U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-373/85018(DRSS); 50-374/85019(DRSS)

Docket Nos. 50-373; 50-374 Licenses No. NPF-11; NPF-18

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle County Station, Marseilles, IL

Inspection Conducted: June 18-21, 1985

Inspector: L. J. Hueter 7-12-85
Date

Approved By: M. C. Schumacher, Chief 7/12/85
Independent Measurements and Date
Environmental Protection Section

Inspection Summary

Inspection on June 18-21, 1985 (Reports No. 50-373/85018(DRSS); 50-374/85019(DRSS))
Areas Inspected: Routine unannounc inspection of gaseous and liquid radioactive programs including: effluent releases; records and reports of effluents; effluent control instrumentation; procedures for controlling releases; reactor coolant chemistry and activity; and gaseous effluent filtration. The inspection involved 41 inspector-hours onsite by one NRC inspector.
Results: No violations were identified.

DETAILS

1. Persons Contacted

*L. Aldrich, Lead Health Physicist
*R. Bishop, Superintendent, Services
G. Ford, Technical Staff
T. Hammerich, Assistant Technical Staff Supervisor for Compliance
F. Lawless, Rad/Chem Supervisor
*P. Nottingham, Lead Chemist
J. Schuster, Chemist
A. Settles, Technical Staff
*M. Jordan, NRC Senior Resident Inspector
*R. Kopriva, NRC Resident Inspector

*Denotes those present at the exit.

2. General

This inspection, which began at 8:30 a.m. on June 18, 1985, was conducted to examine the licensee's gaseous and liquid radwaste management program and related activities for safety and compliance with regulatory requirements.

3. Gaseous Radioactive Waste

The inspector reviewed the licensee's gaseous radwaste management program, including: determination whether gaseous radioactive waste effluents were in accordance with regulatory requirements; adequacy of required records, reports, and notifications; and experience concerning identification and correction of programmatic weaknesses.

The program was reviewed for calendar year 1984 and the first quarter of 1985. The inspector reviewed semiannual effluent reports for 1984 and selectively reviewed effluent records for the same period.

Gaseous effluents are exhausted from the plant via a single vent stack. However the standby gas treatment system (SGTS) has a separate flue inside the vent stack with a separate monitoring/sampling system. Containment vent and purges normally are exhausted via the regular vent stack but may be diverted through the SGTS if filtration is needed. Under normal plant conditions, gaseous releases are quantified weekly from stack grab samples for noble gas and weekly particulate filter and charcoal samples. Under abnormal conditions sampling may be more frequent in order to meet technical specification requirements. Similar samples are taken to quantify SGTS releases. Stack tritium samples are collected on silica gel during reactor startup and shutdown and when power changes exceed 15 percent in one hour. Prior to containment purges, grab samples for noble gas and tritium are collected and analyzed from both the vent stack and containment to verify that releases will not exceed the Offsite Dose Calculation Manual (ODCM) criteria.

The CECo computer program for dose updates and projections is run weekly and before containment purges (more than meeting the 31 day maximum interval for dose projection determination). By inputting releases of each nuclide for the period into the computer program, the gamma air dose, beta air dose, total body dose, skin dose and most restrictive organ dose is provided for the current period, the current calendar quarter to date, the three previous calendar quarters and the calendar year to date.

Reactor Unit 1 has been in operational status throughout most of the review period except for a few short outages plus one of several weeks duration in late 1984. Unit 2 was operated sporadically until startup testing was completed in the Fall of 1984. An approximate four month outage (expected to end in late June, 1985) was conducted to complete a number of plant modifications. The licensee has had no evidence of fuel cladding problems to date with either unit. Radioactive effluent release rates and offsite dose rates have remained low. In 1984, 566 curies of noble gas and 3.54E-03 curies of iodine-131 were released in gaseous effluents from both units combined. Inserting into the CECo computer code the annual values of curies of each nuclide released in gaseous effluents in 1984, the calculated maximum whole body dose and maximum thyroid dose (most restrictive organ dose) to any individual beyond the site boundary were 6.9E-03 mrem and 1.1E-02 mrem respectively. A land use survey is conducted by a contractor during the third calendar quarter each year to determine if any changes have occurred that would require changes in ODCM formulations.

In review of gaseous effluent, it was noted that a significant fraction of the particulate nuclides in effluents were measured on the charcoal adsorber cartridges located downstream of the particulate filters. For example, in November 1984, cobalt-60 was identified on the charcoal adsorber on eight days and accounted for about 36 percent of the total cobalt-60 activity quantified in gaseous effluents for the month. During the same month, manganese-54 was identified on the charcoal adsorber on eleven days and accounted for about 62 percent of the total manganese-54 activity quantified in gaseous effluents for the month. Possible causes were discussed including filter installation problems and possibly elevated counting room backgrounds affecting gamma counting. This matter was discussed at the exit and will be further reviewed during a future inspection. (Open Item 373/85018-01; 374/85019-01)

No violations were identified.

4. Liquids and Liquid Radioactive Wastes

The inspector reviewed the licensee's reactor liquids and liquid radwaste management programs, including: determination whether reactor liquids meet chemical and radiochemical requirements, determination whether liquid radioactive waste effluents were in accordance with regulatory requirements, adequacy of required records, reports, and notifications; and experience concerning identification and correction of programmatic weaknesses.

The program was reviewed for calendar year 1984 and the first quarter of 1985. The inspector reviewed semiannual effluent reports for 1984 and selectively reviewed effluent records for the same period. No significant problems were identified during this review.

Liquid effluents are released on a batch basis from one of two tanks (following sampling and analysis) to a single release path which is a monitored (alarm and isolation functions) radwaste line. This line diverts the effluent to the cooling lake blowdown line to provide adequate dilution to assure that the effluent reaching the river is below MPC for the mixture of all nuclides released. Most plant liquids including chemical waste liquids are processed and reclaimed by use of filters, radwaste evaporators and resin beds. As a result, batch releases consist mainly of laundry water and an occasional batch of other water which does not meet criteria for reuse. The licensee has had rather frequent problems with the three radwaste evaporators but has continued to repair and use them. One of the three radwaste evaporators is currently out of service owing to a recent leak in the surface condenser that cools and condenses (via service water) distillate from the evaporator.

Analyses of batch liquid releases include counting a sample of the recirculated liquid for 60 minutes using a GeLi system to identify and determine the concentration of gamma emitting nuclides in Technical Specification Table 4.11.1-1. For pure beta emitters, including strontium-89 and 90, iron-55 and hydrogen-3, concentrations are considered to be identical to the concentrations in the latest analysis of monthly composite samples of liquid batch releases. The composite samples are sent to a contractor for beta analysis. The concentrations of each nuclide, as well as the cooling lake blowdown flow rate are fed into a computer program which provides the MPC fraction for each nuclide, the sum of MPC fractions, the allowable radwaste discharge flow rate and the setpoint (above background) of the monitor on the discharge line which has alarm and isolation functions. Calculation of the release rate has a built-in safety factor of 10 included. Also, the maximum dilution flow used for the cooling lake blowdown in the calculation is 20,000 gpm whereas the flow rate can range from 20,000 to about 60,000 gpm when the blowdown is in operation. Further, the maximum release rate from the effluent line is 45 gpm. Selective review of recent release records identified no problems with setpoint determination and settings.

To meet surveillance requirements of Technical Specification 4.11.1.2, for each liquid batch release, the activity of each nuclide is entered into a CECo computer program which determines the cumulative dose contributions (in accordance with the ODCM) for the total body and any organ for that batch, for the calendar quarter to date and for the calendar year to date.

In 1984, about 85 millicuries of gross beta-gamma activity (excluding tritium) and about 1.1 curies of tritium was released in liquid effluents from both units combined. From these effluent releases, the calculated maximum whole body dose and maximum bone dose (most restrictive organ dose) to any individual beyond the site boundary were 1.3E-02 mrem and 3.2E-01 mrem respectively.

Licensee efforts are continuing in determining the extent of release of activity to the cooling lake as well as the bounds and degree of soil and ground water contamination resulting from the below ground HPCS line break of late May 1985 which is described in Inspection Report Nos. 50-373/85017 and 50-374/85017.

Reactor coolant sampling and analysis records were reviewed for compliance with chemical and radiochemical criteria contained in Technical Specifications 3/4.4.1 and 3/4.4.5 respectively. Test results reviewed for the period July 1, 1984, to May 31, 1985, included pH, conductivity and chloride. The pH and chloride concentration was contained within the respective specified criteria for both units throughout the review period except for the chloride concentration in Unit 1 reactor coolant for a period of time on August 7 and 8 when the concentration exceeded the 0.2 ppm criteria, reaching a peak of 0.388 ppm. A report was not required nor was a change in the operational condition required because the concentration was brought back within the criteria within a period of less than 72 hours. The conductivity for Unit 1 was out of specification for less than a 72 hour period on a couple of occasions, once in late July and again in early August 1984 when the 1.0 micro mhos/cm was exceeded and reached a maximum of 2.20 micro mhos/cm. The problem has been more frequent with Unit 2 particularly when operating at low power levels during startup testing in the latter half of 1984. The conductivity for Unit 2 was out of specification on seven occasions (each being less than 72 hours duration) when the conductivity exceeded 1.0 micro mhos/cm (maximum of 1.92 micro mhos/cm).

A facility change made during the current Unit 2 outage involves a modification in piping/valving from which the control rod drives obtain cooling water. The modification is designed to eliminate the potential of drawing the control rod drive cooling water from a stagnant supply in a line which can significantly affect primary coolant conductivity particularly during low power operation. The control rod cooling water will now be taken from the condenser hot well for Unit 2 as is already the case with Unit 1.

The dose equivalent iodine-131 activity test results were reviewed from December 1, 1984, to May 20, 1985 and the gross beta-gamma activity test results were selectively reviewed for the last half of 1984 and first quarter of 1985. No problems were identified during the review in either frequency of testing or compliance with concentrations.

No violations were identified.

5. Calibrations and Surveillances of Gaseous and Liquid Process and Effluent Monitors

The inspector reviewed records for seven monitors on the liquid system (including the common radwaste discharge, the service water discharge for each reactor unit and two RHR service water monitors for each unit) and two monitors on the gaseous system (the SGTS and the vent stack). Technical Specification 4.3.7.10 requires calibration of the liquid

monitors described above at 18 month intervals and source checks prior to each release. Technical Specification 4.3.7.11 requires calibration of the gaseous monitors described above at 18 month intervals and source checks at monthly intervals. The inspector reviewed calibration records and selected source checks for the liquid and gaseous effluent monitors described above for the period August 1, 1982 to June 18, 1985. The review showed proper calibrations on a timely basis. The selected review of source checks and instrument setpoints identified no problems.

The initial calibration of liquid monitors involved determination of an efficiency using a single concentration of cesium-137 liquid source and response to several solid cesium-137 sources to determine linearity of response and for use in subsequent calibration checks. For subsequent calibrations an electronic calibration check for linearity is performed as well as verification that response to a solid cesium-137 source (decay corrected) has remained within an established error band. For the liquid radwaste monitor only, during the initial calibration a curve was developed of instrument response versus gamma energy by using five sources ranging in energy from 88 kev to 1332 kev. This information is used, in conjunction with analysis of samples of planned batch releases, for determination of expected monitor response and setpoint values.

In January 1984, the licensee had a contractor do a detailed calibration of the gaseous normal range effluent monitor (beta scintillation detectors) involving several concentrations of xenon-133 and also several concentrations of krypton-85 to show counting efficiency for each gas and to demonstrate linearity characteristics over the range of the monitor for gases with different beta energies. At the same time, five solid sources with a range of beta energies were counted and efficiencies determined. During subsequent calibrations these solid sources are counted to show that the counting efficiency has not changed by more than 10 percent over a broad range of beta energies. Linearity is also verified by counting several sources of a single nuclide with a broad range of activities.

No violations were identified.

6. Procedures for Controlling Releases

The inspector selectively reviewed revisions to the licensee's liquid and gaseous radwaste procedures. No significant problems were identified during the procedures review.

LCP 140-7, Revision 9, Analysis of Radwaste Discharge Tanks 1(2)WF05T and Determination of Discharge Flowrate Using Cooling Pond Blowdown
LCP 730-1, Revision 0, Determination of Station Vent Stack and Standby Gas Treatment Stack Wide Range Gas Monitor Effluent Release Rate Alarm Setpoints
LCP 820-13, Revision 5, Efficiency Calibration of NAI Liquid Process Radiation Monitors
LCP 820-23, Revision 0, Determination of Efficiency Curve for Radwaste Liquid Process Monitor

No violations were identified.

7. Changes to Equipment and Procedures

In discussions/reviews of changes made to gaseous or liquid waste systems during the past year, two facility changes were identified, both involving the liquid waste system. One modification, involving the source of cooling water for Unit 2 CRDs, is described in Section 4. The other modification involves the recent relocation of part of the liquid radwaste discharge line and relocation of the liquid radwaste effluent monitor from an offsite location to a location in the turbine building. The inspector verified that a 10 CFR 50.59 review/evaluation was performed by the licensee for both of these facility changes.

No violations were identified.

8. HEPA Filter and Charcoal Adsorber Systems

Two ventilation systems have HEPA filters and charcoal absorbs subject to technical specification surveillance requirements. These systems are the two trains of the control room and auxiliary electric equipment room emergency filtration system and the two trains (common to both reactor units) of the standby gas treatment system. Inplace testing of HEPA filters and charcoal adsorbers have been performed on a timely basis and records show the efficiency to be greater than the 99.95 percent criteria for the latest tests of the systems described above. In addition, a laboratory analysis of a representative carbon sample from each train for methyl iodide removal has been performed with records showing the removal efficiency to be greater than the 99% criteria for the most recent test results available. Test results from samples just recently removed and sent to a laboratory for analysis were not yet available.

No violations were identified.

9. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on June 21, 1985. The inspector discussed the likely information content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify such documents/processes as proprietary. The inspector summarized the scope and findings of the inspection. In response to certain items discussed by the inspector, the licensee:

Acknowledged a potential problem involving proper quantification of particulates in gaseous effluents in that a significant fraction of the particulate activity is identified on the charcoal adsorber cartridges located downstream of particulate filters. The licensee committed to evaluate the cause and significance of this concern. (Section 3)