



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

AUG 24 1988

Report Nos.: 50-413/88-28 and 50-414/88-28

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: July 25-29, 1988

Inspector: *P. G. Stoddart* 8/23/88
 P. G. Stoddart Date Signed

Approved by: *J. B. Kahle* 8/23/88
 J. B. Kahle, Section Chief Date Signed
 Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection was in the areas of liquid and gaseous waste management, effluent sampling, monitoring and analysis, and radiological environmental monitoring.

Results: In the areas inspected, no violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. Bain, Chemist, Power Chemistry
W. Beaver, Supervisor, Performance Engineering
R. Charest, Station Chemist, Chemistry
B. Chundrlik, Health Physicist, Health Physics
*M. Cote', Compliance Engineer, Compliance
*W. Deal, Station Health Physicist, Health Physics
J. Glenn, Engineer, Quality Assurance
*R. Glover, Compliance Engineer, Compliance
H. McInvale, Health Physicist, Health Physics
P. McNamara, Scientist, Health Physics
G. McNeil, Environmental Specialist, Environmental Center
G. Mode, Health Physicist, Health Physics
A. Nietering, Chemist, Chemistry
*T. Owen, Station Manager
S. Powell, Health Physics Specialist, Health Physics
G. Thompson, Chemist, Radwaste Chemistry
*W. Wardell, Superintendent, Technical Services
R. Wylie, Engineer Compliance

Other licensee employees contacted during this inspection included engineers, technicians, and administrative personnel.

Nuclear Regulatory Commission

P. VanDoorn, Senior Resident Inspector
M. Lesser, Resident Inspector

*Attended exit interview

2. Action on Previous Inspection Findings (92701)

(Open) IFI 50-413, 414/86-01-01: Review modification to post accident liquid sampling system (PALSS) routing undiluted sample residues to containment sump. The licensee had scheduled this modification for the next refueling outages for each unit, with the first tentatively scheduled for September 1988. Status: Awaiting licensee action; this item remains open.

(Closed) URI 50-413, 414/86-01-02: Sampling of radioiodine aerosols had been identified as being subject to substantial but unquantified losses in long sampling lines - generic item applicable to all power reactors. The licensee had negotiated a contract with a qualified vendor for determining line losses of the principal iodine species in traversing a mockup of the

plant's vent effluent stack radioiodine sampler and monitor. Additionally, a member of the plant staff was assigned the task of evaluating the containment atmosphere post accident sampling line for iodine specie losses. The licensee had procured the necessary sampling equipment and materials and procedures had been prepared reviewed and approved for making the necessary tests and measurements. However, the actual test schedule had not been established as of the end date of this inspection. This item was closed for tracking purposes and the two separate tasks described above were listed as new but separate items for tracking purposes.

(Opened) IFI 50-413, 414/88-28-01: Evaluate contractor report of tests to determine sampling losses of iodine species in sampling lines for the plant vent iodine sampler/monitor.

(Opened) IFI 50-413, 414/88-28-02: Evaluate licensee report of tests to quantify sampling losses of iodine species in sampling lines for the containment atmosphere iodine sampler/monitor.

(Closed) IFI 50-414/86-25-02: Improved procedure detail regarding background and sensitivity limits of effluent monitors. This matter was discussed in Section 6 of Inspection Report Nos. 50-413, 414/87-27, September 2, 1987. By error, this item was not closed for the record for Unit 2. Licensee's action in issue of Procedure HP/O/B/1004/05 was reviewed and found to be adequate. This matter is considered closed.

(Open) IFI 50-413, 414/87-27-01: Correction of water-contaminated nitrogen supply. The licensee had not completed action on this matter. As an interim measure, the licensee had positioned nitrogen gas cylinders at the location of the post-accident gas monitoring system for use under accident conditions. The licensee projected a 1990 date for final resolution and installation of a permanent nitrogen supply. This matter remained open.

(Open) IFI 50-413, 414/87-27-02: Correct pressure swing (transient) problem associated with valve WG-159 in EMF-50. The licensee stated that the engineering and installation of equipment to correct the pressure swing problem had been completed but that operating tests had not be performed as of the end date of this inspection. This matter remained open pending satisfactory completion of operational tests.

3. Audit (84743, 84724)

The plant Technical Specifications (TSs) required audits of unit activities encompassing the performance of unit operations to provisions of the TSs and applicable license conditions at least once each 12 months. The inspector reviewed the following audit reports:

- a. QA Audit NP-88-07 (CN), "Health Physics, Environmental Monitoring and ODCM Activities," March 28 to April 27, 1988.

- b. QA Audit NP-87-12 (CN), "Chemistry Group Activities and Process Control Program," July 20 to August 17, 1987.

The inspector discussed audit results and reviewed followup items with licensee representatives.

No violations or deviation were identified.

4. Semi-Annual Radioactive Effluent Release Reports (84723, 84724)

The inspector reviewed the Semi-Annual Radioactive Effluent Release Reports for January - June 1987, and July - December 1987, and discussed the reports with licensee representatives. The reports appeared to be adequate and provided the information and data set forth in the plant TSS and in Regulatory Guide 1.21.

The 1987 releases were combined and tabulated together with releases from 1985 and 1986, for comparative and trending purposes.

TABLE
EFFLUENT RELEASE SUMMARY
FOR
CATAWBA NUCLEAR PLANT, UNITS 1 and 2

LIQUID RELEASES (Curies/Yr)

<u>Calendar Year</u>	<u>Fission and Activation Products</u>	<u>Tritium</u>
1985	1.26	277
1986	0.744	236
1987	1.306	728

GASEOUS RELEASES (Curies/Yr)

<u>Calendar Year</u>	<u>Activation Products</u>	<u>Iodine</u>	<u>Tritium</u>
1985	277	0.00064	0.31
1986	2,720	0.00646	5.7
1987	1,696	0.00338	30

The releases shown above were considered representative of large PWRs in the first three years of plant operation and no specific trends could be determined.

The maximum 40 CFR 190 fuel cycle radiation dose to a hypothetical person in the environment was calculated to be 1.9 millirem to the total body and 2.9 millirem to the maximum organ (Adult - GI-LLI).

Selected liquid and gaseous radwaste release permits were reviewed by the inspector. The packages appeared to be complete and analysis results indicated satisfactory performance by the effluent processing systems. It was noted that the licensee utilized the services of a contractor for portable filter demineralizer treatment of plant liquids prior to discharge and that the effluent release permits reflected adequate decontamination factors.

No violations or deviations were identified.

5. Monitoring of Liquid and Gaseous Effluents (84723, 84724)

The licensee had initiated a radiation monitoring system working group for the purpose of identifying, evaluating and proposing corrective measures to resolve a series of operational problems associated with the in-plant radiation and radioactivity monitoring systems. The working group consisted of approximately 15 staff members representing several technical disciplines from the Catawba Nuclear Plant and from Duke Power Company's corporate offices and included both management personnel and appropriate technical staff.

The inspector observed the group's activities for approximately two hours, of which one hour was devoted to discussion of past and present problems and one hour was spent in visiting the locations of five representative monitor installations. The inspector observed that this appeared to be an interested and dedicated group making a reasonable effort to resolve the problems. The working group appeared to have adequate management backing.

No violations or deviations were identified.

6. Changes to the Offsite Dose Calculation Manual (84723, 84724)

On February 16, 1988, the licensee submitted Revision 19 of the Offsite Dose Calculation Manual (ODCM) for the Catawba Nuclear Station, together with Revision 17 of the McGuire Nuclear Station ODCM and Revision 18 of the Oconee Nuclear Station ODCM. The inspector reviewed the Catawba ODCM revision and discussed the changes with licensee personnel.

No violations or deviations were identified.

7. Leak Testing of High Efficiency Particulate Air (HEPA) Filters and Charcoal Absorbers in Engineered Safety Feature (ESF) Ventilation Treatment Systems

The inspector reviewed test reports of DOP (di-octyl-phthalate) leak tests of HEPA filters and of halogenated hydrocarbon (freon) leak tests of charcoal absorbers in ESF ventilation treatment systems. Testing was conducted by a qualified contractor. Twelve series of tests conducted between August 1987, and June 1988, were reviewed. Methyl iodide laboratory tests of charcoal samples were reviewed, with results noted to

be within Technical Specification requirements. Results of all system tests appeared to be adequate.

No violations or deviations were identified.

8. Chemical and Radiochemical Analyses of Primary Coolant (84723)

The inspector reviewed records of analyses and measurements of primary coolant chemical and radiochemical parameters. The Technical Specification requirements for analysis of primary coolant appeared to have been met. The licensee made good use of graphic trending as a means of keeping the various primary coolant parameters within acceptable levels.

At the time of the inspection, the licensee was utilizing laboratory analysis of samples for boron determination rather than using the originally installed boronometer. A licensee representative stated that the reason for the change was related to problems with neutron exposure of personnel during periodic calibration of the boronometer. The analytical method in use at the time of the inspection was mannitol titration. The inspection also reviewed established procedures for conducting the various required analyses; all procedures appeared to be adequate and had been appropriately reviewed and approved.

No violations or deviations were identified.

9. Waste Holdup Tank Building (84723)

At the time of the inspection, the licensee was performing final tests of a new liquid radwaste facility, designated as the Waste Holdup Tank Building. One section of the building contained three 20,000 gallon capacity tanks. The tanks were enclosed in a walled or diked structure capable of retaining the tanks' contents in the event of one or more tank ruptures. A general purpose work area was provided which could be utilized for connection of portable filtration and demineralization modules to permit decontamination of tank contents. Building ventilation exhaust air was vented to atmosphere downstream of HEPA filters. The entire building was designed as a radiation control zone (RCZ) and was to be so designated prior to introduction of radioactive liquids. A large spent resin storage tank was provided in a shielded compartment; expended decontamination resins were to be stored there pending transfer to a high integrity container (HIC) for dewatering prior to shipment offsite for disposal.

The inspector toured the Waste Holdup Tank Building, accompanied by a licensee representative. It was noted that the design had incorporated use of video cameras and monitors to facilitate remote handling of radioactive wastes to maintain potential radiation exposures to operating personnel as low as reasonably achievable. Shielding provisions appeared to be adequate.

No violations or deviations were identified.

10. Plant Sewage Treatment Facility (IN-88-22)

The inspector discussed operation of the plant sewage treatment system with a licensee representative. The Catawba Nuclear Plant sewage treatment system differed from the systems used at McGuire and Oconee Stations. The Catawba primary treatment system utilized a bottom tube air bubble system to provide added oxygen, resulting in natural oxidation and digestion of the sludge. The primary treatment lagoon was divided into four series-connected segments. Outflow was to a second treatment or holdup lagoon where additional aeration took place. Discharge was to Lake Wylie under a permit from the State of South Carolina. The licensee stated that no sludge deposits had been built-up during system operation and that none were anticipated. The outfall area of the lake was sampled by a continuously operating compositing device. Analyses of lake water and silt deposits for 1987, indicated an increasing trend in tritium, Co-60, and Mn-54 activity as a result of plant operations; however, since other plant liquid discharges were made into the same body of water, it could not be determined if any portion of the activity was attributable to sewage plant discharge.

(Closed) 50-413, 414/88-IN-22, Disposal of Sludge from Onsite Sewage Treatment Facilities. The licensee had received the Information Notices. The licensee had evaluated the Catawba Plant sewage treatment system and determined that the subject of the Information Notice (IN) (88-IN-22) was not applicable. This matter was considered closed.

No violations or deviation were identified.

11. Information Notice 88-31, Steam Generator Tube Rupture Analysis Deficiency (84723, 84724, 92717)

The inspector determined that the licensee had received IN 88-31 and had taken a number of administrative and procedural measures to minimize both the potential for the occurrence of the tube rupture event at full power and the potential offsite dose consequences of such an event occurring at either full power or reduced power.

Implemented preventive and mitigative measures included:

- (1) Continuous simultaneous sampling and monitoring of secondary coolant from all four steam generators and development of the capability to change to either sequential or selective mode of monitoring individual steam generators upon observation of increased noble gas activity at the condenser air ejector effluent monitor;
- (2) At such time as an air ejector noble gas monitor readout increased one-half decade (approximately a factor of three) above pre-existing normal levels, a "Trip 2" annunciator alarm would occur in the Control Room, with established procedural response requiring dispatch

of a technician to draw an air ejector noble gas sample for prompt analysis. If the alarm was validated by sample analyses, Chemistry was to initiate leak rate calculations and begin sequential sampling and monitoring of steam generator fluids for the purpose of identifying the affected system;

- (3) If a primary-to-secondary leak were to be calculated at greater than 25 gpd, Chemistry would go to an enhanced leak rate evaluation schedule with four grab samples per day at six-hour intervals;
- (4) Gas accounting procedures would be initiated and control room operator procedures would require special attention to EMF-34 (Steam generator water sample monitor) and to EMF-31 (Turbine Building sump monitor) readouts. If any increase were to be seen on EMF-31, the Turbine Building sump water discharge would be diverted to the new Radwaste Holdup Tank Building for holdup pending analysis and evaluation (60,000 gallon holdup capacity);
- (5) The Radwaste Holdup Tank Building would be utilized for the processing, analysis, and batch release of all Turbine Building sump water, with three 20,000 gallon tanks calculated to be capable of accommodating a continuous input of 50 to 70 gpm, and with established procedural and ODCM provisions providing the mechanism for batch releases to the environment from the Radwaste Holdup Tank Building. As necessary, portable filters and demineralizers could decontaminate the waste steam, or existing radwaste processing systems in the Auxiliary Building could be lined-up for additional processing capacity;
- (6) Procedures were established to set up the Turbine Building as a Radiation Control Zone (RCZ), if necessary;
- (7) Procedures were established to be ready to reduce power if primary-to-secondary tube leakage reached 250 gpd, to reduce power to 50% at a leak rate of 350 gpd, and to prepare for imminent shutdown at or above 500 gpd in the event that a break were to occur. The licensee, at the time of the inspection, was in the process of submitting a revision to the FSAR concerning actions and provisions responsive to the IN.

(Closed) 88-IN-31, Steam Generator Tube Rupture Analysis Deficiency. On the basis of the above discussion, this matter was considered closed.

No violations or deviations were identified.

12. Radiological Environmental Monitoring

The inspector reviewed the licensee's Environmental Report for the calendar year 1987, and discussed the report with licensee personnel. The report appeared to be adequate and contained the necessary information as established in the plant Technical Specifications.

The inspector accompanied licensee personnel and observed the collection of environmental samples at six locations. The sample media included three air samples, two dairy milk samples, and one lake water sample. The inspector observed sample collection and handling techniques and concluded that these were adequate. One environmental air sampler was observed to be leaking oil and was replaced from spares carried in the sampling vehicle. It was noted that the replaced sampler was still operational the time of changeout and that no sampling time was lost.

Analyses of environmental samples were performed at the Duke Power Company corporate environmental laboratory facility near the McGuire Nuclear Plant. The corporate environmental radioanalytical laboratory will be separately inspected at a later date.

No violations or deviations were identified.

10. Exit Interview

The inspection scope and results were summarized on July 28, 1969, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed. Although reviewed during this inspection, proprietary information is not contained in this report. Dissenting comments were not received from the licensee.