

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.: 50-275
50-323

License Nos.: DPR-80
DPR-82

Report No.: 50-275/97-18
50-323/97-18

Licensee: Pacific Gas and Electric Company

Facility: Diablo Canyon Nuclear Power Plant, Units 1 and 2

Location: 7 1/2 miles NW of Avila Beach
Avila Beach, California

Dates: October 6-10, 1997

Inspector: J. B. Nicholas, Ph.D., Senior Radiation Specialist
Plant Support Branch

Approved By: Blaine Murray, Chief, Plant Support Branch,
Division of Reactor Safety

Attachment: Supplemental Information



EXECUTIVE SUMMARY

Diablo Canyon Nuclear Power Plant, Units 1 and 2
NRC Inspection Report 50-275/97-18; 50-323/97-18

This announced, routine inspection reviewed the implementation of the liquid and gaseous radioactive waste management program. Training and qualifications, quality assurance oversight, facilities and equipment, and annual reports were also reviewed.

Plant Support

- The liquid and gaseous radioactive waste effluent management programs were effectively implemented. Implementing procedures for the liquid and gaseous radioactive waste effluent management programs provided proper guidance. Poor radiation protection sample handling techniques were used while handling potentially contaminated samples. Between 1993 and 1995, the licensee was in the fourth quartile (worst regarding the activity contained in the effluents released) for airborne tritium, liquid tritium, liquid mixed isotopes for pressurized water reactors. The effluent data showed a significant reduction in the amount of effluent radioactivity released after the removal of the Unit 2 failed fuel rod in the spring of 1996 (Sections R1.1, R1.2, and R3.1).
- The engineered-safety feature air cleaning ventilation systems' surveillance testing program was properly implemented (Section R1.3).
- All liquid and gaseous effluent radiation monitoring instrumentation was operable and properly maintained, tested, and calibrated (Section 2.2).
- Training and qualification programs for chemistry/radiation protection technicians and non-licensed radwaste operators were properly implemented. Chemistry personnel and non-licensed radwaste operators had an excellent understanding of the radioactive liquid and gaseous radioactive waste effluent management program, offsite dose calculations, and regulatory requirements (Sections R4 and R5).
- An effective quality assurance program was maintained. Management oversight of the radioactive waste effluent management program was good. The quality assurance audits of the radiological waste effluent management program activities were technically comprehensive and provided good program evaluation. Action requests related to liquid and gaseous radioactive waste management program activities were closed in a timely manner (Section R7.1).



Report Details

Summary of Plant Status

The plant was operating at power during the entire inspection. There were no operational occurrences that impacted the inspection.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Radiological Waste Effluent Management Program

a. Inspection Scope (84750)

Implementation of the radioactive waste effluent management program, as described in the radioactive effluent controls program procedure, was reviewed. This review included: radioactive effluent waste processing, radioactive effluent waste sampling and analyses, analytical sensitivities and results, offsite dose results, and performance of required surveillance tests. The following documentation was reviewed:

- Selected batch radioactive liquid waste effluent release permits for the period January 1996 through September 1997
- Selected batch radioactive gaseous waste effluent release permits for the period January 1996 through September 1997
- Selected gaseous waste effluent sample analyses for samples from the plant vents continuous releases for the period January 1996 through September 1997

The following activities were observed:

- Collection of a sample from a process water receiver tank, performance of the radiochemistry analysis, and preparation of the batch liquid release permit.
- Collection of the weekly air particulate filter and iodine charcoal cartridge samples and monthly tritium and noble gas samples from the Unit 1 plant vent and the performance of the required surveillance testing analyses to monitor the continuous effluent release point.



- Collection of the air particulate filter, iodine charcoal cartridge, tritium, and noble gas samples from the Unit 1 containment, performance of the required radiochemistry analyses, and preparation of the containment purge permit.

b. Observations and Findings

The inspector observed the collection of a process water receiver tank sample. The chemistry/radiation protection technician referred to and followed the appropriate sampling procedure while collecting the sample from the process water receiver tank 02. The inspector noted that the chemistry/radiation protection technician used good sample handling techniques while collecting the sample and transferring the sample to the primary chemistry laboratory and radiochemistry counting room for analysis and also storage of the sample for monthly and quarterly compositing. The inspector observed a chemistry/radiation protection technician perform the radiochemistry analysis (principal gamma emitters) on the sample in the radiochemistry counting room. All aspects of the sample collection and analysis were performed in accordance with approved station procedures. The inspector observed that the chemistry/radiation protection technician properly prepared the batch liquid release permit and radwaste operators performed the batch liquid release.

The inspector observed the collection of an air particulate filter, iodine charcoal cartridge, noble gas, and tritium samples from the Unit 1 plant vent. The inspector noted that the chemistry/radiation protection technician referred to and followed the appropriate sampling procedure while performing the sample collections. The inspector noted that the chemistry/radiation protection technician used forceps while removing the air particulate sample from the sample holder and wore gloves while handling the samples.

The inspector observed the collection of an air particulate filter, iodine charcoal cartridge, noble gas, and tritium samples from the Unit 1 containment. The inspector noted that the chemistry/radiation protection technician referred to and followed the appropriate sampling procedures while performing the sample collections. The inspector noted that the chemistry/radiation protection technician while removing the air particulate sample and iodine charcoal cartridge sample from the sample holder did not use gloves while handling and placing the samples into plastic bags for transfer to the radiochemistry counting room for analyses. The inspector reviewed the protective clothing requirements for Radiation Work Permit 97-0007-00, "Chemistry and Radiochemistry Activities in the Auxiliary and Fuel Handling Buildings (Excluding Containment)," used by the chemistry/radiation protection technician to perform the observed containment sampling activities. The radiation work permit required the use of rubber gloves and lab coat when sampling contaminated systems outside a sample hood. The Unit 1 containment radiation monitor which was sampled was not posted/identified as a contaminated system. A smear survey of the internals of the radiation monitor's air particulate filter and iodine charcoal cartridge sample holders showed that the sample holders were not



contaminated. Analyses of the air particulate filter and iodine charcoal cartridge showed no external contamination. Therefore, there was no violation of the radiation work permit protective clothing requirements. This observation of poor radiological practices while handling potentially contaminated samples was discussed with the licensee during the inspection and at the exit meeting on October 10, 1997. Action Request A0445445 was written to document and evaluate the inspector's observation and concerns and to clarify management's expectations for proper radiological protection techniques when handling potentially contaminated samples.

The inspector verified that the processing, sampling, analyses, and monitoring of the batch liquid radioactive waste effluents, batch gaseous radioactive waste effluents, containment purges, and continuous releases of the radioactive gaseous waste effluents were conducted properly. Offsite doses were calculated according to proper methodologies. Required analyses of monthly and quarterly composite samples of liquid and gaseous radioactive waste effluents were performed in accordance with the radioactive effluent controls program procedure requirements.

c. Conclusions

The liquid and gaseous radioactive waste effluent management programs were effectively implemented. Poor radiation protection sample handling techniques were used while handling potentially contaminated samples. Quantities of radionuclides released in the liquid and gaseous radioactive waste effluents and offsite doses to the environment from the liquid and gaseous radioactive waste effluents were within regulatory limits.

R1.2 Radioactive Waste Effluent Data

a. Inspection Scope (84750)

The inspector evaluated the radioactive waste effluent data and the licensee's effectiveness in identifying, resolving, and preventing problems in the processing and treatment of radwaste effluents.

b. Observations and Findings

Attachment 2 presents the radioactive effluent data for 1993, 1994, and 1995 with a 3 year average as released to the environment from the plant. The data was supplied to the inspector by the licensee and correlates to the effluent release data tabulated in Attachment 3 to this report.

The data tabulated in Attachment 2 shows that the licensee was near the average in the third quartile for airborne gas; in the second quartile for airborne iodine/particulates; and in the fourth quartile (worst) for airborne tritium, liquid mixed isotopes, and liquid tritium.



The radioactive effluent data was discussed with the licensee. The licensee informed the inspector that they were aware of their status in the industry relative to their effluent discharges and stated that improvement in the reduction of effluent radioactivity released from the plant had a high priority.

Radioactive waste effluent data for Units 1 and 2 for the time period 1993 through 1996 are summarized in Attachment 3 to this report. Airborne fission and activation gases and airborne iodine-131 and particulates released from 1993 through 1995 showed a significant increase; however, the 1996 data showed a significant decrease to less than half of the curie amount released during 1995 indicating a marked improvement. The airborne tritium released during 1993 through 1996 remained relatively constant. The liquid dissolved and entrained fission and activation gases and liquid tritium released during 1993 through 1995 showed a significant increase; however, the 1996 data showed an order of magnitude decrease indicating a marked improvement.

In October 1994, Unit 2 experienced a single rod fuel failure early in cycle 7. The failed fuel rod was removed from service during refueling outage 2R7 in the spring of 1996. This fuel rod failure resulted in increased noble gas and iodine being released from Unit 2 during 1994-1996 which resulted in increased activity released in the effluents as shown in Attachment 3. The draft effluent data from 1997 indicated that the liquid and gaseous effluent activities have returned to the previously low values maintained prior to the fuel failure.

c. Conclusions

Between 1993 and 1995, the licensee was in the fourth quartile (worst) for airborne tritium, liquid tritium, liquid mixed isotopes for operating pressurized water reactors. The effluent data showed a significant reduction in the amount of effluent radioactivity released after the removal of the Unit 2 failed fuel rod in the spring of 1996.

R1.3 Engineered-Safety-Feature Air Cleaning Systems

a. Inspection Scope (84750)

Selected surveillance tests and test results for the engineered-safety-feature air cleaning ventilation systems' testing program were reviewed to determine compliance with the requirements in the Technical Specifications.

b. Observations and Findings

The inspector performed a visual inspection with the system engineers responsible for the control room ventilation system, auxiliary building safeguards air filtration system, and the fuel handling building ventilation system. The external visual inspection of the filtration systems did not identify any problems. No external



damage to the filtration units was identified. All filter housings and ducts were well maintained. The areas surrounding the filtration units were clean and free of debris. The filtration units were adequately lighted to provide for visual inspection of housings and components.

The surveillance testing program included the required periodic functional checking of the ventilation systems' components, evaluation of the high efficiency particulate air filters and activated charcoal adsorbers, and in-place filter testing of the high efficiency particulate air filters and charcoal systems. Since some of the surveillance tests were only required to be performed every 18-months, the inspector reviewed the last completed surveillance test and verified that the previous two surveillance tests were performed as required at the 18-month frequency. Selected records and results of surveillance tests for the period January 1995 through September 1997 for the engineered-safety-feature air cleaning ventilation systems in each unit verified that the surveillance tests were performed as required. The activated charcoal efficiency tests were properly performed by an offsite contract laboratory. All surveillance test results were verified to be within Technical Specification limits.

The Technical Specification requirement for testing the air cleaning ventilation systems' activated charcoal adsorber material after every 720 hours of operation following the previous laboratory testing was tracked by the control room and the cognizant system engineer in accordance with the appropriate surveillance test for each ventilation system.

c. Conclusions

The engineered-safety feature air cleaning ventilation systems' surveillance testing program was properly implemented. All surveillance test results met Technical Specification requirements.

R2 Status of Chemistry and Radiological Waste Effluents Facilities and Equipment

R2.1 Radiochemistry Counting Room and Radioactive Waste Effluent Processing Systems

a. Inspection Scope (84750)

The inspector observed analytical measurements of radiological effluent samples performed in the radiochemistry counting room. The radiochemistry counting room instrumentation was inspected to verify if proper calibration and quality control programs were implemented. The radioactive liquid and gaseous waste processing equipment were inspected to ensure agreement with the Final Safety Analysis Report.



b. Observations and Findings

The radiochemistry counting room maintained sufficient state-of-the-art analytical instrumentation to perform the required radiochemistry analytical measurements of the radioactive waste effluents. The instrumentation was properly calibrated and well maintained. Records of calibrations and daily operational quality control checks were properly maintained.

The liquid and gaseous radioactive waste processing and storage systems were installed as described in the Final Safety Analysis Report and were operated in accordance with station procedures.

No major equipment or design modifications were made to the liquid or gaseous radioactive waste management systems during 1995 and 1996.

c. Conclusions

The radiochemistry counting room was equipped with state-of-the-art analytical instrumentation which was properly calibrated, tested, and well maintained. Liquid and gaseous radioactive waste management systems were installed and operated properly.

R2.2 Liquid and Gaseous Effluent Radiation Monitors

a. Inspection Scope (84750)

The liquid and gaseous effluent radiation monitors were inspected for operation, calibration, and reliability. The liquid and gaseous radioactive waste effluent radiation monitor source check, channel check, channel functional test, and channel calibration records were reviewed to determine compliance with the radioactive effluent controls program procedure surveillance requirements for the time period January 1996 through September 1997.

b. Observations and Findings

All records and surveillance tests reviewed indicated that the liquid and gaseous radioactive waste effluent monitoring instrumentation was properly maintained, tested, and calibrated in compliance with the surveillance requirements specified in the radioactive effluent controls program procedure.

During 1995 and 1996, effluent monitoring instrumentation was not out of service in excess of Technical Specification requirements.



c. Conclusion

All liquid and gaseous effluent radiation monitoring instrumentation was operable and properly maintained, tested, and calibrated in compliance with the surveillance requirements specified in the radioactive effluent controls program procedure.

R3 Radiological Protection and Chemistry Procedures and Documentation

R3.1 Radioactive Waste Effluent Procedures and Annual Radioactive Effluent Release Reports

a. Inspection Scope (84750)

Revisions to the procedures for the sampling, analysis, release, and dose calculations of radioactive liquid and gaseous waste effluents were reviewed. Annual radioactive waste effluent release reports for 1995 and 1996 were reviewed.

b. Observations and Findings

The inspector verified that the procedures for batch release of liquid and gaseous radioactive waste effluents provided proper guidance regarding sampling, tank recirculation, analyses, release limits, monitoring, and approvals.

The radioactive waste effluent program's implementing procedures described the responsibilities for collection and analyses of liquid and gaseous radioactive waste effluent samples. Procedures for batch release of liquid radioactive waste effluents provided proper guidance regarding sampling, tank recirculation, analyses, release limits, monitoring, and approvals. Procedures for batch release of gaseous radioactive waste effluents provided proper guidance regarding sampling, analyses, and monitoring. The procedures were written with sufficient detail to effectively conduct the required radioactive waste effluent program activities.

The annual radioactive effluent release reports for 1995 and 1996 were written in the format described in NRC Regulatory Guide 1.21, Revision 1, June 1974, and contained the required information. Summaries of the quantities of radioactive liquid and gaseous effluents released to the environment, and their associated doses to members of the public were properly documented in the reports. A summary of the radioactive liquid and gaseous effluent releases and associated doses is presented in Attachment 3 to this report.

During 1995 and 1996, five abnormal (unplanned) but monitored liquid and gaseous radioactive effluent releases occurred. The inspector noted that the release rates and amount of radioactivity released were less than 0.1 percent of regulatory limits.



c. Conclusions

Implementing procedures for the liquid and gaseous radioactive waste effluent management programs provided proper guidance. Annual radioactive effluent release reports for 1995 and 1996 were submitted in a timely manner and contained the required information presented in the required format.

R4 **Staff Knowledge and Performance**

a. Inspection Scope (84750)

Personnel in the chemistry department and non-licensed radwaste operators were observed and interviewed to determine their knowledge of regulatory and offsite dose calculation procedure requirements for the implementation of the liquid and gaseous radioactive waste effluent management program.

b. Observations and Findings

The inspector observed chemistry/radiation protection technicians perform some of their duties and responsibilities in the implementation of the radioactive waste effluents program and determined that they were familiar with the requirements. Chemistry personnel including engineers, foremen, and technical staff were knowledgeable of the programmatic procedures and regulatory requirements and maintained a high level of performance. Batch radioactive liquid waste effluent releases and batch and continuous radioactive gaseous waste effluent releases were properly performed during the period January 1996 through September 1997.

c. Conclusion

Chemistry personnel had an excellent understanding of the radioactive liquid and gaseous radioactive waste effluent management program, offsite dose calculations, and regulatory requirements.

R5 **Staff Training and Qualification**

a. Inspection Scope (84750)

Training and qualification programs for chemistry/radiation protection technicians and non-licensed radwaste operators involved in conducting the radioactive waste effluent management program were reviewed. Training and qualifications of the chemistry/radiation protection technicians and non-licensed radwaste operators were verified.



b. Observations and Findings

The inspector determined that appropriate training and qualification programs were implemented for the chemistry/radiation protection technicians and non-licensed radwaste operators which included required formal classroom training and on-the-job training.

Twenty-four chemistry/radiation protection technicians currently assigned to the chemistry department had completed the required training and were qualified to independently perform all routine radioactive waste effluent management program activities. These 24 chemistry/radiation protection technicians met the requirements of American National Standards Institute 3.1-1978 to be qualified as a chemistry technician. Each technician had greater than 36 months of work experience in chemistry.

Completed qualification cards documented that there was a sufficient number of non-licensed radwaste operators who were trained and qualified and assigned to shift operations.

c. Conclusions

Training and qualification programs for chemistry/radiation protection technicians and non-licensed radwaste operators were properly implemented. The experience, training, and working knowledge of the chemistry department and the radwaste operations personnel met the training and qualification requirements.

R6 Chemistry Organization and Administration

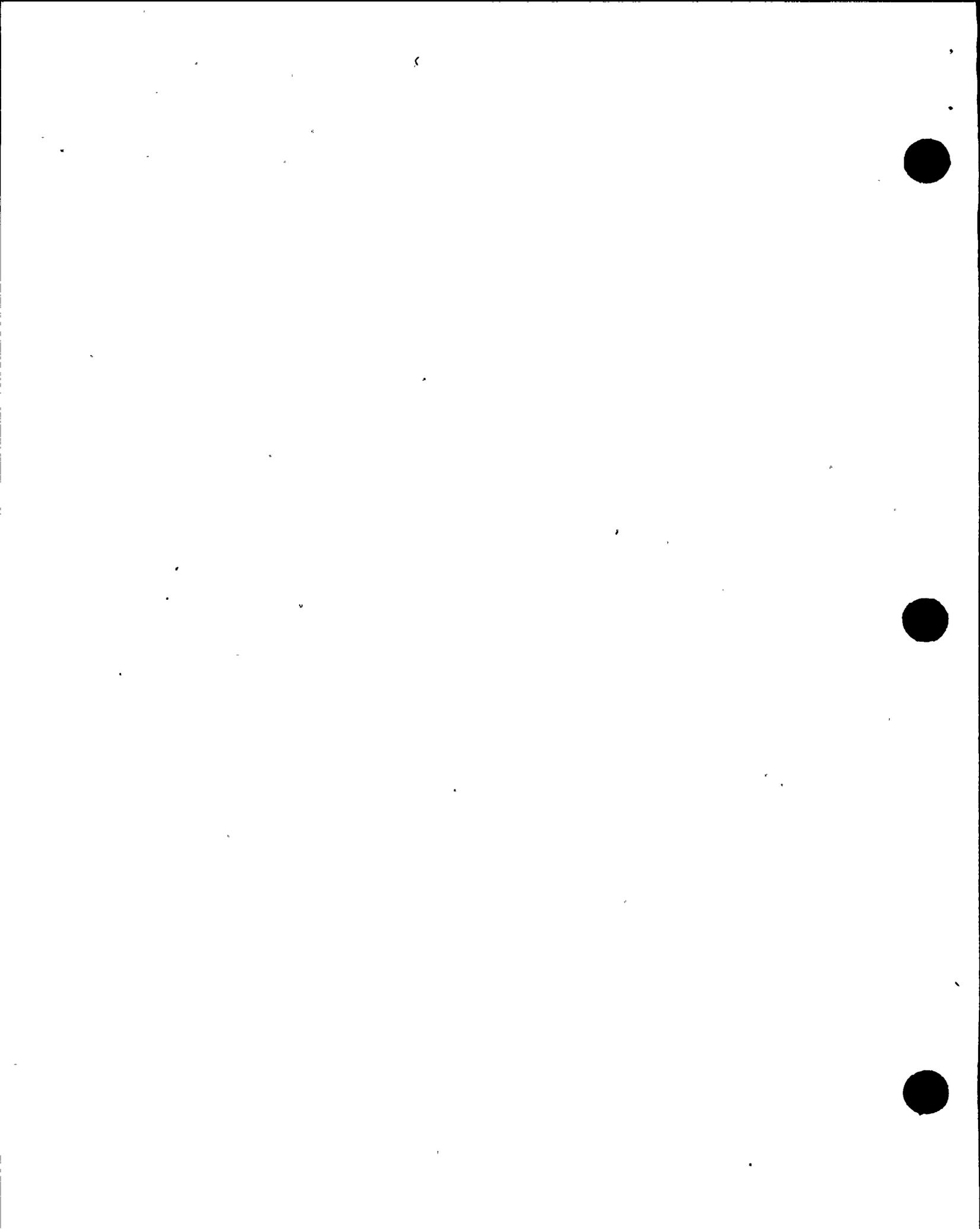
a. Inspection Scope (84750)

The organization, staffing, and assignment of the radioactive waste effluent management program responsibilities were reviewed. Administrative and chemistry departmental procedures were reviewed for the assignment of responsibilities for the management and implementation of the radioactive waste effluent management program.

b. Observations and Findings

The inspector verified that the chemistry and operations organizations and staff were responsible for the implementation of the radioactive waste effluent management program.

The inspector reviewed the staffing of the chemistry and non-licensed radwaste operations organizations and determined that they were adequately staffed. There had been no changes in the chemistry technical staff during the past 1-1/2 years. The chemistry/radiation protection technicians were assigned chemistry and health



physics activities and responsibilities on a rotating basis. The rotating changes in the chemistry/radiation protection technicians assigned to perform chemistry and radioactive waste effluent activities did not appear to have an adverse affect on the implementation of the radioactive waste effluent management program. It was noted that the chemistry department director was replaced since the previous NRC inspection of this area in February 1996. The non-licensed radwaste operator staff had very few changes during the past 1-1/2 years.

c. Conclusion

The chemistry and radwaste operations organizations were properly staffed.

R7 Quality Assurance in Radiological Protection and Chemistry Activities

R7.1 Radioactive Waste Effluent Quality Assurance Program

a. Inspection Scope (84750)

The quality assurance audit program of the radioactive waste effluent management program activities was reviewed for scope, thoroughness of program evaluation, and timely followup of identified deficiencies. The review included:

- Quality assurance audits performed since January 1995
- Qualifications and resumes of auditors and technical specialists
- Action request reports written since January 1996

b. Observations and Findings

The quality assurance master internal audit schedule revised August 29, 1997, indicated that the audit of the radiological waste effluent program was scheduled on a 12-month frequency, and the audit of the offsite dose calculation procedure requirements was scheduled on a 24-month frequency to be performed during odd numbered years in compliance with Final Safety Analysis Report, Section 17.18.

Quality assurance audit reports, performed during the period January 1995 through April 1997 of the areas related to the performance of the radioactive waste effluent management program, were performed in accordance with quality assurance procedures by qualified auditors and assisted by technical specialists, who were knowledgeable of the radioactive waste effluent programs and offsite dose calculation procedure requirements at nuclear power facilities. The audits of the radioactive waste effluent management program were good quality, technically comprehensive, and provided good oversight and evaluation of the licensee's performance in implementing the radioactive waste effluent management program.



No negative trends were identified during the review of action request reports of the radioactive waste effluent management program area. It was noted that recommendations to prevent recurrence of issues identified in the action request reports were appropriate and corrective actions were closed in a timely manner.

c. Conclusions

An effective quality assurance program was maintained. Management oversight of the radioactive waste effluent management program was good. The quality assurance audits of the radiological waste effluent management program activities were technically comprehensive and provided good program evaluation. Action requests related to liquid and gaseous radioactive waste management program activities were closed in a timely manner.

R7.2 Quality Assurance Program for Contractors

a. Inspection Scope (84750)

The quality assurance audit program regarding contractors performing surveillance activities involving the radioactive waste effluent program and engineered-safety-feature air cleaning ventilation systems was reviewed.

b. Observations and Findings

The corporate technical and ecological services laboratory was used to perform required radiochemistry analyses of radioactive waste effluent composite samples. An offsite contractor was used to perform laboratory charcoal adsorber analyses on the station's engineered-safety-feature air cleaning ventilation systems. The licensee performed an audit of the corporate technical and ecological services laboratory while performing the audit of the radiological environmental monitoring program. The licensee had obtained a nuclear procurement issues committee audit of the contractor laboratory responsible for performing charcoal adsorber analyses. These audits were satisfactory to evaluate the performance of the two laboratories in performing their respective surveillance testing requirements and to retain their current status on the licensee's routine suppliers list.

c. Conclusion

There was appropriate evaluation of the performance of the two contractor laboratories.



V. Management Meetings

X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at an exit meeting on October 10, 1997. The licensee acknowledged the findings presented. No proprietary information was identified.



ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Allen, System Engineer, Engineering Services
J. Becker, Director, Operations
C. Belmont, Director, Nuclear Quality Services
D. Bradley, Foreman, Chemistry
B. Buzzelli, Nuclear Operator, Operations
D. Chen, Engineer, Chemistry
B. Crockett, Manager, Nuclear Quality Services
M. Dorsett, Foreman, Chemistry
C. Dougherty, Supervising Engineer, Nuclear Quality Services
C. Gillies, Director, Chemistry
O. Gillis, Shift Chemistry/Radiation Protection Technician, Chemistry
J. Gardner, Senior Engineer, Chemistry
R. Gray, Director, Radiation Protection
S. Ketelsen, Supervisor, Regulatory Services
J. Knemeyer, Engineer, Chemistry
J. Knight, Nuclear Operator, Operations
R. Martin, NRC Interface, Regulatory Services
H. Paperno, Engineer, Nuclear Quality Services
P. Persky, Shift Chemistry/Radiation Protection Technician, Chemistry
R. Peterson, Chemistry/Radiation Protection Technician, Chemistry
G. Quitarano, Engineer, Engineering Services
J. Sands, Nuclear Operator, Operations
D. Stermer, Supervisor, Engineering Services
B. Velasquez, Radwaste Inspector, Nuclear Quality Services

NRC

D. Allen, Resident Inspector

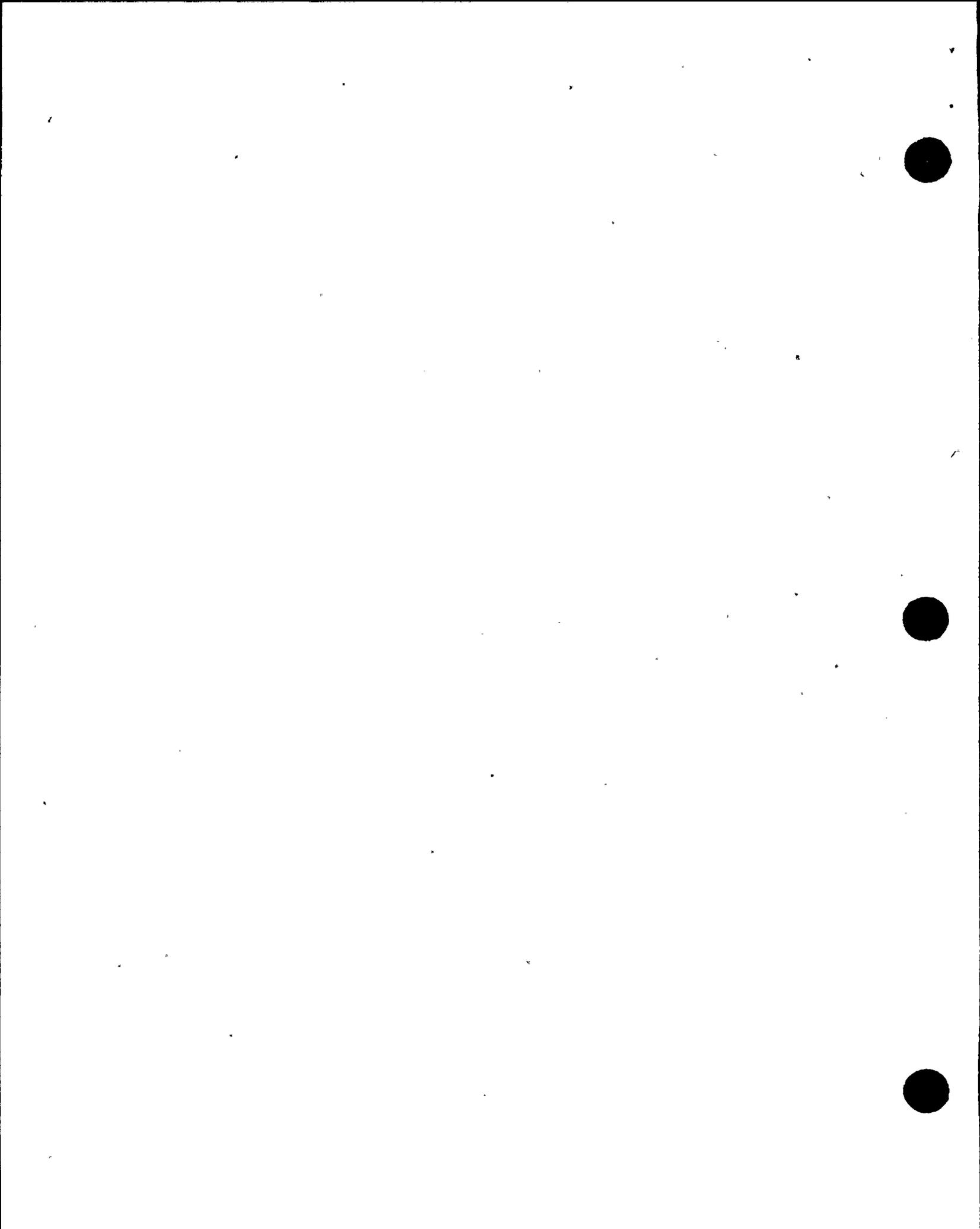
INSPECTION PROCEDURES USED

IP 84750 Radioactive Waste Treatment and Effluent and Environmental Monitoring

LIST OF DOCUMENTS REVIEWED

ORGANIZATION CHARTS

Chemistry Department - July 30, 1997
Operations Crew Cycle - September 22, 1997



QUALITY ASSURANCE DOCUMENTS

Master Internal Audit Schedule - Revised August 29, 1997

AUDITS AND ASSESSMENT

Quality Assurance Assessment 97127003, "Chemistry Technician Qualifications," performed February - April 1997

Quality Assurance Audit 970690024, "Radioactive Effluents and Off-Site Dose Calculation Procedure," performed April 8 - July 3, 1997

Quality Assurance Audit 962610007, "Radiological Environmental Monitoring Program (including the Technical and Ecological Services)," performed November 1 - December 5, 1996

Quality Assurance Audit 961140060, "Radiological Effluents," performed May 21 - June 7, 1996

Quality Assurance Audit 950101, "Radiological Effluents and Off-Site Dose Calculation Procedure," performed April 18 - May 9, 1995

VENDOR AUDIT

NUPIC Joint Audit 95V-16, NUCON International, Inc., performed May 2-5, 1995

PROCEDURES

CY2, "Radiological Monitoring and Controls Program," Revision 2

CY2.ID1, "Radioactive Effluent Controls Program," Revision 2

CAP A-5, "Liquid Radwaste Discharge Management," Revision 26

CAP A-6, "Gaseous Radwaste Discharge Management," Revision 19

CAP A-8, "Off-Site Dose Calculations," Revision 21

CAP A-10, "Effluent Replicate Sampling," Revision 1

CAP A-11, "Liquid Radwaste Processing System Selection," Revision 6

CAP D-1, "Gross Beta Activity," Revision 2

CAP D-3, "Gross Alpha Activity," Revision 3



CAP D-11, "Tritium in Liquid Samples," Revision 6

CAP D-12, "Radiochemical Analysis of Gas Samples," Revision 2

CAP D-17, "Tritium in Airborne Samples," Revision 5A

CAP D-18, "Noble Gas Contents of Gas Decay Tank(s) in Terms of Equivalent XE-133,
Revision 4

CAP D-19, "Correlation of Rad Monitors to Radioactivity, Revision 4A

CAP D-23, "Preparation of Liquid Radwaste Composite Samples, Revision 1

CAP E-2, "Gas Sampling, Revision 8

CAP E-5, "Liquid Radwaste Sampling, Revision 3A

CAP E-19, "Plant Vent Radioactive Effluent Sampling, Revision 7

CAP Q-1, "Chemistry Quality Control Program, Revision 6A

TRAINING DOCUMENTATION

Chemistry department training records
Non-licensed operators training records

REPORTS

Annual Radioactive Effluent Release Reports - 1995 and 1996

MISCELLANEOUS DOCUMENTS

Selected liquid and gaseous radioactive waste batch release permits
Engineered-safety-feature air cleaning systems surveillance test records

Action Request A0445445, "Clarification of Gas Sampling Practices"



Attachment 2

Environmental Releases	1993	1994	1995	3-Year Average	Percentile * (Industry)
Airborne Gas (curies)	2.14	97.70	446.00	255.92	53
Airborne Iodine & Part. (curies)	5.0E-05	2.14E-03	6.29E-03	3.87E-03	42
Airborne Tritium (curies)	156.4	228.7	147.0	175.8	88
Liquid Mixed Isotopes (curies)	0.985	1.12	1.12	1.09	81
Liquid Tritium (curies)	1,030	1,380	1,380	1,322	85

* A 53 percentile equates to 53 percent of the plants did better than the licensee.



Attachment 3

Summary of All Liquid Effluent Releases				
	1993	1994	1995	1996
Number of Batch Releases	645	661	669	652
Fission & Activation Products (Curies)	0.9850	1.1210	0.4551	0.3262
Tritium (Curies)	1,031	1,376	1,572	959
Dissolved & Entrained Noble Gases (Curies)	0.00262	0.02468	0.6407	0.0595
Waste Volume Released (Liters)	1.877E+08	3.207E+08	3.237E+08	3.609E+08

Summary of All Airborne Effluent Releases				
	1993	1994	1995	1996
Number of Batch Releases	90	180	147	120
Fission & Activation Products (Curies)	2.14	97.71	446.00	166.75
Total Iodine-131 (Curies)	5.270E-06	1.971E-03	6.190E-03	2.000E-03
Particulates w/T _{1/2} > 8 Days (Curies)	4.533E-05	1.724E-04	1.016E-04	1.530E-04
Gross Alpha (Curies)	1.170E-06	1.400E-06	7.900E-07	3.360E-07
Tritium (Curies)	156.4	228.7	147.4	126.1

Maximum Annual Doses From Gaseous & Liquid Effluent Releases				
	1993	1994	1995	1996
Liquid Effluents				
Organ (mrem)	0.00738	0.00494	0.00643	0.00653
Whole Body (mrem)	0.00225	0.00212	0.00081	0.00148
Gaseous Effluents				
Gamma Air Dose (mrad)	0.001302	0.01106	0.05378	0.01148
Beta Air Dose (mrad)	0.00097	0.02430	0.12250	0.02651
Iodine-131, 133, Tritium, and Particulates w/T _{1/2} > 8 Days (mrem)	0.0303	0.0438	0.0598	0.0337

