

U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Reports No. 50-237/85021(DRSS); 50-249/85017(DRSS)

Docket Nos. 50-237; 50-249

License No. DPR-19, DPR-25

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: Dresden Nuclear Station

Inspection At: Dresden Nuclear Station, Units 2 and 3

Inspection Conducted: May 21-23, 29, and June 5, 1985

Inspectors: *S. Rozak*
S. Rozak

6/17/85
Date

R. B. Holtzman
R. B. Holtzman

6/17/85
Date

Approved By: *M. C. Schumacher*
M. C. Schumacher, Chief
Independent Measurements and
Environmental Protection Section

6/17/85
Date

Inspection Summary

Inspection on May 21-23, 29 and June 5, 1985 (Reports No. 50-237/85021(DRSS); 50-245/85017(DRSS))

Areas Inspected: Special unannounced inspection of implementation of 10 CFR Part 61 and 10 CFR Part 20.311 requirements for disposal of low-level radioactive wastes, quality control, tour of the facility, and implementation of waste form and waste classification requirements. The inspection involved 45 inspector-hours on site by two NRC inspectors.

Results: One apparent item of noncompliance was identified (Severity Level V Supplement IV violation - failure to include quantities of H-3, C-14, Tc-99 and I-129 on manifests - Section 4).

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DETAILS

1. Persons Contacted

- ¹J. Wujciga, Production Superintendent
- ¹B. Stephenson, Manager of Production, CECO
- ¹D. Sharper, Waste Systems Engineer
- ^{1,2}M. Luoma, Quality Assurance Supervisor
- ¹K. Norbert, Nuclear Services Technical, CECO, General Engineer
- ¹L. Oshier, Health Physicist, Radwaste
- S. McDonald, Rad-Chem Supervisor
- J. Thuot, Staff Assistant, Operations
- C. Fullwood, Chem-Nuclear
- R. Adams, Intern
- ¹C. Anderson, Resident Inspector
- J. Doyle, Quality Control Supervisor

¹Present at plant exit interview on May 23, 1985

²Telephone discussions on May 29, 1985 and June 10, 1985

2. Licensee Action on Previous Inspection Findings

- a. (Closed) Open Item (50-237/85025-02; 50-249/83-23-02): Procedure DCP 1900-2, "Quality Control Program for Chemistry Instrumentation," will be reviewed by March 1, 1985 to remove subjectivity in implementation. The inspectors examined a revised version of DCP-1900-2, approved May 18, 1985. This procedure was modified to rephrase the more important quality control measures to make them mandatory rather than to be recommendations. The procedure appears to be adequate.
- b. (Closed) Open Item (50-237/84-25-01; 50-249/84-22-01): Analyze waste tank sample for H-3, Sr-89, Sr-90 and gross beta and report results to Region III. The results of comparisons made on these four analyses are presented in Table II. Comparison criteria are outlined in Attachment 1. The disagreement for Sr-89 is probably not significant. Analyses of radiostrontium require several steps in the chemical separations that can introduce errors not reflected in the acceptance criteria used. This factor along with the low levels of Sr-89 involved and no recent history of problems with this type of analysis does not appear to warrant any extraordinary followup action. This matter will be examined further when the next series of sample comparisons is performed.

3. Organization and Management Controls

The inspectors reviewed the administration and management of the licensee's radwaste program. The radwaste processing is under the Assistant Superintendent, Operations, and operated by the Waste Systems Engineer with five Staff Assistants. The radiological controls and measurements are performed by Rad-Chem Technicians (RCTs) under the

supervision of the Health Physicist, Radwaste, who is under the Radiation Protection Supervisor. Both this group and the Chemistry group, which provides analyses on the isotopic composition of the samples, are under the Rad Chem Supervisor.

The cooperation among the three groups involved appears adequate and no problems were identified.

4. Waste Classification and Form

The inspectors reviewed the status of the licensee's implementation of the requirements of 10 CFR 20.311 and 10 CFR 61 applicable to low-level radwaste classification, waste form and stabilization. The licensee has made several hundred shipments to date since December 27, 1983, the effective date of the new regulations. The inspectors examined selected manifests and records of more than 100 shipments covering the period from January 16, 1984 through May 21, 1985.

The licensee's program for waste classification, waste stabilization, and manifest preparation and tracking is contained in several documents. The governing document is procedure DOP 2000-44, "Radwaste Shipping." This procedure addresses the applicable requirements in 10 CFR 20.311 and 10 CFR 61 for making radwaste shipments to burial grounds. It is implemented under the cognizance of the Waste Systems Engineer. Other procedures exist to assist in performing detailed measurements and calculations. As an example, procedure DRP 1520-1, "Determination of Waste Classification for Radioactive Waste Burial" gives a detailed guidance for determining waste classification. In practice these calculations are performed by computer programs generated in-house. This program is being used on an interim basis pending company approval of a comprehensive computer code titled WASTETRAK, which is expected to be approved in the very near future and will replace the existing program.

The licensee generates three types of waste, primarily: dry active waste (DAW) shipped in 55 gallon drums or in LSA boxes, evaporator bottoms, and spent resin. The latter two are solidified either in 55 gallon drums or in cask liners. The solidification processes are a Stock Equipment Company process for solidification in 55 gallon drums and a Chem-Nuclear Company process for cask liners which has been in routine use at the site for the last two months. Both processes have undergone testing to demonstrate that the final product can meet stability requirements.

The licensee has sent samples of radwaste to Science Applications, Inc. for determination of correlation factors for the "hard to measure" nuclides used in waste classification. The first set was sent late in 1983, and the correlation factors were determined and documented in a report dated January 10, 1984. A second set has since been collected and sent for analysis. In practice, the "hard-to-measure" radionuclides are correlated to either Co-60 or Cs-137.

To determine waste classification, dose rate measurements are made on the radwaste container; dose to curie conversion factors are then used to determine the total radioactivity content of the container; and this activity is then partitioned into contributions from various radionuclides based on gamma analyses of representative samples and the correlation factors determined previously by the contractor laboratory. The inspectors checked several calculations used in the waste classification for accuracy and identified no problems with the calculations.

During the review of the manifests no problems were found with shipments made during 1984, except for two shipments made on June 6 and June 8, 1984. For those two shipments, the values for Cs-137 and Sr-90, which may be critical for the classification, were missing. The discrepancy was identified at Barnwell and the licensee was notified. The licensee then found that Cs-137 data were missed (the Sr-90 value is correlated to that of the Cs-137) due to a deficiency in the gamma-ray spectrometry software (AAIS) that did not add these data to the "Peaks Summary" section of the report. A recalculation showed the initial classification to have been correct. The manifests were not revised and no written records relating to this problem were available. During this inspection, based on inspector comments, the licensee initiated a written log of communications with the burial grounds to document problems of this nature. The AAIS software has since been revised to reduce the likelihood of a recurrence of this problem.

Another problem noted with the above mentioned shipments and with the majority of shipments made during 1985, was that the quantities of Tc-99, I-129 and less frequently of H-3 and C-14, were not being reported on the manifests. Instead the abbreviation N.P. (not present) was entered on the manifests. This appears to be contrary to the requirements in 10 CFR 20.311(b) which states, in part, that the total quantity of the radionuclides H-3, C-14, Tc-99 and I-129 must be shown. This is an apparent item of noncompliance. For the 1985 shipments, the licensee did not list the quantities of those radionuclides because of a memorandum from the corporate office, dated January 31, 1985, which gave instructions not to list the quantities of these radionuclides whenever they contributed less than one percent of the activity in the container. The inspectors discussed this matter with a representative of Technical Services, Nuclear, but no clear basis for this instruction was identified.

One apparent item of noncompliance was identified.

5. Facility Tour and Quality Control

The inspectors toured the licensee's radwaste facility on May 21, 1985. No problems were identified during the tour.

The inspectors examined licensee audits of the radwaste program performed since the effective date of the new regulations (December 27, 1983). These audits did not address the specific requirements of 10 CFR 61.55 and

10 CFR 61.56, although one question in audit QAA 12-84-21 did address the labelling of radwaste containers required by 10 CFR 61.57. To demonstrate compliance with 10 CFR 21.311(d)(3), which requires a QC program to assure compliance with 10 CFR 61.55 and 61.56, the licensee forwarded to Region III an audit checklist, approved May 21, 1985, which was unavailable for review during the onsite portion of the inspection. This checklist, which was to be used during a scheduled audit in late May 1985, does address specific questions to 10 CFR 61.55 and 10 CFR 61.56 and appears to be adequate.

No apparent items of noncompliance were identified.

6. Exit Interview

The inspectors reviewed the scope and findings of the inspection with licensee representatives (Section 1) at the conclusion of the onsite portion of the inspection on May 23, 1985 and on June 10, 1985 after review of additional documentation supplied by the licensee.

The inspectors discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. Licensee representatives did not identify any such documents/processes as proprietary.

Attachments

1. Table II, Confirmatory Measurements Program, Fourth Quarter of 1984.
2. Attachment, Criteria for Comparing Analytical Measurements

TABLE II

U S NUCLEAR REGULATORY COMMISSION
 OFFICE OF INSPECTION AND ENFORCEMENT
 CONFIRMATORY MEASUREMENTS PROGRAM
 FACILITY: DRESDEN
 FOR THE 4 QUARTER OF 1984

SAMPLE	ISOTOPE	-----NRC-----		----LICENSEE----		---LICENSEE:NRC---		
		RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
L WASTE	H-3	1.3E-03	2.0E-05	1.3E-03	0.0E-01	9.7E-01	6.7E 01	A
	SR-89	3.3E-08	8.0E-09	<1.2E-08	0.0E-01	3.6E-01	4.1E 00	D
	SR-90	1.3E-09	4.8E-09	<7.0E-09	0.0E-01	5.4E 00	2.7E-01	N
	BETA	2.4E-06	9.0E-08	2.1E-06	0.0E-01	8.7E-01	2.6E 01	A

T TEST RESULTS:
 A=AGREEMENT
 D=DISAGREEMENT
 *=CRITERIA RELAXED
 N=COMPARISON

ATTACHMENT 1

CRITERIA FOR COMPARING ANALYTICAL MEASUREMENTS

This attachment provides criteria for comparing results of capability tests and verification measurements. The criteria are based on an empirical relationship which combines prior experience and the accuracy needs of this program.

In these criteria, the judgment limits are variable in relation to the comparison of the NRC's value to its associated one sigma uncertainty. As that ratio, referred to in this program as "Resolution", increases, the acceptability of a licensee's measurement should be more selective. Conversely, poorer agreement should be considered acceptable as the resolution decreases. The values in the ratio criteria may be rounded to fewer significant figures to maintain statistical consistency with the number of significant figures reported by the NRC Reference Laboratory, unless such rounding will result in a narrowed category of acceptance.

<u>RESOLUTION</u>	<u>RATIO = LICENSEE VALUE/NRC REFERENCE VALUE</u>
	<u>Agreement</u>
<3	No Comparison
<u>>3</u> and <4	0.4 - 2.5
<u>>4</u> and <8	0.5 - 2.0
<u>>8</u> and <16	0.6 - 1.67
<u>>16</u> and <51	0.75 - 1.33
<u>>51</u> and <200	0.80 - 1.25
<u>>200</u>	0.85 - 1.18

Some discrepancies may result from the use of different equipment, techniques, and for some specific nuclides. These may be factored into the acceptance criteria and identified on the data sheet.