

ENCLOSURE 1

PROPOSED RADIOLOGICAL EFFLUENT AND
ENVIRONMENTAL MONITORING SPECIFICATIONS

8011180361

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1.6 INSTRUMENTATION SURVEILLANCE

1.6.1 CHANNEL CHECK

A qualitative determination of acceptable operability by observation of channel behavior during operation. This determination shall include comparison of the channel with other independent channels measuring the same variable.

1.6.2 CHANNEL FUNCTIONAL TEST

Injection of a simulated signal into the channel to verify that it is operable, including alarm and/or trip initiating action.

1.6.3 CHANNEL CALIBRATION

Adjustment of channel output such that it responds, with acceptable range and accuracy, to known value of the parameter which the channel measures. Calibration shall encompass the entire channel, including alarm or trip, and shall be deemed to include the channel functional test.

1.6.4 SOURCE CHECK

A source check shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

1.7 CONTAINMENT INTEGRITY

Containment integrity is defined to exist when:

- a. All non-automatic containment isolation valves not required for normal operation are closed and blind flanges are properly installed where required.
- b. The equipment door is properly closed and sealed.
- c. At least one door in the personnel air lock is properly closed and sealed.

1.11

GASEOUS RADWASTE TREATMENT SYSTEM

The Gaseous Radwaste Treatment System is designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system off-gases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

1.12

VENTILATION EXHAUST TREATMENT SYSTEM

The Ventilation Exhaust Treatment System is designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal adsorbers and/or HEPA filters prior to their release to the environment. Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be Ventilation Exhaust Treatment System components.

1.13

OFFSITE DOSE CALCULATION MANUAL (ODCM)

The Offsite Dose Calculation Manual shall contain the methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring alarm/trip setpoints.

1.14

DOSE EQUIVALENT I-131

The Dose Equivalent I-131 shall be that concentration of I-131 (microcurie/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

1.15 PROCESS CONTROL PROGRAM (PCP)

The Process Control Program shall contain the sampling, analysis, and formulation determination by which solidification of radioactive wastes from liquid systems is assured.

1.16 SOLIDIFICATION

Solidification shall be the conversion of radioactive wastes from liquid systems to an immobilized solid with definite volume and shape, bounded by a stable surface of distinct outline on all sides (free standing).

1.17 PURGE - PURGING

Purge or purging is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.

1.18 VENTING

Venting is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is not provided or required during venting. Vent, used in system names, does not imply a venting process.

TABLE 4.1-1 (Continued)

<u>Channel Description</u>	<u>Check</u>	<u>Calibrate</u>	<u>Test</u>	<u>Remarks</u>
21. Containment Sump Level	N.A.	R	N.A.	
22. Turbine Trip Set Point **	N.A.	R	R	
23. Accumulator Level and Pressure	S	R	N.A.	
24. Steam Generator Pressure	S	R	M	
25. Turbine First Stage Pressure	S	R	M	
26. Emergency Plant Portable Survey Instruments	M	R	M	
27. Logic Channel Testing	N.A.	N.A.	M(1)	(1) During hot shutdown and power operation. When periods of reactor cold shutdown and refueling extend this interval beyond one month, the test shall be performed prior to startup.
28. Turbine Overspeed Protection Trip Channel (Electrical)	N.A.	R	M	
29. 4 Kv Frequency	N.A.	R	R	
30. Control Rod Drive Trip Breakers	N.A.	N.A.	M	
31. Overpressure Protection System	N.A.	R	M	
** Stop valve closure or low EH fluid pressure				
S - Each Shift	M - Monthly			
D - Daily	Q - Quarterly			
W - Weekly	P - Prior to each startup if not done previous week			
B/W - Every two weeks	R - Each Refueling Shutdown			
A/R - After each refueling startup	N.A. - Not applicable			
	P/R - Completed prior to making a radioactive materials release			

- e. Investigation of all violations of the Technical Specifications shall prepare and forward a report covering evaluation and recommendations to prevent recurrence to the Vice President - Nuclear Operations and to the Manager - Corporate Nuclear Safety and Quality Assurance Audit.
- f. Review of facility operations to detect potential safety hazards.
- g. Performance of special reviews and investigations and reports thereon as requested by the Manager - Corporate Nuclear Safety and Quality Assurance Audit.
- h. Review of the Plant Security Plan and implementing procedures.
- i. Review of the Emergency Plan and implementing procedures.
- j. Review of all events requiring 24-hour reports to the NRC by regulations or Technical Specifications.
- k. Review of every unplanned onsite release of radioactive material to the environs including the preparation and forwarding of reports covering evaluation, recommendations and disposition of the corrective action to prevent recurrence to the Vice President-Nuclear Operations and to the Manager - Corporate Nuclear Safety and Quality Assurance Audit.
- l. Review of changes to the Process Control Program and the Offsite Dose Calculation Manual.

6.5.1.8 Authority

- a. The Plant Nuclear Safety Committee shall be advisory.
- b. The Plant Nuclear Safety Committee shall recommend to the General Manager approval or disapproval of proposals under 6.5.1.7.a through d. above.

In the event of disagreement between the recommendations of the Plant Nuclear Safety Committee and the actions contemplated by the General Manager, the course determined by the General Manager to be more conservative will be followed with immediate notification to the Vice President - Nuclear Operations and to the Manager - Corporate Nuclear Safety and Quality Assurance Audit.

- e. The Emergency Plan and implementing procedures at least once per two years.
- f. The Security Plan and implementing procedures at least once per two years.
- g. The Facility Fire Protection Program and implementing procedures at least once per 24 months.
- h. Any other area of facility operation considered appropriate by the Corporate Quality Assurance Audit Operation & Maintenance Unit or the Senior Vice-President - Power Supply.
- i. The Radiological Environmental Monitoring Program and the results thereof at least once per 12 months.
- j. The Offsite Dose Calculation Manual and implementing procedures at least once per 24 months.
- k. The Process Control Program and implementing procedures for solidification of radioactive wastes at least once per 24 months.
- l. The performance of activities required by the Quality Assurance Program to meet the criteria of Regulatory Guide 4.15, December 1977 at least once per 12 months.

6.5.4.2

- a. Audit personnel will be independent of the area audited. Selection for auditing assignments is based on experience or training which establishes that their qualifications are commensurate with the complexity or special nature of the activities to be audited. In selecting auditing personnel, consideration will be given to special abilities, specialized technical training, prior pertinent experience, personal characteristics, and education.
- b. Qualified outside consultants or other individuals within organizations reporting to the Chief Operating Officer will be used to augment the audit teams when necessary.

6.8 PROCEDURES

- 6.8.1 Written procedures and administrative policies shall be established, implemented, and maintained that meet or exceed the requirements and recommendations of Sections 5.1 and 5.3 of ANSI N18.7-1972 and Appendix "A" of USNRC Regulatory Guide 1.33 dated November 3, 1972, except as provided in 6.8.2 and 6.8.3 below.
- 6.8.2 Proposed operating procedures, overall plant operating procedures, system descriptions, emergency procedures, fuel handling procedures, periodic test procedures, procedures for equipment maintenance which may affect nuclear safety, annunciator procedures, Fire Protection Program implementation procedures, procedures for implementing the onsite portion of the Radiological Environmental Monitoring Program, Offsite Dose Calculation Manual implementation procedures, Process Control Program implementation procedures, procedures for implementing a Quality Assurance Program for effluent and environmental monitoring (using the guidance in Regulatory Guide 4.15, December 1977), and any other procedures determined by the General Manager to affect nuclear safety, shall be received by the PNSC and approved by the General Manager. Prior to implementation, proposed changes to these procedures must also be reviewed and approved in this manner.
- 6.8.3 Temporary changes to procedures of 6.8.2 above may be made provided:
- a. The intent of the original procedure is not altered.
 - b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License.
 - c. The change is documented, reviewed by the PNSC and approved by the General Manager within three weeks of implementation.

initial criticality, completion of startup test program, and resumption or commencement of commercial power operation), supplementary reports shall be submitted at least every three months until all three events have been completed.

b. Annual Report

Prior to March 1 of each year a report shall be submitted which provides a tabulation on an annual basis of the number of station, utility and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man rem exposure according to work and job functions ⁽¹⁾, e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling. The dose assignment to various duty functions may be estimates based on pocket dosimeter, TLD, or film badge measurements. Small exposures totaling less than 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total whole body dose received from external sources shall be assigned to specific work functions.

c. Monthly Operating Report

Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis. The report formats set forth in Appendices B, C, and D, to Regulatory Guide 1.16* shall be completed in accordance with the instructions provided. In addition, any changes to the Offsite Dose Calculation Manual and the Process Control Program shall be submitted as part of this report within

(1) This tabulation supplements the requirements of Section 20.407 of 10 CFR Part 20.

90 days from which the changes were made effective. The completed forms should be submitted by the fifteenth of the month following the calendar month covered by the report to the Director, Office of Management Information and Program Control, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, with a copy to the appropriate NRC Regional Office.

d. Semiannual Radioactive Effluent Release Report

Routine radioactive effluent release reports covering the operation of the unit during the previous 6 months shall be submitted within 60 days after January 1 and July 1 of each year.

These reports shall include the following:

1. A summary of the quantities of radioactive liquid and gaseous effluent and solids waste released from the unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants" (Revision 1, June, 1974) with data summarized on a quarterly basis following the format of Appendix B thereof.
2. The radioactive effluent release report to be submitted 60 days after January 1 of each year shall include an annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing of wind speed, wind direction, and atmospheric stability, and precipitation (if measured) on magnetic tape, or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability. This same report shall include an assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit during the previous calendar year. This same report shall also include an assessment

of the radiation doses from radioactive liquid and gaseous effluents to members of the public due to their activities inside the site boundary during the report period. All assumptions used in making these assessments (i.e., specific activity, exposure time and location) shall be included in these reports. The meteorological conditions concurrent with the time of release of radioactive materials in gaseous effluents (as determined by sampling frequency and measurement) shall be used for determining the gaseous pathway doses. The assessment of radiation doses shall be performed in accordance with the Offsite Dose Calculation Manual.

3. The radioactive effluent release reports shall include unplanned releases from the site to unrestricted areas of radioactive materials in gaseous and liquid effluents on a quarterly basis.

e. Annual Radiological Environmental Operating Report

Routine radiological environmental operating reports covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year.

The annual radiological environmental operating reports shall include summaries, interpretations and an analysis of trends of the results of the radiological environmental surveillance activities for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of land use census required by Specification 4.2 of Appendix B to

the Operating License. If harmful effects or evidence of irreversible damage are detected by the monitoring, the report shall provide an analysis of the problem and a planned course of action to alleviate the problem.

The annual radiological environmental operating reports shall include summarized and tabulated results in the format of Regulatory Guide 4.8, December 1975 of all radiological environmental samples taken during the report period. In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The reports shall also include the following: a summary description of the radiological environmental monitoring program; a map of all sampling locations keyed to a table giving distance and directions from the reactor.

analyses in the safety analysis report or Technical Specifications bases or discovery during plant life of conditions not specifically considered in the safety analysis report or Technical Specifications that require remedial action or corrective measures to prevent the existence or development of an unsafe condition.

Note: This item is intended to provide for reporting of potentially generic problems

- (10) Offsite releases of radioactive materials in liquid and gaseous effluents which exceed the limits of Specification 1.2.1.1 or 2.2.1.1 of Appendix B to the Operating License.

- b. Thirty-day Written Reports. The reportable occurrences discussed below shall be the subject of written reports to the Director of the appropriate NRC Regional Office within thirty days of occurrence of the event. The written report shall include, as a minimum, a completed copy of the licensee event report form, used for entering data into the NRC's computer-based file of information concerning licensee events. Information provided on the licensee event report form shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

- (1) Reactor protection system or engineered safety feature instrument settings which are found to be less conservative than those established by the Technical Specifications but which do not prevent the fulfillment of the functional requirements of affected systems (but see 6.9.2.a(1) and 6.9.2.a(2) above).

- (2) Conditions leading to operation in a degraded mode permitted by limiting condition for operation or plant shutdown required by a limiting condition for operation (but see 6.9.2.a(2) above).

Note: Routine surveillance testing, instrument calibration or preventive maintenance which require system configurations as described in 6.9.2.b(1) above need not be reported except where test results themselves reveal a degraded mode as described above.

- (3) Observed inadequacies in the implementation of administrative or procedural controls which threaten to cause reduction of degree of redundancy provided in reactor protection systems or engineered safety feature systems (but see 6.9.2.a(6) above).
- (4) Abnormal degradation of systems other than those specified in 6.9.2.a(3) above designed to contain radioactive material resulting from the fission process.

Note: Sealed sources or calibration sources are not included under this item. Leakage of valve packing or gaskets within the limits for identified leakage set forth in Technical Specifications need not be reported under this item.

- (5) An unplanned offsite release of 1) more than 1 curie of radioactive material in liquid effluents, 2) more than 150 curies of noble gas in gaseous effluents, or 3) more than 0.05 curies of radioiodines in gaseous effluents. The report of an unplanned offsite release of radioactive material shall include the following information:

1. A description of the event and equipment involved.
2. Causes(s) for the unplanned release.

3. Actions taken to prevent recurrence.
4. Consequences of the unplanned release.

6.9.3 Special Reports

Special reports shall be submitted to the Director of the Regional Office of Inspection and Enforcement within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirements of the applicable reference specification:

	<u>Area</u>	<u>Reference</u>	<u>Submittal Date</u>
a.	Containment Leak Rate Testing	4.4	Upon completion of each test
b.	Initial Containment Structural Test	4.4	Within three months following completion of test
c.	Deleted		
d.	Inservice Inspection	4.2	After five years of operation
e.	Containment Sample Tendon Surveillance	4.4	Upon completion of the inspection at 5 and 25 years of operation
f.	Post-operational Containment Structural Test	4.4	Upon completion of the test at 3 and 20 years of operation
g.	Fire Protection System	3.14	As specified by limiting condition for operation
h.	Overpressure Protection System Operation	3.1.2.1e	Within 30 days of operation

6.9.4

Special Radiological Effluent Reports

The special radiological effluent reports discussed below shall be the subject of written reports to the Director of the appropriate NRC Regional Office within thirty days of the occurrence of the event.

- a. Failure to satisfy the Minimum Channels Operable requirement for radioactive effluent monitoring instrumentation within the time interval specified in Tables 1.1-1 and 2.1-1 of Appendix B to the Operating License. This report shall include the following information:
 1. The identity of the affected monitoring instrumentation and the cause(s) for not meeting the Minimum Channels Operable requirements within the specified time interval.
 2. A description of the corrective actions that will be taken to meet the Minimum Channels Operable requirements for the affected monitoring instrumentation.
 3. The date by which the corrective action(s) will be completed and the Minimum Channels Operable requirement for the affected monitoring instrumentation satisfied.
 4. A summary description of corrective action(s) taken to prevent a similar recurrence.

6.9.4 (Continued)

- b. Exceeding any of the limits prescribed by Specification 1.3.1.1, 2.3.1.1, and/or 2.4.1.1 of Appendix B to the Operating License.

This report shall include the following information:

1. The cause for exceeding the limit(s)
2. The corrective action(s) to be taken to reduce the releases of radioactive materials in the affected effluents (i.e. liquid, radionoble gas, and/or radioiodines, particulates, etc.) during the remainder of the current calendar quarter and during the subsequent three calendar quarters, such that the calculated dose commitment to an individual is within the annual dose limits prescribed by the specification(s) that was/were exceeded.
3. If any of the limits of Specification 1.3.1.1 were exceeded, the report must include a statement that no drinking water source exists that could be affected or include the results of radiological analyses of affected drinking water sources and the radiological impact on finished drinking water supplied with regards to the requirements of 40CFR141, Safe Drinking Water Act.

- c. Exceeding any of the limits prescribed by Specification 1.4.1.1 and/or 2.5.1.1 of Appendix B to the Operating License. This report shall include the following information:

1. Identification of equipment or subsystems that rendered the affected radwaste treatment system not operable.

6.9.4 (Continued)

2. The corrective action(s) taken to restore the affected radwaste treatment system to an operable status.
 3. A summary description of the action(s) taken to prevent a similar recurrence.
- d. Exceeding the reporting level for environmental sample media as specified in Action statement 4.1.2.2, 4.1.2.3, or 4.1.2.4 for Specification 4.1 of Appendix B to the Operating License. This report shall include the following information:
1. An evaluation of any environmental factor, release conditions, or other aspect which may have caused the reporting level to be exceeded.
 2. A description of action(s) taken or planned to reduce the levels of licensed materials in the affected environmental media to below the reporting level.
- e. Exceeding the limits prescribed by Specification 5.1.1.1 of Appendix B to the Operating License. This report shall be made in lieu of any other report and shall include the following information:
1. The corrective action(s) to be taken to reduce subsequent releases to prevent recurrence of exceeding the limits prescribed by Specification 5.1.1.1.

6.9.4 (Continued)

2. An analysis which estimates the dose commitment to a member of the general public from uranium fuel cycle sources, including all effluent pathways and direct radiation, for a 12 month period that includes releases covered by this report.
3. If the release conditions resulting in violation of 40CFR190 has not already been corrected, include a request for a variance in accordance with the provisions of 40CFR190 and include the specified information of 40CFR190.11(b).

- b. Records of new and irradiated fuel inventory, fuel transfers and assembly burnup histories.
- c. Records of facility radiation and contamination surveys.
- d. Records of radiation exposure for all individuals entering radiation control areas.
- e. Records of gaseous and liquid radioactive material released to the environs.
- f. Records of transient or operational cycles for those facility components designed for a limited number of transients or cycles.
- g. Records of training and qualification for current members of the plant staff.
- h. Records of in-service inspections performed pursuant to these Technical Specifications.
- i. Records of Quality Assurance activities required by the QA Manual.
- j. Records of review performed for changes made to procedures or equipment or reviews of tests and experiments pursuant to 10CFR50.59.
- k. Records of meetings of the PNSC and of the previous off-site review organization Company Nuclear Safety Committee (CNSC).
- l. Records of analyses required by the radiological environmental monitoring program.

6.13 HIGH RADIATION AREA

6.13.1 In lieu of the "control device" or "alarm signal" required by paragraph 20.203(c) (2) of 10CFR20, each High Radiation Area in which the intensity of radiation is 1000 mrem/hr or less shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit*. Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

- a. A radiation monitoring device which continuously indicates the radiation dose rate in the area.
- b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a present integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate level in the area has been established and personnel have been made knowledgeable of them.
- c. An individual qualified in radiation protection procedures who is equipped with a radiation dose rate monitoring device. This individual shall be responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance.

* Health Physics personnel shall be exempt for the RWP issuance requirement during the performance of their assigned radiation protection duties, provided they comply with approved radiation protection procedures for entry into high radiation areas.

6.13.2

The requirements of 6.13.1 above, shall also apply to each high radiation area in which the intensity of radiation is greater than 1000 mrem/hr. In addition, locked doors shall be provided to prevent unauthorized entry into such areas and the keys shall be maintained under the administrative control of the Shift Foreman on duty and/or the Plant Health Physicist.

6.14 Offsite Dose Calculation Manual

6.14.1 The ODCM shall be approved by the Commission prior to implementation.

6.14.2 Licensee initiated changes to the ODCM:

A. Shall be submitted to the Commission in the Monthly Operating Report within 90 days of the date the change(s) was/were made effective. This submittal shall contain:

1. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information.
2. A determination that the change will not reduce the accuracy or reliability of dose calculations or setpoint determinations and
3. Documentation of the fact that the change has been reviewed and found acceptable by the PNSC.

B. Shall become effective upon review and acceptance by the PNSC.

6.15 Process Control Program (PCP)

6.15.1 The PCP shall be approved by the Commission prior to implementation

6.15.2 Licensee initiated changes to the PCP:

- A. Shall be submitted to the Commission in the Monthly Operating Report for the period in which the change(s) was/were made. This submittal shall contain:
 - 1. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information;
 - 2. A determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes; and
 - 3. Documentation of the fact that the change has been reviewed and found acceptable by the PNSC.
- B. Shall become effective upon review and acceptance by the PNSC.

APPENDIX B

TO

THE FACILITY OPERATING LICENSE DPR-23
RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS.

AND BASES

H. B. ROBINSON UNIT NO. 2

CAROLINA POWER & LIGHT COMPANY

DARLINGTON COUNTY, S. C.

DOCKET NO. 50-261

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DEFINITIONS AND FREQUENCY NOTATION

1. The definitions of various terms used throughout these specifications are located in the Definitions Section (1.0) of Appendix A to the Operating License.
2. The frequency notation used throughout these specifications is defined at the bottom of Table 4.1-1 in Appendix A to the Operating License.

1.0 RADIOACTIVE LIQUID EFFLUENTS

1.1 INSTRUMENTATION

1.1.1 LIMITING CONDITION FOR OPERATION

1.1.1.1 The radioactive liquid effluent monitoring instrumentation channels shown in Table 1.1-1 shall be operable with their alarm/trip setpoints set to ensure that the limits of Specification 1.2.1.1 are not exceeded. The alarm/trip setpoints shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM).

1.1.2 ACTION

1.1.2.1 With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, immediately suspend the release of radioactive liquid effluent monitored by the affected channel or declare the channel not operable.

1.1.2.2 With less than the minimum number of radioactive liquid effluent monitoring instrumentation operable, take the Action shown in Table 1.1-1.

1.1.3 SURVEILLANCE REQUIREMENTS

1.1.3.1 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel check, source check, channel calibration, and channel functional test operations at the frequencies shown in Table 1.1-2.

1.1.4 BASES

1.1.4.1 The radioactive liquid effluent monitoring instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated in

1.1.4.1 (Continued)

accordance with the procedures in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10CFR Part 20. The operability and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10CFR Part 50.

Table 1.1-1 Radioactive Liquid Effluent Monitoring Instrumentation

Release Pathway/Instrumentation	MCO*	Required Action
<p>1. Liquid Radwaste Effluent Discharge Line</p> <p>a. Monitor (RMS-18) provides automatic termination of release upon exceeding alarm/trip setpoint.</p> <p>b. Flow rate measurement device (FI-1064)</p>	<p>1</p> <p>1</p>	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may be resumed for up to 14 days, provided that prior to initiating a release:</p> <ol style="list-style-type: none"> 1. At least two independent samples are analyzed in accordance with the Surveillance Requirements of Specification 1.2.1.1, and; 2. At least two members of the facility staff independently verify the release rate calculations and the discharge line valving. <p>If the MCO requirement is not satisfied within 14 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p> <p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may be resumed for up to 30 days, provided that the flow rate is estimated at least once per 4 hours during actual releases. Pump curves may be utilized to estimate the flow rate. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of the Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>

*MCO - Minimum Channels Operable

Table 1.1-1 Radioactive Liquid Effluent Monitoring Instrumentation (Continued)

Release Pathway/Instrumentation	MCO*	Required Action
2. Steam Generator Blowdown Effluent Line		
a. Monitor (RMS-19) provides automatic termination of blowdown from all three Steam Generators upon exceeding alarm/trip setpoint. The flow rate measuring devices for this monitor are considered to be part of this channel for the purpose of establishing the operability of this channel.	1	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days, provided that grab samples are analyzed for gross radioactivity (beta or gamma) with a lower limit of detection of at least 1.0E-07 uCi/ml or are analyzed for principle gamma emitters (See note C of Table 1.2-1) with a lower limit of detection of at least 5.0E-07 uCi/ml;</p> <ol style="list-style-type: none"> 1. At least once per 8 hours when the specific activity of the secondary coolant is greater than 0.01 uCi/ml dose equivalent I-131, or; 2. At least once per 24 hours when the specific activity of the Secondary Coolant is less than or equal to 0.01 uCi/ml dose equivalent I-131. <p>If the MCO requirement is not satisfied within 14 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>
b. Flow rate measurement devices- each Steam Generator has its own blowdown flow rate measuring device.	3	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days, provided that the flow rate for the affected blowdown line(s) is estimated at least once per 24 hours. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>

*MCO - Minimum Channels Operable

Table 1.1-1 Radioactive Liquid Effluent Monitoring Instrumentation (Continued)

Release Pathway/Instrumentation	MCO*	Required Action
3. Service Water Effluent Line		
a. Monitor (RMS-16) does not provide automatic termination of release upon exceeding alarm setpoint.	1	With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days, provided that, at least once per 24 hours, grab samples are collected and analyzed for gross radioactivity (beta or gamma) with a lower limit of detection of at least $1.0\text{E-}07$ uCi/ml or are analyzed for principal gamma emitters (See note c to Table 1.2-1) with a lower limit of detection of at least $5.0\text{E-}07$ uCi/ml. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.
4. Tank Level Indicating Devices		
a. Refueling Water Storage Tank (LI-948)	1	With the number of channels operable less than the MCO requirement for the affected tank(s), liquid additions to the affected tank(s) may continue for up to 30 days, provided that the liquid level for the affected tank(s) is estimated during all liquid additions to the affected tank(s). If the MCO requirement for the affected tank(s) is not satisfied within 30 days, liquid additions to the affected tank(s) may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.
b. Monitor Tanks		
Tank A - (LI-182)	1	
Tank B - (LI-183)	1	
c. Waste Condensate Tanks		
Tank C - (LI-603)	1	
Tank D - (LI-604)	1	
Tank E - (LI-605)	1	
d. Temporary Tanks	1 per tank	

*MCO - Minimum Channels Operable

Table 1.1-2 Radioactive Liquid Effluent Monitoring Instrumentation Surveillance Requirements

Pathway/Instruments	Channel Check	Source Check	Channel Calibration	Channel Functional Test
1. Liquid Radwaste Effluent Line				
a. Monitor (RMS-18)	P/R	P/R	R	Q
b. Flow rate measurement device (FI-1064)	D(Note 1)	N.A.	R	Q
2. Steam Generator Blowdown Effluent Line				
a. Monitor (RMS-19)	D	M	R	Q
b. Flow rate measurement devices for measuring flow of sample to RMS-19	D(Note 1)	N.A.	R	N.A.
c. Flow rate measuring devices for blowdown lines	D(Note 1)	N.A.	R	Q
3. Service Water Effluent Line				
a. Monitor (RMS-16)	D	M	R	Q
4. Tank Level Indicating Devices				
a. Refueling Water Storage Tank (LI-948)	D(Note 2)	N.A.	R	Q
b. Monitor Tanks A (LI-182) & B(LI-183)	D(Note 2)	N.A.	R	Q
c. Waste Condensate Tanks C(LI-603), D(LI-604), & E(LI-605)	D(Note 2)	N.A.	R	Q
d. Temporary Tanks	D(Note 2)	N.A.	R	Q

Notes to Table 1.1-2

Note 1 - The channel check shall consist of verifying indication of flow at least once during each batch type release or shall consist of verifying indication of flow at least once per 24 hours for continuous type releases.

Note 2 - The channel check shall be performed at least once during each addition of liquid to the tank.

1.2 COMPLIANCE WITH 10 CFR PART 20

1.2.1 LIMITING CONDITION FOR OPERATION

1.2.1.1 The concentration of radioactive material released at anytime from the site to unrestricted areas (see Figure 1.2-1) shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} uCi/ml total activity.

1.2.2 ACTION

1.2.2.1 With the concentration of radioactive material released from the site to unrestricted areas exceeding the above limits, immediately restore the concentration to within the above limits. In addition, a prompt notification must be made to the Commission in accordance with Specification 6.9.2(a)(10) of Appendix A to the Operating License.

1.2.2.2 In the event that the immediate Action required by 1.2.2.1 above cannot be satisfied, the facility shall be placed in hot shutdown within 6 hours and in cold shutdown within 30 hours, and entry into an operating mode shall not be made unless Specification 1.2.1.1 is met.

1.2.3 SURVEILLANCE REQUIREMENTS

1.2.3.1 The radioactivity content of each batch of radioactive liquid waste to be discharged shall be determined prior to release by sampling and analysis in accordance with Table 1.2-1. The results of pre-release analyses shall be used with the calculative methods in the ODCM to assure that the concentration at the point of release to the unrestricted area is maintained within the limits of Specification 1.2.1.1.

1.2.3.2

Post-release analyses of samples composited from batch releases shall be performed in accordance with Table 1.2-1. The results of the post-release analyses shall be used with the calculative methods in the ODCM to assure that the concentrations at the point of release were maintained within the limits of Specification 1.2.1.1.

1.2.3.3

The concentration of radioactive materials in liquids discharged from continuous release points shall be determined by collection and analysis of samples in accordance with Table 1.2-1. The results of the analyses shall be used with the calculative methods in the ODCM to assure that the concentrations at the point of release are maintained within the limits of Specification 1.2.1.1.

1.2.4

BASES

1.2.4.1

This specification is provided to ensure that the concentration of radioactive materials released in liquid waste effluents from the site to unrestricted areas will be less than the concentrations specified in 10 CFR Part 20, Appendix B, Table II. This limitation provides the additional assurance that the concentrations of radioactive materials in bodies of water outside the site will not result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to an individual and (2) the limits of 10 CFR Part 20.106(e) to the population. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radionuclide and its MPC in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission on Radiological Protection (ICRP) Publication 2.

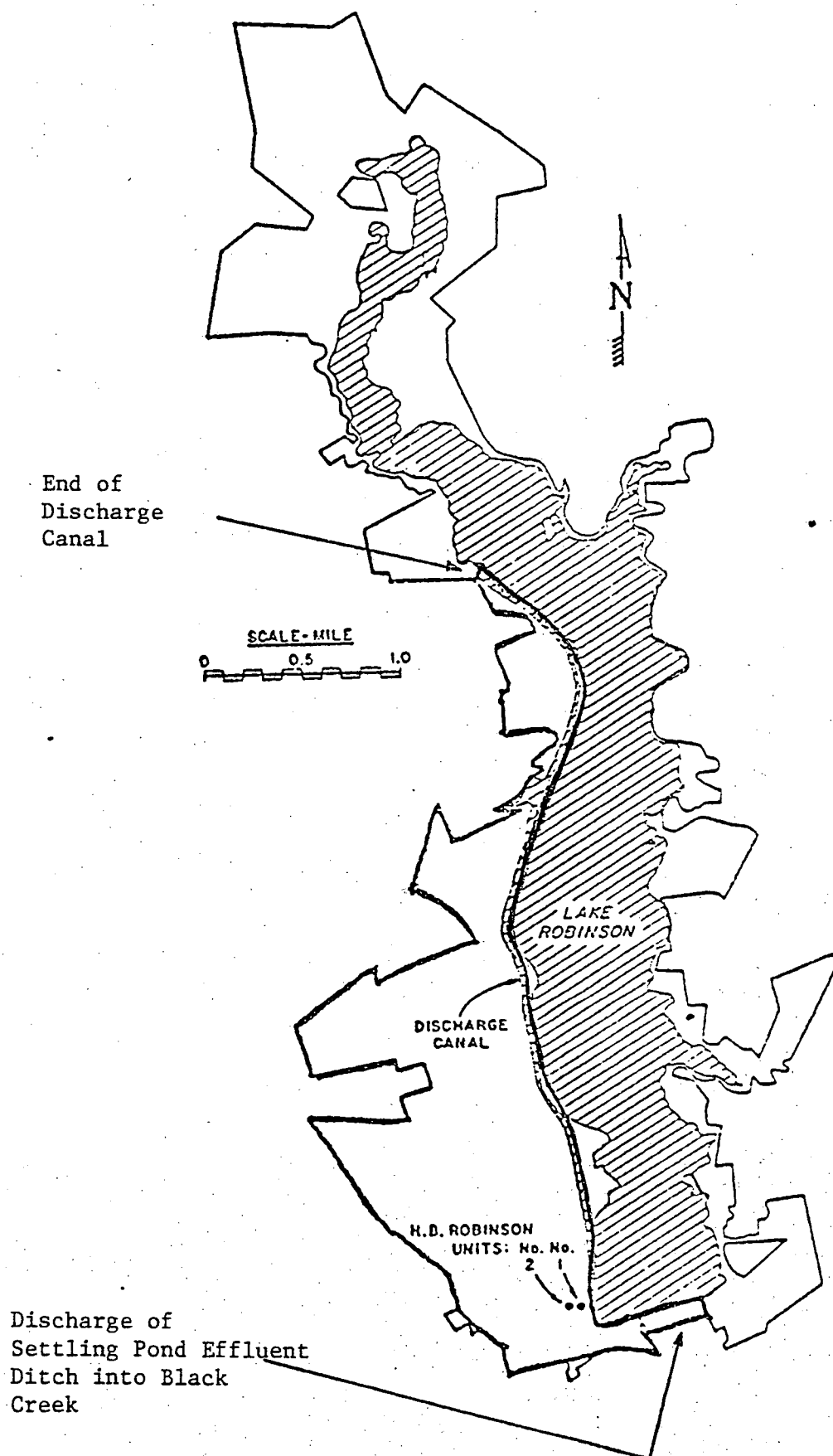
Table 1.2-1 Radioactive Liquid Waste Sampling and Analysis Program

Type of Release	Sampling Frequency	Minimum Analysis Frequency	Required Activity Analysis	Required LLD ^a uCi/ml
<u>Batch Waste Releases^b</u> 1. Monitor Tanks 2. Waste Condensate Tanks 3. Drainage of Systems	P/R Grab Sample Each Batch	P/R on Grab Sample	Principal Gamma Emitters ^c	5E-07
			I-131	1E-06
	P/R Grab Sample One Batch/M	M on Grab Sample	Dissolved and Entrained Gases (gamma emitters)	1E-05
			Tritium	1E-05
	P/R Grab Sample Each Batch and Composited ^d	M on Composite	P-32	1E-06
			Sr-89, Sr-90	5E-08
<u>Continuous Releases^e</u> 1. Steam Generator Blowdown	D Grab Sample	D on Grab Sample	Principal Gamma Emitters ^c	5E-07
			I-131	1E-06
	M Grab Sample	M on Grab Sample	Dissolved and Entrained Gases (gamma emitters)	1E-05
			Tritium	1E-05
	D Grab Sample and Composited ^d	M on Composite	P-32	1E-06
			Sr-89, Sr-90	5E-08

Notes to Table 1.2-1

- a. Lower Limit of Detection calculated in accordance with methodology established in ODCM.
- b. A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed, by a method described in the ODCM, to assure representative sampling.
- c. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141, and Ce-144. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported.
- d. A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released.
- e. A continuous release is the discharge of liquid wastes of a nondiscrete volume; e.g., from a volume of system that has an input flow during the continuous release.

Figure 1.2-1 Discharge Points to Unrestricted Waters
for Liquid Effluents



1.3 COMPLIANCE WITH 10 CFR PART 50

1.3.1 LIMITING CONDITION FOR OPERATION

1.3.1.1 The dose commitment at all times to an individual from radioactive materials in liquid effluents released to unrestricted areas (See Figure 1.2-1) shall be limited:

- a. During any calendar year to ≤ 1.5 mrem to the total body and to ≤ 5 mrem to any organ, and
- b. During any calendar year to ≤ 3 mrem to the total body and to ≤ 10 mrem to any organ.

1.3.2 ACTION

1.3.2.1 With the calculated dose commitment from the release of radioactive materials in liquid effluents exceeding any of the limits prescribed by Specification 1.3.1.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.4(b) of Appendix A to the Operating License.

1.3.3 SURVEILLANCE REQUIREMENTS

1.3.3.1 Dose Calculations: Cumulative dose commitments for the current calendar quarter and calendar year from liquid effluents shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM) at least once per 31 days.

1.3.4 BASES

1.3.4.1 This specification is provided to implement the requirements of Sections II.A and III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Condition for Operation implements the guides set forth in Section II.A of Appendix I. The ACTION statement provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I of 10 CFR Part 50 to assure that the release of radioactive material in liquid effluents will

1.3.4.1 (Continued)

be kept "as low as is reasonably achievable." The dose calculations in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculative procedures based on models and data, such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses due to the actual release rates of radioactive materials in liquid effluents are consistent with the methodology provided in the Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, " Revision 1, October 1977 and Regulatory Guide 1.113. "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April, 1977.

1.4

LIQUID WASTE TREATMENT

1.4.1

LIMITING CONDITION FOR OPERATION

1.4.1.1

The appropriate portions of the Liquid Radwaste Treatment System shall be maintained and used to reduce the concentrations of radioactive materials in liquid wastes prior to their discharge when the projected dose commitments due to the release of radioactive liquid effluents to unrestricted areas (See Figure 1.2-1) when averaged over a calendar quarter would exceed 0.75 mrem to the total body or 2.5 mrem to any organ.

1.4.2

ACTION

1.4.2.1

With the Liquid Radwaste Treatment System not operable and with radioactive liquid wastes being discharged without treatment while in excess of the limits of Specification 1.4.1.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.4(c) of Appendix A to the Operating License.

1.4.3

SURVEILLANCE REQUIREMENTS

1.4.3.1

Dose commitments from liquid releases shall be projected at least once per 31 days, in accordance with the ODCM to ensure the provisions of Specification 1.4.1.1 are satisfied.

1.4.4

BASES

1.4.4.1

The requirements that the appropriate portions of this system be maintained and used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as reasonably achievable". This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50 and the design objective given in Section II.D of

1.4.4.1 (Continued)

Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the Liquid Radwaste Treatment System were specified as the dose design objective set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents.

2.0 GASEOUS EFFLUENTS

2.1 INSTRUMENTATION

2.1.1 LIMITING CONDITION FOR OPERATION

2.1.1.1 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 2.1-1 shall be operable with their alarm/trip setpoints set to ensure that the limits of Specification 2.2.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM).

2.1.2 ACTION

2.1.2.1 With a radioactive effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, immediately suspend the release of radioactive gaseous effluents or declare the channel not operable.

2.1.2.2 With less than the minimum number of radioactive effluent monitoring instrumentation channels operable take the Action shown in Table 2.1-1.

2.1.3 SURVEILLANCE REQUIREMENTS

2.1.3.1 Each radioactive effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel check, source check, channel calibration, and channel functional test operations at the frequencies shown in Table 2.1-2.

2.1.4 BASES

2.1.4.1 The radioactive gaseous effluent monitoring instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated in

2.1.4.1 (Continued)

accordance with the procedures in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The operability and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

Table 2.1-1 Radioactive Gaseous Effluent Monitoring Instrumentation

Release Pathway/Instrumentation	MCO*	Required Action
<p>1. Plant Vent</p> <p>a. Radionoble gas monitor (RMS-14) provides automatic termination of Waste Gas Decay Tank releases upon exceeding alarm/trip setpoint.</p> <p>b. Radionoble gas monitors RMS-14 and PING-2A monitor all effluents from Auxiliary Building Ventilation System without providing automatic termination of release upon exceeding their respective alarm setpoints.</p>	<p>1</p> <p>1 of the two monitors</p>	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may be resumed for up to 14 days, provided that prior to initiating a release:</p> <ol style="list-style-type: none"> 1. At least two independent samples are analyzed in accordance with the Surveillance Requirements of Specification 2.2.1.1, and; 2. At least two members of the facility staff independently verify the release rate calculations and the discharge line valving. <p>If the MCO requirement is not satisfied within 14 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p> <p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that grab samples are collected at least once per 24 hours and are analyzed for radionoble gases. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>

*MCO - Minimum Channels Operable

Table 2.1-1 Radioactive Gaseous Effluent Monitoring Instrumentation (Continued)

Release Pathway/Instrumentation	MCO*	Required Action
1. Plant Vent (Continued)		
c. Radioiodine Sampler (PING-2A)	1	With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that a continuous sample is collected utilizing auxiliary sampling equipment. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.
d. Particulate Sampler (PING-2A)	1	With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that a continuous sample is collected utilizing auxiliary sampling equipment. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.
e. Sampler flow rate monitor (PING-2A)	1	With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that the flow rate is estimated at least once per 24 hours. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.

* MCO - Minimum Channels Operable

Table 2.1-1 Radioactive Gaseous Effluent Monitoring Instrumentation (Continued)

Release Pathway/Instrumentation	MCO*	Required Action
1. Plant Vent (Continued)		
f. Plant Vent flow rate monitor	1	With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that the flow rate is estimated at least once per 24 hours. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.
2. Containment Vessel via Plant Vent		
a. Radionoble gas monitor (RMS-12) provides automatic termination of Containment Vessel releases upon exceeding alarm/trip setpoint.	1	With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that the Plant Vent Radionoble Gas Monitor (RMS-14) is operable; otherwise suspend all releases via this pathway. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.
b. Sampler flow rate monitor (RMS-12)	1	With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that the flow rate is estimated at least once per 24 hours. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement, however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.

Table 2.1-1 Radioactive Gaseous Effluent Monitoring Instrumentation (Continued)

Release Pathway/Instrumentation	MCO*	Required Action
3. Condenser Air Ejector Vent		
a. Radionoble gas monitor (RMS-15) diverts effluents from Condenser Air Ejector Vent to the Plant Vent upon exceeding alarm/trip set-point.	1	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that;</p> <ol style="list-style-type: none"> 1. Grab samples are collected at least once per 24 hours and are analyzed for radionoble gases, or; 2. The effluent is diverted to the Plant Vent and RMS-14 is operable. <p>If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>
b. Flow rate measuring devices-one for each Air Ejector Pump.	1 for each pump in ser- vice	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days, provided that the flow rate is estimated at least once per 24 hours. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>
4. Fuel Handling Building Lower Level Exhaust Vent		
a. Radionoble gas monitor (RMS-20) trips the exhaust and supply fans for the lower level of the Fuel Handling Building upon exceeding alarm/trip set-point.	1	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that grab samples are collected at least once per 24 hours and are analyzed for radionoble gases. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>

* MCO - Minimum Channels Operable

Table 2.1-1 Radioactive Gaseous Effluent Monitoring Instrumentation (Continued)

Release Pathway/Instrumentation	MCO*	Required Action
4. Fuel Handling Building Lower Level Exhaust Vent (Continued)		
b. Sampler flow rate monitor (RMS-20)	1	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that the flow rate is estimated at least once per 24 hours. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>
5. Fuel Handling Building Upper Level Exhaust Vent		
a. Radionoble gas monitor (RMS-21) trips the exhaust and supply fans for the upper level of the Fuel Handling Building upon exceeding alarm/trip setpoint.	1	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days, provided that;</p> <ol style="list-style-type: none"> 1. The Plant Vent Radionoble Gas Monitor (RMS-14) is operable, or; 2. Grab samples are collected at least once per 24 hours and are analyzed for radionoble gases. <p>If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>

* MCO - Minimum Channels Operable

Table 2.1-1 Radioactive Gaseous Effluent Monitoring Instrumentation (Continued)

Release Pathway/Instrumentation	MCO*	Required Action
5. Fuel Handling Building Upper Level Exhaust Vent		
b. Sampler flow rate monitor (RMS-21)	1	<p>With the number of channels operable less than the MCO requirement, effluent releases via this pathway may continue for up to 30 days provided that the flow rate is estimated at least once per 24 hours. If the MCO requirement is not satisfied within 30 days, releases may continue in accordance with the provisions of this Action statement; however, a report must be prepared and submitted to the Commission in accordance with Specification 6.9.4(a) of Appendix A to the Operating License.</p>

* MCO - Minimum Channels Operable

Table 2.1-2 Radioactive Gaseous Effluent Monitoring Instrumentation Surveillance Requirements

Pathway/Instruments	Channel Check	Source Check	Channel Calibration	Channel Functional Test
1. Plant Vent				
a. Radionoble gas monitor (RMS-14)	D & P/R(Note 1)	M & P/R(Note 2)	R	Q
b. Radionoble gas monitor (PING-2A)	D	M	R	Q
c. Sampler flow rate monitor (PING-2A)	D(Note 3)	N.A.	R	Q
d. Plant Vent flow rate monitor	D(Note 3)	N.A.	R	Q
2. Containment Vessel via Plant Vent				
a. Radionoble gas monitor (RMS-12)	P/R	P/R	R	Q
b. Sampler flow rate monitor (RMS-12)	D(Note 3)	N.A.	R	N.A.
3. Condenser Air Ejector Vent				
a. Radionoble gas monitor (RMS-15)	D	M	R	Q
b. Flow rate measuring devices - one for each Air Ejector Pump	D(Note 3)	N.A.	R	N.A.
4. Fuel Handling Building Lower Level Exhaust Vent				
a. Radionoble gas monitor (RMS-20)	D	M	R	Q
b. Sampler flow rate monitor (RMS-20)	D(Note 3)	N.A.	R	N.A.

Table 2.1-2 Radioactive Gaseous Effluent Monitoring Instrumentation Surveillance Requirements

Pathway/Instruments	Channel Check	Source Check	Channel Calibration	Channel Functional Test
5. Fuel Handling Building Upper Level Exhaust Vent				
a. Radionoble gas monitor (RMS-21)	D	M	R	Q
b. Sampler flow rate monitor (RMS-21)	D(Note 3)	N.A.	R	N.A.

Notes to Table 2.1-2

- Note 1 - A channel check must be performed prior to each Waste Gas Decay Tank release.
- Note 2 - A source check must be performed prior to each Waste Gas Decay Tank release.
- Note 3 - The channel check shall consist of verifying indication of flow whenever plant conditions dictate that flow is supposed to be present.

2.2 COMPLIANCE WITH 10 CFR 20

2.2.1 LIMITING CONDITION FOR OPERATION

2.2.1.1 The dose rate due to radioactive materials released in gaseous effluents from the site (see Figure 2.2-1) shall be limited to the following:

- a. for radionoble gases: ≤ 500 mrem/yr to the total body ≤ 3000 mrem/yr to the skin, and
- b. for all radioiodines and for all radioactive materials in particulate form and radionuclides (other than radionoble gases) with half lives greater than 8 days: ≤ 1500 mrem/yr to any organ.

2.2.2 ACTION

2.2.2.1 With the dose rate(s) exceeding the above limits, immediately decrease the release rate to within the above limits. In addition, a prompt notification must be made to the Commission in accordance with Specification 6.9.2(a)(10) of Appendix A to the Operating License.

2.2.2.1 In the event that the immediate Action required by 2.2.2.1 above cannot be satisfied, the facility shall be placed in hot shutdown within 6 hours and in cold shutdown within 30 hours, and entry into an operating mode shall not be made until Specification 2.2.1.1 is met.

2.2.3 SURVEILLANCE REQUIREMENTS

2.2.3.1 The dose rate due to radioactive materials in gaseous effluents shall be determined to be within the above required limits in accordance with the methods and procedures of the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 2.2-1.

2.2.4

BASES

2.2.4.1

This specification is provided to ensure that the dose rate at any time at the site boundary from gaseous effluents from H. B. Robinson Unit No. 2 will be within the annual dose limits of 10 CFR Part 20 for unrestricted areas. The annual dose limits are the doses associated with the concentrations of 10 CFR Part 20 Appendix B, Table II, Column 1. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of individuals outside the site boundary, to annual average concentrations exceeding the limits specified in Appendix B Table II of 10 CFR Part 20, (10 CFR Part 20.106(b)). For individuals who may at times be within the site boundary, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the site boundary unrestricted area. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual in unrestricted areas to \leq (500) mrem/year to the total body or to \leq (3000) mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant individual receptor via the cow-milk-receptor pathway to \leq 1500 mrem/year for the nearest cow to the plant.

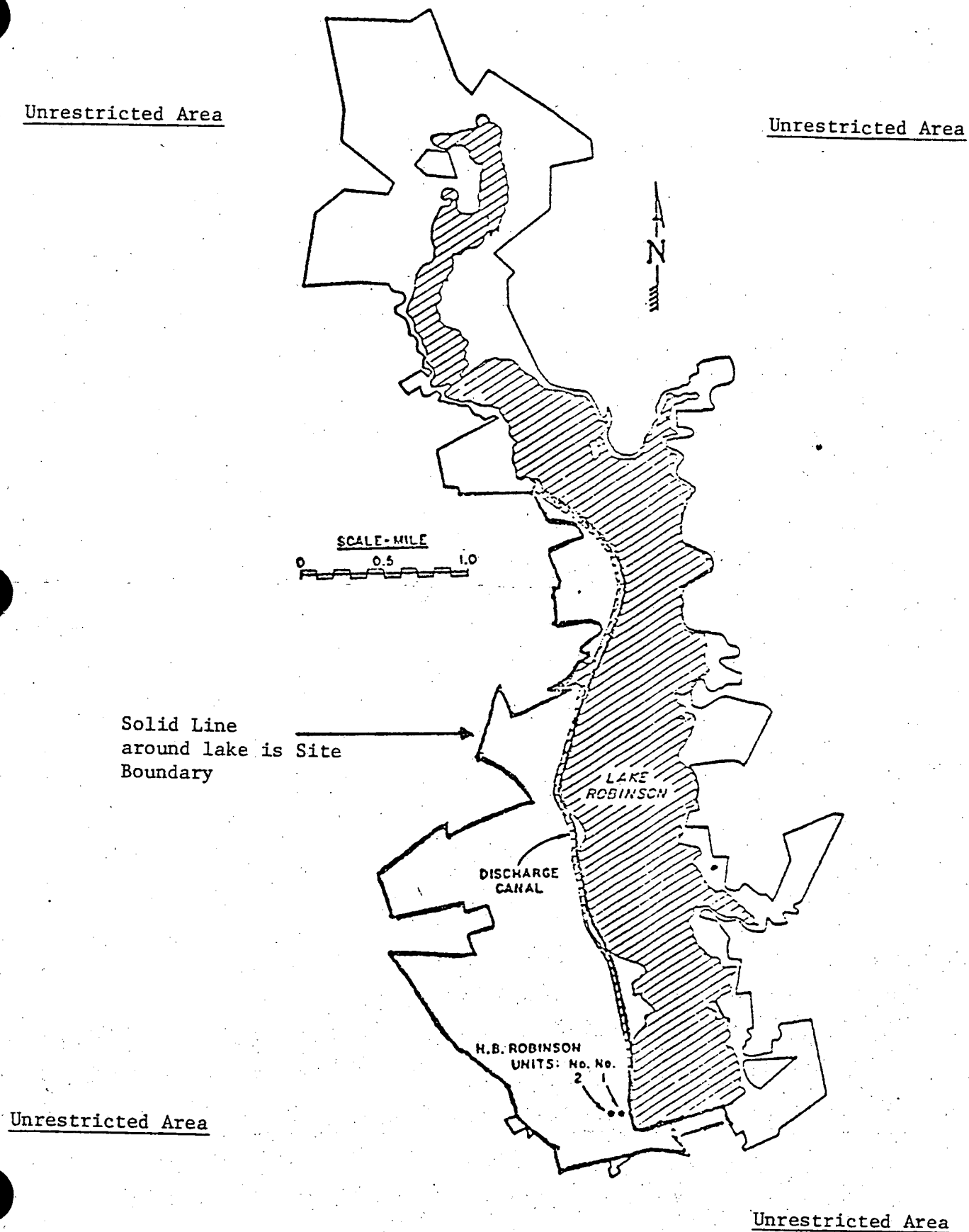
Table 2.2-1 Radioactive Gaseous Waste Sampling and Analysis Program

Type of Release	Sampling Frequency	Minimum Analysis Frequency	Required Activity Analysis	Required LLD ^a uCi/ml
Waste Gas Decay Tanks and Containment Purges	P/R	P/R	Principal Gamma Emitters ^c	1E-04
			Tritium	1E-06
Containment Pressure Reliefs	W Grab Sample ^b	W on Grab Sample	Principal Gamma Emitters ^c	1E-04
			Tritium	1E-06
<u>Continuous Releases</u> 1. Plant Vent 2. Condenser Air Ejector Vent	M Grab Sample for Radionoble Gases and Tritium	M on Grab Sample	Principal Gamma Emitters ^c	1E-04
			Tritium	1E-06
	Continuous ^d Radioiodine Sample	W on Sample	I-131	1E-12
			I-133	1E-10
	Continuous ^d Particulate Sample	W on Sample	Principal Gamma Emitters ^c	1E-11
	Continuous ^d Particulate Samples to be Compositd	Q on Composite	Sr-89, Sr-90	1E-11

Notes to Table 2.2-1

- a. Lower Limit of Detection calculated in accordance with methodology established in ODCM.
- b. Containment pressure reliefs can be made during the week without sampling by correcting the weekly sample analysis results with the ratio of the Containment Radionoble Gas Monitor (RMS-12) and the Containment Particulate Monitor (RMS-11) readings at the time of sampling to the desired time of the pressure relief.
- c. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous emissions, I-131 and I-133 for halogen emissions, and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141, and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measureable and identifiable, together with the above nuclides, shall also be identified and reported.
- d. The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation. In addition, these continuous samples are not required for the Condenser Air Ejector Vent.

Figure 2.2-1 Site Boundary for Dispersion of Gaseous Effluents



2.3 COMPLIANCE WITH 10 CFR PART 50 - RADIONOBLE GASES

2.3.1 LIMITING CONDITION FOR OPERATION

2.3.1.1 The air dose commitment due to radionoble gases released in gaseous effluents to unrestricted areas (See Figure 2.2-1) shall be limited, at all times, to the following:

- a. During any calendar year, to ≤ 5 mrad for gamma radiation and ≤ 10 mrad for beta radiation;
- b. During any calendar year, to ≤ 10 mrad for gamma radiation and ≤ 20 mrad for beta radiation.

2.3.2 ACTION

2.3.2.1 With the calculated air dose commitment from radioactive noble gases in gaseous effluents exceeding any of the limits, prescribed by Specification 2.3.1.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.4(b) of Appendix A to the Operating License.

2.3.3 SURVEILLANCE REQUIREMENTS

2.3.3.1 Cumulative dose commitments for the current calendar quarter and current calendar year shall be determined in accordance with the ODCM at least once per 31 days.

2.3.4 BASES

2.3.4.1 This specification is provided to implement the requirements of Section II.B, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Condition for Operation implements the guides provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low as is reasonably achievable". The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance

2.3.4.1 (Continued)

with the guides of Appendix I be shown by calculative procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The methods established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents are consistent with the methodology provided in the Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, "Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July, 1977. The ODCM equations provided for determining the air dose commitments at the site boundary are based upon historical average atmospheric conditions.

2.4

COMPLIANCE WITH 10 CFR PART 50 - RADIOIODINES, RADIOACTIVE
MATERIAL IN PARTICULATE FORM,
AND RADIONUCLIDES OTHER THAN
RADIONOBLE GASES

2.4.1

LIMITING CONDITION FOR OPERATION

2.4.1.1

The dose to an individual from radioiodines and radioactive materials in particulate form, and radionuclides (other than radionoble gases) with half-lives greater than 8 days in gaseous effluents released to unrestricted areas (See Figure 2.2-1) shall be limited, at all times, to the following:

- a. During any calendar quarter, less than or equal to 7.5 mrem to any organ and,
- b. During any calendar year, less than or equal to 15 mrem to any organ.

2.4.2

ACTION

2.4.2.1

With the calculated dose commitment from the release of radioiodines, radioactive materials in particulate form, or radionuclides (other than radionoble gases) with half lives greater than 8 days, in gaseous effluents exceeding any of the limits prescribed by Specification 2.4.1.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.4(b) of Appendix A to the Operating License.

2.4.3

SURVEILLANCE REQUIREMENTS

2.4.3.1

Cumulative dose commitments for the current calendar quarter and current calendar year shall be determined in accordance with the ODCM at least once per 31 days.

2.4.4

BASES

2.4.4.1

This specification is provided to implement the requirements of Sections II.C, III.A, and IV.A of Appendix I, 10 CFR Part

2.4.4.1 (Continued)

50. The Limiting Condition for Operation implements the guides set forth in Section II.C of Appendix I. The Action statement provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials is gaseous effluents will be kept "as low as is reasonably achievable." The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculative procedures based on models and data, such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The methods established in the ODCM for calculating the doses due to the actual release rates of the subject materials are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I. "Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. The ODCM equations provided for determining the commitments are based upon historical average atmospheric conditions.

2.5

GASEOUS RADWASTE TREATMENT

2.5.1

LIMITING CONDITION FOR OPERATION

2.5.1.1

The appropriate portions of the Gaseous Radwaste Treatment System and the Ventilation Exhaust Treatment System shall be maintained and used to reduce the concentrations of radioactive materials in gaseous wastes prior to their discharge when the projected dose commitments due to the release of gaseous effluents to unrestricted areas (See Figure 2.2-1) when averaged over a calendar quarter would exceed:

- a. 2.5 mrad for gamma radiation and 5 mrad for beta radiation due to radionoble gases or,
- b. 3.75 mrem to any organ due to radioiodines, radioactive materials in particulate form, and radionuclides other than radionoble gases.

2.5.2

ACTION

2.5.2.1

With the Gaseous Radwaste Treatment System and/or the Ventilation Exhaust Treatment System not operable and with radioactive gaseous wastes being discharged without treatment while in excess of the limits of Specification 2.5.1.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.4(c) of Appendix A to the Operating License.

2.5.3

SURVEILLANCE REQUIREMENTS

2.5.3.1

Dose commitments due to gaseous releases shall be projected at least once per 31 days, in accordance with the ODCM to ensure the provisions of Specification 2.5.1.1 are satisfied.

2.5.4

BASES

2.5.4.1

The requirements that the appropriate portions of these systems be maintained and used when specified provides

2.5.4.1 (Continued)

reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable". This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

3.0 SOLID RADIOACTIVE WASTES

3.1 SOLIDIFICATION OF WET RADIOACTIVE WASTE

3.1.1 LIMITING CONDITION FOR OPERATION

3.1.1.1 Wet radioactive wastes shall be solidified in accordance with the Process Control Program (PCP) to ensure that the requirements of 10 CFR Part 20 and 10 CFR Part 71 are met prior to the shipment of radioactive wastes from the site.

3.1.2 ACTION

3.1.2.1 If any test specimen, as required by the PCP, fails to verify solidification, the solidification of the batch under test shall be suspended until such time as additional test specimens can be obtained, alternative solidification parameters can be determined in accordance with the PCP, and a subsequent test verifies solidification. The PCP shall be modified as required in accordance with Section 6 of Appendix A to the Operating License and solidification of the batch may then be resumed using alternative solidification parameters as determined by the PCP.

3.1.3 SURVEILLANCE REQUIREMENTS

3.1.3.1 The PCP shall be used to verify the solidification of at least one representative test specimen from at least every tenth batch of wet radioactive waste.

3.1.4 BASES

3.1.4.1 This specification ensures that the packaging of wet radioactive wastes meets the requirements of 10 CFR Part 20 and 10 CFR Part 71 prior to their shipment from the site for disposal.

4.0

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

4.1

MONITORING PROGRAM

4.1.1

LIMITING CONDITION FOR OPERATION

4.1.1.1

The Radiological Environmental Monitoring Program shall be conducted in accordance with the requirements specified in Tables 4.1-1, 4.1-2, and 4.1-3 and the ODCM. The ODCM shall include a map of all sampling locations keyed to a table giving distances and directions from the plant.

4.1.2

ACTION

4.1.2.1

With the radiological environmental monitoring program not being conducted as specified in Table 4.1-1, prepare and submit to the Commission, in the Annual Radiological Operating Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence. (Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, or to malfunction of automatic sampling equipment. If the latter, every effort shall be made to complete corrective action prior to the end of the next sampling period.)

4.1.2.2

With the level of radioactivity in an environmental sampling medium at one or more of the locations specified in the ODCM exceeding the limits of Table 4.1-2 when averaged over any calendar quarter sampling period, prepare and submit a report to the Commission in accordance with Specification 6.9.4(d) of Appendix A to the Operating License. This report is not required if the medium at the

4.1.2.2 (Continued)

particular location is sampled less frequently than twice per quarter or the measured level of radioactivity was not the result of plant effluents; however, in such an event the condition shall be reported and described in the Annual Radiological Environmental Operating Report.

4.1.2.3

When more than one of the radionuclides in Table 4.1-2 are detected in a sampling medium, a report must be submitted to the Commission in accordance with Specification 6.9.4(d) of Appendix A to the Operating License if:

$$\frac{\text{concentration (1)}}{\text{reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \dots \quad 1.0$$

This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Operating Report.

4.1.2.3

When licensed materials other than those in Table 4.1-2 are detected and are the result of plant effluents, a report must be submitted to the Commission in accordance with Specification 6.9.4(d) of Appendix A to the Operating License if the projected calendar year dose commitment to an individual is equal to or greater than the following limits:

1. 3 mrem to the total body or 10 mrem to any organ from non-airborne radionuclides.
2. 15 mrem to any organ from airborne radionuclides or radioparticulates.

If the measured level of radioactivity is not a result of plant effluents, this report is not required; however, the condition shall be reported and described in the Annual Radiological Environmental Operating Report.

4.1.3

SURVEILLANCE REQUIREMENTS

4.1.3.1

The radiological environmental monitoring samples shall be collected pursuant to Table 4.1-1 from the locations defined in the ODCM and shall be analyzed pursuant to the requirements of Tables 4.1-2 and 4.1-3.

4.1.4

BASES

4.1.4.1

The radiological monitoring program required by this specification provides measurements of radiation and of the radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures of individuals resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways.

Table 4.1-1 Radiological Environmental Monitoring Program

Exposure Pathway and/or Sample	Minimum Number of Sample Stations	Sampling and Collection Frequency	Type and Frequency of Analysis
<p>1. AIRBORNE</p> <p>a. Radioiodine and Particulates</p>	5	Continuous operation of sampler with sample collection as required by dust loading but at least once per 7 days.	<p>Radioiodine canister. Analyze at least once per 7 days for I-131.</p> <p>Particulate sampler. Analyze for gross beta radioactivity \geq 24 hours following filter change. Perform gamma isotopic analysis on each sample when gross beta activity is >10 times the mean of control sample. Perform gamma isotopic analysis on composite (by location) sample at least once per 92 days.</p>
2. DIRECT RADIATION	<p>8</p> <p>\geq 2 dosimeters or \geq 1 instrument for continuously measuring and recording dose rate at each location, (each TLD chip is considered a dosimeter)</p>	At least once per 92 days.	Gamma dose. At least once per 92 days.

Table 4.1-1 Radiological Environmental Monitoring Program (Continued)

Exposure Pathway and/or Sample	Minimum Number of Sample Stations	Sampling and Collection Frequency	Type and Frequency of Analysis
3. WATERBORNE			
a. Surface	2	Sample collected over a period of ≤ 31 days.	Gamma isotopic analysis of each composite sample by location. Tritium analysis of composite sample at least once per 92 days.
b. Ground	2	At least once per 92 days.	Gamma isotopic and tritium analyses of each sample.
c. Sediment from Shoreline	1	At least once per 184 days.	Gamma isotopic analysis of each sample.
4. INGESTION			
a. Milk	1	At least once per 31 days	Gamma isotopic and I-131 analysis of each sample.
b. Fish	1	At least once per 184 days. One sample of each of the following: 1. Free Swimmers 2. Bottom Feeders	Gamma isotopic analysis on edible portions.

Table 4.1-1 Radiological Environmental Monitoring Program (Continued)

Exposure Pathway and/or Sample	Minimum Number of Sample Stations	Sampling and Collection Frequency	Type and Frequency of Analysis
c. Food Products	1	At time of harvest. Green leafy vegetables	Gamma isotopic analysis on edible portions.
	1	At time of harvest. One sample of broad leaf vegetation.	I-131 analysis

Table 4.1-2 Reporting Levels For Radioactivity Concentrations In Environmental Samples

Radionuclide	Water (pCi/l)	Airborne (pCi/m ³)	Fish (pCi/Kg,wet)	Milk (pCi/l)	Food Products (pCi/Kg,wet)
H-3	3E+04				
Mn-54	1E+03		3E+04		
Fe-59	4E+02		1E+04		
Co-58	1E+03		3E+04		
Co-60	3E+02		1E+04		
Zn-65	3E+02		2E+04		
Zr-Nb-95	4E+02				
I-131	2E+00	9E-01		3E+00	1E+02
Cs-134	3E+01	1E+01	1E+03	6E+01	1E+03
Cs-137	5E+01	2E+01	2E+03	7E+01	2E+03
Ba-La-140	2E+02			3E+02	

Table 4.1-3 Maximum Values For The Lower Limits Of Detection (LLD)

Analysis	Water (pCi/l)	Airborne (pCi/m ³)	Fish (pCi/kg,wet)	Milk (pCi/l)	Food Products (pCi/kg,wet)
gross beta	4E+00	1E-02			
³ H	2E+03				
⁵⁴ Mn	1.5E+01		1.3E+02		
⁵⁹ Fe	3E+01		2.6E+02		
^{58,60} Co	1.5E+01		1.3E+02		
⁶⁵ Zn	3.E+01		2.6E+02		
⁹⁵ Zr-Nb	1.5E+01				
¹³¹ I	1.E+00	7E-02		1E+00	6E+01
^{134,137} Cs	1.5E+01	1E-02	1.3E+02	1.5E+01	8E+01
¹⁴⁰ Ba-La	1.5E+01			1.5E+01	

4.2

LAND USE CENSUS

4.2.1

LIMITING CONDITION FOR OPERATION

4.2.1.1

A land use census shall be conducted and shall identify the location of the nearest milk animal, the nearest residence and the nearest garden* of greater than 500 square feet producing fresh leafy vegetables in each of the 16 meteorological sectors within a distance of five miles.

4.2.2

ACTION

4.2.2.1

With the land use census identifying a location which yields a calculated dose commitment for a specific exposure pathway greater than that at a location from which samples are currently being obtained, add the new location to the ODCM (as required by Specification 4.1.1.1) within 30 days, if possible. The sampling location having the lowest calculated dose commitment for the same exposure pathway may be deleted from the monitoring after October 31 of the year in which the land use census was conducted.

4.2.3

SURVEILLANCE REQUIREMENTS

4.2.3.1

The land use census shall be conducted at least once per 12 months between the dates of June 1 and October 1, by door-to-door survey, aerial survey, or by consulting local agriculture authorities.

4.2.4

BASES

4.2.4.1

This specification is provided to ensure that changes in the use of unrestricted areas are identified and that modifications to the monitoring program are made if required by the results of the census. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting

* Broad leaf vegetation sampling may be performed at the site boundary in the direction sector with the highest D/Q in lieu of the garden census.

4.2.4.1 (Continued)

the census to gardens of greater than 500 square feet provides assurance that significant exposure pathways via leafy vegetables will be identified and monitored since a garden of this size is the minimum required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regulatory Guide 1.109, Revision 1 for consumption by a child. To determine this minimum garden size, the following assumptions were used: 1) that 20% of the garden was used for growing broad leaf vegetation (i.e. similar to lettuce and cabbage), and 2) a vegetation yield of 2 kg/square meter.

5.0 RADIOACTIVE EFFLUENTS FROM URANIUM FUEL CYCLE SOURCES

5.1 COMPLIANCE WITH 40 CFR 190

5.1.1 LIMITING CONDITION FOR OPERATION

5.1.1.1 The dose commitment to any member of the general public, due to releases of licensed materials and radiation, from uranium fuel cycle sources shall be limited to less than or equal to 25 mrem to the total body or any organ (except the thyroid, which shall be limited to less than or equal to 75 mrem) over 12 consecutive months. This specification is applicable to Robinson Unit 2 only for the area within a fifty mile radius around the Robinson Plant.

5.1.2 ACTION

5.1.2.1 With the calculated dose commitment from the release of licensed materials in liquid or gaseous effluents exceeding any of the limits of Specification 5.1.1.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.4(e) of Appendix A to the Operating License. Submittal of this report is considered a timely request, and a variance is granted until Commission action on the request is complete. This variance only relates to the limits of 40CFR190, and does not apply in any way to the requirements for dose limitation of 10CFR20, as addressed in other sections of this Appendix (Appendix B to the Operating License).

5.1.3 SURVEILLANCE REQUIREMENTS

5.1.3.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with the Surveillance Requirements for Specifications 1.3.1.1, 2.3.1.1, or 2.4.1.1 of this Appendix (Appendix B to the Operating License). For the purposes of this Surveillance Requirement, it may be assumed

5.1.3.1 (Continued)

that the dose commitment to a member of the public from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. In addition, an individual is not considered a member of the public during any period in which he/she is engaged in carrying out any operation which is part of the nuclear fuel cycle.

5.1.4

BASES

5.1.4.1

This specification is provided to meet the dose limitations of 40CFR190. The specification requires the preparation and submittal of a Special Report whenever the calculated doses from plant radioactive effluents exceed the limits of 40CFR190. The Special Report will describe a course of action which should result in the limitation of dose to a member of the public for 12 consecutive months to within the 40CFR190 limits.

ENCLOSURE 2

RESPONSES TO NRC COMMENTS
OF JUNE 2, 1980

Response to NRC Comments on the first draft of the H. B. Robinson Unit #2 Radiological Effluent Technical Specifications (RETS).

NRC Comment #1:

We have reviewed the subject radiological effluent Technical Specifications as submitted by the licensee, and have marked them up to reflect a document which is acceptable to us. We have, in a number of cases, changed the licensee's wording, content, and table format to make them conform to the contents of NUREG-0472, Rev. 2. Specific changes made may require subsequent discussion.

Response to Comment #1:

Our present Technical Specifications differ significantly in format and expression from the standardized version of Radiological Effluent Technical Specifications (RETS) presented in NUREG-0472, Rev. 2. In an effort to reduce confusion by our operating staff, we have compiled the majority of the RETS as Appendix B to our Operating License which is intended to act as a complete revision of our present Appendix B. In a number of cases, we have deviated from the wording, content, and table format of NUREG-0472. Many of the changes in wording and table format were made to promote ease of interpretation for our operating staff. Significant differences in content exist because we are submitting only those specifications that we can meet with our present facility design and operating equipment. In certain cases Carolina Power and Light Company is proposing a series of commitments to perform appropriate modifications to the existing Robinson Unit #2 facility and incorporate appropriate Technical Specifications at a future date to implement requirements of NUREG-0472 that we presently cannot meet. These commitments are discussed in greater detail throughout this response and are summarized at the end of this response.

NRC Comment #2:

In your specification 6.5.1.7, add the following responsibilities:

- k. Review of every unplanned onsite release of radioactive material to the environs including the preparation and forwarding of reports covering evaluation, recommendations and disposition of the corrective action to prevent recurrence to the (Superintendent of Power Plants) and to the (Company Nuclear Review and Audit Group).
- l. Review of changes to the PROCESS CONTROL PROGRAM, OFFSITE DOSE CALCULATIONAL MANUAL, and radwaste treatment systems.

Response to Comment #2:

This change has been incorporated as requested.

NRC Comment #3:

Delete your specification 6.9.4 and incorporate its contents as follows:

- a. Move item (1) to Specification 6.9.2.6 as item (5), as noted in markup. Also add item (6) as noted in markup.
- b. Move item (2) to Specification 6.9.2.a as item (10), as noted in markup. Also add item (11) as noted in markup.
- c. Items (3) and (4) should be included in the applicable Specifications, as noted in markup.

Response to Comment #3:

We are still proposing to incorporate a Specification 6.9.4 into Section 6.0 (Administrative Controls) of Appendix A to our Operating License.

The format of our present Technical Specifications references Section 6.0 for the reporting requirements associated with the body of the operating specifications. Since our operating staff is familiar with this format, we wish to preserve it to the greatest extent possible in our proposed Appendix B; therefore, all the special reports required by the RETS have

been incorporated into Section 6.0 of Appendix A to our Operating License. Specification 6.9.4 was developed because these special reports did not fit into any of our existing reporting categories.

NRC Comment #4:

In Specification 6.14, modify contents as shown in markup.

Response to Comment #4:

Most of the wording requested by your staff has been incorporated into Specification 6.14 for Licensee initiated changes to the ODCM. We felt the phrase, "Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information", was adequate to describe how the change is to be incorporated into the Monthly Operating Report. This is why the description of the "change package" has not been incorporated in our submission.

NRC Comment #5:

Add Specification 6.16 for PROCESS CONTROL PROGRAM (PCP) and Specification 6.17 for MAJOR CHANGES TO RADIOACTIVE WASTE TREATMENT SYSTEMS, as noted in markup. Also see Comment #20.

Response to Comment #5:

A Specification 6.15 for licensee initiated changes to the PCP has been added. We have changed the mechanism for reporting changes to the PCP to the Commission from the Semi-annual Radioactive Effluent Release Report to the Monthly Operating Report. We believe the ODCM and PCP are similar license documents in concept and there appears to be no reason for reporting changes to them in different reports. We believe the Monthly Operating Reports is the cleanest way to handle these reporting requirements.

We have not added a specification which would require us to report major changes to radioactive waste treatment systems. We believe such a

specification is redundant to the reporting requirements already prescribed by 10CFR50.59 (b).

NRC Comment #6:

In your Specification 6.10.2, add the following item:

1. Records of analyses required by the radiological environmental monitoring program.

Response to Comment #6:

The requested addition has been made to the specification.

NRC Comment #7:

In your Specification 1.1, Table 1.1-1, modify table as shown in markup and indicate the following:

- a. Capability for monitoring or sampling the Turbine Building (Floor Drains) Sumps Effluent Line.
- b. Capability for monitoring activity in the Service Water System Effluent Line.
- c. Capability for monitoring activity in the Component Cooling Water System. Per your FSAR, this is RMS-17.
- d. • Capability for measuring flow rate in the Discharge Canal.
- e. Capability for indicating level in any outdoor tanks containing potentially radioactive fluids.

Response to Comment #7:

Table 1.1-1 has been modified to include all of our existing process monitors for various effluent pathways. We have changed the format of this table for clarity to our operating staff and have modified the action statements to include a reporting requirement that we believe is appropriate to the intent of Specification 1.1. Our response to your staff's specific concerns are as follows:

- a. We do not have a turbine building and all of the drainage from the secondary coolant system goes directly to our storm drain system. The storm drains all empty into two redundant settling ponds, the runoff from which goes to Black Creek just below the Robinson Impoundment Dam. We presently do not have any monitoring/automatic sampling capabilities for this potential effluent pathway. Carolina Power and Light Company will install an appropriate monitoring/sampling system for this potential effluent pathway and will submit changes to Tables 1.1-1 and 1.1-2 as appropriate by December 31, 1982.
- b. We have a process monitor (RMS-16) which monitors the service water that comes from the HVH fan coolers in the Containment Vessel. This monitor has been included in Table 1.1-1 as requested.
- c. We have not included our Component Cooling Water Monitor (RMS-17) because this is a closed loop system and therefore would be inappropriately placed in the RETS. The calibration and operability requirements for this monitor already exist in our current Technical Specifications (Appendix A to our Operating License).
- d. We presently do not have any capability for measuring the flow rate in the Discharge Canal. Our present Technical Specifications (Appendix A to our Operating License) require that at least one Circulating Water Pump be in operation during the release of radioactive effluents. We presently utilize pump curves to estimate dilution flow in the Discharge Canal.
- e. The level indicating devices for the appropriate outdoor tanks have been included in Table 1.1-1 as requested.

NRC Comment #8:

In your Specification 1.1, Table 1.1-2, modify table as shown in markup. Additional instruments shown in markup added to concur with markup of Table 1.1-1 and corresponding Comment #7. Note that CHANNEL FUNCTIONAL TEST frequency for flow rate measurement devices is quarterly (Q).

Response to Comment #8:

Table 1.1-2 has been modified to be consistent with Table 1.1-1. The frequency for the channel functional test for the sample flow rate measuring devices for RMS-19 has been specified as "not applicable" because these devices are rotameters which only give local indication of flow. We fail to see where the channel functional test can be applied to such devices.

NRC Comment #9:

Figures 1.1-1 and 2.1-1 are not acceptable. Provide maps clearly defining the site boundary and restricted area boundary, and in accordance with the instructions in the markups.

Response to Comment #9:

These figures have been replaced in accordance with staff's comments.

NRC Comment #10:

In your Specification 1.2, Table 1.2-1, modify as shown in markup. Note that analyses for Gross Alpha, P-32 and Fe-55 should be included.

Response to Comment #10:

Table 1.2-1 has been developed in accordance with our present facility design and operating equipment. The gross alpha analysis requirement was not included in the table because this analysis is totally inconsistent with the RETS (i.e. one cannot perform dose calculation utilizing gross radioactivity measurements).

We presently have no capability for obtaining continuous composite samples from our Steam Generator Blowdown; therefore, we have substituted a grab sampling regimen which closely reflects our current sampling practices for this pathway. Carolina Power and Light Company will install an appropriate continuous composite sampling system for this pathway and will submit changes to Tables 1.1-1, 1.1-2, and 1.2-1 as appropriate by December 31, 1982. We believe that this date is reasonable because this commitment will require extensive modification of our current Steam Generator Blowdown System.

The requirement for Fe-55 analyses has not been included because we presently do not have the counting instrumentation necessary to perform this analysis accurately. Carolina Power and Light Company will procure the necessary instrumentation for this analysis and will submit a change to Table 1.2-1 as appropriate by December 31, 1981.

NRC Comment #11:

Include a specification for liquid waste treatment system operability; i.e., Specification 1.4 in markup.

Response to Comment #11:

Such a specification has been included in our submission; however, its wording and content are significantly different from that suggested by NUREG-0472. We have dispensed with the "Operability" wording because establishing operability of an entire system is simply too nebulous of a concept and would ultimately lead to gross misinterpretations on the behalf of our operating staff as well as the NRC's Inspection and Enforcement Staff. Instead, we have borrowed the wording of 10CFR50.36(a) which states that such systems will be "maintained and used". The conditions under which this treatment system must be used have been

specified as the quarterly equivalent of the annual dose design objectives set forth in Appendix I to 10CFR50. This has been done because it is our position that Technical Specifications are only appropriate for setting limiting or minimum conditions for operation that are consistent with facility design capabilities. These facility design capabilities are clearly expressed in Appendix I to 10CFR50; whereas, the requirements for ALARA are expressed only in philosophical terms rather than clearly defined limits. Carolina Power and Light Company is deeply (and formally) committed to the ALARA principle and we believe that this commitment is the proper means for maintaining effluent releases ALARA.

NRC Comment #12:

Include a specification for outdoor liquid holdup tanks' curie content; i.e., Specification 1.5 in markup.

Response to Comment #12:

We have examined the requirements of this specification and have determined that our present facility design and operating capabilities cannot meet the activity limits that would be necessary to ensure that the basis of the specification are satisfied. Carolina Power and Light Company will develop a means for implementing such a specification and will submit an appropriate specification to be included in Appendix B of our Operating License by December 31, 1982.

NRC Comment #13:

In your Specification 2.1, Table 2.1-1, modify table as shown in markup and indicate the following:

- a. Capability for monitoring activity and flow rate of effluents from the waste gas holdup system, and provisions for alarm and automatic termination of release.

- b. Capability for monitoring H_2/O_2 in the waste gas holdup system, with alarm and control functions. Also see Comment #18.
- c. Capability for monitoring activity in containment purge system effluents, and provisions for alarm and automatic termination of release.
- d. Capability for monitoring activity in fuel storage building area effluents.
- e. Capability for monitoring activity in steam generator blowdown vent system effluents.

Response to Comment #13:

Table 2.1-1 has been modified to include all our existing process monitors for various effluent pathways. We have changed the format of this table for clarity to our operating staff and have modified the action statements to include a reporting requirement that we believe is appropriate to the intent of Specification 2.1. Our response to your staff's specific concerns are as follows:

- a. The requested capabilities have been incorporated into Table 2.1-1.
- b. We presently do not have the capability for continuously monitoring our Waste Gas Decay Tanks for H_2/O_2 ; however, we do have a single system that monitors several tanks and systems including the Waste Gas Decay Tank in service for H_2/O_2 on a rotating basis. Carolina Power and Light Company will install the necessary equipment which will provide redundant continuous monitoring of the Waste Gas Decay Tanks for explosive mixture and will submit an appropriate specification to be included in Appendix B to our Operating License by December 31, 1982. We believe this date is reasonable because this commitment will require extensive modification of our Waste Gas Holdup System and because we do have some capability for monitoring the Waste Gas Decay Tanks for explosive mixtures in the interim.

- c. The requested capabilities have been incorporated into Table 2.1-1.
- d. The requested capabilities have been incorporated into Table 2.1-1.
- e. We presently do not have the capability for monitoring our Steam Generator Blowdown Vent. A heat recovery train has been added to our original Steam Generator Blowdown System which prevents the blowdown from flashing to steam whenever the plant is operating above 30% power; therefore, effluents via the Steam Generator Blowdown Vent are released very infrequently. The Steam Generator Blowdown Monitor (RMS-19) is a liquid monitor which would terminate the blowdown to all three Steam Generators in the event of excessive primary to secondary leakage. At present, we utilize calculative and/or grab sample methods to account for the effluents released from this vent when we are operating below 30% power. In view of our operating system, we do not believe that a monitor for this vent is necessary.

NRC Comment #14:

In your Specification 2.1, Table 2.1-2, modify table as shown in markup. Additional instruments shown in markup added to concur with markup Table 2.1-1 and corresponding Comment #13. Note required CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST frequencies.

Response to Comment #14:

Table 2.1-2 has been modified to be consistent with Table 2.1-1. The frequency for the channel functional test for certain of the flow measuring devices have been specified as "not applicable" because these devices are rotameters which only give local indication of flow. We fail to see where the channel functional test can be applied to such devices.

NRC Comment #15:

In your Specification 2.2, Table 2.2-1, modify table as shown in markup.
Note required LLD values and sampling points.

Response to Comment #15:

Table 2.2-1 has been developed in accordance with our present monitoring and sampling capabilities. The Fuel Handling Building Vents and the Steam Generator Blowdown Vent have not been included in this table because we do not consider these vents to be normal release pathways.

NRC Comment #16:

Provide separate specifications for:

- a. 10 CFR 50 dose limitations due to noble gases; i.e., markup Specification 2.3; and
- b. 10 CFR 50 dose limitations due to radioiodines, radioactive materials in particulate form, and radionuclides other than noble gases; i.e., markup Specification 2.4.

Response to Comment #16:

These specifications have been incorporated as requested.

NRC Comment #17:

Include a specification for gaseous radwaste treatment system operability; i.e. markup Specification 2.5.

Response to Comment #17:

Please see our response to Comment #11 as it applies equally as well to this comment.

NRC Comment #18:

Based on available information it appears that a cycling gas analyzer is used to monitor H_2/O_2 concentrations in your waste gas holdup system. It is our position that continuous monitoring is required. Provide a

specification for explosive gas mixtures in your waste gas holdup system; i.e., markup Specification 2.6. How do you intend to meet the requirements of Surveillance Requirement 2.6.3.1?

Response to Comment #18:

Please see our response to Comment #13 part b as it applies equally as well to this comment.

NRC Comment #19:

Include a specification for gas storage tank curie content; i.e., Specification 2.7 in markup.

Response to Comment #19:

Having reviewed the proposed specification, we do not believe we can implement the surveillance requirements for all modes of operation (most notably reactor shutdowns). Carolina Power and Light Company will develop the means for limiting the activity in Waste Gas Decay Tanks to comply with the basis of the proposed specification and will submit an appropriate specification to be included in Appendix B of our Operating License by December 31, 1982. This time frame is desired because we intend to fulfill this commitment in conjunction with the commitment to install explosive mixture monitors on the Waste Gas Holdup System.

NRC Comment #20:

Provide a specification for solid radwaste solidification system operability, and provide a PROCESS CONTROL PROGRAM (PCP) for our review. See markup Specification 2A.1.

Response to Comment #20:

We solidify waste using an manual mixing method; therefore, our solidification specification does not address system operability because it is not applicable. We are providing a PCP as requested.

NRC Comment #21:

Modify Specification 3.1 as shown in markup, in accordance with NUREG-0472.

Response to Comment #21:

We have resubmitted this specification as Specification 5.1 and have modified the wording and format to promote clarity to our operating staff.

NRC Comment #22:

In Section 1.0, DEFINITIONS, modify as follows:

- a. Item 1.12 - move system description information to the ODCM.
- b. Delete previous item 1.16. Specific system description information should be moved to the ODCM.
- c. Item 1.13 - move system description details, including Table 1.13-1 to the ODCM.

Response to Comment #22:

The modifications to the Definitions section have been made as requested. We have modified the frequency notations of Table 4.1-1 in our present Technical Specifications (Appendix A to our Operating License) to include frequency notations applicable to our proposed Appendix B.

NRC Comment #23:

In Specifications 1.2 and 2.2, include ACTION Specifications 1.2.2.2 and 2.2.2.2 as noted in markup, to provide remedial direction in the event that the associated Limiting Condition for Operation and/or its associated ACTION requirement cannot be satisfied.

Response to Comment #23:

The action statements to Specification 1.2 and 2.2 have been included as requested.

Summary of Carolina Power and Light Company Commitments With
Regards To The Radiological Effluent Technical Specifications

- 1) Install an appropriate monitoring/sampling system on the flyash settling ponds for the purpose of monitoring effluents from the secondary coolant system of Robinson Unit #2. Action will be completed and appropriate revisions to Technical Specifications will be submitted by December 31, 1982.
- 2) Install an appropriate continuous composite sampling system on the Steam Generator Blowdown System. Action will be completed and appropriate revisions to Technical Specifications will be submitted by December 31, 1982.
- 3) Procure counting instrumentation and develop procedures necessary to conduct Fe-55 analyses on liquid effluents. Action will be completed and appropriate revisions to Technical Specifications will be submitted by December 31, 1981.
- 4) Develop a means for implementing the activity limitation specification for all outdoor tanks which have the potential for containing radioactive liquids. Action will be completed and appropriate revisions to Technical Specifications will be submitted by December 31, 1982.
- 5) Install redundant continuous explosive mixture monitoring capability on Waste Gas Decay Tanks. Action will be completed and appropriate revisions to Technical Specifications will be submitted by December 31, 1982.
- 6) Develop a means for implementing the activity limitation specification for the Waste Gas Decay Tanks. Action will be completed and appropriate revisions to Technical Specifications will be submitted by December 31, 1982.