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Effluent Release

Radioactive Effluent Release limits, effluent sampling, and effluent analyses requirements are contained in ~~specification 15.7.5.~~ the Radiological Effluent and Materials Control and Accountability Program Manual.

NOTATION USED IN TABLE 15.4.1-1

S- Each shift

D- Daily

W- Weekly

Q- Quarterly

M- Monthly

P- Prior to reactor criticality if not performed during the previous week.

R- Each refueling interval (but not to exceed 18 months)

PWR- Power and Low Power Operation, as defined in Specifications 15.1.h. and 15.1.n.

HOT S/D- Hot Shutdown, as defined in Specification 15.1.g.1.

COLD S/D- Cold Shutdown, as defined in Specification 15.1.g.2.

REF S/D- Refueling Shutdown, as defined in Specification 15.1.g.3.

ALL- All conditions of operation, as defined in Specifications 15.1.g, h and n.

NOTES USED IN TABLE 15.4.1-1

- (1) Not required during periods of refueling shutdown, but must be performed prior to reactor criticality if it has not been performed during the previous surveillance period.
- (2) Tests of the low power trip bistable setpoints which cannot be done during power operations shall be conducted prior to reactor criticality if not done in the previous surveillance interval.
- (3) Perform test of the isolation valve signal.
- (4) Perform by means of the moveable incore detector system.
- (5) Recalibrate if the absolute difference is ≥ 3 percent.
- (6) Verification of proper breaker alignment and that the 120 Vac instrument buses are energized.
- (7) Radioactive Effluent Monitoring Instrumentation Surveillance Requirements are specified in Section 15.7.4 the Radiological Effluent and Materials Control and Accountability Manual.
- (8) Verify that the associated rod insertion limit is not being violated at least once per 4 hours whenever the rod insertion limit alarm for a control bank is inoperable.
- (9) Test of Narrow Range Pressure, 3.0 psig, -3.0 psig excluded.

~~Radioactive effluent sampling and analysis requirements and operational environmental monitoring requirements are specified in 15.7.6 and 15.7.7 respectively.~~

The Radiological Environmental Monitoring Program (REMP) sampling and analyses requirements are addressed in the Radiological Effluent and Materials Control and Accountability Program Manual. The requirement for the REMP is specified in Section 15.7.8.3.

15.6.5 REVIEW AND AUDIT (Continued)

15.6.5.1 Manager's Supervisory Staff (Continued)

- f. Review violations of Technical Specifications, such reviews to include reports, evaluations and recommendations.
- g. Perform special reviews, investigations or prepare reports thereon as requested by the Chairman of the Off-Site Review Committee.
- h. Review the Facility Fire Protection Program at least once per 24 months to ensure the program meets established commitments and requirements.
- i. Investigate, review, and report on all reportable events.
- j. Review every release of radioactive material to the environment resulting in doses in excess of the annual dose objectives specified in 10 CFR 50, Appendix I or resulting in the special report specified by Section 15.7.8.4.D. ~~in excess of the limits specified in Section 15.7.5.~~ Such review will include a summary of evaluation, recommendation and disposition of corrective action to prevent recurrence.
- k. Review all change to the manuals described in Section 15.7.8.3. ~~PCP and ODCM.~~

15.6.5.1.9

The Manager's Supervisory Staff shall have the following responsibility:

- a. Serve as an advisory committee to the Manager.
- b. Make recommendations to the Manager for proposals under items a. through d. above. In the event of disagreement between a majority of the Supervisory Staff and decisions by the Manager, the course of action will be determined by the Manager and the disagreement recorded in the Staff minutes.

15.7 RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS (RETS)

RETS do not directly expand the responsibilities of the licensed operators of the Point Beach Nuclear Plant Units 1 and 2, and the material contained in this section of these Technical Specifications will not be the subject of SRO/RO licensing examinations.

15.7.1 DEFINITIONS

The definitions for frequently used terminology in these RETS are stated below. These definitions are supplemental to those definitions provided in Section 15.1.

A. ~~Equivalent Curie~~

~~An equivalent Curie is that quantity of a reference isotope that will produce the same dose as the actual amount of a particular isotope in question.~~

B. ~~Lower Level of Detection (LLD)~~

~~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:~~

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

~~Where:~~

~~LLD = the a priori lower limit of detection as defined above, in microcuries per unit volume or mass as applicable.~~

~~S_b = the standard deviation of the background counting rate or the counting rate of a blank sample as appropriate in counts per minute;~~

~~E = the counting efficiency in counts per disintegration;~~

~~V — the sample size in units of volume or mass as applicable,~~
 ~~2.22×10^6 — the number of disintegrations per minute per microcurie,~~
~~Y — the fractional radiochemical yield, when applicable,~~
 ~~λ — the radioactivity decay constant for the particular radionuclide, and~~
 ~~Δt — for plant effluents, Δt is the elapsed time between the midpoint of~~
~~sample collection and time of counting; for environmental samples,~~
 ~~Δt is the elapsed time between sample collection, or end of the~~
~~collection period, and the time of counting.~~

~~Typical values of E, V, Y, and Δt will 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.~~

AG. Members of the Public

Members of the public 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.

BD. Offsite Dose Calculation Manual (ODCM)

The Offsite Dose Calculation Manual contains the methodology for the determination of gaseous and liquid effluent monitoring alarm or trip setpoints, the methodology for determining compliance with release limits, and the methodology used in the calculation of offsite doses due to radioactive gaseous and liquid effluents.

CE. Radioactive Waste Handling

1. Process Control Program (PCP)

The Process Control Program contains the methodologies used to ensure

that the processing and packaging of solid radioactive waste will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61, and 71, and all other Federal and State regulations governing the disposal of the radioactive waste.

2. Solidification

The conversion of liquid wastes into a form that meets shipping and burial ground requirements.

D. Radiological Effluent and Materials Control and Accountability Program

The Radiological Effluent and Materials Control and Accountability Program (REMCAP) specified by 15.7.8.3 shall ensure that all radioactive effluent (materials released via liquid and atmospheric pathways as well as solid materials) from the Point Beach Nuclear Plant are controlled and accounted for in a manner which ~~complies~~ with the applicable regulations and shall ensure that control and accountability for atmospheric and liquid releases are supplemented by environmental sampling and dose calculations. The four major components of the REMCAP are the ODCM, the PCP, the Radiological Environmental Monitoring Program (REMP), and the Radiological Effluent Control Program (RECP). Other supporting guidance, procedures, manuals, or programs may be included or referenced but may not be subject to the program controls specified in 15.7.8.6 and 15.7.8.7.

F. Source Check

~~A source check is an assessment of channel response when the channel detector is exposed to a source of increased radiation.~~

G. Unrestricted Area

~~An unrestricted area is any area at or beyond the site boundary where access is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.~~

H. Gaseous Radioactive Effluent Treatment System

~~The gaseous radioactive effluent treatment system consists of those components or devices utilized to reduce gaseous radioactive material in effluents. The system consists of the following:~~

- ~~a. gas decay tanks,~~
- ~~b. drumming area ventilation exhaust duct filter assembly,~~
- ~~c. Unit 1 and 2 containment purge exhaust filter assemblies,~~

- ~~d. air ejector decay duct filter assembly,~~
- ~~e. auxiliary building ventilation filter assembly (nominal 11,214 cfm exhaust pathway),~~
- ~~f. chemistry laboratory exhaust duct filter assembly,~~
- ~~g. service building ventilation exhaust duct filter assembly,~~
- ~~h. auxiliary building ventilation filter assemblies (nominal 34,150 cfm exhaust pathway)~~

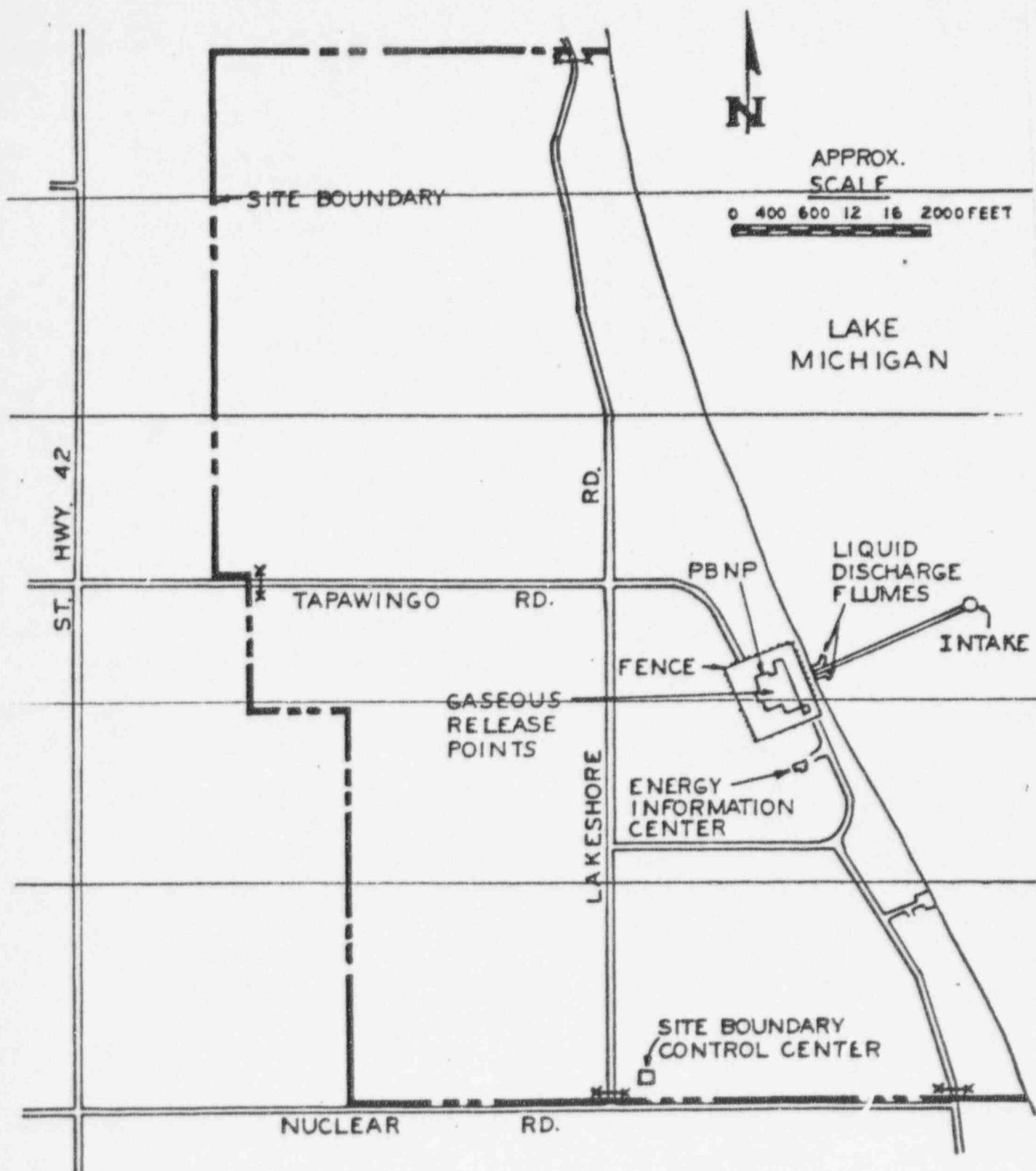
~~I. Liquid Radioactive Effluent Treatment System~~

~~The liquid radioactive effluent treatment system consists of those components or devices utilized to reduce liquid radioactive material in effluents. The system consists of the following:~~

- ~~a. blowdown evaporator or waste evaporator,~~
- ~~b. polishing demineralizers,~~
- ~~c. boric acid evaporator feed demineralizers,~~
- ~~d. boric acid evaporators,~~
- ~~e. boric acid evaporator condensate demineralizers.~~

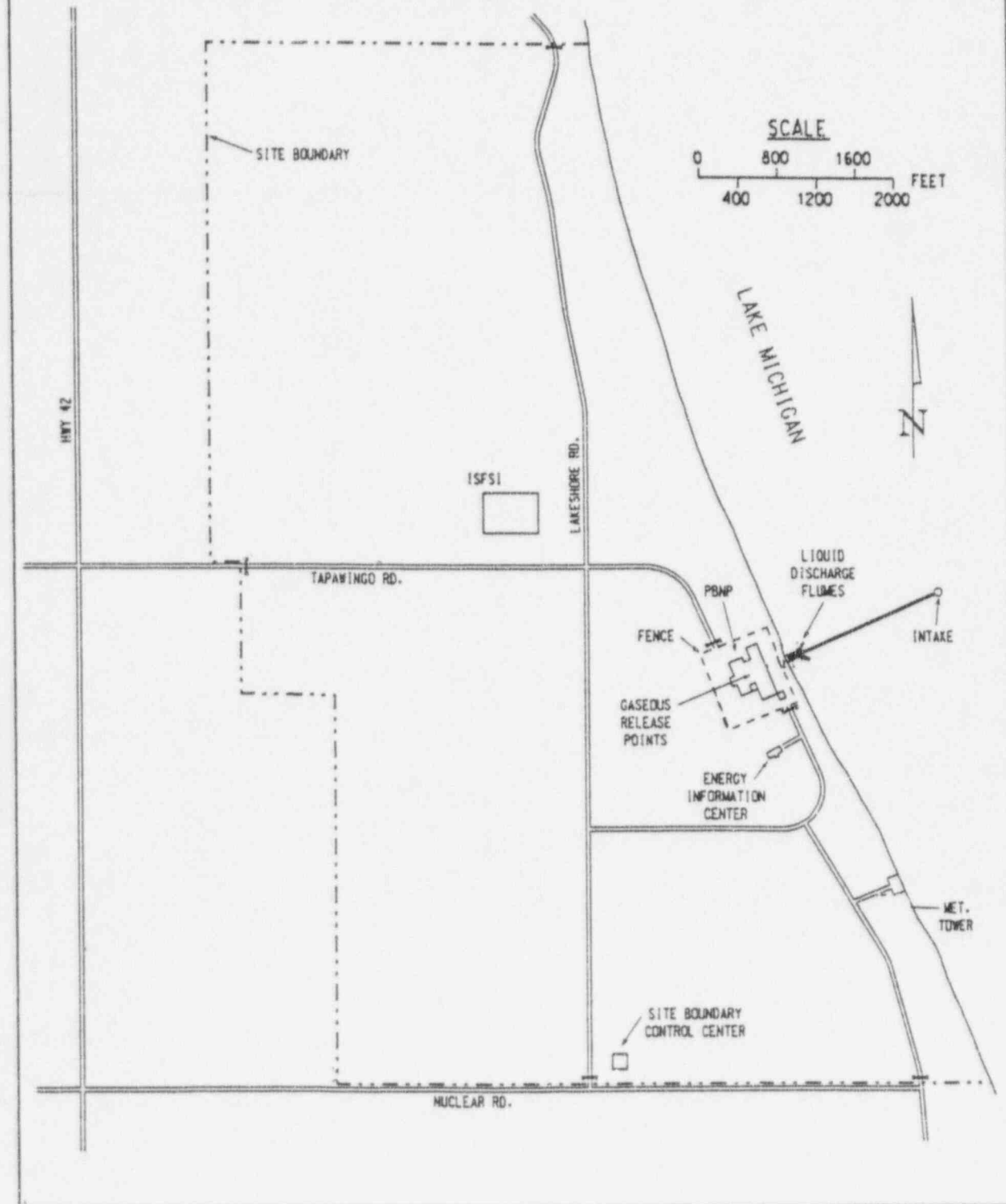
15.7.2 SITE DESCRIPTION

Figure 15.7.2-1 is a site map for the Point Beach Nuclear Plant Units 1 and 2. The site map shows the site boundary and points within the site boundary from which gaseous and liquid effluents are released. Fence locations are approximate.



SITE-MAP
POINT-BEACH NUCLEAR PLANT

SITE MAP POINT BEACH NUCLEAR PLANT



Unit 1 - Amendment No.
Unit 2 - Amendment No.

Figure 15.7.2-1

15.7.3 RADIOACTIVE EFFLUENT MONITORING INSTRUMENTATION
OPERABILITY REQUIREMENTS

Operability requirements have been removed from the Technical Specifications and moved to the REMCAP Manual.

Applicability

~~Applies to the operability and alarm or trip setpoint requirements for liquid and gaseous effluent monitoring instrumentation.~~

Objective

~~To ensure liquid and gaseous radioactive effluents are adequately monitored and to ensure that alarm or trip setpoints are established such that effluent releases do not exceed the limits specified in Specification 15.7.5.~~

Specifications

~~A. Radioactive Liquid Effluent Monitoring Instrumentation~~

- ~~1. The radioactive liquid effluent monitoring instrumentation channels listed in Table 15.7.3-1 shall be operable. The alarm or trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.~~
- ~~2. If fewer than the minimum number of radioactive liquid effluent monitoring channels are operable, the action statement listed in Table 15.7.3-1 opposite the channel shall be taken. Best effort shall be made to return an inoperable channel to operable status within 30 days. If the channel is not returned to an operable status within 30 days, the circumstances of the instrument failure and schedule for repair shall be reported to the NRC Resident Inspector.~~
- ~~3. If a radioactive liquid effluent monitoring instrumentation channel alarm or trip setpoint is found less conservative than required by the ODCM, the channel shall be declared inoperable or the setpoint shall be changed to the ODCM value or a more conservative value.~~

~~B. Radioactive Gaseous Effluent Monitoring Instrumentation~~

- ~~1. The radioactive gaseous effluent monitoring instrumentation channels~~

~~the methodology and parameters in the ODCM.~~

- ~~2. If fewer than the minimum number of radioactive gaseous effluent monitoring channels are operable, the action statement listed in Table 15.7.3-2 opposite the channel shall be taken. Best effort shall be made to return an inoperable channel to operable status within 30 days. If the channel is not returned to an operable status within 30 days, the circumstances of the instrument failure and schedule for repair shall be reported to the NRC Resident Inspector.~~
- ~~3. If the radioactive gaseous effluent monitoring instrumentation channel alarm or trip setpoint is found less conservative than required by the ODCM, the channel shall be declared inoperable or the setpoint shall be changed to the ODCM determined value or a more conservative value.~~

TABLE 15.7.3-1RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

<u>Instrument</u>	<u>Minimum Channels Operable</u>	<u>Action</u>
1. <u>Liquid Radwaste System</u>		
a. <u>RE 223, Waste Distillate Tank Discharge, or RE 229, Service Water Discharge (for applicable unit)</u>	<u>1</u>	<u>Note 1</u>
b. <u>RE 218, Waste Condensate Tank Discharge, or RE 229, Service Water Discharge (for applicable unit)</u>	<u>1</u>	<u>Note 1</u>
c. <u>Waste Condensate Tank Discharge Flow Meter</u>	<u>1</u>	<u>Note 4</u>
d. <u>Waste Distillate Tank Flow Rate Recorder</u>	<u>1</u>	<u>Note 4</u>
2. <u>Steam Generator Blowdown System</u>		
a. <u>For Each Unit; RE 219, Steam Generator Blowdown Liquid Discharge, or RE 222, Blowdown Tank Monitor, or RE 229, Service Water Discharge</u>	<u>1</u>	<u>Note 2</u>
b. <u>Steam Generator Blowdown Flow Indicators (1 per steam generator)</u>	<u>1</u>	<u>Note 9</u>
3. <u>Service Water System</u>		
a. <u>RE 229, Service Water Discharge (1 per unit)</u>	<u>1</u>	<u>Note 3</u>
b. <u>For Each Unit; RE 216, Containment Cooling Fan Service Water Return, or RE 229, Ser- vice Water Discharge</u>	<u>1</u>	<u>Note 3</u>
c. <u>RE 220, Spent Fuel Pool Heat Exchanger Service Water Outlet or RE 229, Service Water Discharge (for applicable unit)</u>	<u>1</u>	<u>Note 3</u>
4. <u>Retention Pond Discharge System</u>		
a. <u>RE 230, Retention Pond Discharge</u>	<u>1</u>	<u>Note 3</u>
b. <u>Retention Pond Discharge Composite Sampler</u>	<u>1</u>	<u>Note 8</u>
c. <u>Retention Pond Discharge Flow Determination</u>	<u>NA</u>	<u>*</u>

* Retention pond discharge flow may be determined from pump run time and pump
performance curves.

TABLE 15.7.3-2
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

<u>Instrument</u>	<u>Minimum Channels Operable</u>	<u>Action</u>
1. Gas Decay Tank System		
a. RE 214, Noble Gas (Auxiliary Building Vent Stack), or RE 315 Noble Gas (Auxiliary Building Vent SPING)	1	Note 1
b. Gas Decay Tank Flow Measuring Meter	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. Isokinetic Iodine and Particulate Continuous Air Sampling System	1	Note 5
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 9
4. Containment Purge and Vent System		
a. RE 212, Noble Gas Monitors (1 per unit); or RE 305, Noble Gas (Purge Exhaust SPING 1 per unit)	1	Note 6
b. 30 cfm Forced Vent Path Flow Indicators	1	Note 9

~~TABLE 15.7.3-2 (CONTINUED)~~

Instrument	Minimum Channels Operable	Action
c. Iodine and Particulate Continuous Air Samplers	1	Note 5
d. Sampler Flow Rate Measuring Device	1	Note 9
5. Fuel Storage and Drumming Area Ventilation System		
a. RE 221, Noble Gas (Drumming Area Stack), or RE 325, Noble Gas (Drumming Area SPING)	1	Note 6
b. Isokinetic Iodine and Particulate Continuous Air Sampling System	1	Note 5
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 9
7. Waste Gas Holdup System Explosive Gas Monitoring System		
a. Oxygen Monitor*	1	Note 7

~~*Effective upon completion of installation and checkout but in no case later than
April 1, 1986.~~

NOTATIONS FOR TABLES 15.7.3-1 AND 15.7.3-2

~~Note 1: If the number of channels operable is fewer than the minimum required, effluent releases via this pathway may continue provided that prior to initiating a release, two separate samples are analyzed by two technically qualified people in accordance with the applicable part of Tables 15.7.6-1 and 15.7.6-2 and the release rate is reviewed by two technically qualified people.~~

~~Note 2: If the number of channels operable is fewer than the minimum required, effluent releases via this pathway may continue provided grab samples are analyzed for gamma radioactivity in accordance with Table 15.7.6-1 at least once every 24 hours when the secondary coolant specific activity is less than 0.01 $\mu\text{Ci/cc}$ dose equivalent I-131 or once every 12 hours when the activity is greater than 0.01 $\mu\text{Ci/cc}$ dose equivalent I-131.~~

~~Note 3: If the number of channels operable is fewer than the minimum required, effluent releases via this pathway may continue provided that at least once every 12 hours grab samples are collected and analyzed in accordance with Table 15.7.6-1.~~

~~Note 4: If the number of channels operable is fewer than the minimum required, effluent releases via this pathway may continue provided the flow rate is estimated at least once every four hours during actual gaseous or liquid batch releases.~~

~~Note 5: If the number of channels operable is fewer than the minimum required, effluent releases via the affected pathway may continue provided samples are continuously collected with auxiliary sampling equipment.~~

~~Note 6: If the number of channels operable is fewer than the minimum required, effluent releases via this pathway may continue provided grab samples are collected at least once per 12 hours and are analyzed in accordance with Table 15.7.6-2.~~

~~Note 7: If the number of channels operable is fewer than the minimum required, addition of waste gas to the Waste Gas Holdup System may continue for up to 14 days, provided grab samples are taken from the on-service gas decay tank and analyzed either daily during normal operations or every four hours when the primary system is being~~

~~degassed (other than normal gas stripping of the letdown flow). If the monitoring system is out of service for greater than 14 days, in addition to the above sampling, a report of the cause and corrective action for failure and repair of the gas monitor shall be included in the Annual Monitoring Report.~~

~~Note 8: If the number of channels operable is fewer than the minimum required, effluent releases via this pathway may continue provided grab samples are collected twice per week and analyzed in accordance with Table 15.7.6 1.~~

~~Note 9: If the number of channels operable is fewer than the minimum required, effluent releases via this pathway may continue provided the flow is estimated or determined with auxiliary indication at least once every 24 hours.~~

15.7.4 RADIOACTIVE EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Surveillance requirements have been removed from Technical Specifications and moved to the REMCAP Manual.

Applicability

~~Applies to the periodic inspection, testing, calibration and verification of operability requirements for radioactive liquid and gaseous effluent monitoring instrumentation.~~

Objective

~~To verify that radioactive liquid and gaseous effluent monitoring instrumentation are periodically demonstrated to be operable.~~

Specifications

~~A. Radioactive Liquid Monitoring Instrumentation Surveillance Requirements~~

- ~~1. Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel check, calibration, functional test, and source check at the frequencies shown in Table 15.7.4-1.~~

~~B. Radioactive Gaseous Monitoring Instrumentation Surveillance Requirements~~

- ~~1. Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel check, calibration, functional test, and source check at the frequencies shown in Table 15.7.4-2.~~

TABLE 15.7.4-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

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

TABLE 15.7.4-2

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Channel Description	Channel Check	Calibrate	Functional Test	Source Check
1. Gas Decay Tank System				
a. RE 214, Noble Gas (Auxiliary Building Vent Stack)	D	R	Q	M
b. Gas Decay Tank Flow Measuring Device	P	R	NA	NA
2. Auxiliary Building Ventilation System				
a. RE 214, Noble Gas (Auxiliary Building Vent Stack)	D	R	Q	M
b. RE 315, Noble Gas (Auxiliary Building SPINC)	D	R	Q	M
c. Isokinetic Iodine and Particulate Continuous Air Sampling System	W	R	NA	NA
3. Condenser Air Ejector System				
a. RE 225, Noble Gas (Combined Air Ejector Discharge)	D	R	Q	M
b. RE 215, Noble Gas (Air Ejectors - 1 per unit)	D	R	Q	M
c. Flow Rate Monitor - Air Ejectors (1 per unit)	D	R	NA	NA
4. Containment Purge and Vent System				
a. RE 212, Noble Gas (1 per unit)	D	R	Q	M*
b. 30 cfm Vent Path Flow Indicator	P/D	R	NA	NA

TABLE 15.7.4-2 (Continued)

Instrument Description	Channel		Calibrate	Functional		Source
	Check	Test		Test	Check	
c. RE 305, Noble Gas (Purge Exhaust SPING 1 per unit)	D		R	Q		M*
d. Iodine and Particulate Continuous Air Sampler	P/W		NA	NA		NA
e. Sampler Flow Rate Measuring Device	P/D		R	NA		NA
5. Fuel Storage and Drumming Area Ventilation Stack						
a. RE 221, Noble Gas (Drumming Area Vent Stack)	D		R	Q		M
b. RE 325, Noble Gas (Drumming Area SPING)	D		R	Q		M
c. Isokinetic Iodine and Particulate Continuous Air Sampling System	W		NA	NA		NA
6. Gas Stripper Building Ventilation System						
a. RE 224 Noble Gas	D		R	Q		M
b. Iodine and Particulate Continuous Air Sampler	W		NA	NA		NA
c. Sampler Flow Rate Measuring Device	W		R	NA		NA
7. Waste Gas Holdup System Explosive Gas Monitoring System						
a. Oxygen Monitor	D		Q**	Q		NA

NOTATIONS FOR TABLES 15.7.4.1 AND 15.7.4.2

- ~~—D — Daily~~
- ~~—W — Weekly~~
- ~~—M — Monthly~~
- ~~—Q — Quarterly~~
- ~~—R — Each Refueling Interval (but not to exceed 18 months)~~
- ~~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~~
- ~~—** — The channel calibration shall include the use of standard gas samples~~
 - ~~— appropriate to the recommendations of the manufacturer of the gas~~
 - ~~— analyzer equipment in use and include calibration points in the range~~
 - ~~— of interest.~~

15.7.5 RADIOACTIVE EFFLUENT RELEASE AND EXPLOSIVE GAS CONCENTRATION LIMITS

Applicability

Applies to the ~~controlled release of radioactive materials~~ explosive gas concentration in ~~liquid and gaseous effluents to unrestricted areas~~ the radioactive gas decay tanks. Radioactive effluent release limits have been removed from Technical Specifications and placed in the REMCAP Manual.

Objective

To ensure ~~controlled releases of radioactive materials in liquid and gaseous effluents to unrestricted areas are within concentration limits specified in 10 CFR 20 and to ensure the quantities of radioactive material released during any calendar year are such that resulting radiation exposures~~ explosive gas concentrations do not exceed the limits corresponding to the 10 CFR 50 Appendix I dose objectives of Specification 15.7.5.A.

Specifications

A. ~~Radioactive Liquid Effluent Concentrations~~

- ~~1. Alarm setpoints for liquid effluent monitors shall be determined and adjusted utilizing the methodologies and parameters given in the ODCM.~~
- ~~2. The liquid effluent monitor setpoints shall be established to ensure that radioactive materials released as effluents shall not result in concentrations to unrestricted areas in excess of the values specified in 10 CFR 20, Appendix B, Table II.~~
- ~~3. During release of radioactive liquid effluents, at least one condenser circulating water pump shall be in operation and the service water return header shall be lined up only to the unit whose circulating water pump is operating.~~

B. ~~Radioactive Liquid Effluent Release Limits~~

- ~~1. The annual calculated total quantity of radioactive material above background released from PBNP in liquid effluents shall not result in an unrestricted area estimated annual dose or dose commitment from all exposure pathways to any individual in excess of 6 millirem to the total body or 20 millirem to any organ.~~

~~2. Quarterly limits are defined as one quarter (1/4) of the annual limits.~~

~~3. Compliance with these release limits will be demonstrated by periodic calculations utilizing either of the following methods:~~

~~a. the calculation of doses based on actual releases; or~~

~~b. the calculation and comparison of equivalent Curies released to equivalent Curie release limits, which would result in the above described dose limits, as described in the ODCM.~~

~~The methodology for converting actual activity to equivalent activity is provided in the ODCM and is based upon dose conversion factors contained in Regulatory Guide 1.109, Revision 1, October 1977.~~

~~C. Radioactive Gaseous Effluent Concentrations~~

~~1. Alarm setpoints for the gaseous effluent monitors shall be determined and adjusted utilizing the methodologies and parameters given in the ODCM.~~

~~2. The gaseous effluent monitor setpoints are established to ensure that radioactive materials released shall not result in concentrations to unrestricted areas in excess of the values specified in 10 CFR 20, Appendix B, Table II.~~

~~3. During the release of radioactive gaseous effluents from the gas decay tanks through the auxiliary building vent, at least one auxiliary building exhaust fan shall be in operation.~~

~~D. Radioactive Gaseous Effluent Release Limits~~

~~1. The annual calculated total quantity of radioactive materials above background released from PBNP to the atmosphere shall not result in an unrestricted area estimated annual dose or dose commitment from all exposure pathways to any individual in excess of the following:~~

~~a. 10 millirem to the total body or 30 millirem to the skin from gaseous effluents near ground level; and~~

- ~~b. 30 millirem to any organ from all radioiodines and radioactive material in particulate form.~~
- ~~2. Quarterly limits are defined as one quarter (1/4) of the annual limits.~~
- ~~3. Compliance with these release limits will be demonstrated by periodic calculations utilizing either of the following methods:~~
 - ~~a. the calculation of doses based on actual releases, or~~
 - ~~b. the calculation and comparison of equivalent Curies released to the equivalent Curie release limits, which would result in the above dose limits, as described in the ODCM.~~

~~The methodology for converting actual activity to equivalent activity is provided in the ODCM and is based upon dose conversion factors contained in Regulatory Guide 1.109, Revision 1, October 1977.~~

~~E. Tritium Adjustment~~

~~The release limit for tritium in liquid effluents may be increased, provided it is accompanied by a proportional decrease in the release limit for tritium in gaseous effluents. Similarly, the release limit for tritium in gaseous effluents may be increased, provided it is accompanied by a proportional decrease in the release limit for tritium in liquid effluents. The tritium adjustment will be made in accordance with the following formula:~~

$$\frac{\text{Annual Liquid Tritium Releases}}{\text{Annual Liquid Tritium Limit}} + \frac{\text{Annual Gaseous Tritium Releases}}{\text{Annual Gaseous Tritium Limit}} \leq 2.0$$

~~F. Quarterly Summary~~

- ~~1. A summary of radioactive effluent releases shall be made on a quarterly basis as described in the ODCM.~~
- ~~2. If the calculations required by B.3 or D.3 of this specification exceed the corresponding quarterly limit during any calendar quarter, a summary of radioactive effluent releases shall be made monthly until it is determined that release quantities are within the annual limits.~~
- ~~3. If the calculations required by B.3 or D.3 of this specification exceed twice the corresponding quarterly limit during any calendar quarter, actual doses will be calculated as described in the ODCM, and a special report will be prepared and submitted per Specification 15.7.8.4.E.~~

- ~~b. 30 millirem to any organ from all radioiodines and radioactive material in particulate form.~~
- ~~2. Quarterly limits are defined as one quarter (1/4) of the annual limits.~~
- ~~3. Compliance with these release limits will be demonstrated by periodic calculations utilizing either of the following methods:~~
 - ~~a. the calculation of doses based on actual releases, or~~
 - ~~b. the calculation and comparison of equivalent Curies released to the equivalent Curie release limits, which would result in the above dose limits, as described in the ODCM.~~

~~The methodology for converting actual activity to equivalent activity is provided in the ODCM and is based upon dose conversion factors contained in Regulatory Guide 1.109, Revision 1, October 1977.~~

~~E. Tritium Adjustment~~

~~The release limit for tritium in liquid effluents may be increased, provided it is accompanied by a proportional decrease in the release limit for tritium in gaseous effluents. Similarly, the release limit for tritium in gaseous effluents may be increased, provided it is accompanied by a proportional decrease in the release limit for tritium in liquid effluents. The tritium adjustment will be made in accordance with the following formula:~~

$$\frac{\text{Annual Liquid Tritium Releases}}{\text{Annual Liquid Tritium Limit}} + \frac{\text{Annual Gaseous Tritium Releases}}{\text{Annual Gaseous Tritium Limit}} \leq 2.0$$

~~F. Quarterly Summary~~

- ~~1. A summary of radioactive effluent releases shall be made on a quarterly basis as described in the ODCM.~~
- ~~2. If the calculations required by B.3 or D.3 of this specification exceed the corresponding quarterly limit during any calendar quarter, a summary of radioactive effluent releases shall be made monthly until it is determined that release quantities are within the annual limits.~~
- ~~3. If the calculations required by B.3 or D.3 of this specification exceed twice the corresponding quarterly limit during any calendar quarter, actual doses will be calculated as described in the ODCM, and a special report will be prepared and submitted per Specification 15.7.8.4.E.~~

4. ~~If the calculations required by B.3 or D.3 of this specification demonstrate that quarterly releases exceed the quarterly limit, corrective actions shall be taken to ensure that subsequent releases in that calendar year will be in compliance with quarterly and annual limits.~~

G. ~~Radioactive Effluent Treatment~~

1. ~~The gaseous radioactive effluent treatment system shall be operated. If the gaseous effluent treatment system becomes inoperable, the effluent reporting requirements of section 15.7.5.F of this Specification shall apply. These provisions do not include the gas decay tanks, the auxiliary building ventilation exhaust charcoal filter, and the air ejector decay duct charcoal filter assembly.~~
 - a. ~~A gas decay tank(s) shall be operated whenever required to maintain gaseous releases within the limits of Specification 15.7.5.D.~~
 - b. ~~The auxiliary building ventilation exhaust charcoal filter shall be operated when required to maintain gaseous releases within the limits of Specification 15.7.5.D for radioiodines.~~
 - c. ~~The air ejector charcoal filter shall be operated when required to maintain releases within the limit of Specification 15.7.5.D for radioiodines.~~
2. ~~The liquid radioactive effluent treatment system shall be operated. If the liquid radioactive effluent system becomes inoperable, the effluent reporting requirements of section 15.7.5.F of this Specification shall apply. These provisions do not include the processing of steam generator blowdown, the processing of liquid wastes collected in the waste holdup tank, the processing of secondary side sampling and turbine building wastes through the retention pond, and the processing of preplanned tank batch releases.~~
 - a. ~~Steam generator blowdown shall be processed to reduce radioactive effluents when required to maintain releases within the limits of Specification 15.7.5.B.~~
 - b. ~~Wastes collected in the waste holdup tank shall be processed to reduce radioactive effluents when required to maintain releases within the limits of Specification 15.7.5.B.~~

~~e. Preplanned tank batch releases may be made without processing under any of the following conditions, provided the release limits of Specification 15.7.5.B are not exceeded:~~

- ~~1. Processing or disposal of tank contents would prevent plant operation or delay plant start up or shutdown; or~~
- ~~2. The tank release is necessary to conform to Technical Specification operating requirements; or~~
- ~~3. The tank release is necessary to eliminate a chemical contaminant to satisfy chemistry specifications; or~~
- ~~4. The tank release is desired for any other reason and a cost-benefit analysis has been performed.~~

~~H. Total Dose~~

- ~~1. 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.~~
- ~~2. If the calculations required by B.3 or D.3 of this specification exceed twice the annual limits as specified in Specifications 15.7.5.B.1 and 15.7.5.D.1, dose calculations shall be performed as described in the ODCM and shall include exposures from effluent pathways and direct radiation contributions from the reactor units and from any outside storage tanks.~~
- ~~3. A report will be submitted to the Commission within 30 days upon completion of the dose calculations required by Specification 15.7.5.H.2, if the calculated dose to any member of the general public exceeds the 40 CFR 190 annual dose limits.~~

~~A1. Explosive Gas Mixture~~

~~The concentration of oxygen in the on-service gas decay tank shall be limited to less than or equal to 4% by volume.~~

- ~~1. If the concentration of oxygen in the on-service gas decay tank is greater than 4% by volume, immediately suspend all additions of waste gases to the on-service gas decay tank.~~
- ~~2. Reduce the oxygen concentration to less than 4% oxygen by volume as soon as possible. If the on-service gas decay tank is at or~~

near capacity and the tank must be isolated to permit the required decay time to conform with release limits of 15.7.5.D, it will not be possible to immediately reduce the oxygen concentration. In this case, the tank will be isolated and the oxygen concentration reduced as soon as the gas decay requirements are satisfied.

J. ~~Solid Radioactive Waste~~

~~The solid radwaste system shall be used in accordance with the Process Control Program to process 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 radioactive waste from the site will be suspended. The Process Control Program shall be used to verify solidification of radwaste.~~

~~Basis~~

~~Liquid wastes from the radioactive waste disposal system are diluted by the circulating water system prior to release to Lake Michigan⁽¹⁾. With two pumps operating per unit, the rated flow of the circulating water system is approximately 356,000 gpm per unit. Operation of a single circulating water pump per unit reduces the nominal flow rate by about 40%. Liquid waste from the waste disposal system may be discharged to the circulating water system of either unit via the service water return header. Because of the low radioactivity levels in the circulating water discharge, the concentrations of liquid radioactive effluents at this point are not measured directly. The concentrations in the circulating water discharge are calculated from the measured concentration of the liquid effluent, the discharge flow rate of the effluent and the nominal flow in the circulating water system.~~

~~The concentration of liquid radioactive wastes in the circulating water discharge does not exceed 10 CFR 20 MPC values. The average concentrations at the intake of the nearest public water supply are well below the MPC values of 10 CFR 20, Appendix B⁽²⁾. Thus, discharge of liquid wastes not exceeding the design release limits will not result in significant exposure to members of the public as a result of consumption of drinking water from the lake, even if the effect of potable water treatment systems on reducing radioactive concentrations of the water supply is conservatively neglected.~~

~~Prior to release to the atmosphere, gaseous wastes are mixed in the auxiliary building vent with the flow from at least one of two auxiliary building exhaust fans. Further dilution then occurs in the atmosphere.~~

~~The limits prescribed in these Specifications take atmospheric dilution into account and ensure that at the point of maximum ground concentration (site boundary) the requirements of 10 CFR 20 will not be exceeded at any time and that the design objectives of Appendix I to 10 CFR 50 will not be exceeded on an annual basis. The limits and objectives are based on the highest long term values of X/Q that occur at the nearest portion of the site boundary.~~

~~The release of radioactive materials in liquid effluents to unrestricted areas will not exceed the limits set forth in Section 15.7.5.B.1 and will be as low as is reasonably achievable in accordance with the requirements of 10 CFR Part 50.34a and 50.36a. These Specifications provide reasonable assurance that the resulting average annual dose or dose commitment from liquid effluents from each unit of the Point Beach Nuclear Plant for any individual in an unrestricted area from all pathways of exposure will not exceed 3 mrem to the total body or 10 mrem to any organ. These Specifications also provide reasonable assurance that no individual in an unrestricted area will receive an annual dose to the total body greater than 5 mrem or an annual dose to the skin greater than 15 mrem from these gaseous effluents.~~

~~At the same time, these Specifications permit the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided with a dependable source of power even under unusual operating conditions which may temporarily result in releases higher than such numerical guides for design objectives but still within levels that assure that the average population exposure is equivalent to small fractions of doses from natural background radiation.~~

~~The release limits set forth in this Specification are derived from the dose evaluation performed in accordance with Appendix I to 10 CFR Part 50. In the evaluation, certain maximum calculated doses to an individual result from the calculated effluent releases. Release limits are defined by scaling calculated~~

~~releases upward to the point at which corresponding doses reach the applicable limit specified in Appendix I to 10 CFR Part 50.~~

~~The radioactive liquid and gaseous effluent instrumentation is provided to monitor and control the releases of radioactive materials in liquid and gaseous effluents during actual or potential releases. The trip setpoints for these instruments are calculated utilizing the methodology in the Offsite Dose Calculation Manual.~~

~~The requirement that the appropriate portions of the liquid and gaseous radwaste treatment systems be used when specified provides assurance that the releases of radioactive materials in liquid and gaseous effluents will be kept "as low as is reasonably achievable".~~

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

References:

- ~~(1) FSAR, Section 10.2~~
- ~~(2) FSAR, Section 2~~
- ~~(3) FSAR, Sections 2.6 and 2.7~~

Sampling and analysis requirements removed from Technical Specifications and placed in the REMCAP Manual.

Applicability

~~Applies to the sampling frequency, analysis frequency, and analysis requirements for radioactive liquid and gaseous effluents.~~

Objectives

~~To verify that the concentrations and quantities of radioactive material released from the site in liquid and gaseous effluents do not exceed the limits specified in Specification 15.7.5.~~

Specifications

~~A. Radioactive Liquid Waste Sampling and Analysis~~

- ~~1. The concentration of radioactivity in liquid waste shall be determined by sampling and analysis in accordance with Table 15.7.6 1.~~

~~B. Radioactive Gaseous Waste Sampling and Analysis~~

- ~~1. The concentration of radioactivity in gaseous wastes shall be determined by sampling and analyses in accordance with Table 15.7.6 2.~~

TABLE 15.7.6-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis ⁵	Lower Level of Detection ¹ ($\mu\text{Ci}/\text{cc}$)
1. Batch Releases²				
a. Waste Condensate Tank	Prior to Release	Prior to Release	Gamma Emitters	5×10^{-7}
b. Waste Distillate Tank			I 131	1×10^{-6}
c. Monitor Tanks				
d. Other tanks containing radioactivity to be discharged.		Monthly on composites obtained from batches released during the current month	Gross Alpha Tritium	1×10^{-7} 1×10^{-5}
2. Continuous Releases³				
a. Steam Generator Blowdown	Grab Samples Twice Weekly	Quarterly on composites obtained from batches released during the current quarter	Gamma Emitters I 131	5×10^{-7} 1×10^{-6}
b. Service Water	Monthly on Grab Composites		Gross Alpha Tritium	1×10^{-7} 1×10^{-5}
	Quarterly on Grab Composites		Sr 89/90	5×10^{-8}
c. Retention Pond	Continuous Composite ⁴	Weekly	Gamma Emitters I 131	5×10^{-7} 1×10^{-6}
		Monthly on Weekly Composite	Gross Alpha Tritium	1×10^{-7} 1×10^{-5}
		Quarterly on Monthly Composites	Sr 89/90	5×10^{-8}

NOTES FOR TABLE 15.7.6-1

- ~~1. The principal gamma emitter for which the gamma isotopic LLD applies is Cs-137. Because gamma isotopic analyses are performed, the LLDs for all other gamma emitters are inherently determined by the operating characteristics of the counting system. All identifiable gamma emitters will be reported in the Annual Monitoring Report.~~
- ~~2. A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses each batch shall be isolated and mixed to assure representative sampling.~~
- ~~3. 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 release.~~
- ~~4. A continuous composite is one in which the method of sampling employed results in a specimen that is representative of the liquids released.~~
- ~~5. Identified entrained noble gases shall be reported as gaseous effluents.~~

TABLE 15.7.6-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Level of Detection ¹ ($\mu\text{Ci/cc}$)
1. Gas Decay Tank	Prior to Release	Prior to Release	Gamma Emitters	1×10^{-4}
2. Containment Purge or Continuous Vent	Prior to Purge ² or Vent	Prior to Purge or Vent	Gamma Emitters Tritium	1×10^{-4} 1×10^{-6}
3. Continuous Releases:	Continuous ³	Weekly Analysis of Charcoal and Particulate Samples	Gamma Emitters I 131	1×10^{-11} 1×10^{-12}
a. Unit 1 Containment Purge and Vent				
b. Unit 2 Containment Purge and Vent		Monthly Composite of Particulate Sample	Gross Alpha	1×10^{-11}
c. Drumming Area Vent				
d. Gas Stripper Building Vent		Quarterly Composite of Particulate Sample	Sp 89/90	1×10^{-11}
e. Auxiliary Building Vent				
		Noble Gas Monitor	Noble gases Gross Beta or gamma	1×10^{-6}
	Monthly ⁴ (Grab)	Monthly	Gamma Emitters	1×10^{-4}
		Monthly	Tritium	1×10^{-6}

NOTES FOR TABLE 15.7.6-2

- ~~1. The principal gamma emitters for which the LLD specification applies are Cs-137 in particulates and Xe-133 in gases. Because gamma isotopic analyses are performed, the LLDs for all other gamma emitters are inherently determined by the operating characteristics of the counting system. All identifiable gamma emitters will be reported in the Annual Monitoring Report.~~
- ~~2. Tritium grab samples will be taken every 24 hours when the refueling cavity is flooded.~~
- ~~3. The ratio of the sample flow rate to the release flow rate shall be known or estimated for the time period covered by each sampling interval.~~
- ~~4. 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.~~

15.7.7 OPERATIONAL ENVIRONMENTAL MONITORING PROGRAM

The description of the environmental monitoring program has been removed from Technical Specifications and placed in the REMCAP Manual.

Applicability

~~This section applies to operational environmental radioactivity monitoring and sampling.~~

Objective

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

Specifications

A. Environmental Monitoring Program

- ~~1. Environmental monitoring samples shall be taken at locations specified in the PBNP Environmental Manual according to the sampling and collection frequencies given in Table 15.7.7-1.~~
- ~~2. Deviations from the required sampling schedule as specified in Table 15.7.7-1, are permitted if hazardous conditions, seasonal unavailability, automatic sampling equipment malfunctions, and other legitimate reasons make the sample unobtainable. If the radiological environmental monitoring program is not being conducted as specified in Table 15.7.7-1, a description of the reasons for not conducting the program and the plans for preventing a recurrence will be submitted with the next Annual Monitoring Report.~~
- ~~3. If milk or vegetation samples become unavailable from one or more of the sample locations specified in the PBNP Environmental Manual, identify locations for obtaining replacement samples and add them to the radiological environmental monitoring program within 30 days. The specific locations from which samples were unavailable may then be deleted from the monitoring program. The cause of the unavailability of samples and replacement samples shall be~~

~~identified in the next Annual Monitoring Report. Figures and tables in the Environmental Manual are to be revised reflecting the new sample locations.~~

~~B. Detection Capabilities~~

- ~~1. Environmental samples shall be analyzed as specified in Table 15.7.7-2.~~
- ~~2. The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs).~~
- ~~3. If circumstances render the stated LLDs in Table 15.7.7-2 unachievable, the contributing factors shall be identified and described in next Annual Monitoring Report.~~

~~C. Notification Levels~~

- ~~1. If a measured level of radioactivity in any environmental medium exceeds the notification level listed in Table 15.7.7-3, 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 15.7.8.4.B within thirty days of the confirmation. This report is not required if the measured level of radioactivity was not the result of plant effluents.~~
- ~~2. If more than one of the radionuclides listed in Table 15.7.7-3 are detected in any environmental medium, a weighted sum calculation shall be performed if the measured concentration of a detected radionuclide is greater than 25% of the notification levels. For those radionuclides with LLDs in excess of 25% of the notification level, a weighted sum calculation need only be performed if the reported value exceeds the LLD. The weighted sum is calculated as follows:~~

$$\frac{\text{concentration (1)}}{\text{notification level (1)}} + \frac{\text{concentration (2)}}{\text{notification level (2)}} + \dots = \text{weighted sum}$$

~~If the calculated weighted sum is equal to or greater than 1, resampling and/or reanalysis for confirmation shall be completed within 30 days of the determination of the anomalous result. If~~

~~the confirmed calculated weighted sum remains equal to or greater than 1, a written report shall be submitted to the NRC in accordance with Section 15.7.8.4.B within thirty (30) days of the confirmation. This calculation requirement and report is not required if the measured level of radioactivity was not the result of plant effluents.~~

- ~~3. All detected radionuclides shall be reported in the Annual Monitoring Reports. Naturally occurring nuclides such as Be-7, K-40, and the U-238 and Th-232 decay series radionuclides shall not be included in this requirement.~~

~~D. Land Use Census~~

- ~~1. 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.~~

~~E. Interlaboratory Comparison Program~~

- ~~1. The environmental sampling analyses shall be performed by a laboratory participating in an Interlaboratory Comparison Program.~~
- ~~2. If the analytical laboratory is not participating in the Interlaboratory Comparison Program, a description of the corrective actions to be taken to preclude a recurrence shall be submitted in the Annual Monitoring Report.~~

Basis

~~The operational radiological environmental monitoring program as outlined in Table 15.7.7-1 provides sufficient sample types and locations to detect and to evaluate changes in environmental radioactivity. Although radioactivity in plant effluents is continuously monitored and releases are well below levels which are considered safe upper limits, radiological environmental monitoring is a conservative measure undertaken to determine whether the operation of the Point Beach Nuclear Plant produces any significant radiological change in the surrounding environment.~~

~~Radioactivity is released in liquid and gaseous effluents. Air particulate samples and thermoluminescent dosimeters placed at various locations provide means of detecting changes in environmental radioactivity as a result of plant releases to the atmosphere.~~

~~The land in the area of Point Beach Nuclear Plant is used primarily for farming and dairy operations. Therefore, radiological environmental sampling of vegetation is conducted to detect changes in radiological conditions at the base of the food chain. Sampling of area produced milk is carried out because dairy farming is a major industry in the area.~~

~~Water, periphyton, and fish are analyzed to monitor radionuclide levels in Lake Michigan in the vicinity of PBNP. Periphyton, attached algae, concentrate radionuclides from the surrounding lake water. Therefore, algae samples, along with lakewater samples, provide a means of detecting changes which may have a potential impact on the radionuclide concentrations in Lake Michigan fish. Because of the migratory behavior of fish, fish sampling is of minimal value for determining radiological impact specifically related to the operation of the Point Beach Nuclear Plant. However, fish sampling is carried out as a conservative measure with emphasis on species which are of intermediate trophic level and which exhibit minimal migration in order to monitor the status of radioactivity in fish.~~

~~Vegetation, algae, and fish sampling frequencies are qualified on an "as available" basis recognizing that certain biological samples may occasionally be unavailable due to environmental conditions.~~

TABLE 15.7.7-1

OPERATIONAL RADIOLOGICAL ENVIRONMENTAL PROGRAM

SAMPLE TYPE	NUMBER & LOCATION OF SAMPLES	COLLECTION FREQUENCY	ANALYSIS TYPE AND FREQUENCY
Direct environmental	23 TLDs are distributed as follows: (Each TLD contains 2 chips) 9 In the general area of the site boundary in the nine meteorological sectors around the Point Beach Nuclear Plant 1 On the Lake Michigan side of PBNP 11 In a ring around PBNP at a distance of 3 to 6 miles from the plant 1 Background reference in a low D/Q area greater than 16 miles from PBNP 1 Transport control	Quarterly	Gamma dose quarterly
Vegetation	8 samples of vegetation obtained as follows: 1 Background reference as described above 4 In the general area of the site boundary 3 At locations N, W and S of PBNP at 3-6 miles from the plant	3x/yr as available	Radioiodine and gamma isotopic analysis performed 3x/yr as samples are available

TABLE 15.7.7.1 (Continued)

SAMPLE TYPE	NUMBER & LOCATION OF SAMPLES	COLLECTION FREQUENCY	ANALYSIS TYPE AND FREQUENCY
Well water	1 Onsite well	Quarterly	H-3 quarterly with gamma isotopic analysis performed quarterly on total solids
Lake water	1 Discharge flume	Monthly	Monthly gross beta and gamma isotopic analysis of total solids. H-3 analysis quarterly on composite
	2 N of discharge 0.5 to 5 miles from PBNP	(discharge flume is collected weekly and composited for monthly analysis)	
	2 S of discharge 0.5 to 5 miles from PBNP		
Air filters	1 Reference location as described above	Weekly by continuous air sampler	Radioiodine weekly on charcoal canisters. Gross beta weekly on particulate filters after at least 24 hours decay. Gamma isotopic analysis quarterly on particulate filter composites.
	4 In the general area of the site boundary		
	1 About 6 miles W of PBNP		
Milk	3 Dairy farms about 2-6 miles N, W, and S of PBNP	Monthly	Monthly gamma isotopic analysis and radioiodine analysis
Fish	1 Travelling screens available	3x/yr as	Gamma isotopic analysis 3x/yr as available. Analysis of edible portions only
Algae	2 Along shore within 5 miles N and S of discharge	3x/yr as available	Gross beta and gamma isotopic analysis 3x/yr as available

TABLE 15.7.7-2 RADIOLOGICAL ENVIRONMENTAL MONITORING ANALYSIS¹LOWER LIMIT OF DETECTION (LLD)²

Analysis	Vegetation (pCi/g wet)	Airborne (pCi/m ³)	Milk (pCi/l)	Well Water & Lake Water ³		Fish (pCi/g wet)
				(pCi/l)	I.S. ⁴	
Gross Beta		0.01		4	0.25	
H-3				3,000		
Gamma Scan						
I-131	0.06	0.07	0.5			
Cs-137	0.08	0.06	18	18	0.25	0.15
Cs-134	0.06	0.05	15	15	0.25	0.13
Co-58				15	0.25	0.13
Co-60				15	0.25	0.13
Ba-140			15	15		
Zr-Nb-95				15		
Fe-59				30		0.26
Zn-65				30		0.26
Mn-54				15		0.13

NOTES FOR TABLE 15.7.7-2

1. ~~For gamma isotopic analysis of environmental samples, the spectrum is scanned over the energy range of 80 to 2048 KeV for gamma ray emitting radionuclides which may be attributable to Point Beach Nuclear Plant effluents. The analysis specifically includes, but is not limited to Mn 54, Fe 59, Zn 65, Co 58, Co 60, Zr Nb 95, Ru 103, Ru 106, I 131, Ba La 140, Cs 134, Cs 137, Ce 141, and Ce 144.~~
2. ~~The environmental TLDs have an LLD of 1 mrem/chip.~~
3. ~~No drinking water~~
4. ~~T.S. - total solids~~

TABLE 15.7.7.3 RADIOLOGICAL ENVIRONMENTAL MONITORING ANALYSIS

NOTIFICATION LEVELS

Analysis	Vegetation (pci/g wet)	Airborne (pci/m3)	Milk (pci/l)	Well Water & Lake Water		Fish (pci/g wet)
				(pci/l)	(pci/g wet)	
H-3				30,000		
I-131	0.1	0.9	3			
Cs-137	2	20	70	50	10	2
Cs-134	1	10	60	30	10	1
Co-58				1,000	10	30
Co-60				300	10	10
Ba-La-140			300	200		
Zr-Nb-95				400		
Fe-59				400		10
Zn-65				300		20
Mn-54				1,000		30

15.7.8 ADMINISTRATIVE CONTROLS

15.7.8.1 Duties of the Manager's Supervisory Staff

The duties of the Manager's Supervisory Staff with respect to these radiological effluent technical specifications are listed in Specification 15.6.5.1.8 at Items j. and k.

15.7.8.2 Audits

A. An audit of the activities encompassed by the Radioactive Effluent and Materials Control and Accountability Program (REMCAP), [the Offsite Dose Calculation Manual (ODCM)], the Radiological Effluent Control Program (RECP), the Radiological Environmental Monitoring Program (REMP), and the Process Control Program (PCP)] and its implementing procedures shall be performed utilizing either offsite licensee personnel or a consulting firm.

~~B. An audit of the radiological environmental monitoring program and the results thereof shall be performed utilizing either offsite licensee personnel or a qualified consulting firm.~~

~~BC.~~ The results of the audits in A and B above shall be transmitted to the Vice-President - Nuclear Power and the Chairman of the Offsite Review Committee.

15.7.8.3 Plant Operating Procedures and Programs

The Radioactive Effluent and Materials Control and Accountability Program (REMCAP) shall be established, implemented, and maintained in accordance with the provisions of Technical Specification 15.6.8. REMCAP shall assure that radioactive effluent and waste material from PBNP complies with applicable Federal, State, and burial ground regulations while keeping all exposures to members of the public as low as reasonably achievable (ALARA). This program shall conform to and implement the requirements of PBNP GDC 70 and of 10 CFR 50.34a and 10 CFR 50.36a for the control of radioactive effluents while maintaining doses from these effluents ALARA, shall implement the requirements of 10 CFR 50.34a and General Design Criterion 60 of Appendix A to 10 CFR 50 to suitably control the release and the processing of waste materials, shall conform to the guidance of Appendix I to 10 CFR 50 and PBNP GDC 17 for the assessment of radioactivity in the environs of PBNP, and shall include remedial

actions to be taken whenever the program limits are exceeded. REMCAP shall be implemented and maintained under the procedures and methodologies specified in the four (4) manuals/programs listed below and supported, as required, by other procedures. Effluent and environmental monitoring shall be addressed in the Quality Assurance Program.

- a. Environmental Manual (EM) - In order to assure conformance with PBNP GDC 17 and with the guidance of Appendix I to 10 CFR 50, this manual shall contain the Radiological Environmental Monitoring Program (REMP) methodology, parameters, and administrative functions required for monitoring, sampling, analyzing, and reporting of radiation levels and radionuclide concentrations in the environment around PBNP. The REM shall require an annual milk survey and shall require that radioanalyses to be conducted by a laboratory participating in an Interlaboratory Comparison Program.
- b. Radiological Effluent Control Program Manual (RECM) - The RECM shall contain the Radiological Effluent Control Program (RECP) parameters and methodologies needed in order to assure conformance with 10 CFR 50.36a for the control of effluents and for maintaining doses to the public ALARA and for compliance with 10 CFR 20.1302. The following RECP items are contained in the RECM:
 - 1) radioactive effluent monitoring instrumentation operability, with actions to be taken if operability requirements are not met, and surveillance requirements,
 - 2) radioactive effluent sampling and analyses requirements;
 - 3) limitations on the concentrations of radioactive materials in effluents;
 - 4) administrative functions and reporting requirements.
- c. Offsite Dose Calculation Manual (ODCM) - The ODCM shall specify that the annual doses from PBNP effluent shall conform to the limits of Appendix I to 10 CFR 50 and of 40 CFR 190, shall contain the parameters and methodology used to calculate the doses to members of the public from PBNP liquid and atmospheric

releases in order to demonstrate compliance with these dose limits, and shall contain the methodology to calculate setpoints to ensure that the effluent radionuclide concentrations in unrestricted areas do not exceed the limits specified in the RECP.

- d. Process Control program (PCP) - The PCP shall provide the methodologies for assuring that the processing and packaging of solid radioactive wastes will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61 and 71, and all other applicable Federal and State regulations governing the disposal of the radioactive waste.

~~The ODCM and the PCP shall be established and maintained in accordance with the provisions of specification 15.6.8. Effluent and environmental monitoring shall be addressed in the Quality Assurance Program.~~

15.7.8.4 RETS Reporting Requirements

The following written reports shall be submitted to the Administrator, U.S. Nuclear Regulatory Commission Region III with a copy to the Director, Office of Inspection and Enforcement, USNRC, Washington, D.C. 20555 within the time periods specified.

A. Annual Monitoring Report

A report covering the operation of PBNP for the previous twelve (12) month period or fraction thereof, ending December 31, shall be submitted by May 1 of each year containing:

1. RECP

Information relative to the quantities of radioactive liquid and gaseous effluents and solid radioactive waste released from PBNP during the reporting period. The information shall be consistent with the objectives outlined in the ODCM and RECM as well as Section IV.B.1 of Appendix I to 10 CFR 50 and 10 CFR 50.36a.

~~Information relative to the quantities of liquid, gaseous and solid radioactive effluents released from the facility, and effluent volumes used in maintaining the~~

~~releases within the limits of 10 CFR 20 shall be provided (summarized on a monthly basis) as follows:~~

~~a. Liquid Releases~~

- ~~(1) Total radioactivity (in Curies) released, other than tritium, and average diluted discharge concentrations.~~
- ~~(2) Total tritium (in Curies) discharged, and average diluted discharge concentrations.~~
- ~~(3) Total volume (in gallons) of liquid waste released into circulating water discharge.~~
- ~~(4) Total volume (in gallons) of dilution water used.~~
- ~~(5) The maximum concentration released (averaged over the period of a single release).~~
- ~~(6) Estimated total radioactivity (in Curies) released, by nuclide (other than tritium), based on representative isotopic analyses performed.~~

~~b. Gaseous Releases~~

- ~~(1) Total radioactivity (in Curies) released of:~~
 - ~~(a) Noble Gases.~~
 - ~~(b) Halogens.~~
 - ~~(c) Particulates~~
 - ~~(d) Tritium.~~
- ~~(2) Maximum release rate (for any one hour period).~~
- ~~(3) Estimated total radioactivity (in Curies) released by nuclide (other than tritium) based on representative isotopic analyses performed.~~

~~c. Solid Waste~~

- ~~(1) The total amount of solid waste shipped (in cubic feet).~~
- ~~(2) Estimated total radioactivity (in Curies) involved.~~
- ~~(3) The dates of shipment.~~

2. New and Spent Fuel Receipts and Shipments

- a. Number and type of new fuel assemblies received during the reporting period, if any.

- b. Number of spent fuel assemblies shipped off site during the reporting period, if any.

3. REMP

Summaries and results from the REMP for the reporting period. The information shall be consistent with the objectives outlined in the EM and in Sections IV.B.2, IV.B.3, and IV.C of Appendix I to 10 CFR 50.

Environmental Monitoring

- a. ~~A summary of pertinent environmental monitoring activities performed during the reporting period, including:~~
- ~~(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.~~

4. Leak Testing of Sealed Sources

Results of required leak tests performed on sealed sources if the tests reveal the presence of 0.005 microcuries or more of removable contamination.

5. Meteorological Data

Meteorological data shall be kept in file on site for review by the NRC upon request. The data available will include wind speed, wind direction and atmospheric stability. The data will be in the form of strip charts or hour-by-hour averages stored in electronic form for each of the parameters.

6. ODCM and PCP REMCAP Changes

A description of changes to the REMCAP, ODCM, EM, RECM or PCP which were implemented and became effective during the reporting period shall be submitted

~~pursuant to Specification 15.7.8.7. The description shall include sufficient information to support the rationale for the changes and a determination that the change will not reduce the overall effectiveness of the PCP or ODCM. For the ODCM, this submittal shall include revised ODCM pages affected by the change identified with a revision number and approval date.~~

7. Special Circumstance Reports

- a. In accordance with note 7 to ~~RECM~~ Table ~~15.7.3-1~~ ~~3-2~~, if the Waste Gas Holdup System Explosive Gas Monitor is out of service for greater than 14 days.
- b. In accordance with ~~15.7.7.B.3~~ the EM, factors which render the LLDs ~~stated in Table 15.7.7-2~~ unachievable.
- c. In accordance with ~~15.7.7.E.2~~ the EM, failure of the analytical laboratory to participate in an Interlaboratory Comparison Program.

B. Measured Radioactivity Above Notification Levels

If the confirmed level of radioactivity remains above the notification levels specified in ~~Table 15.7.7-3 of specification 15.7.7 "Operational Environmental Monitoring Program"~~ the EM, a written report describing the circumstance shall be prepared and submitted within thirty days of the confirmation that a notification level was exceeded.

C. Radioactive Liquid Effluent Treatment

If the radioactive liquid ~~or gaseous~~ effluent treatment system is inoperable and liquid ~~or gaseous~~ effluents are being discharged for 31 days without the treatment required to meet the release limits specified in ~~Section 15.7.5~~ the ~~RECM~~, 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.

~~D. Radioactive Gaseous Effluent Treatment~~

~~If the radioactive gaseous effluent treatment system is inoperable and gaseous effluents are being discharged for 31 days without the treatment required to meet the release limits specified in Section 15.7.5, 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.~~

~~DE. Radioactive Effluent Releases~~

~~If the quantity of radioactive material actually released in liquid or gaseous effluents during any calendar quarter exceeds twice the quarterly limit as specified in Section 15.7.5 the RECM, a special report shall be prepared and submitted to the Commission within thirty days of determination of the release quantity.~~

15.7.8.5 Major Change to Radioactive Liquid, Gaseous and Solid Waste Treatment Systems

Licensee initiated major changes to the radioactive waste treatment systems (liquid, gaseous, and solid) shall be reported to the U.S. Nuclear Regulatory Commission with the annual update to the FSAR for the period in which the major change was complete. The discussion of each change shall include:

- 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. Information necessary to support the reason for the change;
- C. A description of the equipment, components and processes involved and the interfaces with other plant systems;

- D. An evaluation of the change, which shows how the predicted releases of radioactive materials in liquid effluents and gaseous effluents and/or quantity of solid waste will 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 an individual in the unrestricted area and to the general population that differ from those previously estimated in the license application and amendments thereto;
- F. An estimate of the exposure to plant operating personnel as a result of the change.

15.7.8.6 Record Retention

Records of reviews performed for changes made to the REMCAP Manual and to the following REMCAP components; the EM, RECM, ODCM, and PCP; shall be kept for the duration of the operating licenses of Units 1 and 2 of the Point Beach Nuclear Plant.

15.7.8.7 Revisions

A. Process Control Program

Revisions to the PCP shall be documented and records of reviews performed for the revision shall be retained as required by 15.7.8.6. The documentation shall contain:

1. Information sufficient to support the change together with the appropriate analyses or evaluations justifying the change(s), and
2. A determination that the change will maintain the overall conformance of the solidified waste product to existing requirements of Federal, State, or other applicable regulations.
3. Revisions shall become effective after review and acceptance by the Manager's Supervisory Staff and approval by the Manager - PBNP.

B. Revisions to the EM, ODCM, RECM and REMCAP

1. Revisions to the EM, ODCM, RECM and REMCAP shall be documented and reviews performed of the revision shall

be retained as required in 15.7.8.6. The documentation shall contain:

- a. Sufficient information to support the change together with the appropriate analyses or evaluations justifying the revision, and
 - b. A determination that the change will maintain the levels of radioactive effluent control required pursuant to 10 CFR 20.1302, 10 CFR 50.36a, Appendix I to 10 CFR 50, and 40 CFR 190.
2. Shall become effective after review and acceptance by the Manager's Supervisory Staff and the approval of the Manager - PBNP,
 3. Shall be submitted to the Commission in the form of a complete, legible copy of the entire manual either as part of, or concurrent with, the Annual Monitoring Report for the period of the report in which the revision was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed. Each copy shall indicate the date (e.g., month/year) the revision was implemented.
 4. In addition to items 1-3 above, all changes regarding explosive gas must be made via the 50.59 process.

This binder contains manuals that are either new or have been revised to contain material removed from RETS pursuant to GL 89-01 and GL 95-10. The following manuals are enclosed:

Radiological Effluent and Materials Control and
Accountability Program (REMCAP) Manual

Radiological Effluent Control Manual

Environmental Manual

Offsite Dose Calculation Manual