This was identified as a weakness in the STA training program.

d. Technical Specifications

TS section 6.2.2.g stated "On occasion when there is a need for both the Shift Supervisor and the SRO to be absent from the control room, the Shift Manager shall be allowed to assume the control room command function and serve as the SRO in the control room provided that: (1) the Shift Supervisor is available to return to the control room within 10 minutes, (2) the assumption of SRO duties by the Shift Manager be limited to periods not in excess of 15 minutes duration and a total time not to exceed 1 hour during any shift, and (3) the Shift Manager has a Senior Operating license on the unit."

The team discussed this section of the TS with licensee management and determined that none of the current STAs can assume the control room command function because although the STAs maintain a SRO license on the unit, the license is inactive. There were no plans to activate the STAs' SRO licenses. Without an activated SRO license, STAs/Shift Managers could not assume Control Room command functions. The team did not find any examples of STAs/Shift Managers inappropriately assuming Control Room command functions nor did the team find any STAs who misinterpreted this requirement.

The team reviewed the general categories of simulator usage for the years 1988 through 1992. The usage was found to be almost entirely for operator training and examination. Simulator availability was in excess of 99 percent each of these years. Total usage for all purposes ranged from approximately 3000 hours per year to 3700 (40 percent of total hours). Of this time, about 50 hours per year were being devoted to non-operator training and examination activities such as plant drills, design engineering use and public relations.

Based upon the results of the above reviews and observations, the team concluded that evaluation of the SAT process as applied to the STA program was not warranted. The team also concluded that the licensee was appropriately dispositioning active and inactive operating licenses. Furthermore, they concluded that Catawba STAs had qualifications commensurate with the performance requirements of their job.

No violations or deviations were identified.

7. Action on Previously Identified Items

(Closed) IFI 50-413,414/91-301-01, Procedure OMP 1-8 does not clearly address what controls non-licensed operators can operate while under direct supervision of a licensed operator.

While conducting control room walkthrough examinations during initial examination 50-413,414/91-301, the examiner observed an unsupervised non-licensed individual simultaneously manipulate the Nuclear Instrument System recorder switches on the MC1 Rod Control Panel. This practice was

not in keeping with Operations Management Procedure 1-8 (Authority and Responsibility of Licensed ROs and Licensed SROs) which states in paragraph 7.2.A.3 that "licensed operators cannot delegate the operation of the "CONTROLS" of a unit, but may allow non-licensed operators to manipulate the "CONTROLS" under the direction of a licensed operator for training purpose.

OMP 1-8 now states in paragraph 10.0 that a non-licensed operator who is not in an approved licensed training class may never operate the controls, as defined earlier in section 7.2.A.3. However, an NLO doing control room observation may operate control room equipment under the direct observation of an actively licensed RO or SRO within the surveillance area except control rod motion, boration, or dilution of the NC or ND system, turbine generator control, or steam generator inventory control (modes 1-4).

(Closed) IFI 50-413,414/91-19-01, Documentation methods used to qualify trainees and/or note deficiencies was weak.

The review of the training records indicated that the standard was weakly enforced. Several student training records did not indicate the method employed in determining the trainee's qualifications. Also, interviews with qualifiers determined that when the qualifiers felt that the student did not possess sufficient knowledge for the task, they would send the trainee off to conduct further study rather than annotate the deficiency and send the record to PTS for evaluation.

The team inspected the employee training and qualification standards. All ETQS guides were rewritten to provide an element which specifically requires a demonstration of mastery of prerequisite knowledges. The revised guides also specifically identified the lessor plans which were prerequisites for each guide. The instructions for the program were revised to provide specific instructions and general standards for the evaluation of prerequisites and intersystem knowledge.

No violations or deviations were identified.

8. Exit Interview

The inspection scope and findings were summarized on January 8, 1993, with those persons indicated in paragraph 1. The NRC described the areas inspected and discussed in detail the inspection findings. No proprietary material is contained in this report. No dissenting comments were received from the licensee.

Item Number	Status	Description, Paragraph
413,414/91-19-01	Closed	IFI - Documentation methods used to qualify trainees and/or note deficiencies was weak, paragraph 7.

413,414/91-301-01	Closed	IFI - Procedure OMP 1-8 does not clearly address what controls non-licensed operators can operate while under direct supervision of a licensed operator, paragraph 7.
413,414/93-01-01	Open	IFI - Corrective action implementation to prevent a repeat of the October 1992 initial examination high written failure rate, paragraph 7.

Appendix A List of Acronyms

AOP	Abnormal Operating Procedure
ATWS	Anticipated Transient Without Scram
CA	Auxiliary Feedwater
CFST	Critical Safety Function Status Tree
EOP	Emergency operating procedure
ERG	Westinghouse emergency response guidelines
ETQS	Employee Training Qualification and Standard
FSAR	Final Safety Analysis Report
HLP	Hot License Preparation
IAE	Instrumentation and Electrical
IFI	Inspector Followup Item
JTA	Job Task Analysis
LOCA	Loss of Coolant Accident
NC	Reactor Coolant System
ND	Residual Heat Removal System
NLO	Non-licensed Operator
OAC	Operator Aide Computer
OJT	On the Job Training
OMP	Operations Management Procedure
PORV	Power operated relief valve
PTS	Production Organization Services
SAT	Systems Approach to Training
SGTR	Steam Generator Tube Rupture
SM	Main Steam
SPDS	Safety Parameter Display System
SRO	Senior Reactor Operator
STA	Shift Technical Advisor
TS	Technical Specifications
WOG	Westinghouse Owners Group

Appendix B List of Procedures

List of Procedures

AP/2/A/5500/19,	REV 15	LOSS OF RESIDUAL HEAT REMOVAL SYSTEM
EP/1/A/5000/01,	REV 15	REACTOR TRIP OR SAFETY INJECTION
EP/1/A/5000/1E	REV 14	STEAM GENERATOR TUBE RUPTURE
EP/1/A/5000/1E3,	REV 11	SGTR WITH CONTINUOUS NC SYSTEM LEAKAGE - SUBCOOLED RECOVERY
EP/1/A/5000/2A1,	REV 4	NUCLEAR POWER GENERATION/ATWS
EP/1/A/5000/2C1,	REV 12	LOSS OF SECONDARY HEAT SINK
EP/1/A/5000/2F3,	REV 8	VOIDS IN REACTOR VESSEL
OP/1/A/6450/10,	REV 5	CONTAINMENT HYDROGEN CONTROL SYSTEM
PT/1/A/4600/09,	REV 5	LOSS OF OPERATOR AID COMPUTER
SD 3.0.11 (OPS),	REV 3	RESPONSIBILITIES AND QUALIFICATIONS OF THE SHIFT MANAGER AND REQUIRED MANAGEMENT NOTIFICATION
SD 3.0.11 (IS),	REV 2	RESPONSIBILITIES AND QUALIFICATIONS OF THE SHIFT MANAGER
SD 3.1.3.0,	REV 5	UNIT SHUTDOWN CONFIGURATION CONTROL
OMP 1-8	REV 20	AUTHORITY AND RESPONSIBILITY OF LICENSED REACTOR OPERATORS AND LICENSED SENIOR REACTOR OPERATORS
OMP 2-33,	REV 15	VALVE AND BREAKER POSITION VERIFICATION AND VALVE OPERATION
OMP 5-1	REV 1	DUTIES OF THE SHIFT MANAGER
DPC ETQS,	REV 10	STANDARD 1002.0 (OJT AND QUALIFICATIONS RECORDS)
DPC ETQS,	REV 5	STANDARD 401.0 (INSTRUCTOR TRAINING AND CERTIFICATION PROGRAM)
DPC ETQS,	REV 1	STANDARD 404.0 (SELECTION AND TRAINING OF OJT TRAINERS AND QUALIFIERS)
COTG-07,	REV 2	INITIAL INSTRUCTOR CERTIFICATION AND REQUALIFICATION ADMINISTRATION