



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

JUL 06 1984

Report No.: 50-413/84-70

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

Docket No.: 50-413

License No.: CPPR-116

Facility Name: Catawba

Inspection Date: June 12-15, 1984

Inspection at Catawba site near Rock Hill, South Carolina

Inspectors: The Inspection Team consisted of B. T. Debs and D. F. Falconer.
Assistance was provided by F. R. McCoy.

Team Leader: B. T. Debs
B. T. Debs, Reactor Inspector
Operational Programs Section

3 JUL 1984
Date Signed

Accompanying Personnel: F. R. McCoy

Approved by: H. E. P. Krug
H. E. P. Krug, Section Chief (Acting)
Operational Programs Section
Division of Reactor Safety

3 JUL 84
Date Signed

SUMMARY

Scope: This special, announced inspection involved 60 inspector-hours on site in the areas of Operator Shift Experience and Manning and the Shift Advisor Program.

Results: The Catawba Unit 1 Operator Shift manning and experience and the Shift Advisor Program were inspected. The team concluded that the proposed shift manning would result in effective staffing of the operating shifts at Catawba.

With the implementation of three recommendations that the licensee agreed to adopt, the team concluded that the Shift Advisors are properly trained and qualified to perform their assigned duties at Catawba.

Of the two areas inspected, no violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

H. B. Tucker, Vice President - Nuclear Production, Duke Power Co.
*J. W. Hampton, Plant Manager, CNS
*C. W. Graves, Operations Superintendent, CNS
*L. E. Schmid, Systems Production Engineer, CNS
*W. Barron, Senior Instructor, CNS
G. L. Mitchell, Assistant Operating Engineer, CNS
R. Kimray, Associate Instructor, CNS
G. Spurlin, Associate Instructor, CNS
*L. W. H. Bradley, QA Surveillance, CNS
*C. L. Hartzell, Licensing Engineer, CNS
*P. G. Leroy, Licensing Engineer, CNS
#D. J. Rains, Superintendent of Maintenance, MNS
#B. Travis, Operating Engineer, MNS
#D. Mendezoff, License Engineer, MNS
R. A. Lindsey, Assistant Shift Supervisor, MNS
R. W. Mayes, Assistant Shift Supervisor, MNS
C. B. Craig, Assistant Shift Supervisor, MNS

Other Organizations

K. Jabbour, NRC/DL
L. Crocker, NRC/DHFS/LQB
H. Thompson, NRC/NRR/DHFS
T. Novak, NRC/DL
A. Gibson, NRC/RII
V. Brownlee, NRC/RII
P. Taylor, NRC/RII

NRC Resident Inspectors

*P. Skinner, SRI, CNS
#W. Orders, SRI, MNS
#R. Pierson, RI, MNS

*Attended exit interview, CNS, June 15, 1984
#Attended exit interview, MNS, June 13, 1984

2. Exit Interview

The inspection scope and findings were summarized on June 13 and June 15, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged the inspection findings.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Operator Shift Experience and Manning

An inspector discussed and reviewed Duke Power's proposal to initially man four shifts of twelve hour rotation. Also discussed were future plans for five shifts of eight hour rotation. The aforementioned review included discussion of operator requalification training during four shift rotation, Duke Power's experience associated with twelve hour shift rotations, staffing requirements for four and five shift rotation, and the hot participation experience of designated operating shift personnel. In addition, a shift manning document was provided to and discussed with the inspector. This document contained the proposed operator shift assignments, and the hot operating experience of each Reactor and Senior Reactor operator. It was noted that the initial four shifts vice five shift proposal provided a greater experience density per shift.

The inspection team reviewed the crew experience against the criteria contained in the proposal by the Industry Working Group, presented to the Commissioners on February 24, 1984, by Mr. J. H. Miller of Georgia Power Company and Mr. D. F. Schnell of Union Electric Company; as clarified by a letter from Chairman N. J. Palladino to Mr. J. H. Miller dated June 14, 1984. The inspection team concluded that the licensee meets or exceeds these criteria. The letter of June 14, 1984, requests that the NRC staff be notified one month prior to the release of Shift Advisors from the plant to which they are assigned. This notification provision is being carried as Inspector Followup Item 413/84-70-01, "Notification of SA Discontinuation."

Within the areas inspected, no violations or deviations were identified.

6. Shift Advisor Program

a. Introduction

On June 12-15, 1984, an inspection team composed of three individuals from the Operations Branch, Division of Reactor Safety, Region II, visited the Catawba Nuclear Station in order to evaluate the Catawba Unit 1 Shift Advisor Program and the capabilities of the Catawba Shift Advisors to provide adequate advice to the operating shifts. The team members reviewed the procedure developed by the licensee which describes the duties and responsibilities of the Shift Advisors, reviewed the resumes of the Shift Advisors to determine whether they meet the industry criteria for Shift Advisors, reviewed the results of a six member Utility Advisor Evaluation Team evaluation of the Catawba Shift Advisor Program, reviewed the Training Program provided to the Shift

Advisors, reviewed Training records for the Shift Advisors, reviewed Shift Advisor Written and Oral Examinations and Examination Results, interviewed Licensee Management in order to discuss previous performance ratings of the shift advisors and their involvement in reactor plant events during the rating period, interviewed four of the eight Shift Advisors, interviewed two of the training instructors who administered the Shift Advisor Training Program, and interviewed one member of station staff who had administered portions of the oral examinations.

b. Program Status

At the time of the visit, each shift advisor had completed his designated training program for Shift Advisor; two were continuing in the Catawba Nuclear Station Cold License Certification Program and five were working with McGuire Nuclear Station plant operating shifts while one was working with McGuire Nuclear Station. The six McGuire based advisors were currently licensed as Senior Reactor Operators at McGuire. Also at the time of this visit, a six member Utility Advisor Evaluation Team had completed an industry review of the Catawba Shift Advisor Program and had published the results of this review in a letter to the licensee dated June 8, 1984. The stated intent of the licensee is to assign an advisor to each operating shift prior to Catawba Unit 1 Fuel Loading. Each advisor will rotate as a shift member and will participate in periodic requalification training at his home based unit. The team endorses these licensee intentions.

c. Shift Advisor Procedure

The procedure governing the duties and responsibilities of the Shift Advisor Program is a report approved by G. Vaughn on May 4, 1984, entitled "The Catawba Nuclear Station Shift Advisor Program." While on shift duty, the Shift Advisor advises the Shift Supervisor and reports to the Shift Operating Engineer, who also directs the activities of the Shift Supervisor. The evaluation team considers these reporting arrangements to be acceptable.

Review of the report delineating the Shift Advisor program found that the report properly described the duties and responsibilities of the Shift Advisor subject to incorporation of the Utility Advisor Evaluation Team review recommendations.

d. Utility Advisor Evaluation Team Industry Review of the Shift Advisor Program

A six member Utility Advisor Evaluation Team (UAET) consisting of representatives from six major nuclear utilities, conducted a comprehensive evaluation of the Catawba Shift Advisor Program on June 6, 7, and 8, 1984. The UAET evaluated all aspects of the program including advisor training, qualifications, responsibilities, interfaces between the shift crews and the advisor, procedures and examinations. The

evaluation included documentation reviews, interviews with Duke Power Company (DPC) shift advisors, management and operations staff, direct observation of shift operations, and a simulator visit.

The UAET concluded that DPC had defined an effective Shift Advisor program, had selected qualified individuals, and had provided training appropriate for the shift advisors.

The UAET also concluded that the advisors can rapidly and effectively communicate their experience to the Catawba shift crews. It was the UAET's unanimous opinion that DPC's Shift Advisor program provided sufficient additional assurance that the Catawba Nuclear Station can be started up and operated safely in accordance with NRC regulatory requirements.

The UAET members recommended the following improvements which will further strengthen the program:

- (1) Revise "The Catawba Nuclear Station Shift Advisor Program" approved by G. Vaughn on May 4, 1984, by modifying the Duties and Responsibilities section as follows:
 - (a) Change the wording of Step B.1 so that it clearly indicates that the Shift Advisor is to participate in the entire Shift Supervisor turnover process as described in the Operations Management Procedure on shift turnovers.
 - (b) Delete from Step B.4, the words "at the SS's request" so as to clearly indicate that the Shift Advisor is encouraged to provide advice whenever appropriate.
 - (c) Add to the procedure, a copy of an organization chart of the Catawba Operations section that will promote a better understanding of the reporting relationships between the Shift Advisor and the rest of the shift organization.
- (2) Incorporate the revised Catawba Nuclear Station Shift Advisor Program into a station procedure and review this revised procedure with all shift advisors and appropriate shift operating personnel.
- (3) Establish a structured Shift Advisor Update program to assure that shift advisors assigned to McGuire Nuclear Station remain aware of significant operating events at Catawba Nuclear Station.
- (4) Assure that all shift advisors are cognizant of significant differences between NRC approved Catawba Technical Specifications and the Technical Specifications used in the training of each group of shift advisors.
- (5) Consider assignment of the shift advisors on shift prior to RCS fill and vent so that the benefit of their experience during this and subsequent evolutions may be more fully utilized. (The licensee indicated to the team that the shift advisors will be on shift prior to fuel load).

- (6) Assure that each McGuire based shift advisor has reviewed the course final exam prior to assuming shift advisor duties.
- (7) Assure that each Catawba based shift advisor reviews the Operations Management Procedures prior to assuming shift advisor duties.
- (8) Provide oral examinations to the Catawba based shift advisors on the responsibilities of the Shift Advisor.

The stated intent of the licensee is to incorporate the UAET recommendations into the Shift Advisor program. The team endorses these plans. This is Inspector Followup Item 413/84-70-02, "UAET recommendations."

e. Shift Advisor Qualifications

The licensee's stated qualification requirements for Shift Advisors as delineated in a licensee letter to the Office of Nuclear Reactor Regulation dated March 14, 1984 and as supplemented by the "Catawba Nuclear Station Shift Advisor Program" approved by G. Vaughn on May 1984, are as follows:

- (1) The Shift Advisor will have four years power plant experience.
- (2) The Shift Advisor will have at least two years on-shift experience as a licensed operator (preferably one year of this as a Senior Reactor Operator) at a similar type plant.
- (3) The Shift Advisor will have at least one year on shift as a NRC licensed operator at a hot nuclear plant of the same type.

A review of resumes of all Shift Advisors and interviews with seven of the eight Shift Advisors reflected that all Shift Advisors exceeded the licensee stated qualification requirements.

During the course of the review of Shift Advisor qualifications, it was noted that the two Catawba based Shift Advisors had allowed their NRC licensing medical examinations to lapse. The evaluation team believes that the advisors should meet the same medical criteria as licensed operators. This matter was discussed with the licensee and it was agreed that Duke Power Company would arrange for medical examinations to be satisfactorily completed for these two individuals prior to Catawba Unit 1 fuel loading. The team informed the licensee that the aforementioned item will be carried as Inspector Followup Item 413/84-70-03, "Shift Advisor Medicals."

f. Shift Advisor Performance Evaluation

A review of the performance of the six McGuire based Shift Advisors was conducted for the current rating period (August 1983 to date). An interview with supervision for these advisors reflected that all

McGuire based advisors were rated satisfactory for the rating period and considered by their supervisor to be in the upper half of their peer group. During the course of this interview, information was provided relative to involvement in technical specification violations and reportable and nonreportable events occurring during the current rating period. In summary, two of the six McGuire shift advisors were involved in no technical specification violations or events, one was involved in a single reportable event concerning improper independent verification of restoration of a charging pump breaker, and one was involved in a single technical specification violation concerning a late Reactor Coolant System Leakage calculation. One was involved in a single event concerning inadequate technical specification logbook review during turnover, and one was involved in a single nonreportable event concerning an out of commission centrifugal charging pump.

The inspectors considered these to be isolated events and not indicative of an unacceptable performance trend. The past performance of the McGuire based individuals was judged satisfactory for fulfilling their role as Shift Advisors based upon the performance review conducted.

g. Shift Advisor Training Program, Training Records, and Training Instructor Interviews

The Shift Advisor training program for Catawba based Shift Advisors and McGuire based Shift Advisors were tailored to the specific needs of each group based on the specific group experiences and consequently, were different.

The requirements for Catawba based Shift Advisors as delineated in the "Catawba Nuclear Station Shift Advisor Program" approved by G. Vaughn on May 4, 1984, were programmed by the licensee to enable experienced individuals who had held an SRO license on the Oconee Nuclear Station and who were participating in the Catawba Nuclear Station Cold License Preparatory Training to properly function as Shift Advisors.

The requirements for this Catawba based Shift Advisor training program are:

- (1) Training on the duties and responsibilities of a Shift Advisor
- (2) Completion of the Systems, Theory, Simulator, and Procedures Segments of the Catawba Cold License Preparatory Training
- (3) Satisfactorily passing written examinations on the four Cold License Preparatory Training segments with an overall average grade of $\geq 80\%$.

Both Catawba based Shift Advisors had satisfactorily fulfilled these program requirements based on review of training records. As previously stated, the UAET review recommended and the licensee agreed to

provide oral examinations to the Catawba based Shift Advisors on the responsibilities of the Shift Advisor.

Our evaluation team noted that both of the Catawba based Shift Advisors were currently in procedure walkthroughs scheduled to be completed on July 9, 1984, (after scheduled fuel load and shift assignments) and considered it necessary that walkthroughs on the new Symptom Oriented Emergency Procedures be completed prior to these advisors standing shift. This matter was discussed with the licensee and the licensee stated that both of these Shift Advisors would complete Emergency Procedure System Walkthroughs prior to assignment to a shift. The inspectors informed the licensee that the aforementioned item will be carried as Inspector Followup Item 413/84-70-04, "EP Walkthroughs."

The requirements for McGuire based Shift Advisors as delineated in the "Catawba Nuclear Station Shift Advisor Program" approved by G. Vaughn on May 4, 1984, were programmed by the licensee to enable experienced individuals currently holding an SRO license on the McGuire Nuclear Station to adequately function as Shift Advisors at Catawba Nuclear Station. The requirements for this McGuire based Shift Advisor training program are:

- (1) Training on the duties and responsibilities of the Shift Advisor
- (2) Training on significant system differences between Catawba and McGuire Nuclear Stations
- (3) Training on Operating Procedures, Abnormal Procedures, Emergency Procedures, Station Emergency Plan, and Operations Management Procedures
- (4) Satisfactorily pass a written examination on the subjects covered with a grade $\geq 80\%$
- (5) Satisfactorily pass an oral examination administered by the utility

All six McGuire based Shift Advisors had satisfactorily fulfilled these program requirements based on the review of the training records.

The evaluation team reviewed the training provided to the McGuire based Shift Advisors for system differences and emergency procedures. The licensee stated that with regard to system differences, a listing of all systems was reviewed by two Catawba training personnel who were previously licensed and experienced at McGuire as an Operating Engineer and Control Room Operator in order to determine those systems which would be different between the two plants. The Plant Summary Manuals for each plant were then compared to determine the specific differences. The specific differences were then compiled and used in conjunction with the Catawba training lesson plan for the particular system to provide the required training. A review of two systems,

which were not identified by the licensee as containing differences, was conducted by the evaluation team (Safety Injection System and Main Steam Systems). No significant differences were noted.

The instructor who taught the system differences course for the Auxiliary Feedwater System was interviewed by the evaluating team and he explained during this interview how this particular course was developed and taught and what material was covered during the course using the plant summary manuals, system differences compilation and Catawba Auxiliary Feedwater Lesson Plan. The instructor's responses during this interview were considered to be acceptable.

The licensee stated that with regard to emergency procedures, each McGuire based Shift Advisor was provided a copy of all Catawba Symptom Oriented Emergency Procedures for self study, lectures were provided on selected emergency procedures with regard to content and format, and simulator training was provided for LOCA Events, Steam Line Break Events, Steam Generator Tube Rupture Events, and a Loss of Heat Sink event. The licensee considered this training to be acceptable since the role of Shift Advisor is envisioned to provide experience-based knowledge rather than procedure-based knowledge.

During this evaluation, the McGuire based Shift Advisors were performing procedure validations for the McGuire Symptom Oriented Emergency Procedures at McGuire Nuclear Station and would continue to perform these validations as part of their normal requalification program at McGuire.

Interviews with three of the six McGuire based Shift Advisors on the overview, format, and technical details of the Catawba emergency procedure for "Inadequate Core Cooling" demonstrated that each advisor interviewed was proficient in the technical details and use of this symptom oriented procedure. The evaluation team concluded that the training provided to the McGuire based Shift Advisors was acceptable.

h. Written and Oral Examinations and Interview of Oral Examiner

The written and oral examinations, which were administered to the six McGuire based Shift Advisors, were reviewed for content and grading by a Region II Operator License Examiner. The questions covered were found to be at the Reactor Operator (RO) rather than the Senior Reactor Operator (SRO) level. This was considered to be sufficient since the operator license examiner concluded that the type of system differences which exist are more appropriately tested on the Reactor Operator level instead of Senior Reactor Operator level. The oral examination questions were very similar to the written examination questions. The operator license examiner considered that this condition was acceptable for a person fulfilling a Shift Advisor role. The examination grading was reviewed in all six cases and determined to be satisfactory by the Operator License Examiner. All examinees satisfied the licensee criteria for passing the examinations. An interview with one oral

examiner was conducted by the evaluation team in order to determine his qualifications for conducting oral examinations. The individual was a licensed SRO and had six years experience as a training instructor at Catawba.

i. Shift Advisor Interviews

The inspectors interviewed three of the six McGuire based Shift Advisors and one of the two Catawba based Shift Advisors. The interviews were conducted to ascertain knowledge of shift advisor responsibilities, expected interfaces with the operational crew, adequacy of shift advisor training, proficiency in use of Symptom Oriented Emergency Procedures, and technical proficiency with the Catawba Symptom Oriented Emergency Procedure for Inadequate Core Cooling. Each Shift Advisor interviewed understood his responsibilities and interfaces with the operational crew. Additionally, each Shift Advisor considered the plant specific training he had received to be satisfactory and each appeared confident in his role as Shift Advisor.

Each Shift Advisor was able to proficiently explain how to use Symptom Oriented Emergency Procedures. With regard to technical proficiency of the Inadequate Core Cooling Emergency Procedures, the performance of the three McGuire based Shift Advisors interviewed was very good to excellent and the performance of the Catawba based Shift Advisor interviewed was marginally satisfactory.

It is noted that the Catawba based Shift Advisor had not read this particular emergency procedure within the past eight months; however, the Shift Advisor would be conducting procedure walkthroughs on this and all other emergency procedures as part of Cold License Certification Training. As noted earlier in this report, completion of emergency procedure walkthroughs for Catawba based Shift Advisors is planned to be completed prior to Shift Assignment. The evaluation team considers that this action will eliminate the weaknesses noted during this particular interview.

j. Conclusions

The inspection team concluded that:

- (1) All Shift Advisors exceeded the licensee stated qualification requirements.
- (2) The criteria contained in the proposal by the Industry Working Group presented to the Commissioners on February 24, 1984, by Mr. J. H. Miller of Georgia Power Company and Mr. D. F. Schnell of Union Electric Company; as clarified by a letter from Chairman N. J. Palladino to Mr. J. H. Miller of Georgia Power Company dated June 14, 1984, are met or exceeded by the licensee. "The Catawba Nuclear Station Shift Advisor Program" approved by G. Vaughn on

May 4, 1984, properly describes the duties and responsibilities of the Shift Advisors subject to incorporation of recommendations of the Utility Advisor Evaluation Team.

- (3) Subject to recommendations of the Utility Advisor Evaluation Team and our own recommendations below, the training program, including quizzes and examinations, administered to the Shift Advisors is adequate to assure that the advisors will have sufficient knowledge of the Catawba systems, procedures, and Technical Specifications to properly perform their duties. Further, the training program acceptably covers the duties, responsibilities, and the limitations of the Shift Advisors.
- (4) The Shift Advisors are comfortable with and have a positive attitude towards their duties and understand how to interface with the operating crew.
- (5) Subject to implementation of the recommendations noted below, the evaluation team concludes that the Catawba based and McGuire based Shift Advisors are adequately trained and qualified to perform their assigned duties as Shift Advisor at Catawba Nuclear Station.

k. Recommendations

- (1) The inspectors agreed with the licensee that the eight recommendations of the Utility Advisor Evaluation Team review of June 6-8, 1984, should be incorporated into the Catawba Shift Advisor Program.
- (2) The Shift Advisors should meet the same medical criteria as required for licensed plant operators. In particular, the two Catawba based Shift Advisors should undergo licensing medical examinations prior to shift assignment. The licensee has agreed with this recommendation.
- (3) The two Catawba based Shift Advisor should complete Cold License Certification Emergency Procedure walkthroughs on all emergency procedures prior to Shift Assignment. The licensee agreed with this recommendation.

Within the areas inspected, no violations or deviations were identified.