



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report No.: 50-413/84-42

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

Docket No.: 50-413

License No.: CPPR-116

Facility Name: Catawba 1

Inspection at Catawba site near Rock Hill, South Carolina

Inspector: *D. M. Montgomery for* 5-3-84
G. B. Kuzo Date Signed

Approved by: *D. M. Montgomery* 5-3-84
D. M. Montgomery, Section Chief Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Inspection on April 9-12, 1984

Areas Inspected

This routine, unannounced inspection involved 26 inspector-hours on site in the areas of quality control for chemistry and radiochemistry including review of: quality control programs, counting room and chemistry procedures, and the chemistry laboratory and counting room facilities.

Results

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

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. W. Hampton, Plant Manager
- *J. W. Cox, Technical Services Superintendent
- *W. P. Deal, Station Health Physicist
- C. V. Wray, Health Physics Supervisor
- G. L. Courtney, Staff Health Physicist
- R. Charest, Station Chemist
- *L. Evans, Power Chemistry Coordinator
- B. Painter, Project Supervisor, Chemistry
- *C. L. Hartzell, Licensing and Project Engineer

Other licensee employees contacted included six technicians.

NRC Resident Inspector

- *P. Skinner

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 12, 1984, with those persons indicated in Paragraph 1 above. The inspector expressed concern that delays completing the installation and testing of the counting equipment for radiological effluent monitoring would not provide adequate lead time for procedure development and training of personnel. The inspector requested that the simulated effluent sample provided by the NRC contract laboratory be analyzed by the licensee to verify effluent measurement capability and stated that results from these analyses would be reviewed during a subsequent inspection. Cognizant licensee representatives acknowledged the inspector's comments.

3. Unresolved Items

Unresolved items were not identified during this inspection.

4. Laboratory Quality Control Program

- a. The inspector reviewed the licensee's Quality Control and Quality Assurance programs for the chemistry laboratory and counting room. Proposed Technical Specification 6.8.1.g requires written procedures be established, implemented, and maintained covering a Quality Assurance Program for effluent and environmental monitoring. Proposed Technical Specification 6.5.2.9 requires audits of unit activities to be performed under the cognizance of the NSRB to encompass the performance

of activities required by the Quality Assurance Program to meet the criteria of Regulatory Guide 4.15, December 1977 at least once per 12 months.

b. The inspector reviewed the licensee's program for compliance with Regulatory Guide 4.15. as follows:

(1) Organizational Structure and Responsibilities of Managerial and Operational Personnel

The Station Health Physicist and Station Chemist have overall responsibility for counting room and chemistry laboratory operations, respectively. Daily operational responsibilities for the counting room and chemistry laboratory are assigned to Health Physics Supervisor and the Power Chemistry Coordinator.

(2) Specifications of Qualifications of Personnel

Qualifications for staff members are specified in job descriptions. Training and experience requirements for each laboratory personnel position are detailed in plant administrative procedures.

(3) Operating Procedures and Instructions

The inspector verified that operating procedures are being written and implemented. Review of these procedures is discussed in Paragraph 5a-f.

(4) Records

The inspector verified from review of procedures and by direct observation of chemistry records that a system for documentation and tracking of activities performed in the laboratories exists and is being implemented. This includes records to track samples from sample collection to the actual reporting of results. Documentation and maintenance of QC records in the laboratories are required by approved procedures.

(5) Quality Control in Sampling

The inspector verified that operating procedures have been written and implemented specifying sample points, sampling techniques, and sample preparation.

Other areas of the licensee's Counting Room and Chemistry Quality Control Program are discussed in Paragraph 5e.

5. Review of Chemistry, Health Physics and Counting Room Procedures

- a. Proposed Technical Specification 6.8.1.c requires written procedures be established, implemented, and maintained covering applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, Revision 2, February 1978. Section 10 of this regulatory guide requires chemical and radiochemical control procedures be written to prescribe the frequency of sampling and specify analyses for maintaining water quality in reactor systems and to determine the concentration and species of radioactivity in liquids and gases prior to their release.
- b. The inspector reviewed selected portions of the following procedures:
- (1) HP/O/B/1001/02, Sample Preparation for Counting Room Equipment, 2/22/79
 - (2) HP/O/B/1001/03, Calibration of Ge(Li) Detectors, 5/12/83
 - (3) HP/O/B/1001/04, Operation of Ortec Model 7044 Multichannel Analyzer, 10/18/83
 - (4) HP/O/B/1001/07, Operation and Calibration of the Liquid Scintillation Counters, 11/17/83
 - (5) HP/O/B/1001/12, Technical Specifications Gaseous Waste Sampling and Analysis, 3/29/84
 - (6) HP/O/B/1001/13, Technical Specification Liquid Waste Analyses, 2/17/84
 - (7) HP/O/B/1001/14, Preparation and Counting of Composite Samples, 1/19/84
 - (8) HP/O/B/1001/15, Preparation of Sources, 3/13/84
 - (9) HP/O/B/1000/20, Determination of Xe-133 Equivalent Activity, Rev. 1, 2/14/83
 - (10) HP/O/B/1000/22, Health Physics Supervisor Responsibilities, 1/27/84
 - (11) HP/O/B/1000/29, Use and Control of Procedures, 1/30/84
 - (12) HP/O/B/1004/04, Radioactive Liquid Waste Release, 6/30/83
 - (13) HP/O/B/1004/05, Radioactive Gaseous Waste Release, 8/1/83
 - (14) HP/O/B/1004/14, Cumulative Off-Site Dose from Liquid and Gaseous Effluents, 9/6/83

- (15) HP/O/B/1004/25, Radioactive Effluent Technical Specification Adherence, 2/6/84
- (16) PT/O/B/4600/12, Review of Health Physics Procedures and Station Directives, 2/2/84
- (17) CP/O/B/8200/01, Chemistry Procedure for the Determination of Beta Activity, 2/27/84
- (18) CP/O/A/8200/02, Chemistry Procedure for the Determination of Gross Activity in Reactor Coolant, 3/14/84
- (19) CP/O/A/8200/03, Chemistry Procedure for the Determination of Tritium, 3/27/84
- (20) CP/O/A/8200/04, Chemistry Procedure for the Determination of Gamma Isotopic Activity, 3/27/84
- (21) CP/O/A/8200/06, Chemistry Procedure for the Determination of Dose Equivalent Iodine-131, 2/24/84
- (22) CP/O/A/8200/07, Chemistry Procedure for the Determination of E-Bar and Limiting Activity, 4/5/84
- (23) CP/O/A/8700/01, Chemistry Procedure for Sampling Local Primary Sample Points, 3/30/84
- (24) CP/O/B/8800/01, Reagent Verification and Instrument Check and Calibration, 3/8/84
- (25) CP/O/B/8800, Chemistry Procedure for the Recording and Management of Data, 3/12/84
- (26) CP/O/B/8100/16, Chemistry Procedure for Determination of Boron, 10/24/83
- (27) PT/O/B/4600/11, Test Procedure for Verification of Procedural Adequacy
- (28) PT/O/B/4600/12, Review of Health Physics Procedures and Station Directives, 2/2/84
- (29) Catawba Nuclear Station Directive 4.2.1, Rev. 14, 2/13/84

The procedure review was discussed with licensee representatives as noted in Paragraphs 5c-g.

- c. The inspector discussed procedure CP/O/B/8800/16, "Chemistry Procedure for Determination of Boron" and IE Information Notice No. 83-12, "Incorrect Boron Standards" with cognizant licensee representatives.

The inspector noted that licensee representatives can adequately verify the quality of boric acid standards prior to use.

- d. The inspector noted that procedures for operation and calibration of the High Purity Ge(Li) Detectors and the GM Counting Systems referenced in Paragraph 7 were not complete. The inspector noted that existing procedures for laboratory instrumentation did not adequately address the following areas:

- (1) detailed calibration and operating instructions
- (2) quality control procedures and operational checks with acceptance criteria
- (3) details of an interlaboratory cross check program

Licensee representatives informed the inspector that new procedures were being completed.

This area will be reviewed during a subsequent inspection (50-413/84-42-01).

- e. The inspector noted that a tritiated toluene standard was utilized for calibration of the liquid scintillation counters. The inspector informed licensee representatives that this standard may not be representative of an actual sample and calibrations conducted using this standard could result in inaccurate measurements. Licensee representatives agreed to evaluate this area. This will be reviewed during a subsequent inspection (50-413/84-42-02).
- f. The inspector reviewed the Chemistry Laboratory 8200 Series "Radio-analytical Procedures" and had no further questions regarding this item. This closes a previously identified inspector followup item (50-413/84-14-04).
- g. The inspector discussed CP/O/B/8800/01, "Chemistry Procedure for Reagent Verification and Instrument Check and Calibration" with cognizant licensee representatives. The inspector noted that standard curves for various chemical analyses utilizing UV/VIS spectrophotometers were not prepared at regular intervals nor following periodic calibrations. The inspector informed licensee representatives that periodic preparation of standard curves is considered a standard analytical practice. Licensee representatives agreed to evaluate this concern. This area will be reviewed during a subsequent inspection (50-413/84-42-03).

6. Review of Records and Logs

a. The inspector reviewed selected portions of the following records and logs:

- (1) LS 1800 Liquid Scintillation Counter No. 1127 Instrument Quality Control Logs for March - April 1984 including:
 - (a) Daily Background and Performance Log Sheets
 - (b) Monthly Performance Chart
 - (c) Weekly Calibration Log Sheet
 - (d) Monthly Background Log Sheet
 - (e) Monthly Performance Data Sheet
 - (f) Monthly Efficiency Data Sheet
- (2) Alpha/Beta Proportional Counter No. CHP1133 Quality Control Logs for March - April 1984 including:
 - (a) Daily Background and Performance Check
 - (b) Alpha Check Source Data Sheet
 - (c) Efficiency and Monthly Performance Worksheet
- (3) NBS traceable Source Calibration Certificates for the following standard geometries: Mixed Gamma Standard; 50/1000 ml solid in Nalgene LPE Bottle; Face-Loaded CP100 Charcoal Cartridge; 2" Glass Fiber Filter in Tape; 1.0/3.5 Liter Solid in 130/430G GA-MA Beaker.
- (4) Chemistry Procedure Verification Checklist for January 1982 - March 1984.
- (5) Reagent Verification, Instrument Check, Accuracy Check, and Calibration Quality Control Sheets for the following Chemistry Laboratory Instrumentation:
 - (a) pH Meter Nos. CNCHM 18202, 18103, 18120 March 1984
 - (b) Conductivity Meter No. CNCHM 18105 March - April 1984
 - (c) Analytical Balance No. CNCHM 10011 November 1983 - April 1984.
 - (d) Top Loading Balance No. CNCHM 10012 November 1983 - April 1984.
 - (e) Spectrophotometer Nos. CNCHM 18107 and 18108 November 1983 - April 1984.
 - (f) Automatic Titrator No. CNCHM 18120.

- (6) Chemical Analyses Quality Control Accuracy and Precision Charts, Reagent Verification, Instrument Checks, Calibrations and Standard Curves for the following analyses:
- (a) Chloride, July 1982 - April 1984
 - (b) Silica, June 1982 - April 1984
 - (c) Hydrazine, November 1984 - April 1984
 - (d) Chromate, October 1983 - April 1984
 - (e) Phosphate, October 1983 - April 1984
 - (f) Boron, April 1984
- (7) Nuclear Station Chemistry Laboratories Sample Cross-Check Program Results July 1982 - October 1983.

The results of the record review are discussed in Paragraph 6b.

- b. The inspector noted that the standard curves prepared for hydrazine, chromate, and phosphate analyses using the spectrophotometers were not properly labeled as to analysis type, instrument utilized, and date prepared. Licensee representatives agreed to improve record details in the chemistry laboratory. This area will be reviewed in a subsequent inspection (50-413/84-42-04).

7. Counting Room and Chemical Laboratory Instrumentation

- a. The inspector toured the counting room and reviewed the operational status of instrumentation. The inspector noted that the following equipment was in the process of being tested and calibrated: Four High Purity Ge(Li) Gamma Spectroscopy Detector Systems, and five Tennelec Automatic GM Counting Systems. The inspector expressed concern that further delays in the operability of counting room equipment and development of procedures could result in inadequate training of personnel in this area with a resultant adverse effect on the quality of the radiological measurements program. These areas were previously identified (50-413/83-38-03 and 413/84-14-02) and will remain open for review during a subsequent inspection.
- b. The inspector toured the Plant Chemistry Facilities including: the atomic absorption laboratory and the chemistry hot and cold laboratories. Following the record review listed in Paragraph 6 and discussion with cognizant licensee representatives, the inspector noted that performance checks and/or calibrations were being conducted in accordance with procedures. The inspector noted that all chemical solution storage times and expiration dates were maintained according to procedural requirements. This comprehensive review of the chemistry facilities closes a previously identified inspector followup item (50-413/84-14-05).

8. Capability Tests

Licensee representatives acknowledged receipt of a simulated liquid effluent sample provided by the NRC Contract Laboratory. However, analyses were not complete at the time of the inspection due to a delay in equipment installation, calibration, and validation of preliminary operational tests. The inspector informed cognizant licensee representatives that complete installation, operability, and verification of all counting systems in the Health Physics Laboratory was necessary prior to their utilization in the reactor coolant and liquid and gaseous effluent measurement programs. The inspector informed licensee representatives that these results and additional capability tests will be reviewed during a subsequent inspection (50-413/84-42-05).