

*Reactor Facilities  
Branch*

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

MAR 8 1976

Commonwealth Edison Company  
ATTN: Mr. Byron Lee, Jr.  
Vice President  
P.O. Box 767  
Chicago, Illinois 60690

Docket No. 50-10  
Docket No. 50-237  
Docket No. 50-249

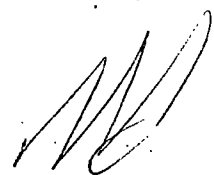
Gentlemen:

This refers to the inspection conducted by Mr. B. L. Jorgensen and Dr. M. J. Oestmann of this office on January 27-30, and February 2 and 13, 1976, of activities at the Dresden Nuclear Power Station authorized by Operating Licenses No. DPR-2, No. DPR-19 and No. DPR-25, and to the discussion of our findings with Mr. Stephenson and others of your staff at the conclusion of the inspection.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

No items of noncompliance with NRC requirements were identified within the scope of this inspection. However, the new Generating Stations Emergency Plan (GSEP) has not been adequately implemented at this time. Specifically, those items identified and referenced further in paragraphs D and C under Management Interview in the Summary of Findings section of the enclosed inspection report require further action. Please inform this office of the actions you are taking or plan to take to complete and consolidate implementing procedures in accordance with GSEP Section 10, and to provide adequate temporary and permanent site first aid facilities. Include a completion date for each item.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room, except as follows. If this report contains information that you or your contractors believe to be proprietary, you must apply in writing to this



MAR 8 1976

office, within twenty days of your receipt of this letter, to withhold such information from public disclosure. The application must include a full statement of the reasons for which the information is considered proprietary, and should be prepared so that proprietary information identified in the application is contained in an enclosure to the application. Unless we receive an application to withhold information or are otherwise contacted within the specified time period, the written material identified in this paragraph will be placed in the Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely yours,

J. M. Allan, Chief  
Fuel Facility and  
Materials Safety Branch

Enclosure:

IE Inspection Reports  
No. 050-010/76-03,  
No. 050-237/76-02 and  
No. 050-249/76-02

cc w/encl:

B. B. Stephenson, Station  
Superintendent

bcc w/encl:

PDR  
Local PDR  
NSIC  
TIC  
Anthony Roisman, Esq.,  
Attorney  
HQ Reproduction

UNITED STATES NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Emergency Planning and Confirmatory Measurements Inspection

IE Inspection Report No. 050-010/76-03

IE Inspection Report No. 050-237/76-02

IE Inspection Report No. 050-249/76-02

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

Dresden Nuclear Power Station  
Units 1, 2 and 3  
Morris, Illinois

Licenses No. DPR-2,  
No. DPR-19  
and No. DPR-25  
Category: C

Type of Licensee: BWR (GE) 700 Mwt - Unit 1  
2527 Mwt - Unit 2  
2527 Mwt - Unit 3

Type of Inspection: Routine, Announced

Dates of Inspection: January 27-30, February 2 and 13, 1976

Principal Inspector: *B. L. Jorgensen*  
B. L. Jorgensen

3/4/76  
(Date)

Accompanying Inspector: *M. J. Oestmann*  
M. J. Oestmann

3/2/76  
(Date)

Other Accompanying Personnel: None

Reviewed By: *J. A. Pagliaro*  
J. A. Pagliaro, Chief  
Environmental and Special Projects Section

3/5/76  
(Date)

## SUMMARY OF FINDINGS

### Inspection Summary

Routine, announced emergency planning and confirmatory measurements inspection conducted on January 27-30, and February 2 and 13, (Unit 1, 76-03), (Unit 2, 76-02), and (Unit 3, 76-02): Reviewed requirements, documentation, and procedures of the licensee's Generating Stations Emergency Plan (GSEP); reviewed reports on drills, examined equipment, instrumentation and supplies specified in GSEP and emergency plan implementing procedures (EPIP); conducted discussions with offsite support agencies and with plant personnel; discussed and reviewed results of comparative analyses of previous effluent and radiological samples; collected effluent samples for subsequent comparative analysis; discussed and reviewed programs for control of quality in laboratory radioanalyses; and followed up items from previous emergency planning inspection.

### Enforcement Items

None.

### Licensee Action on Previously Identified Enforcement Items

No previously identified enforcement items within the scope of this inspection.

### Other Significant Items

#### A. Systems and Components

The licensee has not initiated architectural design or construction of an onsite medical facilities area. A temporary area designated by the licensee for first aid use is located in a trailer used for other purposes and lacks certain equipment and available facilities. This temporary area was found to be cluttered, unclean, and not completely equipped. (Paragraph 6.a)

This item will remain open and be reviewed during a subsequent inspection.

#### B. Facility Items (Plans and Procedures)

The licensee has not completed or compiled a set of emergency plan implementing procedures (EPIP) for the Dresden Nuclear Station as listed in Section 10 of GSEP. (Paragraphs 5 and 8)

This item will remain open and be reviewed in a subsequent inspection.

Analytical results of cesium-134 and cobalt-60 on particulate filters from the licensee in comparison with those obtained from the NRC reference laboratory were found to be in disagreement and will be reexamined during a subsequent inspection.

C. Managerial Items

No significant items identified.

D. Noncompliance Items Identified and Corrected by Licensee

None.

E. Deviations

None.

F. Status of Previously Reported Unresolved Items

None.

Management Interview

A management interview was conducted on February 2, 1976, with Mr. Stephenson and members of his staff, and additional discussions were held by telephone on February 13 with Messrs. Stephenson and Cobbs. The following items were discussed.

- A. The NRC inspectors discussed the scope and extent of this inspection. (Paragraph 2, Report Details)
- B. The NRC inspectors reviewed the status of several open items identified in the previous inspections, stating that the licensee's activities were responsive to these items.
- C. The NRC inspectors discussed the results of the confirmatory analysis of samples taken previously and noted those results which were acceptable and those which were not and the problems associated with their analysis. The inspectors stated that the results of the NRC reference laboratory would be reevaluated. Additional licensee samples were taken and sent to the NRC reference laboratory for analysis. (Paragraph 12, Report Details)
- D. The inspectors discussed their examination of facilities and equipment specified in the emergency plan (GSEP) and reported their concern of the inadequacy of the present temporary medical area facilities. The licensee stated that the new plant modification for an emergency medical area facility would be six months to a year away. (Paragraph 6.a, Report Details)

- E. The inspectors noted that certain of the new personnel from the offsite support agencies should be briefed as to their responsibilities and commitments in the event of an accident requiring their assistance. (Paragraph 3, Report Details)
- F. The licensee also was informed of the difficulty of being able to determine X/Q values based on the meteorological monitors in the control room. (Paragraph 5, Report Details)
- G. The inspectors also discussed the need for completion and consolidation of the emergency plan implementing procedures, such that the procedures specified in Section 10 of GSEP are complete and readily available for use. The licensee responded that EPIP's are developed by personnel assigned to each position identified in GSEP. (Paragraph 8, Report Details)

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Personnel

H. Cobbs, Generating Stations Emergency Plan Coordinator, Commonwealth Edison Headquarters, Chicago Illinois  
J. Healy, Medical Facilities Administrator, Commonwealth Edison Headquarters, Chicago, Illinois  
B. B. Stephenson, Plant Superintendent, Dresden  
J. Abel, Administrator Assistant to Plant Superintendent, Dresden  
D. Simpson, Radiation Protection Engineer, Dresden  
B. Zank, Training Supervisor, Dresden  
T. Blackman, Training Staff, Dresden  
F. Gebert, Shift Foreman, Dresden  
R. Coley, Chemical Engineer  
G. Bergan, Plant Chemist, Dresden  
D. Adam, Radiation Chemistry Supervisor, Dresden  
L. Shearer, Plant Chemist, Dresden  
D. O'Keefe, Rad-man, Dresden  
J. Perry, Health Physicist, Dresden.

#### Offsite Support Personnel

J. D. Bertoglio, Director, Emergency Squad, Coal City, Illinois  
D. R. Ulivi, Assistant Fire Chief, Coal City, Illinois  
W. Button, Sheriff, Grundy County, Morris, Illinois  
J. Temple, Director, Civil Defense of Grundy County, Morris, Illinois  
M. Bolos, Chief Deputy Sheriff, Will County, Joliet, Illinois  
T. Kelley, Lt., Sheriff's Department, Will County, Joliet, Illinois  
G. Fredrickson, Captain, District Five, Illinois State Police, Lockport, Illinois  
N. Sharp, Chairman of the Emergency Committee, St. Joseph Hospital, Joliet, Illinois  
G. Boyd, Fire Chief, Volunteer Fire Department, Braidwood, Illinois  
E. Jascewsky, Safety Division, Chicago Operations Office, ERDA, Argonne, Illinois  
P. Tedeschi, State of Illinois Department of Health, Springfield, Illinois  
R. Piercy, Tri-County Ambulance Service, Channahon, Illinois  
J. Talerico, Director, Civil Defense of Will County, Joliet, Illinois  
F. Kinney, M.D., St. Joseph Hospital, Joliet, Illinois  
R. Calosio, M.D., St. Joseph Hospital, Joliet Illinois

### 2. General

This inspection at the Dresden Station was an annual review inspection of the Generating Stations Emergency Plan (GSEP), dated January 2,

1975, which had replaced the GSEP, dated May 1, 1972, and Emergency Plan Implementing Procedures (EPIP) as they are applied to the Dresden Station. Dresden Station Emergency Plan (DSEP) used previously has been superseded by the 1975 GSEP and EPIP.

Documentation pertaining to various aspects of the emergency preparedness program including medical arrangements, training, tests and drills, and agreements and coordination with offsite agencies, was reviewed. A number of the offsite support agencies listed in EPIP were either contacted by phone or visited by the inspectors. Selected facilities, equipment, and materials planned for use in the event of an emergency were examined. Significant findings identified in previous inspection reports<sup>1/</sup> as requiring further action were reviewed, discussed and closed. Program management functions including review, audit, and update were reviewed and discussed.

This inspection also included a test of the licensee's ability to analyze quantities and concentrations of radioactive materials in plant effluents. The test consists of comparing results of licensee analyses with those of the NRC reference laboratory. The two laboratories make measurements on the same samples or on duplicates or splits of the same samples. The results of the NRC reference laboratory are referenced to the National Bureau of Standards Radioactivity Measurements System by laboratory intercomparisons.

Programs and activities to assure quality in laboratory radioanalyses were also reviewed and discussed with licensee representatives.

### 3. Agreements and Coordination

Representatives of the offsite support agencies listed in Paragraph 1, above, were contacted or visited by the inspectors during this inspection. Based on discussions with the offsite support personnel, it was determined that the licensee has maintained contact and continued coordination of emergency planning activities.

The inspectors examined the letters of agreement currently on file with the licensee. All letters were dated 1975. A letter requesting agreement has been sent to the Tri-County Ambulance Service, which will become the backup service with the withdrawal of the Morris Ambulance Service. Upon investigation, the inspectors learned that the Tri-County Ambulance Service would respond favorably to the licensee's request.

1/ IE Inspection Rpts No. 050-010/75-01, 050-237/75-02 and 050-249/75-02, Summary of Findings.



It was noted in a previous inspection report<sup>2/</sup> that no letter of agreement from the Illinois Department of Public Health was available for review at the time of inspection. However, a letter of agreement dated October 6, 1975, from the Illinois Department of Public Health was available at this inspection for review.

Representatives of the offsite supporting agencies which were contacted during this inspection were, in general, aware of their supportive roles during emergencies. A coordination meeting to discuss evaluation planning and communication was held in June 1975 with the civil defense, police, and licensee representatives. The inspectors noted that there had been some recent personnel changes in certain offsite groups, and that there is a need for new personnel to be contacted and briefed concerning existing agreements and responsibilities.

Discussions with licensee representatives established that in accordance with Section 9.1 of GSEP, the licensee will conduct an annual review of the GSEP and provide changes to the emergency plan to offsite personnel on a timely basis. A directory of telephone listings of both onsite and offsite emergency response organizations is officially revised semiannually at a minimum or on learning of changes. New listings are then distributed to the offsite agencies. These two commitments are responsive to open items identified during a previous inspection.<sup>3/</sup>

#### 4. Facilities and Equipment

The inspectors examined selected emergency facilities, equipment, and materials for their maintenance in a ready and operable condition. Items examined included emergency kits, emergency control centers, emergency communications systems, and decontamination and first aid supplies. Specific types of instrumentation were found to be operable. In accordance with Section 9.4 of the GSEP, each director is required to maintain the state of readiness of the material and equipment required for use in his area of responsibility.

The inspectors noted that equipment such as in the Dresden Mobile Unit are inventoried quarterly and the decontamination and medical area, including first aid supplies, are inventoried monthly. Procedures for inventoring the above equipment have been developed and approved by the Dresden Offsite Review Board during 1975. These actions are responsive to concerns expressed in the previous inspection report<sup>4/</sup>. The inspectors noted that no gasoline or kerosene, however, was available in the GSEP trailer for use in lanterns and pumps for air samplers.

<sup>2/</sup> Ibid, Paragraph 3, Report Details.

<sup>3/</sup> Ibid, Summary of Findings, B.1 and B.3.

<sup>4/</sup> Ibid, Summary of Findings, A.1.

The inspectors also checked the St. Joseph Hospital emergency cart which is inventoried quarterly. The inspectors noted that certain instrumentation had current calibration tags on them.

5. Means for Monitoring Release of Radioactivity

Means for monitoring and determining the significance of potential releases of radioactivity were discussed with the licensee representatives. Selected instrumentation including stack and ventilation monitors, liquid effluent monitors, area monitors, meteorological instrumentation, survey team portable instrumentation and other decisional aids were examined. The process and survey monitoring instrumentation and radwaste instrumentation were found to be operable and functioning properly. Calibration documentation was reviewed. The inspectors noted that no calibration schedule had been established for some portable emergency instrumentation. All portable instruments inspected were found to have posted calibration dates. The decisional aids including communication lists, equipment inventory and various maps and overlays for different sectors were available for examination. The meteorological indicators examined in the control room were found operable. However, no monitor is available to measure a temperature differential for determining X/Q. This meteorological instrumentation is not all located at the same elevation.

As stated in the previous inspection report,<sup>5/</sup> the licensee again reported that meteorological data would be obtained during an incident situation by sending an individual to the meteorological tower on the site, rather than utilizing data telemetered into the control room from instruments mounted on a plant building.

The inspectors noted that a licensee's action item, dated September 5, 1975, is pending to complete an emergency plan implementing procedure (EPIP) to determine the magnitude of the release based on plant instrumentation readings. This is discussed further in Paragraph 8.

6. Medical Arrangements

a. Onsite Medical Facilities

The onsite medical facility was found to be temporarily moved into a trailer. This trailer contained lockers and a lunch area and is also being used for other purposes. The area to be used for emergency response was in disarray and did not include a sink with hot and cold running water, a phone or a

5/ Ibid, Paragraph 5.b, Report Details.

hot plate as required on the facility inventory check list. The licensee has placed a work request to install those missing items. The inadequacy of these facilities and the need for upgrading the onsite medical facilities were discussed with the plant's management. The licensee reported that the new medical facility was six months to a year away to being completed. The inspectors examined preliminary plans for the proposed facilities. The licensee reported that an architect would have to be obtained and a contract let to construct the new medical facilities. This item will be reviewed in a subsequent inspection. The inspector noted that first aid supplies were available and a monthly inventory list for the medical area had been prepared and approved by the Dresden Offsite Review Board in February 1975. The last inventory check was done on January 19, 1976.

b. Personnel Decontamination Area

The inspectors observed the personnel decontamination area. This area had been directly involved in the construction activities associated with the access building modifications. Although the area needed to be cleaned, the licensee had developed a procedure for review and inspection of the personnel decontamination area at a specified frequency (monthly) against an inventory check list. The procedure was approved on February 19, 1975, by the Dresden Offsite Review Board. The inspectors noted that all equipment and supplies for the decontamination area in the inventory list were available. The last inventory check was made by the licensee on January 19, 1976. This action is responsive to the need for further action identified in the previous inspection report<sup>6/</sup>.

c. Offsite Ambulance and Medical Treatment Facilities

Discussions were held with the chief of the Coal City Emergency Squad. The inspectors noted that there were three ambulances available for emergencies. Each ambulance could be used for multiple injuries.

The Morris Ambulance Service has withdrawn their participation in emergency preparedness planning. However, an agreement with Tri-County Ambulance Service is pending; a letter requesting agreement has been sent to the Tri-County Ambulance Service on January 21, 1976.

<sup>6/</sup> Ibid, Summary of Findings, A.3.

Discussions were also held with the emergency coordinator for the St. Joseph Hospital in Joliet, Illinois, the licensee's designated primary offsite medical facility. Close cooperation and contact have been maintained between the licensee and the hospital.

These discussions included a review of the status of facilities and equipment for medical treatment at the offsite hospital. The previous inspection report<sup>7/</sup> indicated that the hospital was being expanded. The new emergency area and treatment facilities will be available by about March 1, 1976.

The licensee maintains an emergency cart at the hospital, containing emergency decontamination supplies and portable survey instrumentation. The cart is inventoried monthly. The inspectors noted that all the supplies and instrumentation listed on the inventory list were available and operable.

According to representatives of both the hospital and the licensee, a training session involving a seminar on medical management of radiation injuries was held in January 1975.

d. Arrangements with Radiation Management Corporation (RMC)

The licensee is underwriting an office of RMC in Chicago to provide emergency services to its personnel at all nuclear plants and to offsite support personnel. The Chicago office established in November 1975 provides phone consultation, a health physicist, equipment and instrumentation for a radiation emergency medical (REM) team, 24-hour communication to the home office of RMC in Philadelphia and coordination of the licensee's tertiary care facility at the Northwestern Memorial Hospital. RMC office also provides an emergency medical assistance program (EMAD) involving evaluation of the health physics status of individuals, consultation for medical management of incidents, periodic medical training sessions, audits of facilities, equipment and supplies, reconnaissance of drills and other services and a basic emergency medical assistance coordinator (BEMAC).

In December 1975, the RMC health physicist and a licensee representative visited the St. Joseph Hospital and audited the emergency area decontamination area and supplies.

7/ Ibid, Paragraph 6, Report Details.

e. Arrangements with Medical Doctors

The licensee has a Medical Director, Dr. W. H. Mehn, on its staff. A letter dated December 8, 1974 from Dr. Mehn discussed the physicians, medical services and facilities available to the licensee for its nuclear medical emergency program. The licensee's radiation emergency medical plan and facilities are under Dr. Mehn's authority and responsibility. The licensee has also made arrangements for a tertiary care facility for radiation accidents at Northwestern Memorial Hospital. GSEP Section 6.3 now references both local and backup hospital facilities. This is in response to findings of the previous inspection report.<sup>8/</sup> Letters of agreement were received from two medical doctors. A third doctor has the RMC medical plan but has not submitted a letter of agreement.

7. Training

a. Onsite Training

Documentation of the GSEP training being provided all station personnel was reviewed during this inspection.

- (1) A two-hour fire brigade training course was presented in 1975 by a contractor to 80 personnel.
- (2) First aid training has been presented annually to the Radiation Protection staff. It is now also being offered to all shift engineers. New employees receive a 10-hour first aid training course. A retraining course is offered later on for experienced employees.
- (3) Generalized GSEP training is presented to the entire staff on an annual basis. A 40-minute videotape is available for training purposes.
- (4) Specialized GSEP training is under the corporate management responsibility.

From review of training records, it appears that the training requirements outlined in Section 6.4 of GSEP are being followed. However there are problems of getting everybody retrained on a regular schedule. The administrative staff has not been previously included in the annual training. A

<sup>8/</sup> Ibid, Summary of Findings, A.4.

followup letter listing those personnel missing a training period is sent to the plant manager so he can arrange to schedule additional sessions so that the entire staff receives an annual training course.

b. Offsite Training

Documentation of training and retraining of offsite emergency support agencies was examined. Meetings between the licensee and non-company personnel have been held. Several training sessions for medical doctors, registered nurses and ambulance service personnel were given by RMC during 1975. Topics discussed include an overview of the radiation emergency medical program, sequence and response to accidents, detection and protection from ionizing radiation, medical significance of radiation exposure, principles of first aid, and radiation protection of ambulances and hospitals.

Radiation protection classes have been presented on several different occasions to the fire departments in Coal City, Braidwood and Morris and to the state police.

The licensee offers an "Emergency Response Planning for Fixed Nuclear Facilities" course based on a curriculum developed by the NRC to all participating non-company organizations at different times and places during the year. GSEP (Section 9.3.2) requires this course to be offered at least annually. Based on the records, the licensee has been conducting training and retraining to offsite emergency support groups so each group can function as a part of the total response team in the event of an accident. This is in response to needs identified in the previous inspection report.<sup>9/</sup>

8. Implementing Procedures

At the time of this inspection no single collection of all emergency plan implementing procedures (EPIP) was available for review. The previous inspection<sup>10/</sup> pointed out the same problem. Some EPIP's have been written and approved, some are under review, and some are being prepared. Those EPIP completed and approved which were reviewed by the inspectors include duties of personnel (reference GSEP Section 10.2), and medical

9/ Ibid, Summary of Findings, A.5, B.2.b and B.2.c(2).

10/ Ibid, Paragraph 8, Report Details.

procedures with appendices (reference GSEP Section 10.4) which were prepared by RMC and Dr. Mehn, the licensee's Medical Director. The licensee has also developed GSEP control procedures for the Command Center Directors which function in support of GSEP implementation.

Those EPIP which are being approved or being developed include environs procedures and test of surveillance stations (Section 10.6 of GSEP), procedures for new evacuation routes, procedures for recovery and reentry (Section 10.8 of GSEP), and procedures for determining magnitude of release (Section 10.1.a, b, d of GSEP). No date was established as to when these EPIP's are to be completed and approved. This item will remain open and be reviewed in a subsequent inspection.

Some of the apparent inconsistencies pointed out in the previous inspection report<sup>11/</sup> have been resolved through implementation of GSEP. This has resulted because of improved coordination with offsite support groups and because the content and format of EPIP are required to follow guidelines issued by the Division Manager - Nuclear (Section 10 of GSEP). However, there remains the inconsistency of maintaining EPIP in separate documents. This inconsistency and the importance of resolving it was discussed with the licensee's management. The licensee stated that it was in the process of consolidation of the EPIP. This item will be reviewed in a subsequent inspection.

9. Protective Action Levels for Implementing Offsite Protective Measures

As referenced in the previous inspection report,<sup>12/</sup> the inspectors found that the protective action levels considered by the licensee in its revision of the old GSEP, dated May 1, 1972, to the new GSEP, dated January 2, 1975 were based on AEC radiological assistance program (revised February 14, 1974) (Ch 0526) rather than the EPA's Interim Protection Levels. This item remains open.

10. Tests and Drills

The inspectors reviewed documentation that indicated that emergency tests and drills are conducted quarterly at a minimum in accordance with Section 9.2 of GSEP. The licensee's emergency

<sup>11/</sup> Ibid, Paragraph 6, Report Details.

<sup>12/</sup> Ibid, Summary of Findings, B.5.

coordinator observed the drills, wrote up the results, and proposed recommendations based on deficiencies noted during and/or as a result of the drills. When questioned regarding the disposition of the recommendation, the licensee representative stated some were complied with immediately and others are entered into their action tracking system. These items are not removed from this system until they are completed.

11. Review and Update of the Emergency Plan and EPIP

As discussed in the previous inspection report,<sup>13/</sup> GSEP, dated January 2, 1975, replaced the old GSEP, dated May 1, 1972. Section 9.1 of the new GSEP discusses the requirements for frequency of review and approval of changes to GSEP and EPIP. Section 9.7 also discusses the manner of distribution and receipt of changes to GSEP by onsite and offsite support agencies. Documentation regarding these requirements of review, approval, distribution and receipt of revisions or changes to GSEP and/or EPIP will be examined in a subsequent inspection.

12. Results of Comparative Analysis

Some of the licensee's reported results on analysis of these samples, when compared with the reported results of the NRC reference laboratory, yielded acceptable comparisons. Some of the licensee results, however, yielded unacceptable comparisons. The types of samples tested and the results of measurements were as follows.

Type of Sample: Liquid Waste (5/75)  
(Results in units of uCi/ml)

ACCEPTABLE

<u>Radionuclide</u>	<u>NRC Reference Measurement</u>	<u>Licensee's Measurement</u>
Gross Beta	8.7 ± 0.2 E-06	8.3 E-06
H-3	1.89 ± 0.04 E-03	1.9 ± 0.2 E-03
Cs-134	2.2 ± 0.1 E-06	3.5 E-06
Cs-137	3.0 ± 0.2 E-06	5.2 E-06
Co-60	5.2 ± 0.2 E-06	5.8 E-06

<sup>13/</sup> Ibid, Summary of Findings, B.2.c(3) and B.3.



NOT ACCEPTABLE

None.

Type of Sample: Off-gas (5/75)  
(Results in units of uCi/ml)

ACCEPTABLE

<u>Radionuclide</u>	<u>NRC Reference Measurement</u>	<u>Licensee's Measurement</u>
Xe-133	1.61 + 0.05 E-01	1.8 E-01

NOT ACCEPTABLE

None.

Type of Sample: Particulate Filter (5/75)  
(Results in units of uCi/sample)

ACCEPTABLE

<u>Radionuclide</u>	<u>NRC Reference Measurement</u>	<u>Licensee's Measurement</u>
Ba-140	2.0 + 0.1 E-03	1.7 E-03
Cs-137	4.0 + 0.2 E-04	5.2 E-04

NOT ACCEPTABLE

<u>Radionuclide</u>	<u>NRC Reference Measurement</u>	<u>Licensee's Measurement</u>
Cs-134	3.6 + 0.6 E-05	9.3 E-05
Co-60	9 + 1 E-05	2.1 E-04

Type of Sample: Charcoal Adsorber (5/75)  
(Results in units of uCi/sample)

ACCEPTABLE

None.

NOT ACCEPTABLE

<u>Radionuclide</u>	<u>NRC Reference Measurement</u>	<u>Licensee's Measurement</u>
I-131	4.1 + 0.2 E-03	6.9 + 1.7 E-03

a. Samples Not Meeting Acceptance Criteria

The licensee's reported results on analysis of a particulate filter sample for Cs-134 and Co-60 and on analysis of a charcoal adsorber sample for I-131 yielded comparisons in the unacceptable category when compared with the reported results of the NRC reference laboratory. In each case, both laboratories reexamined original records, methods and reported results, finding no likely bases for the reported differences in results. The inspectors also examined raw data and discussed these analyses with licensee personnel.

The licensee on this occasion reported concentrations of Cs-134 and Co-60 on a particulate filter which were factors of approximately 2.6 and 2.3 times greater, respectively, than the values reported by the NRC reference laboratory. On three previous particulate filter comparisons in 1974 and 1975, the licensee reported values yielding acceptable comparisons for eleven of twelve nuclides compared. Furthermore, the licensee reported values yielding acceptable comparisons for two other nuclides on this comparison. This media and these analyses will be reexamined at a subsequent inspection.

The licensee's reported result for I-131 on a charcoal adsorber was approximately 70 percent greater than the result of the NRC reference laboratory. The licensee had previously performed this analysis (January 1975) with a result approximately 45 percent greater than that of the NRC reference laboratory. Earlier comparisons had shown the licensee's results to be uniformly lower than those of the NRC reference laboratory. The two most recent results followed a normalization of licensee results to those of the NRC reference laboratory based on previous experience. It appears in this case that this normalization may have resulted in an overcorrection, and the licensee will renormalize the data based on the recent experience. This media and analysis will be reexamined at a subsequent inspection.

The inspectors specifically noted that the licensee successfully analyzed Co-60 in liquid waste during this comparison. The previous inspection<sup>14/</sup> had yielded an unacceptable comparison for this nuclide and media.

14/ IE Inspection Rpts No. 050-010/75-08, No. 050-237/75-237 and No. 050-249/75-11.

### 13. Control of Quality in Laboratory Radioanalysis

During this inspection, discussions were held with the licensee representatives and certain procedures were reviewed pertaining to the licensee's programs to assure quality in laboratory radioanalysis. These matters were previously discussed and have been summarized in an earlier inspection report.<sup>15/</sup> Since the time of the previous inspection, the licensee has initiated several procedural changes to improve procedural control over program activities. New or revised procedures in the general areas of sample collection and preparation, activities scheduling, and reporting functions were reviewed and discussed.

The licensee's radioanalytical laboratory activities are subject to audit by both onsite and offsite audit groups. Audit results and followup actions directed to resolve matters identified in audits were discussed with licensee representatives. Certain of the procedural modifications discussed above were identified as responsive to questions raised in the audit program.

The licensee continues to conduct instrument calibration and maintenance on an informally scheduled basis for those activities carried out by the Technical Staff. Calibration checks are proceduralized and accomplishment of the required activities in accordance with procedures is documented in individual log books maintained for each instrument.

The NRC Confirmatory Measurements inspection program remains the only formal independent verification program in which the station participates. The licensee is moving forward in establishment of an overall radioanalytical quality control program expected to utilize a central licensee-owned reference laboratory. Final details and overall strategy and scheduling have not been completely established.

Attachment:  
Attachment 1

15/ Ibid.

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 judgement limits are variable in relation to the comparison of the NRC Reference Laboratory's value to its associated 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 must be considered acceptable as the resolution decreases.

<u>RESOLUTION</u>	RATIO = LICENSEE VALUE/NRC REFERENCE VALUE		
	<u>Agreement</u>	<u>Possible Agreement A</u>	<u>Possible Agreement B</u>
3	0.4 - 2.5	0.3 - 3.0	No Comparison
4 - 7	0.5 - 2.0	0.4 - 2.5	0.3 - 3.0
8 - 15	0.6 - 1.66	0.5 - 2.0	0.4 - 2.5
16 - 50	0.75 - 1.33	0.6 - 1.66	0.5 - 2.0
51 - 200	0.80 - 1.25	0.75 - 1.33	0.6 - 1.66
200	0.85 - 1.18	0.80 - 1.25	0.75 - 1.33

"A" criteria are applied to the following analyses:

Gamma Spectrometry where principal gamma energy used for identification is greater than 250 Kev.

Tritium analyses of liquid samples.

"B" criteria are applied to the following analyses:

Gamma spectrometry where principal gamma energy used for identification is less than 250 Kev.

89Sr and 90Sr Determinations.

Gross Beta where samples are counted on the same date using the same reference nuclide.