U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports Nos. 50-237/91013(DRSS); 50-249/91012(DRSS)

Docket Nos. 50-237; 50-249 License Nos. DPR-19; DPR-25

Licensee: Commonwealth Edison Company
1400 Opus Place
Downers Grove, IL 60515

Facility Name: Dresden Nuclear Generating Station, Units 2 and 3

Inspection At: Dresden Site, Morris, Illinois

Inspection Conducted: April 30 - May 3, and May 8, 1991 (On site)
May 13, (Regional visit)

Inspector: M. Schumacher for J. E. House 5/20/91
Date

Approved By: M. C. Schumacher, Chief 5/20/91
Radiological Controls and Date
Chemistry Section

Inspection Summary

Inspection on April 30 - May 3, and May 8, 1991 (Report Nos. 50-237/91013(DRSS); 50-249/91012(DRSS))
Areas Inspected: Routine unannounced inspection of: (1) the chemistry program including procedures, organization and training (IP 84750); (2) reactor systems water quality control programs (IP 84750); (3) quality assurance/quality control program in the laboratory (IP 84750); (4) nonradiolgical confirmatory measurements (IP 84750); and (5) the Radiological Environmental Monitoring Program (REMP) (IP 84750).
Results: The licensee's water quality control program conforms to the EPRI BWR Owners Group Guidelines. Overall water quality was very good. The nonradiological confirmatory measurements were good. Laboratory instrumentation and the QA/QC program were adequate. The chemistry technician testing program was well managed. The REMP appeared to be satisfactory. No violations or deviations were identified.

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DETAILS

1. Persons Contacted

[1]R. Berg, Training Coordinator, DNGS
[1]G. Bergan, Nuclear Safety, DNGS
[1]F. D. Bevington, Nuclear Quality Programs, DNGS
[1]E. D. Eenigburg, Station Manager, DNGS
[2]L. Gerner, Technical Superintendent, DNGS
[2]J. Golden, Supervisor, Environmental Monitoring, CECo
[1]R. Holman, G-SEP Coordinator, DNGS
[1]K. Kociuba, Superintendent, Nuclear Quality Programs, DNGS
[1]D. Lowenstein, Regulatory Assurance Analyst, DNGS
[1]D. Malauskas, Quality Assurance Chemist, DNGS
D. Morey, Supervisor, Chemistry Services, DNGS
[1]K. Neal, Unit Chemist, DNGS
[1]K. Peterman, Regulatory Assurance Supervisor, DNGS
[1]D. Saccomando, Supervisor, Health Physics Services, DNGS
[1]K. Whittum, Chemist, DNGS

[1]M. Peck, Resident Inspector, NRC

[1]Present at the Exit Meeting on May 8, 1991
[2]Regional visit, May 13, 1991.

2. Management Controls Organization and Training (IP 84750)

Management structure of the laboratory is similar to that previously described, Region III Inspection Report Nos. (50-237/90008; 50-249/90007). The Lead Chemist, two chemistry laboratory supervisors (Foremen), the Waste Products Chemist and the Quality Assurance Chemist report to the Chemistry Services Supervisor. Fourteen Chemistry Technicians (CTs) report to the Laboratory Supervisors. Reporting to the lead chemist are Unit Chemists, HRSS Chemist, Radiochemist and two Laboratory Chemists. Low turnover in the department results in stability. Supervisors and technicians were knowledgable and technically competent. The staffing appeared adequate to perform the required chemistry for plant operations.

No violations of deviations were identified

3. Water Chemistry Control Program (IP 84750)

The inspector reviewed the water chemistry control program. The operational chemistry limits and action levels were consistent with the EPRI BWR Owners Group Guidelines. The licensee is replacing the reactor coolant sample panels and in-line monitoring systems (silica, pH and conductivity). In addition, an in line Ion Chromatograph (IC) has been acquired to monitor chloride, fluoride, sulfate, nitrate, sodium,

potassium, calcium and magnesium. Real time monitoring capability will be provided by data loggers and a data acquisition recorder. The licensee's new make up demineralizer (MUD) system is operational. It is composed of two 150 GPM trains, each having separate anion, cation and mixed bed resin tanks.

Chemistry parameters are reviewed daily by laboratory personnel and by plant management in the daily report. Trend charts including reactor power levels are available for assessing reactor water parameters including conductivity, silica, dissolved oxygen, sulfate, and chloride. Trend charts for feedwater parameters have been discontinued, however the data is reviewed daily and is trended in tabular form. Licensee representatives stated that feedwater quality was good and since little information was gained from these trend plots they were discontinued. A review of the tabular data for feedwater confirmed the feedwater quality.

A review of selected data indicated that Units 2 and 3 reactor water has remained below Action Level 1 except for excursions during power changes or during startup/shutdown conditions. Conductivity for both units appeared to averaged less than 0.1 uMHO/cm, chloride was less than 3 ppb and sulfate was less than 4 ppb. The overall high quality of Reactor water was demonstrated by the Chemistry Performance Index chart for 1990 based on chloride, sulfate and conductivity. The facility has deep bed demineralizers which can process 100% of the condensate. This is a design strength and contributes to maintaining water quality.

No violations or deviations were identified.

4. Confirmatory Measurements (IP 84750)

The inspectors submitted chemistry samples to the licensee for analyses as part of a program to evaluate the laboratory's capabilities to monitor nonradiological chemistry parameters in various plant systems with respect to regulatory and administrative requirements. These samples had been prepared, standardized, and periodically reanalyzed (to check for stability) for the NRC by the Safety and Environmental Protection Division of Brookhaven National Laboratory (BNL). The samples were analyzed by the licensee using routine methods and equipment.

A single dilution of each sample was prepared by licensee personnel as necessary to bring the concentrations within the ranges normally analyzed by the laboratory, and run in a manner similar to that of routine samples. The results are presented in Table 1 which also contains the criteria for agreement. These criteria are based on BNL analyses of the standards and on the relative standard deviations (RSD) derived from the results of the plants participating in the 1986 interlaboratory comparisons. (Table 2.1, NUREG/CR-5422). The acceptance criteria were that the licensee's value should be within 2 Standard Deviations of the BNL value for agreement and between 2 and 3 SD for qualified agreement. A qualified agreement may indicate a bias in the assay.

The licensee determined seven analytes at two concentrations each, three analytes at one concentration and one analyte at three concentrations. Of the initial 20 analyses, 16 were agreements, 3 were qualified agreements and 1 (low level iron) was a disagreement. The iron had a negative bias of approximately 20%, however, it became an agreement when it was rerun. There was no apparent reason for this disagreement as another iron unknown of similar concentration exhibited a small negative bias of 5% and was an agreement. The analytical results were good, however some of the analyses required considerable effort on the part of laboratory personnel due to an apparent contamination problem experienced with the Ion Chromatograph (IC) or glassware used for dilution of interlaboratory comparison unknowns.

The licensee was very successful in analyzing a sample of sodium and lithium on the IC. Peak separation was excellent even though the two elements elute closely and the lithium concentration was about four times that of sodium. This method (IC) may be superior to Atomic Absorption Spectrophotometry for quantitating these elements in nuclear plants.

No violations or deviations were identified.

5. Implementation of the QA/QC Program in the Laboratory (IP 84750)

The inspector reviewed the chemistry QA/QC program as defined by "Nuclear Stations Chemistry Quality Control Program Manual", Revision 8, July 16, 1990. The licensee has control charts, independent controls and multiple point calibration curves. One improvement noted was that the previously completed control chart was left in the instrument manual providing the technician with the instrument's performance history. The control charts are statistically based. Standard deviation (SD) and control limits are set at $\pm$ 2 SD. Charts are reviewed by chemists daily. Data from selected control charts reviewed appeared to have a random scatter.

The licensee's corporate Interlaboratory Comparison Program results for 1990 and the first quarter of 1991 were approximately 92% agreements. The inspector reviewed selected data from this program. Most of the analyses were within 8% of the corporate values which represents good performance.

The licensee's Chemical Technician (CT) Testing Program is conducted by the Production Training Center (PTC). CTs spend about one week annually at the PTC analyzing unknowns prepared by supervisors. The program appeared to be well managed. CTs are required to turn on the instrument, perform the necessary calibration, run a performance check (control), analyze the unknown, run the second performance check and report the results. Control limits are based on plant chemistry laboratory control charts, and unknown acceptance criteria are based on an INPO standard. A review of selected data indicated that CTs are being tested as required and the procedure is being followed. Analysis results were good. This program represents a laboratory strength.

The inspector examined and discussed operation of the HRSS system with licensee representatives. System oversight is assigned to a specific

chemistry staff member. The inspector noted that an initialed surveillance checklist for January 22, 1991, indicated that the Unit two weekly operability surveillance (January 20-26, 1991) was performed. However, the HRSS weekly operability surveillance form had not been initialed. A licensee representative stated that the surveillances had been performed but did not know why the form was not completed. A licensee representative stated that in the near future, instrument readings demonstrating operability will also be recorded on the form. The inspector noted to the Nuclear Quality Programs group (NQP) that QC of the HRSS system should be included in the chemistry surveillance program. Improvement in this area will be followed under Open Items (50-237/91013-01; 50-249/91012-01).

No violations or deviations were identified.

6. Radiological Environmental Monitoring Program (REMP)(IP 84750)

The inspector reviewed the REMP including the 1990 Annual Environmental Report which appeared to comply with the REMP requirements. All of the required samples were collected and analyzed, except as noted in the report, and a survey of the results showed them to be reasonable.

The inspector examined selected environmental air sampling stations around the plant and tested those systems for operability and leakage. The pump and filter train on the air samplers on the seven observed sampling stations appeared to be operating satisfactorily, both with respect to vacuum and flowrate. Each had a calibration and filter changeout record attached. The REMP is conducted by an outside vendor and managed by the licensee's corporate office. A review of the latest contractor audit by the licensee (Section 7) and discussions with licensee personnel indicated that licensee oversight of the REMP is adequate.

The REMP appeared to be conducted in an acceptable manner.

No violations or deviations were identified.

7. Audits and Appraisals (IP 84750)

The inspector reviewed five corporate and site managed audits. Corporate Audit 12-90-I conducted June 18-22, 1990 reviewed the chemistry program. Auditors observed three CTs collect, process and analyze samples. Sampling observations included CT adherance to radiological protection procedures during sample collection, sample line purging and proper labeling of sample container. The CT testing program, instrument calibration, chemicals, QC charts, preparation and labeling of standards were reviewed. The ANSI qualifications of the three CTs being observed were reviewed. The inspector noted to licensee representatives that the auditors should review the ANSI qualifications of all CTs.

Nuclear Quality Programs (NQP) Audit Report Number 12-90-16 conducted May 4-25, 1990, of the Environmental Monitoring Program reviewed, in part, the REMP contractors radiological cross check program and Technical Specification sampling requirements.

NQP Audit Report Number 12-90-14, conducted November 30-December 17, 1990, focused on chemistry. Required sampling, analysis results, use of independent controls, and RCT testing were reviewed.

The inspector reviewed a portion of an unfinished audit, NQP Audit Report Number 12-91-14 which reviewed environmental monitoring. The auditor accompanied the REMP contractor on a weekly sampling round to verify that the REMP field activities were conducted according to licensee requirements and contractor sampling manual. Air particulate and surface water samples were collected. The auditor found this area to be acceptable.

The licensee performed a corporate QA audit of the REMP contractor, Audit Report Number G-90-241, dated November 16, 1990. Auditors reviewed the contractor's QA program, procedures, records, Training and laboratory performance and the audit program. The licensee found the contractor laboratory to have an adequate program for sample analysis, however, five findings were made which the contractor was required to address. A licensee representative stated that a follow-up audit of the contractor laboratory will be conducted to resolve the findings.

The licensee's audits were performance based and focused on QA programs and the performance of laboratory personnel. Findings from licensee internal audits were addressed in a timely manner.

No violations or deviations were identified.

8. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspectors, and which involve some action on the part of the NRC or licensee, or both. An open items disclosed during the inspection is discussed in Section 5.

9. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (Section 1) at the conclusion of the inspection on May 8, 1991. The inspector discussed the confirmatory measurements results, laboratory QA/QC, plant water quality, audits and the REMP. During the exit interview, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. Licensee representatives did not identify any such documents or processes as proprietary.

No violations of deviations were identified

Attachments:
1. Table 1, Nonradiological Confirmatory Measurements Results, April 30-May 3, 1991

TABLE 1
Nonradiological Confirmatory Measurements Results
Dresden Nuclear Station
April 30-May 3, 1991

Analyte	Method[1]		Concn[2]	Ratio[3]	Acceptance Ranges[4] ± 2RSD	± 3RSD	Result[5]
				ppb			
Fluoride	A	IC	3	1.025	0.875-1.125	0.813-1.187	A
	C		10	1.064	0.875-1.125	0.813-1.187	A
Chloride	A	IC	3	1.090	0.933-1.067	0.900-1.100	A+
	C		10	0.999	0.926-1.074	0.895-1.105	A
Sulfate	A	IC	3	1.089	0.895-1.105	0.842-1.158	A
	C		10	1.005	0.900-1.100	0.867-1.133	A
Iron	G	AA/Fl	1PPM	0.803	0.904-1.096	0.854-1.146	D
	H		2PPM	0.945	0.903-1.097	0.857-1.143	A
Rerun	G		1PPM	0.955	0.904-1.096	0.854-1.146	A
Copper	G	AA/Fl	1PPM	1.000	0.904-1.095	0.859-1.141	A
	H		1PPM	1.002	0.904-1.096	0.857-1.143	A
Nickel	G	AA/Fl	1PPM	0.956	0.936-1.064	0.906-1.094	A
Chrome	G	AA/Fl	1PPM	1.100	0.905-1.095	0.855-1.145	A+
	H		1PPM	1.054	0.903-1.097	0.854-1.146	A
	I		1PPM	1.112	0.903-1.097	0.858-1.147	A+
Sodium	K	IC	10	0.980	0.859-1.141	0.788-1.212	A
Lithium	K	IC	30	1.123	0.860.140	0.758-1.125	A
Silica	S	Color	20	1.011	0.906-1.094	0.859-1.141	A
	T		50	1.054	0.090-1.091	0.860-1.136	A

Analyte	Method[1]	Concn[2]	Ratio[3]	Acceptance Ranges[4] ± 2RSD	± 3RSD	Result[5]
		ppm				
Boron	E	3000	0.988	0.979-1.021	0.968-1.032	A
	F	5000	0.990	0.979-1.021	0.968-1.032	A

1. Methods: Titr - Titration
   IC - Ion Chromatography
   Color - Colorimetric
   AA/Fl Flame Atomic Absorption Spectrophotometry

2. Conc: Approximate concentration analyzed.

3. Ratio of Licensee mean value to NRC mean value.

4. The SD in the fifth and sixth columns represents the coefficient of variation obtained from averaging licensee data from the preceding cycle (Table 2.1 of NUREG/CR-5244). A result is considered to be in agreement if it falls within the ± 2 SD range; a qualified agreement if it lies outside ± 2 SD, but within ± 3 SD; and in disagreement if it is outside the ± 3 SD range.

5. Result:
   A = Agreement: Licensee value is within ±2 SDs of the NRC mean value.
   A+ = Qualified agreement, licensee is between ± 2 and ±3 SDs of the NRC value.
   D = Disagreement: licensee value is outside ± 3 SDs.