DCS M5-016

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Docket Nos. 50-266
and 50-301

Mr. C. W. Fay, Vice President
Nuclear Power Department
Wisconsin Electric Power Company
231 West Michigan Street, Room 308
Milwaukee, Wisconsin 53201

Dear Mr. Fay:

SUBJECT: RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS (RETS)
FOR POINT BEACH UNIT NOS. 1 AND 2

We have completed our initial review of your October 7, 1983 submittal for the subject item. Comments regarding your submittal are contained in the enclosure to this letter. These have been discussed briefly with Mr. Krause of your staff.

These comments have been developed by our contractor, EG&G of Idaho and NRC staff members after reviewing your October 7, 1983 submittal with regard to our latest guidance concerning RETS. In some cases the discrepancies listed may be simply resolved. For example, if a particular action statement or definition included in our model RETS guidance was not addressed in your submittal because it is already contained in your existing Technical Specifications, that would be an example of an acceptable resolution of that discrepancy.

It is our intention to have you review our comments and be prepared to discuss them at a subsequent meeting with the NRC staff. We intend to have members of the NRC staff with decision-making authority present at the meeting and request that you have the appropriate members of your staff available also. Based on the results of the meeting, you may be requested to amend your previous submittal. We would like to tentatively schedule the meeting around mid-August at the NRC Headquarters in Bethesda, Maryland. If this meets with your approval, please contact the NRC Project Manager, Timothy G. Colburn, (301) 492-4709, to arrange the specific details of the meeting (date, time, location, etc.).

No formal submittal is required prior to the meeting but we request that you be prepared to discuss each of the discrepancies listed in the enclosure to this letter. If you have any questions, please contact T. Colburn.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore OMB clearance is not required under P.L. 96-511.

Sincerely,

Original Signed by J. R. Miller

James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosure: October 7, 1983
RETS Submittal Comments,
Point Beach 1 and 2

cc w/enclosure:
See next page

ORB#3:DL	ORB#3:DL	ORB#3:DL
PMKreutzer	TColburn/pn	JRMiller
7/ /84	7/ /84	7/ /84

Wisconsin Electric Power Company

cc:
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ENCLOSURE

OCTOBER 7, 1983 RETS SUBMITTAL COMMENTS

POINT BEACH UNITS 1 AND 2

POINT BEACH UNITS 1 AND 2		
Draft 7" of NUREG-0472, Rev. 3, September 1982	Comments	Licensee RETS Submittal

DRAFT #7"

NUREG-0472
REVISION 3

STANDARD RADIOLOGICAL EFFLUENT TECHNICAL
SPECIFICATIONS FOR PRESSURIZED WATER REACTORS
SEPTEMBER 1982

This draft document is intended for contractor guidance in reviewing RETS proposals for Operating Reactors.

PROPOSED
RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS
POINT BEACH NUCLEAR PLANT

September 30, 1983

Draft 7" of NUREG-0472, Rev. 3, September 1982	Comments	Licensee RETS Submittal

1.0 DEFINITIONS (Continued)

GASEOUS RADWASTE TREATMENT SYSTEM

1.6 A GASEOUS RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for decay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

MEMBER(S) OF THE PUBLIC

1.7 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the utility, its contractors or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational or other purposes not associated with the plant.

OFFSITE DOSE CALCULATION MANUAL (ODCM)

1.8 The OFFSITE DOSE CALCULATION MANUAL shall contain the current methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm/trip setpoints, and in the conduct of the environmental radiological monitoring program.

2. OPERABLE - OPERABILITY

1.9 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

3. OPERATIONAL MODE - MODE

1.10 An OPERATIONAL MODE (i.e., MODE) shall correspond to any one inclusive combination of core reactivity condition, power level, and average reactor coolant temperature specified in Table 1.1.

PROCESS CONTROL PROGRAM (PCP)

1.11 The PROCESS CONTROL PROGRAM shall contain the current formula, sampling, analyses, tests, and determinations to be made to ensure that the processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Part 20, 10 CFR Part 71 and Federal and State regulations and other requirements governing the disposal of the radioactive waste.

Discrepancy

1. The following definitions are not included:

   a. Members of the Public
   b. Operable - Operability
   c. Operational Mode - Mode

Licensee Justification

1. None.

Reviewer's Comments

1a. The submittal does not quote doses and therefore does not use this definition. The submittal quotes curies released. The ODCM states the curies released are equivalent to the annual dose objectives to any individual in an unrestricted area.

b&c. The definitions were not included in Revision 2 of the model RETS which was the version used at the plant visit.

Draft 7* of NUREG-0472, Rev. 3, September 1982	Comments	Licensee RETS Submittal
1.0 DEFINITIONS (Continued) PURGE - PURGING 1.12 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. RATED THERMAL POWER 1 o 1.13 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of ___ MWt. SITE BOUNDARY 1.14 The SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee. SOLIDIFICATION 1.15 SOLIDIFICATION shall be the conversion of wet wastes into a form that meets shipping and burial ground requirements. SOURCE CHECK 1.16 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a source of increased radioactivity. 1 b THERMAL POWER 1.17 THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant. 1 c UNRESTRICTED AREA 1.18 An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, or any area within the SITE BOUNDARY used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes.	Discrepancy 1. The following definitions are not included: a. Rated Thermal Power b. Thermal Power c. Unrestricted Area Licensee's Justification 1. None. Reviewer's Comment 1a,b. These definitions were not included in Rev. 2 of the model RETS which was used at the plant visit. 1c. Since the ODCM uses this term, then the definition should be included.	

Draft 7 of NUREG-0472, Rev. 3, September 1982

INSTRUMENTATION

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.10 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3-12 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

APPLICABILITY: At all times.

ACTION

a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, without delay suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-12. Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

c. The provisions of Specifications 3.0.3, 3.0.4, and 6.9.1.9.b are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.10 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 4.3-12.

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Comments

Discrepancies

1. The LCO statement does not state the setpoints will be set to ensure the 10 CFR Part 20 concentrations are not exceeded.
2. Specifications 15.3.9.B.1 and 15.3.9.B.4 allow an annual average concentration and a maximum release rate for any eight hour period shall not exceed ten times the yearly average limit.
3. Specification 15.3.9.A.2 does not state best efforts will be made to return the instrument to operable status within 30 days or report in the next Semiannual Report.

Licensee's Justifications

1. None.
2. None.
3. None.

Reviewer's Comments

1. The ODCM states the alert setpoint is set at two times the established steady-state reading. The alarm/trip setpoint is set at equal to or less than five times the applicable maximum permissible concentrations contained in 10 CFR 20 Appendix B, Table 2.
2. Specifications 15.3.9.B.1 and 15.3.9.B.4 are existing approved Specifications. This may be a major problem that requires NRC attention.

   (As written, Specification 15.3.9.B.4 appears to void the requirement for Action a of the model RETS.)
3. This requirement was not discussed at the plant visit since it was not a Rev. 2 requirement.

Licensee RETS Submittal

15.3.9 A. Radioactive Effluent Monitoring Instrumentation

1) The radioactive effluent monitoring instrumentation channels listed in Table 15.3.9-1 shall be operable and their trip setpoints shall be determined utilizing the methodology given in the ODCM.

2) With less than the minimum number of radioactive effluent monitoring channels operable, the action statement listed in Table 15.3.9-1 opposite the channel shall be taken.

15.3.9-1

15.3.9.B

1) The release rate of radioactive liquid effluents shall be such that the annual average concentration of radionuclides in the circulating water discharge does not exceed the limits specified in 10 CFR 20, Appendix B, for unrestricted areas.

4) The maximum release rate for any eight hour period shall not exceed ten times the yearly average limit.

15.3.9-2

Draft 7" of NUREG-0472, Rev. 3, September 1982

TABLE 3.3-12

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

	INSTRUMENT	MINIMUM CHANNELS OPERABLE	ACTION
1.	GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE		
a.	Liquid Radwaste Effluent Line	(1)	28
b.	Steam Generator Blowdown Effluent Line	(1)	29
2.	GROSS BETA OR GAMMA RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE		
a.	Service Water System Effluent Line	(1)	30
b.	Component Cooling Water System Effluent Line	(1)	30
c.	Turbine Building (Floor Drains) Sumps Effluent Line	(1)	30
3.	CONTINUOUS COMPOSITE SAMPLERS AND SAMPLER FLOW MONITOR		
a.	Steam Generator Blowdown Effluent Line	(1)	29
b.	Turbine Building Sumps Effluent Line	(1)	30
4.	FLOW RATE MEASUREMENT DEVICES		
a.	Liquid Radwaste Effluent Line	(1)	31
b.	Steam Generator Blowdown Effluent Line	(1)	31
c.	Discharge Canal	(1)	31
d.	Turbine Building Sumps Effluent Line	(1)	31

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3/4 3-72

9/3/82

Comments

Discrepancies

1. The discharge line flow rate measuring device for the waste distillate tank is omitted from this submittal.

2. Flow rate measuring devices for discharges from the retention pond are not included.

Licensee's Justification

1. None.

2. None.

Reviewer's Comments

1. This device was in the previous submittal. If the device is reinserted, then adequate surveillance checks must also be included. The Licensee must state their method for quantifying the total discharge.

2. Either the devices should be included or the Licensee should state pump curves are used with motor-pump run times to calculate the total release.

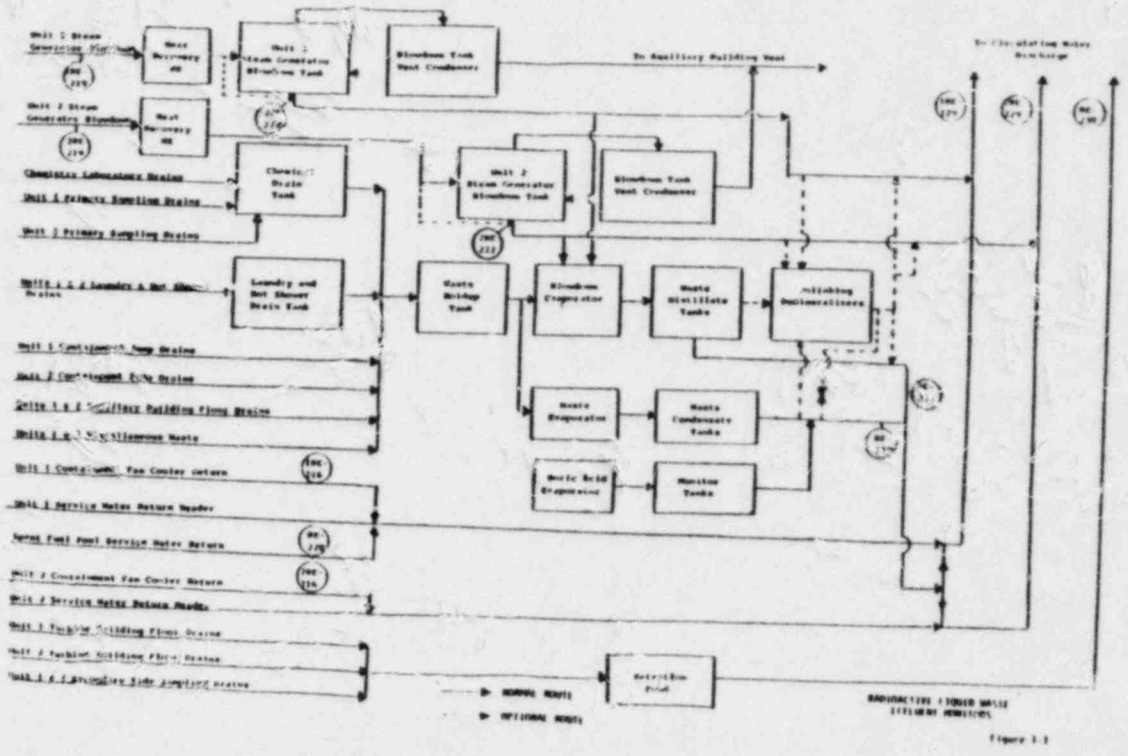
Licensee RETS Submittal

TABLE 11.3.9-1

Page 1 of 4

RADIOACTIVE EFFLUENT MONITORING INSTRUMENTATION

Instrument	Minimum Channels Operable	Action
a. Radioactive Liquid Effluent Monitoring		
1. Liquid Radwaste System		
a. RE-223, Waste Distillate Tank Discharge	1	Note 1
b. RE-218, Waste Condensate Tank Discharge	1	Note 1
c. Waste Condensate Tank Discharge Flow Meter	1	Note 4
2. Steam Generator Blowdown System		
a. RE-219, Unit 1 Steam Generator Blowdown Liquid Discharge (1 per unit) or RE-222, Blowdown Tank Monitor (1 per unit)	1	Note 2
b. Steam Generator Blowdown Flow Indicators (1 per steam generator)	1	Note 4
3. Service Water System		
a. RE-229, Service Water Discharge (1 per unit)	1	Note 3
b. RE-216, Containment Cooling Fan Service Water Return (1 per unit)	1	Note 3
c. RE-220, Spent Fuel Pool Heat Exchanger Service Water Outlet	1	Note 3
4. Retention Pond Discharge System		
a. RE-230, Retention Pond Discharge	1	Note 3
b. Retention Pond Discharge Composite Sampler	1	Note 3
b. Radioactive Gaseous Effluent Monitoring		
1. Gas Decay Tank System		
a. RE-214, Noble Gas (Auxiliary Building Vent Stack)	1	Note 1
b. Gas Decay Tank Flow Measuring Device	1	Note 4



POINT BEACH LIQUID RADWASTE EFFLUENT SYSTEM

TABLE 4.3-12 (Continued)

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
4. FLOW RATE MEASUREMENT DEVICES				
a. Liquid Radwaste Effluent Line	D(4)	N.A.	R	Q
b. Steam Generator Blowdown Effluent Line	D(4)	N.A.	R	Q
c. Discharge Canal	D(4)	N.A.	R	Q
d. Turbine Building Sumps Effluent Line	D(4)	N.A.	R	Q
5. RADIOACTIVITY RECORDERS*				
a. Liquid Radwaste Effluent Line	D	N.A.	R	Q
b. Steam Generator Blowdown Effluent Line	D	N.A.	R	Q
6. TANK LEVEL INDICATING DEVICES*				
a. _____	W**	N.A.	R	Q
b. _____	W**	N.A.	R	Q
c. _____	W**	N.A.	R	Q
d. _____	W**	N.A.	R	Q
e. _____	W**	N.A.	R	Q

*See footnotes on page 3/4 3-71.

**During liquid additions to the tank.

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9/3/82

Comments

Discrepancies

1. Item 4.b in Table 15.4.17-1 is inconsistent with Item 4.b of Table 15.3.9-1.
2. Waste distillate tank flow rate measuring device surveillance checks are not included.
3. A weekly channel check is proposed for the steam generator blowdown flow indicator instead of the required daily check.
4. The discharge canal pumps are calibrated quarterly; however, the frequency is not identified in the table.

Licensee's Justifications

None.

Reviewer's Comments

1. The surveillance checks for the retention pond composite sampler identified as Item 4b of Table 15.3.9-1 are not included in the Surveillance Table 15.4.17-1.

   Also the retention pond sump pumps identified as Item 4.b of Table 15.4.17-1 are not included in the Instrumentation Table 15.3.9-1.
2. See comment on page 3-72.
3. Although the blowdown releases to the service water discharge header before release to the discharge canal, a daily channel check on the flow indicator should be required. There are no flow indicators on the service water discharge lines; therefore, the steam generator flow devices would be required to quantify the releases.
4. At the plant visit we were informed the pumps are calibrated quarterly.

Licensee RETS Submittal

TABLE 15.4.17-1

RADIOACTIVE EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Channel Description	Channel Check	Calibrate	Functional Test	Source Check	Remarks
a. Radioactive Liquid Effluent Monitoring					
1. Liquid Radwaste System					
a. RE-223, Waste Distillate Tank Discharge	D	A	Q	P	
b. RE-218, Waste Condensate Tank Discharge	D	A	Q	P	
c. Waste Condensate Tank Discharge Flow Meter	P/D	A	NA	NA	
2. Steam Generator Blowdown System					
a. RE-219, Steam Generator/Blowdown Liquid Discharge (1 per unit)	D	A	Q	M	
b. RE-222, Blowdown Tank Monitor (1 per unit)	D	A	Q	M	
c. Steam Generator Blowdown Flow Indicator (1 per steam generator)	W	A	NA	NA	
3. Service Water System					
a. RE-229, Service Water Discharge (1 per unit)	D	A	Q	M	
b. RE-216, Containment Cooling Fan Service Water Return (1 per unit)	D	A	Q	M	
c. RE-220, Spent Fuel Pool Heat Exchanger Service Water Outlet	D	A	Q	M	
4. Retention Pond Discharge System					
a. RE-230, Retention Pond Discharge	D	A	Q	M	
b. Retention Pond Discharge Effluent Sump Pumps	W	A	NA	NA	

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TABLE 4.3-12 (Continued)

TABLE NOTATION

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occur if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode.

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode.

(3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used. (Operating plants may substitute previously established calibration procedures for this requirement.)

(4) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made.

Discrepancy

1. Notation 4 of the model RETS is not included.

Licensee's Justification

1. None.

Reviewer's Comment

1. Flow rate measuring devices are on the steam generator only. Permission to retain the weekly channel check would preclude this * notation requirement.

INSTRUMENTATION

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.11 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3-13 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.

APPLICABILITY: As shown in Table 3.3-13

ACTION:

a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Specification, without delay suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-13. Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

c. The provisions of Specifications 3.0.3, 3.0.4, and 6.9.1.9.b are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.11 Each radioactive gaseous 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 4.3-13.

Discrepancies

1. The LCO statement does not state the setpoints will be set to ensure the 10 CFR Part 20 limits are not exceeded.

2. Specifications 15.3.9.C.1 and 15.3.9.C.2 allow an annual average release rate and a maximum release rate in any 60 minute period shall not exceed the yearly average limit.

3. Specification 15.3.9.A.2 does not state best efforts will be made to return the instrument to operable status within 30 days or report in the next Semiannual Report.

Licensee's Justifications

1. None.

2. None.

3. None.

Reviewer's Comments

1. The ODCM states the alert setpoint is set at two times the established steady-state reading. The alarm/trip setpoint is set at equal to or less than five times the applicable maximum permissible concentrations contained in 10 CFR 20, Appendix B, Table 2.

2. Specifications 15.3.9.C.1 and 15.3.9.C.2 are existing approved Specifications. Thus, the gaseous setpoint situation is similar to that of the liquid setpoints. As written, Specification 15.3.9.C.2 appears to void the requirement for Action a of the model RETS.

3. This requirement was not discussed at the plant visit since it was not a Rev. 2 requirement.

15.3.9

A. Radioactive Effluent Monitoring Instrumentation

1) The radioactive effluent monitoring instrumentation channels listed in Table 15.3.9-1 shall be operable and their trip setpoints shall be determined utilizing the methodology given in the ODCM.

2) With less than the minimum number of radioactive effluent monitoring channels operable, the action statement listed in Table 15.3.9-1 opposite the channel shall be taken.

15.3.9-1

C. Radioactive Gaseous Effluent Release Rates

1) The annual average release rates of gaseous and airborne particulate wastes shall be limited as follows:

$$1.5 \times 10^{-6} \frac{\mu Ci}{cc} \sum_i \frac{Q_i}{(MPC)_i} \leq 1.0$$

Where Q_i is the annual release rate (Ci/sec) of any radioisotope, i, and $(MPC)_i$ in units of μCi/cc are defined in Column 1, Table II of Appendix B to 10 CFR 20. For purposes of calculating permissible releases by the above formula $(MPC)_i$ for isotopes of iodine and particulates with half-lives longer than eight days shall be reduced by a factor of 700 from the listed value in 10 CFR 20, Appendix B, December 30, 1982, edition.

2) The maximum release rate for any 60 minute period shall not exceed ten times the yearly average limit.

TABLE 3.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

	INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1.	WASTE GAS HOLDUP SYSTEM			
a.	Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release	(1)	*	35
b.	Iodine Sampler	(1)	*	41
c.	Particulate Sampler	(1)	*	41
d.	Effluent System Flow Rate Measuring Device	(1)	*	36
e.	Sampler Flow Rate Measuring Device	(1)	*	36
2A.	WASTE GAS HOLDUP SYSTEM EXPLOSIVE GAS MONITORING SYSTEM (for systems designed to withstand the effects of a hydrogen explosion)			
a.	Hydrogen Monitor	(1)	**	39
b.	Hydrogen or Oxygen Monitor	(1)	**	39
2B.	WASTE GAS HOLDUP SYSTEM EXPLOSIVE GAS MONITORING SYSTEM (for systems not designed to withstand the effects of a hydrogen explosion)			
a.	Hydrogen Monitor	(2)	**	40
b.	Hydrogen or Oxygen Monitor	(2)	**	40

PWR-STS-1

3/4 3-80

9/3/92

Comments

Discrepancy

1. Explosive gas monitoring instrumentation is not included in the table.

Licensee's Justification

1. None.

Reviewer's Comment

1. At the plant visit we were informed there are both H_2 and O_2 monitors. However, the monitors are not identified in the submittal. The following briefly describes their situation:

   "The waste gas system is not designed to withstand an explosion and there are no recombiners. The system has a 2 psig positive pressure N_2 blanket.

   There is a gas analyzer that works in manual but does not work well in automatic sampling. If the analyzer is inoperable, grab samples are taken and analyzed at the same frequency as the analyzer.

   Of the twelve tanks' sampled, three are waste gas decay tanks and sampling frequency is once per week.

   The instruments on the analyzer have the following ranges:

   H_2 0 - 100 vol. %

   O_2 0 - 5 vol. %

   and are calibrated with the following standards:

   H_2 100 Vol. %

   O_2 2 and 5 vol. %.

   In addition, they use a mixture of 2% C_2, 5% H_2, and 93% N_2 in the calibration.

   The concentrations in the tanks are maintained at H_2 > 4%

   O_2 < 1%

   N_2 = Balance.

   Thus, they are controlling on O_2."

Licensee RETS Submittal

TABLE 3.3.9-1

RADIOACTIVE EFFLUENT MONITORING INSTRUMENTATION

Page 1 of 4

b.	Radioactive Gaseous Effluent Monitoring		
1.	Gas Decay Tank System		
a.	RE-214, Noble Gas (Auxiliary Building Vent Stack)	1	Note 1
b.	Gas Decay Tank Flow Measuring Device	1	Note 4
c.	Iodine and Particulate - Continuous Air Sampler	1	Note 5
d.	Sampler Flow Rate Measuring Device	1	Note 4
2.	Auxiliary Building Ventilation System		
a.	RE-214, Noble Gas (Auxiliary Building Vent Stack) or RE-315, Noble Gas (Auxiliary Building Vent SPING)	1	Note 6
b.	Iodine and Particulate - Continuous Air Sampler	1	Note 5
c.	Sampler Flow Rate Measuring Device	1	Note 4
3.	Condenser Air Ejector System		
a.	RE-225, Noble Gas (Combined Air Ejector Discharge Monitor); or RE-215, Noble Gas (Air Ejector Monitors - 1 per unit); or RE-214, Noble Gas (Auxiliary Building Vent Stack); or RE-315, Noble Gas (Auxiliary Building Vent SPING)	1	Note 6
b.	Flow Rate Monitor - Air Ejectors	1	Note 4
4.	Containment Purge and Continuous Vent System		
a.	RE-212, Noble Gas Monitors (1 per unit); or RE-305, Noble Gas (Purge Exhaust SPING - 1 per unit)	1	Notes 6 & 7
b.	30 CFM Vent Path Flow Indicators	1	Note 4
c.	Iodine and Particulate - Continuous Air Samplers	1	Note 5
d.	Sampler Flow Rate Measuring Device	1	Note 4

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At the plant visit the Licensee stated:

1. The Licensee will not include the calibration standards in their proposal.

2. The Licensee would agree to state they sample once per week for the storage tanks being used.

The following is a suggestion that requires NRC approval:

1. Include the analyzer in Table 15.3.9-1.

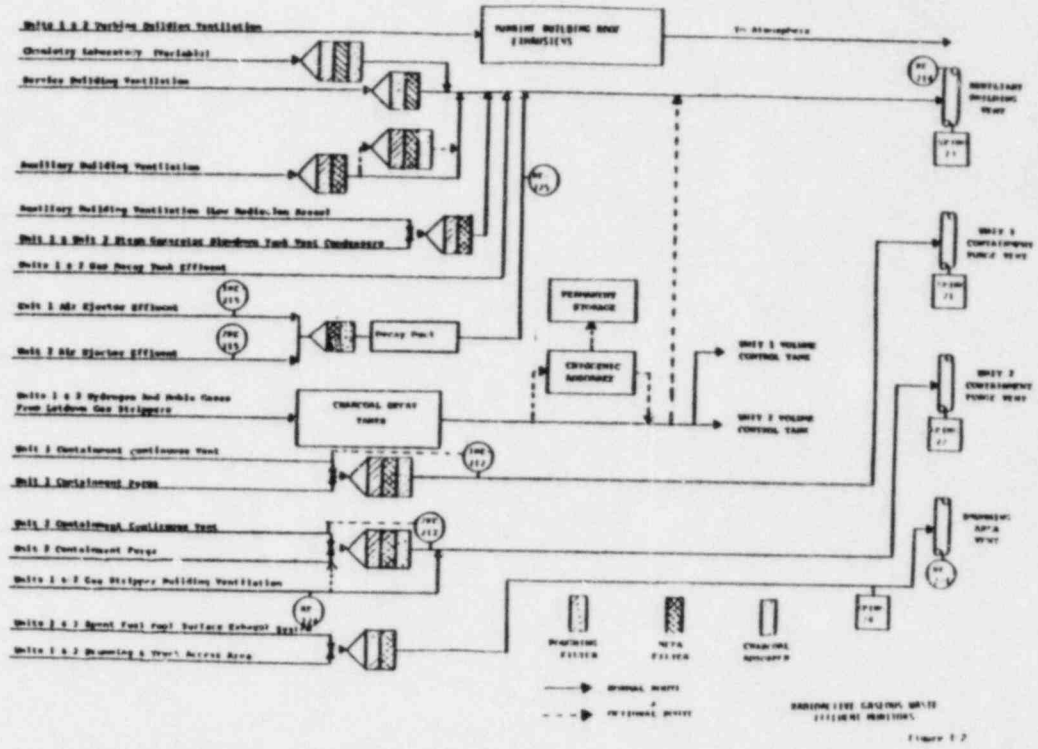
2. Use the gas analyzer only to sample the in-service gas decay tank to ensure O_2 concentrations are < 2 vol. % O_2. This ensures the valved-out tanks are < 2 vol.% O_2. This may require plant modifications to add manual valving from each of the three decay tanks to the gas analyzer. This would permit the analyzer to operate in a manual mode and eliminate the problems that occur from using the equipment in auto.

3. Include the calibration gas standards in a footnote to Table 15.3.9-1.

4. Include an action statement to sample and analyze ever four hours whenever gases are being added to the in-service tank in the event of loss of the gas analyzer.

TABLE 15.3.9-1 (CONTINUED) Page 3 of

Instrument	Minimum Channels Operable	Action
5. Fuel Storage and Drumming Area Ventilation System	1	
a. RE-221, Noble Gas (Drumming Area Stack); or RE-325, Noble Gas (Drumming Area SPING)	1	Note 6
b. Iodine and Particulate - Continuous Air Sampler	1	Note 5
c. Sampler Flow Rate Measuring Device	1	Note 4
6. Gas Stripper Building Ventilation		
a. RE-224, Noble Gas (Gas Stripper Building); or RE-305 (Unit 2 Purge Exhaust SPING)	1	Note 6
b. Iodine and Particulate - Continuous Air Sampler	1	Note 5
c. Sampler Flow Rate Measuring Device	1	Note 4



POINT BEACH GASEOUS RADWASTE EFFLUENT SYSTEM

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BL2,7

TABLE 3.3-13 (Continued)

TABLE NOTATION

* At all times.

1. ** During waste gas holdup system operation (treatment for primary system offgases).

ACTION 35 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the tank(s) may be released to the environment provided that prior to initiating the release:

a. At least two independent samples of the tank's contents are analyzed, and

b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup;

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 36 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION 37 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and these samples are analyzed for gross activity within 24 hours.

ACTION 38 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, immediately suspend PURGING of radioactive effluents via this pathway.

ACTION 39 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, operation of this waste gas holdup system may continue provided grab samples are collected at least once per 24 hours and analyzed within the following 4 hours, and proper function of the recombiner is assured by monitoring recombiner temperature in accordance with approved procedures.

2. ACTION 40 - With the number of channnels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, operation of this system may continue for up to 14 days provided grab samples are taken and analyzed daily. With both channels inoperable operation may continue for up to 14 days provided grab samples are taken and analyzed (1) every 4 hours during degassing operations, and (2) daily during other operations.

ACTION 41 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the effected pathway may continue provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.

Discrepancies

1. The applicability requirement for use of the explosive gas monitoring instrumentation is not included.

2. An action comparable to Action 40 for loss of explosive gas monitoring is not included.

Licensee's Justifications

1. None.

2. None.

Reviewer's Comments

1,2. If the instrumentation is determined to be required, then these notations will be required.

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Comments

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TABLE 4.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. WASTE GAS HOLDUP SYSTEM					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release	P	P	R(3)	Q(1)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Effluent System Flow Rate Measuring Device	P	N.A.	R	Q	*
e. Sampler Flow Rate Monitor	D	N.A.	R	Q	*
2A. WASTE GAS HOLDUP SYSTEM EXPLOSIVE GAS MONITORING SYSTEM (for systems designed to withstand the effects of a hydrogen explosion)					
a. Hydrogen Monitor	D	N.A.	Q(4)	M	**
b. Hydrogen or Oxygen Monitor	D	N.A.	Q(4) or Q(5)	M	**
2B. WASTE GAS HOLDUP SYSTEM EXPLOSIVE GAS MONITORING SYSTEM (for systems not designed to withstand the effects of a hydrogen explosion)					
a. Hydrogen Monitor	D	N.A.	Q(4)	M	**
b. Hydrogen or Oxygen Monitor	D	N.A.	Q(4) or Q(5)	M	**

Discrepancy

1. Surveillance checks for explosive gas monitors are not included.

Licensee's Justification

1. None.

Reviewer's Comment

1. See comment on page 3-80.

License RETS Submittal

TABLE 15.4.17-1

RADIOACTIVE EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Channel Description	Channel Checks	Calibrate	Functional Test	Source Check	Remarks
b. Radioactive Gaseous Effluent Monitoring					
4. Containment Purge and Continuous Vent System					
a. RE-212, Noble Gas (1 per unit)	D	A	Q	N*	
Page 2 of 4					
b. 30 cfm Vent Path Flow Indicator					
c. RE-305, Noble Gas (Purge Exhaust SPING - 1 per unit)	D	A	Q	N*	
d. Iodine and Particulate Continuous Air Sampler	P/W	NA	NA	NA	
e. Sampler Flow Rate Measuring Device	P/W	A	NA	NA	

TABLE 4.3-13 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
5. CONTAINMENT PURGE SYSTEM					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release	D	P	R(3)	Q(1)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Flow Rate Monitor	D	N.A.	R	Q	*
e. Sampler Flow Rate Monitor	D	N.A.	R	Q	*
6. AUXILIARY BUILDING VENTILATION SYSTEM					
a. Noble Gas Activity Monitor	D	M	R(3)	Q(2)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Flow Rate Monitor	D	N.A.	R	Q	*
e. Sampler Flow Rate Monitor	D	N.A.	R	Q	*

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Comments

Discrepancies

1. Surveillance checks for the 30 CFM vent path flow indicators are not included.
2. The channel check for the sampler flow rate measuring device in the containment purge monitoring system is P/W whereas it probably should be P/D.

Licensee's Justifications

1. None.
2. None.

Reviewer's Comments

1. This device is identified in the Instrumentation Table 15.3.9-1. Surveillance checks may not be required if it is a fixed flow orifice. The Licensee should explain the omission of surveillance checks.
2. The model specifications require a daily channel check. If the samplers are those of the SPING monitors, then a low and high flow alarm is integral to the monitor which may justify the P/W frequency. (Note the containment is purged only during cold shutdown.)

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TABLE 4.3-13 (Continued)

TABLE NOTATION

* At all times other than when the line is valved out and locked.

1. —— ** During waste gas holdup system operation (treatment for primary system offgases).

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode.

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode.

(3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used. (Operating plants may substitute previously established calibration procedures for this requirement.)

(4) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:

2. 1. One volume percent hydrogen, balance nitrogen, and
2. Four volume percent hydrogen, balance nitrogen.

(5) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:

1. One volume percent oxygen, balance nitrogen, and
2. Four volume percent oxygen, balance nitrogen.

Discrepancies

1. The applicability statement for use of the explosive gas monitors is not included.
2. The standard gas samples for the explosive gas monitors are not included.

Licensee's Justifications

1. None.
2. None.

Reviewer's Comments

1&2. If it is determined that the explosive gas monitors must be identified in the instrumentation table, then table notations are required.

NOTES FOR TABLE 15.4.17-1

D = Daily

W = Weekly

M = Monthly

Q = Quarterly

A = Annually

P/D = Prior to or immediately upon initiation of a release or daily if a release continues for more than one day

P/W = Prior to or immediately upon initiation of a release or weekly if a release continues for more than one week

P = Prior to or immediately upon initiation of a release

* = Source check required prior to containment purge

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3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.11.1.1 The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS (see Figure 5.1-3) 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 x 10^{-4} microcuries/ml total activity.

APPLICABILITY: At all times.

ACTION:

a. With the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS exceeding the above limits, without delay restore the concentration to within the above limits.

b. The provisions of Specification 6.9.1.9.b are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.1.1 Radioactive liquid wastes shall be sampled and analyzed according to the sampling and analysis program of Table 4.11-1.

4.11.1.1.2 The results of the radioactivity analyses shall be used in accordance with the methodology and parameters in the ODCM to assure that the concentrations at the point of release are maintained within the limits of Specification 3.11.1.1.

Discrepancies

1. Specifications 15.3.9.8.1 and 15.3.9.8.4 are in conflict with Specification 3.11.1.1 of the model RETS.
2. The 2 x 10^{-4} µCi/ml limit for dissolved or entrained noble gases is not included.
3. Specification 15.3.9.8.4 (if allowed) appears to void the requirements of Action a of the model RETS.
4. Specifications 15.4.17.B.1, 15.4.17.B.2, and 15.4.17.B.3 should state the concentrations at the point of release were assured to be in compliance in accordance with the ODCM.

Licensee's Justifications

1. None.
2. The noble gases are assumed to diffuse out of the liquids and are accounted for in the gaseous releases.
3. None.
4. None.

Reviewer's Comments

1. See comment on page 3-71.
2. No comment.
3. No comment.
4. The Specifications do not reference the ODCM.

15.3.9.8

1) The release rate of radioactive liquid effluents shall be such that the annual average concentration of radionuclides in the circulating water discharge does not exceed the limits specified in 10 CFR 20, Appendix B, for unrestricted areas.

4) The maximum release rate for any eight hour period shall not exceed ten times the yearly average limit.

15.3.9-2

15.4.17

B Radioactive Liquid Waste Sampling and Analysis

1. The radioactivity content of each batch of radioactive liquid waste shall be determined prior to release by sampling and analysis in accordance with Table 15.4.17-2 using the methods described in the PCP. The results of pre-release analyses shall be used to assure that the concentration at the point of release is maintained within the limits of Specification 15.3.9.
2. Post-release analyses of samples composited from batch releases shall be performed in accordance with Table 15.4.17-2. The results of the previous post-release analyses shall be used to assure that the concentrations at the point of release were maintained within the limits of Specification 15.3.9.
3. The radioactivity concentration of liquids discharged from continuous release points shall be determined by collection and analysis of samples in accordance with Table 15.4.17-2. The results of the analyses shall be used to assure that the concentrations at the point of release are maintained within the limits of Specification

15.4.17-1

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TABLE 4.11-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD)[b] (μCi/ml)
A. Batch Waste Release Tanks[g]	P Each Batch	P Each Batch	Principal Gamma Emitters[c]	$5x10^{-7}$
1.[c]			I-131	$1x10^{-6}$
2.	P One Batch/M	M	Dissolved and Entrained Gases (Gamma Emitters)	$1x10^{-5}$
	P Each Batch	M Composite[d]	H-3	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
	P Each Batch	Q Composite[d]	Sr-89, Sr-90	$5x10^{-8}$
			Fe-55	$1x10^{-6}$
B. Continuous Releases[g]	Continuous[f]	W Composite[f]	Principal Gamma Emitters[c]	$5x10^{-7}$
1.			I-131	$1x10^{-6}$
2.	M Grab Sample	M	Dissolved and Entrained Gases (Gamma Emitters)	$1x10^{-5}$
	Continuous[f]	M Composite[f]	H-3	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
	Continuous[f]	Q Composite[f]	Sr-89, Sr-90	$5x10^{-8}$
			Fe-55	$1x10^{-6}$

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Comments

Discrepancies

1. I-131 is not specifically identified.
2. The analysis for dissolved and entrained gamma emitters is not included.

Licensee's Justifications

1&2. At the plant visit the Licensee stated I-131 and dissolved gases were included in the analysis for principal gamma emitters.

Reviewer's Comments

1. None of the isotopes are identified as in Notation c of the model RETS.
2. The Licensee assumes the dissolved gases diffuse from the water and are quantified in the gaseous releases.

Licensee RETS Submittal

TABLE 15.4.17-2

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Level of Detection* (μCi/cc)
1. Waste Condensate Tank Waste Distillate Tank	Prior to Release	Prior to Release	Gamma Emitters	5×10^{-7}
			Tritium	1×10^{-5}
		Monthly on Batch Composites	Gross Alpha	1×10^{-7}
		Quarterly on Batch Composites	Sr-89/90	5×10^{-8}
			Fe-55	1×10^{-6}
2. Continuous Releases**				
a. Steam Generator Blowdown	Grab Samples Twice Weekly	Twice Weekly	Gamma Emitters	5×10^{-7}
			Tritium	1×10^{-5}
b. Service Water		Monthly on Grab Composites	Gross Alpha	1×10^{-7}
		Quarterly on Grab Composites	Sr-89/90	5×10^{-8}
			Fe-55	1×10^{-6}
c. Retention Pond	Continuous Composite***	Weekly	Gamma Emitters	5×10^{-7}
			Tritium	1×10^{-5}
		Monthly on Weekly Composite	Gross Alpha	1×10^{-7}
		Quarterly on Monthly Comp.	Sr-89/90	5×10^{-8}
			Fe-55	1×10^{-6}

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TABLE 4.11-1 (Continued)

TABLE NOTATION

[a]The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66\ s_b}{E \cdot V \cdot 2.22 \times 10^6 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

where:

LLD is the "a priori" lower limit of detection as defined above, as microcuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22×10^6 is the number of disintegrations per minute per microcurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

Δt for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as an *a priori* (before the fact) limit representing the capability of a measurement system and not as an *a posteriori* (after the fact) limit for a particular measurement.

[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 to assure representative sampling.

Discrepancy

1. Notation b of the model RETS is not included.

Licensee's Justification

1. The Licensee takes the position this notation does not belong in the Specification.

Reviewer's Comment

1. The requirement for thorough mixing prior to sampling for analysis should be stated in some document.

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TABLE 4.11-1 (Continued) TABLE NOTATION [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 considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent Release Report pursuant to Specification 6.9.1.12. [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 that 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 a system that has an input flow during the continuous release. [f]To be representative of the quantities and concentrations of radioactive materials in liquid effluents, samples shall be collected continuously in proportion to the rate of flow of the effluent stream. Prior to analyses, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.	Discrepancies 1. Cs-137 is the only nuclide listed. 2. Notation f of the model RETS is not included. Licensee's Justifications 1. None. 2. This type of information should not be included in the Specifications. Reviewer's Comments 1. At the plant visit the Licensee was quite adamant in their reluctance to include any reference to LLDs in the Specifications. This submittal reveals considerable progress with respect to the LLD requirements. Nevertheless, I cannot identify the reason for not listing the required nuclides. A problem may arise in satisfying the LLD requirements if the counting equipment is located in area of high energy background which may preclude satisfying the LLD requirements for Co-60, Fe-59, and Zr-65. 2. The requirments of this notation should be contained somewhere in the documentation.	NOTES FOR TABLE 15.4.11-2 * The principal gamma emitter for which the LLD specification applies is Cs-137. This does not mean that only Cs-137 is to be considered. Other gamma peaks that are identifiable are to be included in the [illegible]-annual report. ** A continuous release is the discharge of liquid wastes of a non-discrete volume, e.g., from a volume of a system that has an input flow during the continuous release. *** A composite sample is one in which the method of sampling employed results in a specimen that is representative of the liquids released.

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RADIOACTIVE EFFLUENTS

DOSE

LIMITING CONDITION FOR OPERATION

3.11.1.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each reactor unit, to UNRESTRICTED AREAS (see Figure 5.1-3) shall be limited:

a. During any calendar quarter to less than or equal to 1.5 mrems to the total body and to less than or equal to 5 mrems to any organ, and

1. b. During any calendar year to less than or equal to 3 mrems to the total body and to less than or equal to 10 mrems to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radioactive materials in liquid effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. This Special Report shall also include (1) the results of radiological analyses of the drinking water source and (2) the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR Part 141.*

2.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.2 Cumulative dose contributions from liquid effluents for the current calendar quarter and the current calendar year shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

*Applicable only if drinking water supply is taken from the receiving water body within 3 miles of the plant discharge. In the case of river sited plants this is 3 miles downstream only.

Comments

Discrepancies

1. The annual limits are not included.
2. Specification 15.3.9.E.3 is incorrect and must be reworded to state "...subsequent releases will be in compliance with the quarterly and annual limits."
3. Specification 15.3.9.E.1 states a summary of curie releases are made on a quarterly basis instead of "at least once per 31 days in accordance with the ODCM.
4. The purpose for Specification 15.3.9.E.4 is not clear.

Licensee's Justifications

1. None.
2. None.
3. None.
4. None.

Reviewer's Comments

1. The Licensee proposes to monitor curies released instead of dose commitments. However, only the quarterly limits are included. The annual limits are identified as design objectives in the submittal but not as a Specification. Section 3.2 of the ODCM identifies annual doses.
2. The Specification must be reworded.
3. I assumed Specification 15.3.9.E.1 is comparable to surveillance Specification 4.11.1.2 of the model RETS. If the Specification is changed to once per 31 days, then the ODCM must also be changed.
4. Specification 15.3.9.E.4 is the action response to 15.3.9.E.3. However, as noted 15.3.9.E.3 is incorrect.

Licensee RETS Submittal

15.3.9.D

D. Annual Design Objective Release Quantities

1.) Definition

An equivalent curie quantity is that amount of a reference isotope that would produce the same dose as the actual amount of the particular isotope in question. The methodology for converting actual activity to equivalent activity is provided in the ODCM and is based on dose conversion factors contained in Regulatory Guide 1.109, Revision 1, October 1977.

1. 2.) Annual Release Objectives for Liquid Effluents

Tritium:	≤2.15E+03 curies
Radioiodines:	≤2.82E+01 equivalent curies as I-131
Others:	≤3.49E+01 equivalent curies as Co-60

3. Annual Release Objectives for Gaseous Effluents

Tritium:	≤2.90E+04 curies
Noble Gases:	≤9.21E+05 equivalent curies as Xe-133
Radioiodiens:	≤3.72E-01 equivalent curies as I-131
Others:	≤1.80E+00 equivalent curies as Co-60

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	Reviewer's Comment Design objective 15.3.9.D.4 allows tritium trade-offs between the liquid and gaseous effluents. It is not clear if the proportional decreases are weighted by the liquid or gaseous pathway dose factors or if it is a curie-for-curie adjustment.	15.3.9.D 4) Tritium Adjustment The design objective release for tritium in liquid effluents may be increased, provided it is accompanied by a proportional decrease in the design objective release for tritium in gaseous effluents. Similarly, the design objective release for tritium in gaseous effluents may be increased, provided it is accompanied by a proportional decrease in the design objective release for tritium in liquid effluents. 15.3.4-4

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3.11.1.2 (cont)		15.3.9

E. Quarterly Summary

3. 1) A summary of radioactive effluent releases shall be made on a quarterly basis as described in the ODCM to demonstrate compliance with this section.

2) If the quantity of radioactive material actually released in effluents during any calendar quarter is such that the resulting radiation exposure, calculated on the same basis as the design objective exposure, would exceed one-half the design objective annual exposure, actual doses will be calculated as described in the ODCM, and a special report will be prepared and submitted per Section 15.6.9.3h of these specifications.

2. 3) Corrective actions will be taken to ensure radioactive liquid (or gaseous) effluent releases during subsequent calendar quarters do not exceed the 10 CFR 50 Appendix I annual limits.

4. 4) If the quarterly releases exceed the quarterly release objectives per calculational methods in the ODCM, release and dose calculations shall be made monthly until the releases are within the annual limits.

15.3.9-4

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RADIOACTIVE EFFLUENTS

LIQUID RADWASTE TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.11.1.3 The liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected doses due to the liquid effluent, from each reactor unit, to UNRESTRICTED AREAS (see Figure 5.1-3) would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31 day period.

APPLICABILITY: At all times.

ACTION:

a. With radioactive liquid waste being discharged without treatment and in excess of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days pursuant to Specification 6.9.2 a Special Report that includes the following information:

1. Explanation of why liquid radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability.

2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and

3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.3 Doses due to liquid releases from each reactor unit to UNRESTRICTED AREAS shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM.

Discrepancies

1. The Specification does not address the requirements of 3.11.1.3 of the model Specifications.

2. The reporting requirement Specification 15.6.9.3.G in the Administrative Controls does not satisfy the model requirements.

3. Dose projections to determine when to use the liquid and gaseous radwaste treatment system are not included.

Licensee's Justifications

1. Section IV.A of Appendix I to 10 CFR 50 already provides for actions to be taken in the event quarterly releases exceed one-half the annual design objectives. These actions include the definition and initiation of corrective action. Clearly the operation of liquid and gaseous radwaste systems would be included in such corrective action if appropriate. Hence, an additional Specification of operability related to 1/48 of the dose objectives is unnecessary and would entail an excessive administrative burden without justification. As a matter of historical fact, Point Beach has operated for more than twenty reactor years well below the design objectives of Appendix I. Additional Specifications are not justified.

2. None.

3. None.

Reviewer's Comments

1. The model Specification specifies operation of the equipment whenever projected doses exceed 1/48 the annual limit. The proposal does not include the 1/48 value.

2. The proposed reporting requirements are when the effluents are released without treatment for 31 days to meet the annual limits instead of without treatment to meet the 1/48 annual dose limit.

3. If Specification 15.3.9.F.1 requires changing, then a surveillance Specification comparable to Specification 4.11.1.3 of the model Specification must be included and the methodology must be included in the ODCM.

Licensee RETS Submittal

15.3.9

F. Radioactive Effluent Waste Treatment

1) Portions of the radioactive liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid wastes prior to their discharge whenever such effluents require treatment to meet the design objectives set forth in Appendix I to 10 CFR 50.

15.3.9-5

15.6.9.3

4. Radioactive Liquid Effluent Waste Treatment

If the radioactive liquid waste treatment system is inoperable and liquid radwaste is being discharged for 31 days without the treatment required to meet the design objectives set forth in 10 CFR 50, Appendix I, a special report shall be prepared and submitted to the Commission within thirty days which includes the following information:

1. Identification of the inoperable equipment or subsystem and the reason for inoperability.

2. Actions taken to restore the inoperable equipment to operable status.

3. Summary description of actions taken to prevent a recurrence

15.6.9-11

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3.9

RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE RATE

LIMITING CONDITION FOR OPERATION

1. 3.11.2.1 The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY (see Figure 5.1-3) shall be limited to the following:

   a. For noble gases: Less than or equal to 500 mrems/yr to the total body and less than or equal to 3000 mrems/yr to the skin, and

   b. For iodine-131, for tritium, and for all radionuclides in particulate form with half lives greater than 8 days: Less than or equal to 1500 mrems/yr to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the dose rate(s) exceeding the above limits, without delay restore the release rate to within the above limit(s).

b. The provisions of Specification 6.9.1.9.b are not applicable.

SURVEILLANCE REQUIREMENTS

3. 4.11.2.1.1 The dose rate due to noble gases in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM.

4. 4.11.2.1.2 The dose rate due to iodine-131, tritium, and all radionuclides in particulate form with half lives greater than 8 days in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 4.11-2.

Discrepancies

1. The submittal proposes annual average release rates instead of instantaneous as required by the model Specifications. Curie release rates are proposed instead of the dose rates identified in 3.11.2.1.a and 3.11.2.1.b of the model Specifications.

2. Specification 15.3.9.C.2 as written voids the requirement for Action a of the model Specification.

3. A noble gas dose rate surveillance Specification comparable to 4.11.2.1.1 of the model Specification is not included.

4. Surveillance Specification 15.4.17.C does not reference the ODCM.

Licensee's Justifications

1. None.

2. None.

3. None.

4. None.

Reviewer's Comments

1. No comment.

2. No comment.

3. No comment.

4. The ODCM should be referenced.

15.3.9

C. Radioactive Gaseous Effluent Release Rates

1. 1) The annual average release rates of gaseous and airborne particulate wastes shall be limited as follows:

$$1.5 \times 10^{-6} \frac{\mu Ci}{cc} \sum_i \frac{Q_i}{(MPC)_i} \leq 1.0$$

Where Q_i is the annual release rate (Ci/sec) of any radioisotope i, and $(MPC)_i$ in units of μCi/cc are defined in Column 1, Table II of Appendix B to 10 CFR 20. For purposes of calculating permissible releases by the above formula $(MPC)_i$ for isotopes of iodine and particulates with half-lives longer than eight days shall be reduced by a factor of 700 from the listed value in 10 CFR 20, Appendix B, December 30, 1982 edition.

2. 2) The maximum release rate for any 60 minute period shall not exceed ten times the yearly average limit.

15.4.17

C. Radioactive Gaseous Waste Sampling and Analysis

4. 1. The radioactivity concentration of radioactive gaseous wastes shall be determined by sampling and analyses in accordance with Table 15.4.17-3. The results of the analyses shall be used to assure that concentrations are maintained within the limits of Specification 15.3.9.

TABLE 4.11-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD)[a] (μCi/ml)
A. Waste Gas Storage Tank	P Each Tank Grab Sample	P Each Tank	Principal Gamma Emitters[b]	1×10^{-4}
B. Containment PURGE	P Each PURGE[c] Grab Sample	P Each PURGE[c]	Principal Gamma Emitters[b]	1×10^{-4}
			H-3	1×10^{-6}
C. (List other release points where gaseous effluents are discharged from the facility)	$M^{c,d,e}$ Grab Sample	M^{c}	Principal Gamma Emitters[b]	1×10^{-4}
			H-3	1×10^{-6}
D. All Release Types as listed in A, B, C above.	Continuous[f]	W^{d} Charcoal Sample	I-131	1×10^{-12}
	Continuous[f]	W^{d} Particulate Sample	Principal Gamma Emitters[b] (I-131, Others)	1×10^{-11}
	Continuous[f]	M Composite Particulate Sample	Gross Alpha	1×10^{-11}
	Continuous[f]	Q Composite Particulate Sample	Sr-89, Sr-90	1×10^{-11}
	Continuous[f]	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1×10^{-6}

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Comments

Discrepancies

1. The LLD for tritium is 3×10^{-6} μCi/ml instead of 1×10^{-6} as required by the model Specification.
2. The LLD for iodine is 1×10^{-11} μCi/ml instead of 1×10^{-12} as required by the model Specification.
3. The LLD for the noble gas monitor is not listed in the table.

Licensee's Justifications

1. None.
2. None.
3. None.

Reviewer's Comments

1. The Licensee should justify their position.
2. The Licensee should justify their position.
3. At the plant visit the Licensee stated they did not want to include the LLD in their Specifications.

Licensee RETS Submittal

TABLE 15.4.17-3

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Level of Detection**** (μCi/cc)
1. Gas Decay Tank	Prior to Release	Prior to Release	Gamma Emitter	1×10^{-4}
2. Containment Purge or Continuous Vent	Prior to Purge or Vent*	Prior to Purge or Vent	Gamma Emitters	1×10^{-4}
			Tritium	3×10^{-6}
3. Continuous Releases Including: a. Unit 1 Containment Vent b. Unit 2 Containment Vent c. Drumming Area Vent** d. Gas Stripper Building Vent e. Auxiliary Building Vent	Continuous***	Weekly Analysis of Charcoal and Particulate Samples	Gamma Emitters I-131 & I-133	1×10^{-11}
		Monthly Composite of Particulate Sample	Gross Alpha	1×10^{-11}
		Quarterly Composite of Particulate Sample	Sr-89/90	1×10^{-11}
	Weekly (Grab)	Weekly	Noble Gases	1×10^{-6}
		Weekly	Tritium	3×10^{-6}

* Tritium grab samples will be taken every 24 hours when the refueling cavity is flooded.

** Tritium grab samples will be taken every seven days from the drumming area ventilation exhaust/spent fuel pool area whenever there is spent fuel in the spent fuel pool.

*** The ratio of the sample flow rate to the sampled flow rate should be known for the time period covered by each sampling interval.

**** The principal gamma emitters for which the LLD specification applies are Cs-137 in particulates and Xe-133 in gases. This does not mean that only Cs-137 and Xe-133 will be considered. Other peaks that are identifiable will be included in the semi-annual report.

TABLE 4.11-2 (Continued)

TABLE NOTATION

[a] 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 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 considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent Release Report pursuant to Specification 6.9.1.12.

[c] Sampling and analysis shall also be performed following shutdown, startup, or a THERMAL POWER change exceeding 15 percent of RATED THERMAL POWER within one hour unless (1) analysis shows that the DOSE EQUIVALENT I-131 concentration in the primary coolant has not increased more than a factor of 3; and (2) the noble gas activity monitor shows that effluent activity has not increased by more than a factor of 3.

[d] Tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded.

[e] Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.

[f] 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 made in accordance with Specifications 3.11.2.1, 3.11.2.2 and 3.11.2.3.

[g] Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing, or after removal from sampler. Sampling shall also be performed at least once per 24 hours for at least 7 days following each shutdown, startup or THERMAL POWER change exceeding 15 percent of RATED THERMAL POWER in one hour and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10. This requirement does not apply if (1) analysis shows that the DOSE EQUIVALENT I-131 concentration in the primary coolant has not increased more than a factor of 3, and (2) the noble gas monitor shows that effluent activity has not increased more than a factor of 3.

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Comments

Discrepancies

1. The nuclide list is incomplete.
2. The additional sampling following a power transient described in Notation c of the model Specification is not addressed.
3. The additional sampling following a power transient described in Notation g of the model Specification is not addressed.

Licensee's Justifications

1. See comment No. 1 on page 11-4.

2&3. The containment cannot be purged unless they are in cold shutdown.

Reviewer's Comments

1. See comment No. 1 on page 11-4.

2&3. It was agreed the additional sampling for the containment purge was not required since they only purge during cold shutdown, i.e., no power transient.

However, the drumming area vent, the gas stripper building vent, and the auxiliary building vent are not addressed.

It should be noted that SPING monitors are installed at these release points. The SPINGs continuously monitor the halogens and particulates and noble gases. However, the monitoring capabilities were not identified in the instrumentation table. Iodine and particulate samplers are identified in the table and not the monitors.

Licensee RETS Submittal

Lower Level of Detection (LLD) (μCi/cc)

TABLE 15.4.11-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Note: The principal gamma emitters for which the LLD specification applies are Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous 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 considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent Release Report pursuant to Specification 6.9.1.12.

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RADIOACTIVE EFFLUENTS

DOSE - NOBLE GASES

LIMITING CONDITION FOR OPERATION

3.11.2.2 The air dose due to noble gases released in gaseous effluents, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 5.1-3) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 5 mrads for gamma radiation and less than or equal to 10 mrads for beta radiation and,

b. During any calendar year: Less than or equal to 10 mrads for gamma radiation and less than or equal to 20 mrads for beta radiation.

APPLICABILITY: At all times.

ACTION

a. With the calculated air dose from radioactive noble gases in gaseous effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.2 Cumulative dose contributions for the current calendar quarter and current calendar year for noble gases shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

Discrepancies

1. The annual curie release limits are not identified.

2. Specification 15.3.9.E.3 is incorrect and must be reworded to state "that subsequent releases will be in compliance with the quarterly and annual limits."

3. Cumulative curie releases should be determined at least once per 31 days in accordance with the ODCM.

Licensee's Justifications

See comments on page 11-5.

Reviewer's Comments

1. See comments on page 11-5.

15.3.9.D

1. 3) Annual Release Objectives for Gaseous Effluents

Tritium:	32.90E+04 curies
Noble Gases:	19.21E+05 equivalent curies as Xe-133
Radioiodines:	33.72E-01 equivalent curies as I-131
Others:	51.80E+00 equivalent curies as Co-60

15.3.9.E

E. Quarterly Summary

3. 1) A summary of radioactive effluent releases shall be made on a quarterly basis as described in the ODCM to demonstrate compliance with this section.

2) If the quantity of radioactive material actually released in effluents during any calendar quarter is such that the resulting radiation exposure, calculated on the same basis as the design objective exposure, would exceed one-half the design objective annual exposure, actual doses will be calculated as described in the ODCM, and a special report will be prepared and submitted per Section 15.6.9.3h of these specifications.

2. 3) Corrective actions will be taken to ensure radioactive liquid (or gaseous) effluent releases during subsequent calendar quarters do not exceed the 10 CFR 50 Appendix I annual limits.

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3.11.2.3

RADIOACTIVE EFFLUENTS

DOSE - IODINE-131, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

LIMITING CONDITION FOR OPERATION

3.11.2.3 The dose to a MEMBER OF THE PUBLIC from iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 5.1-3) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 7.5 mrems to any organ and,

b. During any calendar year: Less than or equal to 15 mrems to any organ.

1.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of iodine-131, tritium, and radionuclides in particulate form with half lives greater than 8 days, in gaseous effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

2.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.3 Cumulative dose contributions for the current calendar quarter and current calendar year for iodine-131, tritium, and radionuclides in particulate form with half lives greater than 8 days shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

3.

Discrepancies

1. The annual curie release limits are not identified.

2. Specification 15.3.9.E.3 is incorrect and must be reworded to state "that subsequent releases will be in compliance with the quarterly and annual limits."

3. Cumulative curie releases should be determined at least once per 31 days in accordance with the ODCM.

Licensee's Justifications

See comments on page 11-5.

Reviewer's Comments

1. See comments on page 11-5.

15.3.9.D

1. Annual Release Objectives for Gaseous Effluents

Tritium	82 9uE+04 curies
Noble Gases	49 21E+03 equivalent curies as Xe-133
Radioiodines	13 72E-01 equivalent curies as I-131
Others	11 80E+00 equivalent curies as Co-60

15.3.9.E

E. Quarterly Summary

3. 1) A summary of radioactive effluent releases shall be made on a quarterly basis as described in the ODCM to demonstrate compliance with this section.

2) If the quantity of radioactive material actually released in effluents during any calendar quarter is such that the resulting radiation exposure, calculated on the same basis as the design objective exposure, would exceed one-half the design objective exposure, actual doses will be calculated as described in the ODCM, and a special report will be prepared and submitted per Section 15.6.9.3b of these specifications.

2. 3) Corrective actions will be taken to ensure radioactive liquid (or gaseous) effluent releases during subsequent calendar quarters do not exceed the 10 CFR 50 Appendix I annual limits.

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RADIOACTIVE EFFLUENTS GASEOUS RADWASTE TREATMENT SYSTEM LIMITING CONDITION FOR OPERATION 3.11.2.4 The GASEOUS RADWASTE TREATMENT SYSTEM and the VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected gaseous effluent air doses due to gaseous effluent releases, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 5.1-1) would exceed 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation in a 31 day period. The VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses due to gaseous effluent releases, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 5.1-3) would exceed 0.3 mrem to any organ in a 31 day period. APPLICABILITY: At all times. ACTION: a. With gaseous waste being discharged without treatment and in excess of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that includes the following information: 1. Explanation of why gaseous radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability. 2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and 3. Summary description of action(s) taken to prevent a recurrence. b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable. SURVEILLANCE REQUIREMENTS 4.11.2.4.1 Doses due to gaseous releases from each reactor unit to areas at and beyond the SITE BOUNDARY shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM.	Discrepancies 1. Specification 15.3.9.F.2 does not address the model Specification requirement to operate the gaseous radwaste treatment system whenever projected doses exceed 1/48 of the annual dose. 2. The reporting requirements of Administrative Specification 15.6.9.3.H do not satisfy the requirements of Action a. 3. A surveillance Specification for the projected dose or curies released is not included. Licensee's Justifications 1. None. 2. None. 3. None. Reviewer's Comments 1. The model Specification specifies operation of the equipment whenevsr projected doses exceed 1/48 the annual limit. The proposal does not include the 1/48 value. 2. The proposed reporting requirements are when the effluents are released without treatment for 31 days to meet the annual limits instead of without treatment to meet the 1/48 annual dose limit. 3. If Specification 15.3.9.F.2 requires changing, then a surveillance Specification comparable to Specification 4.11.1.3 of the model Specification must be included and the methodology must be included in the ODCM.	15.3.9.F 1. 2) Portions of the gaseous radwaste treatment and ventilation exhaust treatment systems shall be used to reduce radioactive materials in gaseous wastes prior to their discharge, whenever such effluents require treatment to meet the design objectives set forth in Appendix I to 10 CFR 50. 15.6.9.3 2. Radioactive Gaseous Effluent Waste Treatment If the radioactive gaseous waste treatment system and the ventilation exhaust treatment system are inoperable and gaseous radwaste is being discharged for 31 days without the treatment required to meet the design objectives set forth in 10 CFR 50, Appendix I, a special report shall be prepared and submitted to the Commission within thirty days which includes the following information: 1. Identification of the inoperable equipment or subsystems and the reason for inoperability. 2. Actions taken to restore the inoperable equipment to operable status. 3. Summary description of actions taken to prevent a recurrence.

RADIOACTIVE EFFLUENTS

EXPLOSIVE GAS MIXTURE (Hydrogen rich systems not designed to withstand a hydrogen explosion)

LIMITING CONDITION FOR OPERATION

3.11.2.5B The concentration of oxygen in the waste gas holdup system shall be limited to less than or equal to 2% by volume whenever the hydrogen concentration exceeds 4% by volume.

APPLICABILITY: At all times.

ACTION:

a. With the concentration of oxygen in the waste gas holdup system greater than 2% by volume but less than or equal to 4% by volume, reduce the oxygen concentration to the above limits within 48 hours.

b. With the concentration of oxygen in the waste gas holdup system greater than 4% by volume and the hydrogen concentration greater than 2% by volume, immediately suspend all additions of waste gases to the system and reduce the concentration of oxygen to less than or equal to 2% by volume without delay.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.5B The concentrations of hydrogen and oxygen in the waste gas holdup system shall be determined to be within the above limits by continuously monitoring the waste gases in the waste gas holdup system with the hydrogen and oxygen monitors required OPERABLE by Table 3.3-13 of Specification 3.3.3.11.

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Discrepancies

1. Specification 15.3.9.H.1 does not state the concentrations shall be restored within 48 hours.
2. Specification 15.3.9.H.2 does not state the excess oxygen concentration shall be reduced without delay.
3. A surveillance statement is not included.

Licensee's Justifications

1. None.
2. None.
3. None.

Reviewer's Comments

1. No comment.
2. No comment.
3. See comment on page 3-80.

15.3.9

H Explosive Gas Mixture

The concentration of oxygen in the waste gas vent and holdup system shall be limited to less than or equal to 2% by volume.

1) If the concentration of oxygen in the waste gas vent and holdup system is greater than 2% by volume but less than 4%, the concentration of oxygen will be restored to less than or equal to 2%.

2) If the concentration of oxygen is greater than 4% by volume, additions to the waste gas vent and holdup system will be suspended until concentrations are less than or equal to 2% by volume.

15.3.9-5

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RADIOACTIVE EFFLUENTS GAS STORAGE TANKS LIMITING CONDITION FOR OPERATION 3.11.2.6 The quantity of radioactivity contained in each gas storage tank shall be limited to less than or equal to ___ curies noble gases (considered as Xe-133). APPLICABILITY: As all times. ACTION: a. With the quantity of radioactive material in any gas storage tank exceeding the above limit, immediately suspend all additions of radioactive materials to the tank and within 48 hours reduce the tank contents to within the limit. b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable. SURVEILLANCE REQUIREMENTS 4.11.2.6 The quantity of radioactive material contained in each gas storage tank shall be determined to be within the above limit at least once per 24 hours when radioactive materials are being added to the tank.	Discrepancy 1. A Specification addressing curie limits in gas storage tanks is not included in the submittal. Licensee's Justification 1. Rupture of a gas decay tank was considered in a bounding analysis presented in Section 14 of the Point Beach FSAR assuming a 1% fuel defect level. The calculated whole body dose was 750 mRem at the highest point along the site boundary. However, this bounding analysis overconservatively assumed collection of all gases during an entire fuel cycle. In reality, the gas decay tanks are sized to accomodate gases resulting from 45 days of operation. Correcting for this single over-conservatism results in a dose of approximately 100 mRem, well within the guidelines of the Branch Technical Position. Of course, this still neglects the gaseous waste processing system which provides for substantial decay of the shorter-lived isotopes. With this redundant system, the actual dose for a tank rupture would be much lower. Since the accident dose calculated for the adverse meteorology and maximum design loading of the tanks is so low, additional surveillance would provide no benefit, and a Specification is neither needed nor justified. Reviewer's Comment 1. No comment.	

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RADIOACTIVE EFFLUENTS 3/4 11.3 SOLID RADIOACTIVE WASTE LIMITING CONDITION FOR OPERATION 3.11.3 The solid radwaste system shall be used in accordance with a PROCESS CONTROL PROGRAM to process wet radioactive wastes to meet shipping and burial ground requirements. APPLICABILITY: At all times ACTION: a. With the provisions of the PROCESS CONTROL PROGRAM not satisfied, suspend shipments of defectively processed or defectively packaged solid radioactive wastes from the site. b. The provisions of Specifications 3.0.3, 3.0.4, and 6.9.1.9.b are not applicable. SURVEILLANCE REQUIREMENTS 4.11.3 THE PROCESS CONTROL PROGRAM shall be used to verify the SOLIDIFICATION of at least one representative test specimen from at least every tenth batch of each type of wet radioactive waste (e.g., filter sludges, spent resins, evaporator bottoms, boric acid solutions, and sodium sulfate solutions). a. If any test specimen 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 PROCESS CONTROL PROGRAM, and a subsequent test verifies SOLIDIFICATION. SOLIDIFICATION of the batch may then be resumed using the alternative SOLIDIFICATION parameters determined by the PROCESS CONTROL PROGRAM. b. If the initial test specimen from a batch of waste fails to verify SOLIDIFICATION, the PROCESS CONTROL PROGRAM shall provide for the collection and testing of representative test specimens from each consecutive batch of the same type of wet waste until at least 3 consecutive initial test specimens demonstrate SOLIDIFICATION. The PROCESS CONTROL PROGRAM shall be modified as required, as provided in Specification 6.13, to ensure SOLIDIFICATION of subsequent batches of waste.	Discrepancy 1. Surveillance requirements for the solid radioactive waste Specification are not included in the submittal. Licensee's Justification 1. None. Reviewer's Comment 1. No comment.	15.3.9 G Solid Radioactive Waste The solid radwaste system shall be used in accordance with the Process Control Program to process wet radioactive wastes to meet all shipping and burial ground requirements. If the provisions of the Process Control Program are not satisfied, shipments of defectively processed or defectively packaged solid radioactive waste from the site will be suspended.

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RADIOACTIVE EFFLUENTS 3/4 11.4 TOTAL DOSE LIMITING CONDITION FOR OPERATION 3.11.4 The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems. APPLICABILITY: At all times. ACTION: a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Specification 3.11.1.2.a, 3.11.1.2.b, 3.11.2.2.a, 3.11.2.2.b, 3.11.2.3.a, or 3.11.2.3.b, calculations should be made including direct radiation contributions from the reactor units and from outside storage tanks to determine whether the above limits of Specification 3.11.4 have been exceeded. If such is the case in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR Part 20.405c, shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete. b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable. SURVEILLANCE REQUIREMENTS 4.11.4.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Specifications 4.11.1.2, 4.11.2.2, and 4.11.2.3 and in accordance with the methodology and parameters in the ODCM. 4.11.4.2 Cumulative dose contributions from direct radiation from the reactor units and from radwaste storage tanks shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in Specification 3.11.4.a.	Discrepancy 1. A total dose Specification is not included. Licensee's Justification 1. None. Reviewer's Comment 1. If the Specification is determined to be required, then the entire model Specification must be addressed.	

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3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.1 MONITORING PROGRAM

LIMITING CONDITION FOR OPERATION

3.12.1 The radiological environmental monitoring program shall be conducted as specified in Table 3.12-1.

APPLICABILITY: At all times.

ACTION:

a. With the radiological environmental monitoring program not being conducted as specified in Table 3.12-1, in lieu of a Licensee Event Report, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report required by Specification 6.9.1.11, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

b. With the level of radioactivity as the result of plant effluents in an environmental sampling medium at a specified location exceeding the reporting levels of Table 3.12-2 when averaged over any calendar quarter, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose* to A MEMBER OF THE PUBLIC is less than the calendar year limits of Specifications 3.11.1.2, 3.11.2.2, and 3.11.2.3. When more than one of the radionuclides in Table 3.12-2 are detected in the sampling medium, this report shall be submitted if:

$$\frac{\text{concentration (1)}}{\text{Reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \ldots \geq 1.0$$

When radionuclides other than those in Table 3.12-2 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose* to A MEMBER OF THE PUBLIC is equal to or greater than the calendar year limits of Specifications 3.11.1.2, 3.11.2.2 and 3.11.2.3. 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 Environmental Operating Report.

c. With milk or fresh leafy vegetable samples unavailable from one or more of the sample locations required by Table 3.12-1, identify locations for obtaining replacement samples and add them to the radiological environmental monitoring program within 30 days. The specific

*The methodology and parameters used to estimate the potential annual dose to a MEMBER OF THE PUBLIC shall be indicated in this report.

Comments

Discrepancies

1. Table 15.4.10-1 referenced in Specification 15.4.10.1 has been deleted.
2. A Specification is not included containing the reporting requirements when the environmental monitoring program is not being conducted.
3. The Specification does not include the reporting requirement when the summation of ratios exceed one.
4. The Specification allows a resampling and a follow-on confirmation analysis within 30 days.
5. The intent of the third sentence is not clear.
6. The Specification does not include the reporting requirement when nuclides other than those in the reporting table are identified.
7. Specification 15.4.10.2 does not address the model requirements.

Licensee's Justifications

None.

Reviewer's Comments

1. The previous submittal contained Table 15.4.10-1 which described the physical location for the environmental samples. At the plant visit we suggested this information be relocated to the ODCM. However, a general table identifying number of samples and sampling frequency should be prepared for insertion in the RETS submittal.
2. A statement on page 15.6.9-10 of the submittal (I believe it is a component of the Semiannual Report) contains a reporting requirement if a portion of the environmental monitoring program is not conducted. The statement is in the Administrative Section instead of in a Specification. *
3. No comment.
4. No comment.
5. No comment.
6. No comment.
7. No comment.

Licensee RETS Submittal

15.4.10 OPERATIONAL ENVIRONMENTAL MONITORING

Applicability

This section applies to operational environmental radioactivity monitoring and sampling.

Objective

To verify that plant operations have no significant radiological effect on the environment.

Specification

1. Environmental samples shall be taken at locations shown in the Environmental Manual according to the schedule given in Table 15.4.10-1 and the analytical criteria given in Table 15.4.10-2.
2. The milk sampling program shall be reviewed annually, including a visual verification of animals grazing in the vicinity of the site boundary, to ensure that sampling locations remain as conservative as practicable.
3. If a measured level of radioactivity in any environmental medium exceeds the "notification level" shown in Table 15.4.10-2, resampling and/or reanalysis for confirmation shall be completed within 30 days of the determination of the anomalous result. If the confirmed measured level of radioactivity remains above the notification level, a written report shall be submitted to the NRC in accordance with Section 15.6.9.3.B within thirty (30) days of the confirmation. However, levels of radioactivity less than 10 times those for similar sample types obtained from the reference location shall not be included in this requirement. Additionally, naturally occurring nuclides, such as Be-7, K-40, radium and its daughters, and thorium and its daughters, shall not be included in this requirement.

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locations from which samples were unavailable may then be deleted from the monitoring program. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.12, identify the cause of the unavailability of samples and identify the new location(s) for obtaining replacement samples in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

d. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.1 The radiological environmental monitoring samples shall be collected pursuant to Table 3.12-1 from the specific locations given in the table and figure(s) in the ODCM, and shall be analyzed pursuant to the requirements of Table 3.12-1 and the detection capabilities required by Table 4.12-1.

	Comments	Licensee RETS Submittal
	Discrepancy	
	1. A table comparable to Table 3.12-1 of the model Specifications is not included.	
	Licensee's justification	
	1. None.	
	Reviewer's Comment	
	1. See connention page 12-1.	

TABLE 3.12-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations[a]	Sampling and Collection Frequency	Type and Frequency of Analysis
1. DIRECT RADIATION[b]	40 routine monitoring stations (DR1-DR40) either with two or more dosimeters or with one instrument for measuring and recording dose rate continuously, placed as follows:	Quarterly	Gamma dose quarterly
	an inner ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY (DR1-DR16);		
	an outer ring of stations, one in each meteorological sector in the 5- to 8-km range from the site (DR17-DR32);		
	the balance of the stations (DR33-DR40) to be placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations.		

*Time number, media, frequency, and locations of samples may vary from site to site. This table presents an acceptable minimum program for a site at which such activity is applicable. Local site characteristics must be examined to determine if pathways not covered by this table may significantly contribute to an individual's dose and should be included in the sampling program. The code letters in parentheses, e.g. DR1, A1, provide one way of defining generic sample locations in this specification that can be used to identify the specific locations in the map(s) and table(s) in the ODCM.

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TABLE 3.12-1 (Continued) TABLE NOTATION [a]Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table 3.12-1 in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11. It is recognized that, at times, it may not be possible or practicable to contin[ue] to obtain samples of the media of choice at the most desired location or time. In these instances suitab[le] alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the radiological environmental monitoring program. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.12, identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s). [b]One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation. The 40 stations is not an absolute number. The number of direct radiation monitoring stations may be reduced according to geographical limitations; e.g., at an ocean site, some sectors will be over water so that the number of dosimeters may be reduced accordingly. The frequency of analysis or readout for TLD systems will depend upon the characteristics of the specific system used and should be selected to obtain optimum dose information with minimal fading. [c]The purpose of this sample is to obtain background information. If it is not practical to establish control locations in accordance with the distance and wind direction criteria, other sites that provide valid background data may be substituted. PWR-STS-I 3/4 12-7 9/3/82	**Discrepancy** 1. Table notations comparable to those of the model Specification are not included. **Licensee's Justification** 1. None. **Reviewer's Comment** 1. If a table comparable to Table 3.12-1 of the model is required, then supporting notation is required.	

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TABLE 3.12-1 (Continued)

TABLE NOTATION

[d] Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than ten times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

[e] Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

[f] The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken in an area beyond but near the mixing zone. "Upstream" samples in an estuary must be taken far enough upstream to be beyond the plant influence. Salt water shall be sampled only when the receiving water is utilized for recreational activities.

[g] Composite sample is one in which the quantity (aliquot) of liquid sampled is proportional to the quantity of flowing liquid and in which the method of sampling employed results in a specimen that is representative of the liquid flow. In this program composite sample aliquots shall be collected at time intervals that are very short (e.g., hourly) relative to the composite period (e.g., monthly) in order to assure obtaining a representative sample.

[h] Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

[i] The dose shall be calculated for the maximum organ and age group, using the methodology and parameters in the ODCM.

[j] If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be monthly. Attention shall be paid to including samples of tuberous and root food products.

TABLE 15.4.10-2 - RADIOLOGICAL ENVIRONMENTAL MONITORING ANALYSES

Sample Type	Analysis	Approximate LLD(a)	Notification Level	Comments
Vegetation	Gross Beta	0.5 pCi/gm wet	250 pCi/gm dry	Discrepancy
	Gamma Scan	0.06 pCi/gm wet for I-131, Cs-134, Cs-137	0.1 pCi/gm wet for I-131; 1 pCi/gm wet for Cs-134 and Cs-137	1. The reporting level table contains the following discrepancies:
Shoreline Silt	Gross Beta	2 pCi/gm dry	500 pCi/gm dry	Water
	Gamma Scan	0.15 pCi/gm dry for Cs-134, Cs-137	50 pCi/gm dry	a. I-131 . . . no reporting level listed.
		1 pCi/gm dry for others		b. Cs-134 is 100 instead of 30 pCi/l.
Soil	Gross Beta	2 pCi/gm dry	500 pCi/gm dry	c. Cs-137 is 100 instead of 50 pCi/l.
	Gamma Scan	0.15 pCi/gm dry for Cs-134, Cs-137	50 pCi/gm dry	Fish
		1 pCi/gm dry for others		a. Cs-134 is 30,000 instead of 1,000 pCi/kg.
TLD's	Gamma Dose	1 mrem/TLD	20 mrem/wk	b. Cs-137 is 10,000 instead of 2,000 pCi/kg.
Lake Water	Gross Beta-T.S. (b)	4 pCi/l	250 pCi/l	Licensee's Justification
	Gamma Scan-T.S.	15 pCi/l for Mn-54, Cu-58, Co-60, Zr-Nb-95, Cs-134, Cs-137, Ba-La-140	100 pCi/l for all isotopes listed under LLD	1. None.
		30 pCi/l for Fe-59, Zn-65		Reviewer's Comment
	Tritium	2 pCi/ml	20 pCi/ml	1. No comment.
	Strontium-89	5 pCi/l	100 pCi/l	
	Strontium-90	1 pCi/l	100 pCi/l	
Air Filters	Gross Beta	$0.01\ pCi/m^3$	$1.0\ pCi/m^3$	
	Radioiodine	$0.03\ pCi/m^3$	$0.9\ pCi/m^3$	
	Gamma Scan	$0.05\ pCi/m^3$ for Cs-134, Cs-137	$10\ pCi/m^3$ for Cs-134, Cs-137	
Well Water	Gross Beta-T.S.	4 pCi/l	250 pCi/l	
	Gamma Scan-T.S.	15 pCi/l for Mn-54, Cu-58, Co-60, Zr-Nb-95, Cs-134, Cs-137, Ba-La-140	100 pCi/l for all isotopes listed under LLD	
		30 pCi/l for Fe-59, Zn-65		
	Tritium	2 pCi/ml	20 pCi/ml	
	Strontium-89	5 pCi/l	100 pCi/l	
	Strontium-90	1 pCi/l	100 pCi/l	
Milk	Gamma Scan	15 pCi/l for Cs-134, Cs-137, Ba-La-140	60 pCi/l for Cs-134, Cs-137	
	Radiodine	0.5 pCi/l(c)	3 pCi/l for Ba-La-140	
	Strontium-89	5 pCi/l	10 pCi/l	
	Strontium-90	1 pCi/l	100 pCi/l	

TABLE 3.12-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m³)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)
H-3	20,000*				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-Nb-95	400				
I-131	2	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200			300	

*For drinking water samples. This is 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/l may be used.

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		Comments			

TABLE 15.4.10-2 (CONTINUED)

Sample Type	Nuclide	Approximate LLD(a)	Notification Level
Algae	Gross Beta	5 pCi/gm dry	250 pCi/gm dry
	Gamma Scan	5 pCi/gm dry	25 pCi/gm dry
Fish	Gross Beta	0.5 pCi/gm wet	250 pCi/gm dry
	Gamma Scan	0.13 pCi/gm wet for Mn-54, Co-58, Co-60, Cs-134, Cs-137	10 pCi/gm wet for all isotopes listed under LLD
		0.26 pCi/gm wet for Fe-59 and Zn-65	

(a) LLD - Lower limit of detection; for gamma scans, the stated LLD is nominal and applies to typical common nuclides, unless otherwise stated.

(b) T.S. - Total Solids

(c) LLD for radioiodine in milk applies at the time of sample collection.

TABLE 15.4.10-2 - RADIOLOGICAL ENVIRONMENTAL MONITORING ANALYSES

Sample Type	Analysis	Approximate LLD(a)	Notification Level
Vegetation	Gross Beta	0.5 pCi/gm wet	250 pCi/gm dry
	Gamma Scan	0.06 pCi/gm wet for I-131, Cs-134, Cs-137	0.1 pCi/gm wet for I-131 1 pCi/gm wet for Cs-134 and Cs-137
Shoreline Silt	Gross Beta	2 pCi/gm dry	500 pCi/gm dry
	Gamma Scan	0.15 pCi/gm dry for Cs-134, Cs-137 1 pCi/gm dry for others	50 pCi/gm dry
Soil	Gross Beta	2 pCi/gm dry	500 pCi/gm dry
	Gamma Scan	0.15 pCi/gm dry for Cs-134, Cs-137 1 pCi/gm dry for others	50 pCi/gm dry
TLD-4	Gamma Dose	1 mrem/TLD	20 mrem/wk
Lake Water	Gross Beta-T.S. (b)	4 pCi/l	4 pCi/l
	Gamma Scan-T.S.	15 pCi/l for Mn-54, Co-58, Co-60, Zr-Nb-95, Cs-134, Cs-137, Ba-La-140, 30 pCi/l for Fe-59, Zn-65	30 pCi/l for all isotopes listed under LLD
	Tritium	2 pCi/ml	20 pCi/ml
	Strontium-89	5 pCi/l	100 pCi/l
	Strontium-90	1 pCi/l	10 pCi/l
Air Filters	Gross Beta	0.01 pCi/m^3	1.0 pCi/m^3
	Radioiodine	0.03 pCi/m^3	0.9 pCi/m^3
	Gamma Scan	0.05 pCi/m^3 for Cs-134, Cs-137	10 pCi/m^3 for Cs-134, Cs-137
Well Water	Gross Beta-T.S.	4 pCi/l	250 pCi/l
	Gamma Scan-T.S.	15 pCi/l for Mn-54, Cs-58, Co-60, Zr-Nb-95, Cs-134, Cs-137, Ba-La-140, 30 pCi/l for Fe-59, Zn-65	100 pCi/l for all isotopes listed under LLD
	Tritium	2 pCi/ml	20 pCi/ml
	Strontium-89	5 pCi/l	100 pCi/l
	Strontium-90	1 pCi/l	10 pCi/l
Milk	Gamma Scan	15 pCi/l for Cs-134, Cs-137, Ba-La-140	60 pCi/l for Cs-134, Cs-137 300 pCi/l for Ba-La-140
	Radioiodine	0.5 pCi/l(c)	3 pCi/l
	Strontium-89	0.5 pCi/l	100 pCi/l
	Strontium-90	1 pCi/l	100 pCi/l

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Discrepancy

1. No LLD is included for I-131.

Licensee's Justification

1. None.

Reviewer's Comment

1. No comment.

TABLE 4.12-1

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS[a]

LOWER LIMIT OF DETECTION (LLD)[b,c]

Analysis	Water (pCi/l)	Airborne Particulate or Gas (pCi/m^3)	Fish (pCi/kg,wet)	Milk (pCi/l)	Food Products (pCi/kg,wet)	Sediment (pCi/kg,dry)
Gross Beta	4	0.01				
H-3	2000*					
Mn-54	15		130			
Fe-59	30		260			
Co-58,60	15		130			
Zn-65	30		260			
Zr-Nb-95	15					
I-131	1[d]	0.07	1	60		
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-La-140	15			15		

*If no drinking water pathway exists, a value of 3000 pCi/l may be used.

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TABLE 15.4.10-2 (CONTINUED)

Sample Type	Analysis	Approximate LLD(a)	Notification Level
Algae	Gross Beta	5 pCi/gm dry	250 pCi/gm dry
	Gamma Scan	5 pCi/gm dry	25 pCi/gm dry
Fish	Gross Beta	2.5 pCi/gm wet	250 pCi/gm dry
	Gamma Scan	0.13 pCi/gm wet for Mn-54, Co-58, Co-60, Cs-134, Cs-137 0.26 pCi/gm wet for Fe-59 and Zn-65	10 pCi/gm wet for all isotopes listed under LLD

(a) LLD - Lower limit of detection; for gamma scans, the stated LLD is nominal and applies to typical common nuclides, unless otherwise stated.

(b) T.S. - Total Solids

(c) LLD for radioiodine in milk applies at the time of sample collection.

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TABLE 4.12-1 (Continued)

TABLE NOTATION

1. [a]This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11.

2. [b]Required detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13.

3. [c]The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66\ s_b}{E \cdot V \cdot 2.22 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as picocuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22 is the number of disintegrations per minute per picocurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

Δt for environmental samples is the elapsed time between sample collection, or end of the sample collection period, and time of counting

Typical values of E, V, Y, and Δt should be used in the calculation.

Comments

Discrepancies

1. A notation comparable to Notation a of the model is not addressed.

2. A notation comparable to Notation b of the model is not addressed.

3. The LLD definition for environmental samples is not included. The LLD for effluent samples is included as a definition, however, the Δt term is incorrect for environmental samples.

4. A notation comparable to Notation d of the model is not included.

Licensee's Justification

None.

Reviewer's Comment

No comment.

Licensee RETS Submittal

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TABLE 4.12-1 (Continued)

TABLE NOTATION

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11.

4 [d] LLD for drinking water samples. If no drinking water pathway exists, the LLD of gamma isotopic analysis may be used.

DRAFT

RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.2 LAND USE CENSUS

LIMITING CONDITION FOR OPERATION

3.12.2 A land use census shall be conducted and shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence and the nearest garden* of greater than 50 m^2 (500 ft^2) producing broad leaf vegetation. (For elevated releases as defined in Regulatory Guide 1.111, Revision 1, July 1977, the land use census shall also identify within a distance of 5 km (3 miles) the locations in each of the 16 meteorological sectors of all milk animals and all gardens of greater than 50 m^2 producing broad leaf vegetation.)

APPLICABILITY: At all times.

ACTION:

a. With a land use census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Specification 4.11.2.3, in lieu of a Licensee Event Report, identify the new location(s) in the next Semiannual Radioactive Effluent Release Report, pursuant to Specification 6.9.1.12.

b. With a land use census identifying a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 20 percent greater than at a location from which samples are currently being obtained in accordance with Specification 3.12.1, add the new location(s) to the radiological environmental monitoring program within 30 days. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program after (October 31) of the year in which this land use census was conducted. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.12, identify the new location(s) in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.2 The land use census shall be conducted during the growing season at least once per 12 months using that information that will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11.

*Broad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the site boundary in each of two different direction sectors with the highest predicted D/Qs in lieu of the garden census. Specifications for broad leaf vegetation sampling in Table 3.12-1.4c shall be followed, including analysis of control samples.

Discrepancy

1. The land use census requirements are not adequately addressed in the submittal.

Licensee's Justification

1. The Appendix I evaluation for PCNP and the ODCM methodology already assumes milk animals present at the site boundary in the worst D/Q sector. Since this is the most conservative situation possible, a detailed land use census provides no benefit and is not justified. The existing Technical Specifications provide for visual confirmation of conditions (i.e., principally to verify that milk animals have not moved onto the site), and no further Specification is needed.

Reviewer's Comment

1. No comment.

15.4.10

2. The milk sampling program shall be reviewed annually, including a visual verification of animals grazing in the vicinity of the site boundary, to ensure that sampling locations remain as conservative as practicable.

15.4.10-1

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RADIOLOGICAL ENVIRONMENTAL MONITORING 3/4.12.3 INTERLABORATORY COMPARISON PROGRAM LIMITING CONDITION FOR OPERATION 3.12.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program that has been approved by the Commission. APPLICABILITY: At all times. ACTION: a. With analyses not being performed as required above, report the corrective actions taken to prevent a recurrence to the Commission in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11. b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable. SURVEILLANCE REQUIREMENTS 4.12.3 The Interlaboratory Comparison Program shall be described in the ODCM. A summary of the results obtained as part of the above required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11.	Discrepancy 1. A Specification addressing the Interlaboratory Comparison requirements is not included. Licensee's Justification 1. Our contractor for environmental sample analysis continues to participate in the Interlaboratory Comparison Program. The requirement that the contractor continue such participation will be added to the Point Beach Environmental Manual in the next revision. Reviewer's Comment 1. No comment.	

Draft 7" of NUREG-0472, Rev. 3, September 1982	Comments	Licensee RETS Submittal

This figure shall consist of a map of the site area showing the SITE BOUNDARY and locating points within the SITE BOUNDARY where radioactive gaseous and liquid effluents are released, as well as where radioactive liquid effluents leave the site. If onsite areas subject to radioactive materials in gaseous or liquid effluents are utilized by the public for recreational or other purposes, these areas shall be outlined on the map and identified by occupancy factors and the licensee's method of occupancy control (if any). The figure shall be sufficiently detailed to allow identification of structures and release point locations and elevations, as well as definition of UNRESTRICTED AREAS within the SITE BOUNDARY that are accessible to MEMBERS OF THE PUBLIC. The map scale shall be on the order of 2-3"/mile. See NUREG-0133 for additional guidance.

MAP DEFINING UNRESTRICTED AREAS FOR RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS

FIGURE 5.1-3

Discrepancy

1. The map does not indicate:

   a. Effluent release points,
   b. Areas within the site boundary accessible by members of the public.

Licensee's Justification

1. None.

Reviewer's Comment

1. No comment.

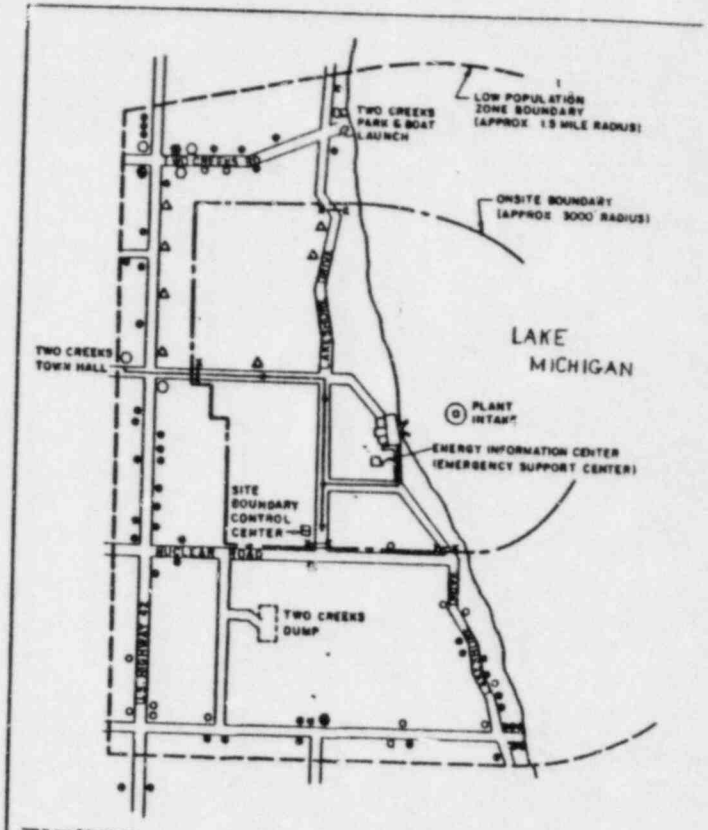

FIGURE 15.5.1-1
MAP OF POINT BEACH NUCLEAR PLANT AND IMMEDIATE SURROUNDING AREA

6.0 ADMINISTRATIVE CONTROLS

6.5.1 UNIT REVIEW GROUP (URG)

RESPONSIBILITIES

6.5.1.6 The URG shall be responsible for:

k. Review of ANY accidental, unplanned or uncontrolled radioactive release including the preparation of reports covering evaluation, recommendations and disposition of the corrective action to prevent recurrence and the forwarding of these reports to the (Superintendent of Power Plants) and to the (Company Nuclear Review and Audit Group).

l. Review of changes to the PROCESS CONTROL PROGRAM and the OFFSITE DOSE CALCULATION MANUAL.

6.5.2 COMPANY NUCLEAR REVIEW AND AUDIT GROUP (CNPAG)

AUDITS

6.5.2.8 Audits of unit activities shall be performed under the cognizance of the (CNPAG). These audits shall encompass:

k. The radiological environmental monitoring program and the results thereof at least once per 12 months.

l. The OFFSITE DOSE CALCULATION MANUAL and implementing procedures at least once per 24 months.

m. The PROCESS CONTROL PROGRAM and implementing procedures for processing and packaging of radioactive wastes at least once per 24 months.

n. The performance of activities required by the Quality Assurance Program to meet the provisions of Regulatory Guide 1.21, Revision 1, June 1974 and Regulatory Guide 4.1, Revision 1, April 1975 at least once per 12 months.

6.8 PROCEDURES AND PROGRAMS

6.8.1 Written procedures shall be established, implemented and maintained covering the activities referenced below:

g. PROCESS CONTROL PROGRAM implementation.

h. OFFSITE DOSE CALCULATION MANUAL implementation.

i. Quality Assurance Program for effluent and environmental monitoring, using the guidance in Regulatory Guide 1.21, Revision 1, June 1974 and Regulatory Guide 4.1, Revision 1, April 1975.

Comments

Discrepancies

1. The submittal proposes review of releases only if the levels exceed a value calculated in the ODCM. The reporting requirements are not addressed.

2. The submittal does not address the requirements of 6.5.2.8.n of the model Specification.

3. The submittal does not address the requirements of 6.8.1.g, 6.8.1.h, and 6.8.1.i of the model Specification.

Licensee's Justifications

None.

Reviewer's Comments

1. No comment.

2. At the plant visit the omission was accepted since we were informed the Environmental Monitoring Manual contained a requirement to meet Reg. Guide 4.15. The EMM does not reference any Reg. Guide.

3. Item e of Specification 15.6.5.3.8 alludes to procedures for the ODCM and PCP.

Licensee RETS Submittal

15.6.5.2.6

h) Review every onsite release of radioactive material to the environs in excess of the levels calculated using the methodology of the ODCM. Such review will include a summary of evaluation, recommendation and disposition of corrective action to prevent recurrence.

15.6.5-4

AUDITS

15.6.5.3.8

Audits of facility activities shall be performed under the cognizance of the OSRC. These audits shall encompass:

a) The conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions at least one per year.

b) The performance, training and qualifications of the licensed operating staff at least once per year.

c) The results of actions taken to correct deficiencies occurring in facility equipment, structures, systems, or method of operation that affect nuclear safety at least twice per year at approximately six-month intervals.

d) The results of quarterly audits by the Quality Assurance Division on the performance of activities required by the Quality Assurance Program to meet the criteria of Appendix "B", 10 CFR 50, at least once per two years.

e) The Offsite Dose Calculation Manual and Process Control Program together with their implementing procedures at least once per two years.

15.6.5-7

ADMINISTRATIVE CONTROLS

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT*

6.9.1.11 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 initial report shall be submitted prior to May 1 of the year following initial criticality.

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, with operational controls as appropriate, and with 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 censuses required by Specification 3.12.2.

The Annual Radiological Environmental Operating Reports shall include the results of analysis of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the Table and Figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual 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; at least two legible maps** covering all sampling locations keyed to a table giving distances and directions from the centerline of one reactor; the results of licensee participation in the Interlaboratory Comparison Program, required by Specification 3.12.3; discussion of all deviations from the sampling schedule of Table 3.12-1, and discussion of all analyses in which the LLD required by Table 4.12-1 was not achievable.

*A single submittal may be made for a multiple unit station.

**One map shall cover stations near the site boundary; a second shall include the more distant stations.

Discrepancy

1. The submittal does not include an Annual Report section.

Licensee's Justification

1. None.

Reviewer's Comment

1. Item b on page 15.6.9-10 is an Annual Report item. However, I do not know what report is assumed as the pages previous to 15.6.9-10 are missing.

(1) The number and types of samples taken and the types of analytical measurements made on the samples.

(2) Any changes made in sample types or locations during the reporting period and criteria for these changes.

b. A summary of survey results during the reporting period including a comment on any significant portion of the Operational Environmental Monitoring Program not conducted.

15.6.9-10

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B.25

ADMINISTRATIVE CONTROLS

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT*

6.9.1.12 Routine Radioactive Effluent Release Reports covering the operation of the unit during the previous 6 months of operation shall be submitted within 60 days after January 1 and July 1 of each year. The period of the first report shall begin with the date of initial criticality.

The Radioactive Effluent Release Reports shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of 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.

The Radioactive Effluent Release Report to be submitted within 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 on magnetic tape of wind speed, wind direction, atmospheric stability, and precipitation (if measured), 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 or station 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 (Figure 5.1-3) 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. (For ORs: approximate and conservative approximate methods are acceptable.) The assessment of radiation doses shall be performed in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

The Radioactive Effluent Release Report to be submitted 60 days after January 1 of each year shall also include an assessment of radiation doses to the likely most exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, for the previous calendar year to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power

*A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.

**In lieu of submission with the first half year Radioactive Effluent Release Report, the licensee has the option of retaining this summary of required meteorological data on site in a file that shall be provided to the NRC upon request.

Discrepancy

1. The semiannual reporting requirements are not addressed.

Licensee's Justification

1. None.

Reviewer's Comment

1. The only Semiannual Report item found is the meteorological data.

15.6.9.2 UNIQUE REPORTING REQUIREMENTS

The following written reports shall be submitted to the Director, Office of Nuclear Reactor Regulation, USNRC:

A. Each integrated leak test shall be the subject of a summary technical report, including results of the local leak rate tests and isolation valve leak rate tests since the last report. The report shall include analysis and interpretations of the results which demonstrate compliance with specified leak rate limits.

B. If the confirmed measured level of radioactivity remains above the notification levels specified in Table 15.4.10-2 of Specification 15.4.10, "Operational Environmental Monitoring", a written report describing the circumstance shall be submitted to the NRC Regional Administrator, copy to the above Director, within thirty days of the confirmation.

C. Submission of a report within sixty days after January 1 and after July 1 each year for the six-month period of fraction thereof, ending June 30 and December 31 containing:

15.6.9-7

5. Meterological Data

The summary of required meterological data shall be kept in a file on site and will be provided to the NRC upon request. The annual summary may be either in the form of an hour-by-hour listing on magnetic tape of wind speed, wind direction, atmospheric stability, and precipitation (if measured) or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability. The meterological data will be available following the installation and operation of the new plant process computer and software (approximately 1985)

15.6.9-10

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MINISTRATIVE CONTROLS

peration. Acceptable methods for calculating the dose contribution from liquid and gaseous effluents are given in Regulatory Guide 1.109, Rev. 1, October 1977.

The Radioactive Effluent Release Reports shall include the following information for each class of solid waste (as defined by 10 CFR Part 61) shipped offsite during the report period:

a. Container volume,

b. Total curie quantity (specify whether determined by measurement or estimate),

c. Principal radionuclides (specify whether determined by measurement or estimate),

d. Source of waste and processing employed (e.g., dewatered spent resin, compacted dry waste, evaporator bottoms),

e. Type of container (e.g., LSA, Type A, Type B, Large Quantity), and

f. Solidification agent or absorbent (e.g., cement, urea formaldehyde).

The Radioactive Effluent Release Reports shall include a list and description of unplanned releases from the site to UNRESTRICTED AREAS of radioactive materials in gaseous and liquid effluents made during the reporting period.

The Radioactive Effluent Release Reports shall include any changes made during the reporting period to the PROCESS CONTROL PROGRAM (PCP) and to the OFFSITE DOSE CALCULATION MANUAL (ODCM), as well as a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census pursuant to Specification 3.12.2.

SPECIAL REPORTS

Special reports may be required covering inspections, test and maintenance activities. These special reports are determined on an individual basis for each unit and their preparation and submittal are designated in the Technical Specifications.

6.9.2 Special reports shall be submitted to the Director of the NRC Regional Office listed in Appendix D, 10 CFR Part 20, with a copy to the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 within the time period specified for each report.

6.10 RECORD RETENTION

6.10.2 The following records shall be retained for the duration of the Unit Operating License:

a. Records of analyses required by the radiological environmental monitoring program that would permit evaluation of the accuracy of the analysis at a later date. This should include procedures effective at specified times and QA records showing that these procedures were followed.

Comments

Discrepancy

1. The record retention requirements are not fully addressed.

Licensee's Justification

1. None.

Reviewer's Comment

1. No comment.

Licensee RETS Submittal

M. Test results, in units of microcuries, for leak tests performed pursuant to Specification 15.4.12.

N. Record of annual physical inventory verifying accountability of sources subject to Specification 15.4.12.

O. *Records of training and qualification for current plant NRC licensed staff and key personnel.

P. *Records of inservice inspections performed pursuant to these Technical Specifications.

Q. *Records of Quality Assurance activities required by the QA Manual.

R. *Records of reviews performed pursuant to 10 CFR 50.59.

S. *Records of meetings of the Manager's Supervisory Staff and the Offsite Review Committee.

T. *Records of Environmental Qualification which are covered under the provisions of paragraph 15.6.12.

U. *Records of the service life of all snubbers in accordance with Specification 15.4.13.4.

V. *Record of analyses for radiological environmental monitoring

*Items will be permanently retained.

Draft 7" of NUREG-0472, Rev. 3, September 1982	Comments	Licensee RETS Submittal
ADMINISTRATIVE CONTROLS 6.13 PROCESS CONTROL PROGRAM (PCP) 6.13.1 The PCP shall be approved by the Commission prior to implementation. 6.13.2 Licensee initiated changes to the PCP: 1. Shall be submitted to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made. This submittal shall contain: a. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information; b. A determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes; and c. Documentation of the fact that the change has been reviewed and found acceptable by the (URG). 2. Shall become effective upon review and acceptance by the (URG). 6.14 OFFSITE DOSE CALCULATION MANUAL (ODCM) 6.14.1 The ODCM shall be approved by the Commission prior to implementation. 6.14.2 Licensee initiated changes to the ODCM: 1. Shall be submitted to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made effective. This submittal shall contain: a. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information. Information submitted should consist of a package of those pages of the ODCM to be changed with each page numbered and provided with an approval and date box, together with appropriate analyses or evaluations justifying the change(s); b. A determination that the change will not reduce the accuracy or reliability of dose calculations or setpoint determinations; and c. Documentation of the fact that the change has been reviewed and found acceptable by the (URG). 2. Shall become effective upon review and acceptance by the (URG).	Discrepancies 1. A PCP Specification is not included. 2. An ODCM Specification is not included. Licensee's Justification 1. None. 2. None. Reviewer's Comment 1. No comment. 2. No comment.	

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ADMINISTRATIVE CONTROLS

6.15 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT SYSTEMS*

6.15.1 Licensee initiated major changes to the radioactive waste systems (liquid, gaseous and solid):

1. Shall be reported to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the (Unit Review Group). The discussion of each change shall contain:

   a. A summary of the evaluation that led to the determination that the change could be made in accordance with 10 CFR Part 50.59.

   b. Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information.

   c. A detailed description of the equipment, components and processes involved and the interfaces with other plant systems;

   d. An evaluation of the change, which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the license application and amendments thereto;

   e. An evaluation of the change, which shows the expected maximum exposures to individual in the UNRESTRICTED AREA and to the general population that differ from those previously estimated in the license application and amendments thereto;

   f. A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period prior to when the changes are to be made;

   g. An estimate of the exposure to plant operating personnel as a result of the change; and

   h. Documentation of the fact that the change was reviewed and found acceptable by the (URG).

2. Shall become effective upon review and acceptance by the (URG).

*Licensees may chose to submit the information called for in this Specification as part of the annual FSAR update.

Discrepancy

1. A Specification addressing major changes to the radwaste treatment system is not included.

Licensee's Justification

1. The requirement to report major changes to the radioactive waste treatment systems is already addressed in 10 CFR 50.59. An additional inclusion in Technical Specifications is unnecessary.

Reviewer's Comment

1. No comment.

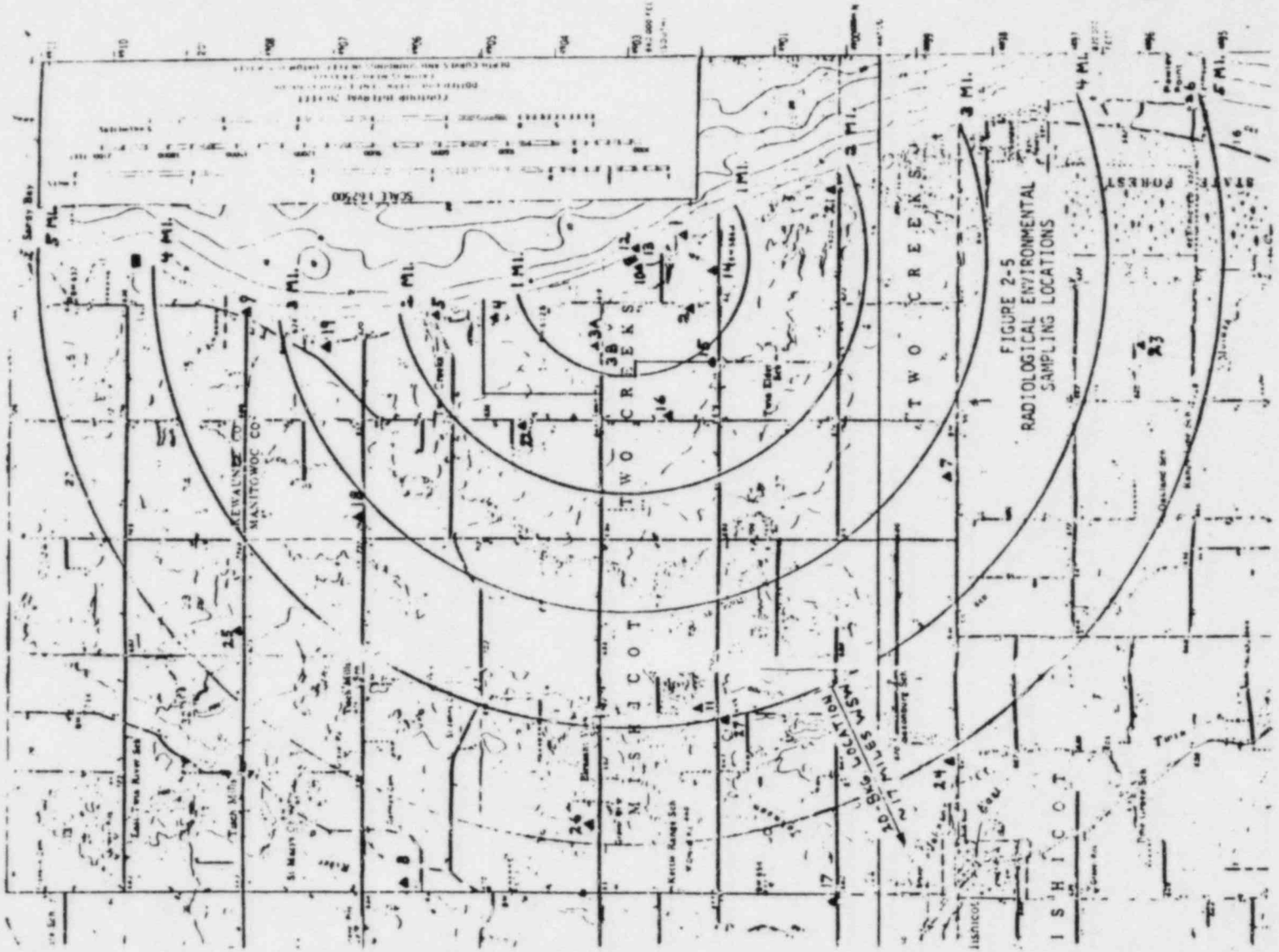
POINT BEACH NUCLEAR PLANT

UNIT NOS. 1 AND 2

ENVIRONMENTAL MONITORING MANUAL

WISCONSIN ELECTRIC POWER COMPANY

Revision 2
June 1982


1 MI.
2 MI.
3 MI.
4 MI.
5 MI.
TWO CREEKS
MANITOWOC CO.
KEWAUNEE CO.
MISHICOT
ISHICOT
STATE FOREST
FIGURE 2-5
RADIOLOGICAL ENVIRONMENTAL
SAMPLING LOCATIONS

Licensee REIS Submittal

SAMPLE TYPE	LOCATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TLD's (Quarterly)	E-01	/			/			/			/		
	E-02	/			/			/			/		
	E-03	/			/			/			/		
	E-04	/			/			/			/		
	E-05	/			/			/			/		
	E-06	/			/			/			/		
	E-07	/			/			/			/		
	E-08	/			/			/			/		
	E-09	/			/			/			/		
	E-12	/			/			/			/		
	E-14	/			/			/			/		
	E-15	/			/			/			/		
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	E-17	/			/			/			/		
	E-18	/			/			/			/		
	E-20	/			/			/			/		
	E-22	/			/			/			/		
	E-23	/			/			/			/		
	E-24	/			/			/			/		
	E-25	/			/			/			/		
	E-26	/			/			/			/		
	E-27	/			/			/			/		
	E-RC	/			/			/			/		

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Discrepancies

1. Eight TLD packets are not located in the general area of the site boundary.
2. Section 2.3.4 does not specify the number of TLD locations although 23 are counted in the location table.

Licensee's Justifications

1. None.
2. None.

Reviewer's Comments

1. Since the site is located adjacent to Lake Michigan only 20 TLDs would be required, and therefore, eight would be required near the site boundary.
2. The number should be identified in the event the number is changed in the future.

Comments

TABLE 4.12-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	1. DIRECT RADIATION[a]	Number of Representative Samples and Sample Locations[a]	Sampling and Collection Frequency	Type and Frequency of Analysis
	40 routine monitoring stations (DR1-DR40) either with two or more dosimeters or with one instrument for measuring and recording dose rate continuously, placed as follows:		Quarterly	Gamma dose quarterly
	an inner ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY (DR1-DR16).			
	an outer ring of stations, one in each meteorological sector in the 6- to 8-km range from the site (DR17-DR32).			
	the balance of the stations (DR33-DR40) to be placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations.			

Time Number, media, frequency, and location of samples may vary from site to site. This table presents an acceptable minimum program for a site at which entry is applicable. Local site characteristics must be examined to determine if pathways not covered by this table may significantly contribute (2 an individual's dose and should be included in the sampling program. The code letters in parenthesis, e.g. DR1, A1, provide one way of defining generic sample locations in this site specification that can be used to identify the specific locations in the map(s) and table in the ODCM.

9/1/82

Pub-515-1

1/4 12-1

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(see Table 3.12-1 below)	**Discrepancies** 1. The locations of the airborne samplers are not identified. **Licensee's Justification** 1. None. **Reviewer's Comment** 1. The locations should satisfy the requirements prescribed in the model Specification.	2.3.6 Air Filters Air filters are changed weekly at specified locations. The forms described in Section 2.1 are to be used by PBNP personnel. Take precautions when handling filters to avoid loss of collected material as well as to avoid contamination of the filters. Washing hands before changing filters is a recommended practice. Filters are allowed to decay at least 24 hours before counting. Both particulate filters and charcoal cartridges are employed at each sampling location. Particulate filters are analyzed for gross beta activity; in addition, gamma scans are done on quarterly composites for each location. The charcoal cartridges are used for detection of radioiodine by gamma counting under the 0.36 Mev peak.

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations[a]	Sampling and Collection Frequency	Type and Frequency of Analysis
2. AIRBORNE Radioiodine and Particulates	Samples from 5 locations (A1-A5): 3 samples (A1-A3) from close to the 3 SITE BOUNDARY locations, in different sectors, of the highest calculated annual average groundlevel D/Q. 1 sample (A4) from the vicinity of a community having the highest calculated annual average groundlevel D/Q. 1 sample (A5) from a control location, as for example 15-30 km distant and in the least prevalent wind direction.[c]	Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading.	Radioiodine Cannister: I-131 analysis weekly. Particulate Sampler: Gross beta radioactivity analysis following filter change;[d] Gamma isotopic analysis[e] of composite (by location) quarterly.
3. WATERBORNE a. Surface[f]	1 sample upstream (Wa1) 1 sample downstream (Wa2)	Composite sample over 1-month period[g]	Gamma isotopic analysis[e] monthly. Composite for tritium analysis quarterly.
b. Ground	Samples from 1 or 2 sources (Wb1, Wb2), only if likely to be affected[h]	Quarterly	Gamma isotopic[e] and tritium analysis quarterly.
c. Drinking	1 sample of each of 1 to 3 (Wc1 - Wc3) of the nearest water supplies that could be affected by its discharge. 1 sample from a control location (Wc4).	Composite sample over 2-week period[g] when I-131 analysis is performed, monthly composite otherwise	I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year.[i] Composite for gross beta and gamma isotopic analyses[e] monthly. Composite for tritium analysis quarterly.

Draft 7[th] of NUREG-0472, Rev. 3, September 1982

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations[a]	Sampling and Collection Frequency[b]	Type and Frequency of Analysis
c. Food Products (cont'd)	Samples of 3 different kinds of broad leaf vegetation grown nearest each of two different offsite locations of highest predicted annual average ground-level D/Q if milk sampling is not performed (1c10 - 1c12).	Monthly when available	Gamma isotopic[e] and I-131 analysis.
	1 sample of each of the similar broad leaf vegetation grown 15-30 km distant in the least prevalent wind direction if milk sampling is not performed (1c20 - 1c22)	Monthly when available	Gamma isotopic[e] and I-131 analysis.

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9/3/82

Comments

Discrepancies

1. A control milk sample is not included.

Licensee's Justification

1. None.

Reviewer's Comment

1. The location for the milk samples are not identified. Therefore, it is not clear if a control location exists.

Licensee RETS Submittal

2.3.8 Milk

Milk samples are obtained monthly from three individual dairy farmers located north, south, and west of the site. Analyses include a gamma scan, radioiodine by

SAMPLE TYPE	LOCATION
MILK	E-11
(Monthly)	E-19
	E-31
WELL WATER	E-10
LAKE WATER	E-01
	E-05
	E-06
	E-07
[illegible] 1	E-17
weekly for 2	
monthly 3	
analysis 4	
Date Shipped	

Draft 7[th] of NUREG-0472, Rev. 3, September 1982	Comments	Licensee RETS Submittal
TABLE 3.12-1 (Continued) TABLE NOTATION [a]Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table 3.12-1 in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time. In these instances suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the radiological environmental monitoring program. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.12, identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s). [b]One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation. The 40 stations is not an absolute number. The number of direct radiation monitoring stations may be reduced according to geographical limitations; e.g., at an ocean site, some sectors will be over water so that the number of dosimeters may be reduced accordingly. The frequency of analysis or readout for TLD systems will depend upon the characteristics of the specific system used and should be selected to obtain optimum dose information with minimal fading. [c]The purpose of this sample is to obtain background information. If it is not practical to establish control locations in accordance with the distance and wind direction criteria, other sites that provide valid background data may be substituted. PWR-STS-I 3/4 12-7 9/3/82	Discrepancy 1. The table notations are not included. Licensee's Justification 1. None. Reviewer's Comment 1. The data was not presented in table form. Nevertheless, the information in the table notation of the model Specification is not included in the submittal.	

OFFSITE DOSE CALCULATION MANUAL

POINT BEACH NUCLEAR PLANT

Revision 0
September 1981

Page 2-2, Section 2.4 and page 2-3, Section 2.5:

An alarm or trip setpoint which actuates at five times MPC limits is not acceptable. These setpoints should be set at no greater than 10 CFR Part 20 Appendix B, Table 2 limits.

Page 2-2, Section 2.5:

General methodology, including equations, for determining effluent monitor setpoints should be included in the ODCM. More detailed procedures for each monitor are appropriately addressed by inclusion in the PBNP Health Physics Calibration Manual.

If the increased reading is actually due to an increased radiation inventory within the system being monitored, as opposed to an increased background radiation field in the vicinity of the detector, the Shift Superintendent, Chemistry and Health Physics Superintendent should be notified of the indicated increase in effluent concentrations. An evaluation must be made to determine the impact of the release and to determine if the alert setpoint may be adjusted to a higher value. The alert setpoint may be adjusted to a higher value with the concurrence of the Duty Shift Superintendent and the Chemistry and Health Physics Superintendent.

2.4 Alarm or Trip Setpoint Guidelines

The alarm or trip setpoint of each effluent monitor will be set to actuate at concentrations equal to or less than five times the applicable maximum permissible concentrations contained in 10 CFR 20, Appendix B, Table 2. The alarm setpoints are not to be changed without Management Supervisory Staff approval.

2.5 Determination of Setpoints

Calibration of the RMS effluent detectors is accomplished in accordance with the PBNP Health Physics Calibration Manual. A derived calibration constant is utilized to standardize all releases to equivalent concentrations of the appropriate reference isotope. Noble gas effluent monitors apply the calibration constant to normalize to equivalent concentrations of Xe-133. Gaseous particulate effluent monitors and liquid effluent monitors apply the calibration constant to standardize all particulate releases to equivalent concentrations of Co-60. Radioiodine monitors are adjusted to obtain equivalent concentrations of I-131.

Page 2-2, Section 2.4 and page 2-3, Section 2.5

An alarm or trip setpoint which actuates at five times MPC limits is not acceptable. These setpoints should be set at no greater than 10 CFR Part 20 Appendix B, Table I limits.

Grab samples from each effluent stream are isotopically analyzed and an average isotopic distribution is developed. The average isotopic concentrations are normalized to the appropriate reference isotope. The methodology for normalization to a reference isotope is detailed in Section 4. Isotopes are normalized to the reference isotope based on dose conversion factors contained in Regulatory Guide 1.109. Calibration factors are adjusted to permit each monitor to display effluent concentrations in equivalent concentrations of the reference isotope. The calibration factor reflects the correlation between the effluent monitor response expected from an effluent of average isotopic distribution. The QAD computer program may be used to determine the monitor response expected from an effluent of average isotopic distribution. The alert and alarm setpoints for each monitor will be correlated to the maximum permissible concentration of the referenced isotope. Monitors referenced to Xe-133 equivalent concentrations will have their alarm or trip setpoints established at a value less than or equal to five times the MPC for Xe-133. Monitors referenced to Co-60 equivalent concentrations will have alarm and trip setpoints established at a value less than or equal to five times the MPC for Co-60.

Page 3-1, Section 3.0:

General equations used in the computer program for calculating liquid and gaseous annual dose should be included for review.

3.0 DEMONSTRATING COMPLIANCE WITH 10 CFR 50, APPENDIX I

3.1 Introduction

Maintaining effluents within the dose objectives of Appendix I to 10 CFR 50 is demonstrated for PBNP by a two-step process:

A. A summation of all releases in equivalent curies is performed on a quarterly basis. These sums are then compared with previously calculated release objectives, i.e., quantities which would result in the dose objectives of Appendix I to 10 CFR 50. If actual releases are less than or equal to the release objectives, then de facto compliance with Appendix I exists, and no further action is required.

B. If the sums exceed the release objectives, then dose calculations are required every thirty days until releases return to normal. These calculations may be performed in either of two ways.

1. Computer - This capability will be provided upon completion of the new meteorology and dose assessment software to be installed on the new plant process computer late in 1984.

2. Hand Calculations - Based on the meteorology, plant parameters, and dose pathways given in Appendix I of the PBNP FSAR and on the dose conversion factors set forth in Regulatory Guide 1.109.

3.2 Dose Objectives

To define the limits and conditions for the controlled release of radioactive materials in liquid and gaseous effluents to the environs to ensure that these releases are as low as is reasonably achievable in conformance with 10 CFR Parts 50.34a and 50.36a, to ensure that these releases result in concentrations of radioactive materials in

Page 3-4, Section 3.3:

The factor L_k is not defined.

It may be appropriate to include a factor that would increase the value of D_k to account for doses via pathways not considered in the calculation.

There are two typos:

(a) ΣACE_{ijk} should be $\Sigma AC_{e}{}_{ijk}$

(b) "form" should be "from".

$$IDCe_{ijk} = \Sigma ACe_{ijk} \times \frac{L_k \times 2}{D_k}$$

where $IDCe_{ijk}$ = Dose objective release in total equivalent curies for all isotopes of effluent type k

ΣACE_{ijk} = Calculated release in total equivalent curies for all isotopes of effluent type k

2 = Two units per plant.

D_k = Calculated dose resulting from release of ΣACE_{ijk} curies.

A. The following notes apply to the calculation of design objective releases for gaseous effluents:

1. For noble gases, the gamma air dose is limiting.
2. For radioiodines, the thyroid dose to the infant is limiting; the dose contribution form other isotopes is negligible.
3. For remaining isotopes, the liver dose to the child is limiting; the dose contribution from radioiodines is negligible for all organs other than the thyroid

B. The following notes apply to the calculation of design objective releases for liquid effluents:

1. For radioiodines, the thyroid dose to a child is limiting; for scaling purposes, the [illegible]e contribution from other isotopes is negligible.
2. For remaining isotopes, the liver dose to a teenager is limiting; the dose contribution from radioiodines is negligible for all organs other than the thyroid

Page 3-5, Section 3.4:

Direct radiation needs to be addressed when showing compliance to 40 CFR 190 requirements.

Design objective releases calculated in the manner described above are quantities of radioactivity in effluents which, for the particular environmental parameters and conditions at Point Beach Nuclear Plant, would result in maximum doses to an individual corresponding to the limits set forth in Appendix I to 10 CFR 50. Actual plant releases are expected to be well within the design objective release quantities. The periodic review required by this section ensures that plant releases remain as low as is reasonably achievable.

3.4 EPA Regulations

Compliance with the provisions of Appendix I to 10 CFR 50 is adequate demonstration of conformance to the standards set forth in 40 CFR 190 regarding the dose commitment to individuals from the uranium fuel cycle. The Specifications direct that if actual quantities of radioactive materials release exceed twice the quantities associated with the design dose objective of Appendix I to 10 CFR 50, a special report will be submitted.

D Particulates (isotopes other than tritium, noble gases or radioiodines)

$\Sigma CE_{ij} \leq 1.80E+00$ equivalent curies

Where 1. The reference isotope, j, is Co-60.

2. DF_i is the highest dose factor for isotope i in any column of Table E-13 of Regulatory Guide 1.109, Revision 1, October 1977; dose factors for isotopes not given in Table E-13 are obtained from Table E-11. Dose factors for isotopes not given in either Table E-13 or Table E-11 are obtained from the dose factor for any isotope of the same element, modified by the ratio of their respective maximum permissible concentrations (MPCs) as given in 10 CFR 20.

3. DF_j is the highest dose factor for the reference isotope, Co-60, given in any column of Table E-13 of Regulatory Guide 1.109, Revision 1, October 1977.

4.4 Tritium in Liquid and Gaseous Effluents

The design objective release for tritium in liquid effluents may be increased, provided it is accompanied by a proportional decrease in the design objective release for tritium in gaseous effluents. Similarly, the design objective release for tritium in gaseous effluents may be increased, provided it is accompanied by a proportional decrease in the design objective release for tritium in liquid effluents.

4.5 Quarterly Summary

A summary of effluent releases is made on a quarterly basis to demonstrate compliance with this section. In the event that actual quantities of radioactive materials released in liquid and gaseous effluents for any quarter exceed one-half the annual release objectives as described in this section, a special report

Page 4-3, Section 4.4:

Can release curies be traded between liquid and gaseous contributions? If this is correct, the proportional decreases should be weighted by the dose factors for appropriate pathways.

Table 4-1 (1 of 2), Section C:

Dose factors DF_i listed are not those given in Regulatory Guide 1.109, Table E-13, page 1.109-63 for the child thyroid. Therefore, the ratios DF_i/DF_j are not correct. Also all radioiodines listed in Table E-11 are listed in Table E-13.

TABLE 4-1
LIQUID EFFLUENT CONVERSION FACTORS

A. Tritium: Since tritium is considered by itself, the conversion factor is unity.

B. Noble Gases: The noble gases released in liquid effluents are to be added to noble gases released in gaseous effluents. They are normally insignificant

C. Radioiodine: For iodines, use Regulatory Guide 1.109, Table E-13, thyroid dose factors for a child. For radioiodines not listed in Table E-13, use Table E-11 for adults. Reference isotope (DF_j) is I-131.

ISOTOPE	DF_i (mRem/μCi)	DF_i/DF_j
I-130	2.85E-04	5.25E-02
I-131	5.43E-03	1.00E+00
I-132	7.15E-05	1.32E-02
I-133	1.78E-03	3.28E-01
I-134	3.74E-05	6.89E-03
I-135	1.53E-04	2.82E-02

D. Additional Isotopes - To obtain DF_i/DF_j for isotopes not in this table, use the approach as described in item E, below. For DF_i, of isotopes not listed in Regulatory 1.109, scale to another isotope of the same element by the ratio of MPC's. If the MPC is not available, use the MPC of the next longer-lived isotope of the same element. Rh-103m, Rh-106, Cd-189, Bi-207, and Sn-113 have already been obtained in this manner

Table 4-1 (2 of 2):

The values of DF_i listed are not from Tables E-12 or Table E-11 of Regulatory Guide 1.109, Revision 1, October 1977, therefore, the ratios DF_i/DF_j are not correct.

Table 4-1 (Continued)

E. Other: For non-iodine, non-tritium, non-C-14 in liquids, use Regulatory Guide 1.109, Table E-12, dose factors for teenagers. (Dose factors for teenagers are chosen because of the critical pathway identified in the Appendix I analysis as given in the PBNP FSAR.) For isotopes not listed in Table E-12, use Table E-11 (Adults). Normalize to Co-60. In using Regulatory Guide 1.109, the table is scanned for the highest DF_i for any organ.

ISOTOPE	DF_i (mRem/pCi)	DF_i/DF_j
F-18	6.25E-07	1.89E-02
Na-24	2.26E-06	6.83E-02
Bi-51	6.69E-07	2.02E-02
Mn-54	1.40E-05	4.23E-01
Fe-55	3.23E-05	9.76E-01
Fe-59	3.40E-05	1.03E+00
Co-57	4.44E-06	1.34E-01
Co-58	1.34E-05	4.05E-01
Co-60	3.31E-05	1.00E+00
Br-83	5.79E-08	1.75E-03
Br-84	5.22E-08	1.58E-03
Br-85	2.14E-09	6.47E-05
Rb-86	2.11E-05	6.37E-01
Rb-88	6.06E-08	1.83E-03
Sr-89	4.60E-04	1.39E+01
Sr-90	1.04E-02	3.14E+02
Sr-91	2.93E-05	8.85E-01
Y-90	1.09E-04	3.29E+00
Y-91m	2.67E-10	8.07E-06
Y-91	7.53E-05	2.27E+00
Y-93	8.50E-05	2.27E+00
Zr-95	2.68E-05	8.10E-01
Nb-95	1.78E-05	5.38E-01
Mo-99	9.99E-06	3.02E-01
Tc-99m	4.13E-07	1.25E-02
Ru-103	1.85E-05	5.59E-01
Ru-106	1.81E-04	5.47E+00
Rh-103m	1.41E-07	4.26E-03
Rh-106	1.41E-07	4.26E-03
Cd-109	1.16E-05	3.50E-01
Ag-110m	6.04E-05	1.82E+00
Sb-124	7.95E-05	2.40E+00
Sb-125	2.33E-04	7.04E+00
Te-125m	1.07E-05	3.23E-01
Te-127m	2.75E-05	8.31E-01
Te-127	1.22E-05	3.69E-01
Te-129m	5.80E-05	1.75E+00
Te-129	8.32E-07	3.99E-03
Te-131m	8.40E-05	2.54E+00
Te-131	8.64E-08	2.61E-03
Te-132	8.00E-05	2.42E+00
Cs-134	1.94E-04	5.86E+00
Cs-136	2.57E-05	7.76E-01
Cs-137	1.44E-04	4.35E+00
Cs-138	1.09E-07	3.29E-03
Ba-137m	(included in Cs-137)	
Ba-140	2.83E-05	8.61E-01
La-140	9.48E-05	2.86E+00
Ce-141	2.29E-05	6.92E-01
Ce-143	4.56E-05	1.38E+00
Ce-144	1.70E-04	5.14E+00
Pr-143	4.03E-05	1.22E+00
Pr-144	3.02E-11	9.12E-07
Bi-207	3.17E-05	9.58E-01
Th-232	1.80E-03	5.44E+01
Np-239	2.40E-05	7.25E-01
U-238	7.67E-04	2.32E+01
Sn-113	2.60E-05	7.85E-01
Ce-139	(use Ce-144)	5.14E+00
La-140	(use Ce-134)	5.36E+00

Table 4-1 (2 of 2)

Table 4-2, Section C & D:

The values of DF_i listed are not from the cited tables of Regulatory Guide 1.109, Revision 1, October 1977, therefore, the ratios DF_i/DF_j are not correct.

TABLE 4-2
GASEOUS EFFLUENT CONVERSION FACTORS

A. Tritium: Since tritium is considered by itself, the conversion factor is unity.

B. Noble Gases: Use external dose factors, DFB_i, from Table B-1 of Regulatory Guide 1.109. Normalize to Xe-133.

ISOTOPE	DFB_i	DFB_i/DFB_j
Ar-41	8.84E-03	3.01E+01
Kr-83m	7.56E-08	2.57E-04
Kr-85m	1.17E-03	3.98E+00
Kr-85	1.61E-05	5.48E-02
Kr-87	5.92E-03	2.01E+01
Kr-88	1.47E-02	5.00E+01
Kr-89	1.66E-02	5.65E+01
Kr-90	1.56E-02	5.31E+01
Xe-131m	9.15E-05	3.11E-01
Xe-133m	2.51E-04	8.54E-01
Xe-133	2.94E-04	1.00E+00
Xe-135m	3.12E-03	1.06E+01
Xe-135	1.81E-03	6.16E+00
Xe-137	1.42E-03	4.83E+00
Xe-138	8.83E-03	3.00E+01

C. Radioiodine: For iodines in gaseous effluents, use thyroid dose factors for an infant from Table E-14 of Regulatory Guide 1.109. For radioiodines not given in Table E-14, use Table E-11 (Adults). Normalize to I-131.

ISOTOPE	DF_i	DF_i/DF_j
I-130	2.85E-04	2.18E-02
I-131	1.31E-02	1.00E+00
I-132	7.15E-05	5.46E-03
I-133	4.35E-03	3.32E-01
I-134	3.74E-05	2.85E-03
I-135	1.53E-04	1.17E-02

Table 4-2, Section C & D:

The values of DF_i listed are not from the cited tables of Regulatory Guide 1.109, Revision 1, October 1977; therefore, the ratios DF_i/DF_j are not correct.

D. Other: For particulates in gaseous effluents, use the internal dose factors for a child from Table E-13 of Regulatory Guide 1.109. For isotopes not listed in Table E-13, use Table E-11 (Adults). Normalize to Co-60. In using Regulatory Guide 1.109, the table is scanned for the highest DF_i for any organ.

ISOTOPE	DF_i	DF_i/DF_j	ISOTOPE	DF_i	DF_i/DF_j
F-18	6.25E-07	2.19E-02	Nb-95	1.44E-05	5.03E-01
Na-24	2.26E-06	7.90E-02	Mo-99	9.99E-06	3.49E-01
Cr-51	6.69E-07	2.34E-02	Ru-103	1.78E-05	6.22E-01
Mn-54	1.40E-05	4.90E-01	Cd-109	1.16E-05	4.06E-01
Mn-56	3.67E-06	1.28E-01	Sn-113	2.60E-05	9.09E-01
Fe-59	3.40E-05	1.19E+00	Sb-125	1.04E-04	8.15E+00
Co-56	(same as Co-58)	3.85E-01	Te-132	7.89E-05	2.76E+00
Co-57	4.44E-06	1.55E-01	Ba-133	(use Cs-134)	(use Cs-134)
Co-58	1.10E-05	3.85E-01	Cs-134	3.77E-04	1.32E+01
Co-60	2.86E-05	1.00E+00	Cs-136	2.57E-05	8.99E-01
Zn-65	1.54E-05	5.38E-01	Cs-137	3.12E-04	1.09E+01
Rb-85	6.06E-08	2.12E-03	Cs-138	1.09E-07	3.81E-03
Rb-89	4.01E-08	1.40E-03	La-140	1.00E-04	3.50E+00
Sr-89	1.38E-03	4.83E+01	Ba-140	8.26E-05	2.89E+00
Sr-90	1.72E-02	6.01E+02	Ce-141	2.36E-05	8.25E-01
Sr-91	2.93E-05	1.02E+00	Ce-139, 144	1.75E-04	6.12E+00
Y-91	7.77E-05	2.72E+00	Ta-182	(use MPC ratio)	4.29E-01
Y-91m	2.67E-10	9.34E-06	Th-232	1.80E-03	5.44E+01
Zr-95	2.50E-05	8.74E-01	U-238	7.67E-04	2.68E+01

E. Additional Isotopes: To obtain DF_i/DF_j for isotopes not in this table, use the approach as described in item D, above. For DF_i of isotopes not listed in Regulatory Guide 1.109, scale to another isotope of the same element by the ratio of MPC's. If the MPC is not available, use the MPC of the next longer-lived isotope of the same element.

F. Notes

(1) For radioiodines in gaseous effluents, ingestion dose factors are used, since the grass-cow-milk pathway is limiting.

(2) For particulates in gaseous effluents, ingestion dose factors are used, since ingestion was generally the most significant dose pathway. Note also that a significant portion of inhaled particulates is eventually swallowed, thereby further confirming the appropriateness of this approach.

Page 5-1, Section 5.0:

A multiplying factor for dose D_{fj} for those considered pathways should be included that increases the dose for those minor dose pathways not calculated.

5.0 MANUAL CALCULATION OF DOSES RESULTING FROM EFFLUENTS

This section is required only if the release quantities for any quarter should exceed one-half the annual design objective release quantities.

5.1 Basis

There are, of course, a very large number of exposure pathways that can be considered for calculating dose to any offsite individual. However, the actual pathways to be considered for this procedure are limited to those pathways found most significant in the 10 CFR 50 Appendix I evaluation for PBNP as contained in Appendix I of the PBNP FSAR. These are as follows:

A. Gaseous Releases

1. Radioiodine dose to an infant thyroid via the cow or goat milk pathway at the site boundary (1300 m) in SSE sector.
2. Noble gas dose:
   (a) Gamma dose to the whole body at the site boundary (1460 m) in the SSW sector.
   (b) Beta dose to the skin at the site boundary (1460 m) in the SSW sector.
3. Tritium dose is not normally limiting and should only be calculated if tritium releases are exceptionally high. Calculate adult inhalation dose to the whole body at the site boundary (1460 m) in the SSW sector.
4. Dose from particulates is not normally limiting and should only be calculated if particulate releases are exceptionally high. Calculate the liver dose to a child at the site boundary (1460 m) in the SSW sector via the stored vegetable pathway as described in Appendix I to the PBNP FSAR.

Page 5-4, Section 5.3:

Were the dose conversion constants DK_i and DL_i calculated using the correct Regulatory Guide 1.109, Table E-11 through 14 values? Also is the exponent of E-12 on page 5-4 for I-134 correct?

Thus, in applying this procedure, the χ/Q's and D/Q's from only lines IA and IIA of Table I 4-2 are required.

5.3 Procedure for Gaseous Releases

A. Group all releases into the two categories (IA or IIA) as described above.

B. Calculate Infant Thyroid Dose:

During growing season (April through September)

1. Perform this section for all iodines for each release type (IA and IIA).

2. Select grazing season D/Q's from Table I 4-2. Assume nearest cow is at site boundary at 1300 meters in SSE direction.

3. Use the following:

$$D_{ij} = DK_i \times Q_{ij} \times D/Q_j$$

where: D_{ij} = dose to thyroid in mrem for iodine i and release type.

Q_{ij} = curies released of iodine i and release type j.

D/Q_j = deposition constant in m^{-2} for release type j.

DK_i = combined dose conversion constants derived from equations C-5, C-7, C-10, C-11, and C-13 of Regulatory Guide 1.109 in units of mrem-m^2 per Ci:

I-130	1.31E+07
I-131	1.57E+10
I-132	1.58E+00
I-133	1.39E+08
I-134	9.83E-12
I-135	3.22E+05

4. Sum the results for all iodines and all release types.

Non-grazing season (October through March)

1. Perform this section for all iodines for each release type (IA and IIA).

2. Select annual χ/Q's from Table I 4-2. Assume receptor is at site boundary at 1460 meters in SSW direction.

Page 5-5, Section 5.3:

were the dose conversion constants DK_i and DL_i

calculated using the correct Regulatory Guide 1.109, Table E-11 through 14 values? Also is the exponent of E-12 on page 5-4 for I-134 correct?

3. Use the following:

$D_{ij} = DL_i \times Q_{ij} \times \chi/Q_j$

where: D_{ij} = dose to thyroid in mrem for iodine i and release type j.

Q_{ij} = curies released of iodine j and release type j.

χ/Q_j = annual diffusion factor in sec/m^3 for release type j.

DL_i = combined dose conversion constants derived from equations C-3 and C-4 of Regulatory Guide 1.109 in units of mrem-m^3 per Ci-sec.

I-130	1.34E+05
I-131	1.24E+06
I-132	1.42E+04
I-133	2.98E+05
I-134	3.73E+03
I-135	5.83E+04

4. Sum the results for all iodines and all release types.

C. Calculate gamma and beta doses to whole body and skin, respectively, from noble gases:

1. Perform this section for all noble gases for each release type.

2. Select annual χ/Q's from Table 1.4-2. Assume receptor is at site boundary (1460 m) in SSW sector.

3. Use the following:

$D_{ij} = 3.17 \times 10^4 \times DN_i \times Q_{ij} \times \chi/Q_j$

where: D_{ij} = dose in mrem from noble gas i in effluent type j.

DN_i = dose conversion factor in mrem-m^3 per pCi-yr from Table B-1 of Regulatory Guide 1.109. Use DFS_i for skin dose and DFB_i for whole body gamma dose.

Q_{ij} = curies released of noble gas i and release type j.

χ/Q_j = diffusion constant in sec/m^3 for release type j.

3.17×10^4 = pCi-yr per Ci-sec.

Page 5-8:

Typo: t should be t_p.

Q_i = curies of isotope i released during period

B_i = bioaccumulation factor for freshwater fish from Table A-1 of Regulatory Guide 1.109

DF_i = dose conversion factor from Table E-11 of Regulatory Guide 1.109 in mRem/pCi ingested for adult thyroid

λ_i = decay constant for isotope i in hr^{-1}

t = holdup time = 24 hours.

2. The equation then simplifies to:

$$D_i = 7.3\, Q_i\, B_i\, DF_i e^{-\lambda_i t_p}$$

3. The exponential term may be ignored for all isotopes with halflives longer than two days.

4. Sum the results for all radioiodines.

B. Noble gas releases in liquid effluents are usually several orders of magnitude less than those in gaseous effluents and should be ignored. Otherwise, they may be presumed to diffuse into the air and should be added to the noble gases in gaseous effluents in release type IIA (ground level release).

C. Tritium dose is not normally limiting and usually need not be calculated. If tritium releases are exceptionally high, calculate adult ingestion dose to whole body from drinking water at Two Rivers, with a dilution factor of 100.

1. The equation is similar to that for radioiodines in a., above, except that there is no bioaccumulation factor (B_i).

2. For a dilution factor of 100, a consumption rate of 370 l/yr, and a dose conversion factor of 1.05E-07 mrem/pCi ingested:

$$D_T = 6.76E\text{-}07\ Q_T$$

where: D_T = dose from tritium in mrem

Q_T = curies of tritium released in liquid effluents

Page 5-8, Section C:

What is the term and the units of 6.76 E-7?

Page 5-9, Section D:

Waht is the term and the units of 5.57?

D. For all isotopes other than radioiodine, noble gas, or tritium, calculate the dose to the liver of a teenager from eating fish obtained at the edge of the initial mixing zone. Consumption rate is 16 Kg/yr.

1. The equation is similar to that for radioiodines in a., above, except for a different consumption rate

2. Use the following:

$$D_i = \frac{5.57}{} Q_i B_i DF_i e^{-\lambda_i t_p}$$

where: D_i = dose from isotope i in mrem

Q_i = curies of isotope i released

B_i = bioaccumulation factor for freshwater fish from Table A-1 of Regulatory Guide 1.109

DF_i = dose conversion factor from Table E-12 of Regulatory Guide 1.109 in mrem/pCi ingested for teenager liver. For isotopes not listed in Table E-12, use Table E-11 for adult liver.

λ_i = decay constant for isotope i in hr^{-1}

t = holdup time = 24 hours

3. The exponential may be ignored for all isotopes with half-lives longer than two days.

4. Sum the results for all radioisotopes.

Page 6-1, Section 6.0:

The equations that will be used in the computer program should be included in this section for review.

6.0 COMPUTER CALCULATION OF DOSES RESULTED FROM EFFLUENTS

As part of the software being provided for the new meteorological instrumentation at PBNP, a dose assessment program will be provided for application to normal releases. A description and operating instructions will be provided in this Section upon completion of the installation. Should dose calculations be required, either the manual techniqe of Section 5.0 or the computer technique of the Section may be used.