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16.11 RADIOLOGICAL EFFLUENTS CONTROL

16.11-4 OPERATIONAL SAFETY REVIEW

COMMITMENT

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To specify the frequency and type of surveillance to be applied to unit equipment and conditions.

1. Required sampling should be performed as detailed in Table 16.11-3.
2. The frequency and type of surveillance required for radioactive effluent monitoring instrumentation shall be as stated in Table 16.11-4.

APPLICABILITY:

Applies to items directly related to safety limits and limiting conditions for operation.

REFERENCE:

- (1) FSAR, Section 7.2.3.4

BASES:

Failures such as blown instrument fuses, defective indicators, and faulted amplifiers are, in many cases, revealed by alarm or annunciator action. Comparison of output and/or state of independent channels measuring the same variable supplements this type of built-in surveillance. Based on experience in operation of both conventional and nuclear systems, when the unit is in operation, the minimum checking frequency stated is deemed adequate .

STATION MANAGER APPROVAL

  
B. L. Peele

DATE

7-30-94

TABLE 16.11-3 (Page 2 of 5)

## Minimum Sampling Frequency And Analysis Program

<u>Item</u>	<u>Check</u>	<u>Frequency</u>	<u>Lower Limit of Detection(*) of Lab Analysis for Waste</u>
3. Waste Gas Decay Tank	c. Gases by Principal Gamma Emitters <sup>(4)</sup>	c. Weekly Grab Sample	c. $<10^{-4}$ $\mu\text{Ci/cc}$
	d. Tritium	d. Weekly Grab Sample	d. $<10^{-6}$ $\mu\text{Ci/cc}$
	a. Principal Gamma Emitters <sup>(4)</sup>	a. Grab sample prior to release of each batch	a. $<10^{-4}$ $\mu\text{Ci/cc}$ (gases) $<10^{-10}$ $\mu\text{Ci/cc}$ (particulates and iodines)
	b. Tritium	b. Grab sample prior to release of each batch	b. $<10^{-6}$ $\mu\text{Ci/cc}$
4. Reactor Building	a. Principal Gamma Emitters <sup>(4)</sup>	a. Grab sample each purge	a. $<10^{-4}$ $\mu\text{Ci/cc}$ (gases) $<10^{-10}$ $\mu\text{Ci/cc}$ (particulates and iodines)
	b. Tritium	b. Grab sample each purge	b. $<10^{-6}$ $\mu\text{Ci/cc}$
5. Backwash Receiving Tanks	Principle Gamma Emitters including dissolved noble gases	Grab Sample prior to release of each batch	
6. #3 Chemical Treatment Pond Effluent	a. Principal Gamma Emitters <sup>(3)</sup>	a. Monthly from composite sample <sup>(7)</sup>	a. Ce-144 and Mo-99 $<5 \times 10^{-6}$ $\mu\text{Ci/ml}$ Other Gamma Nuclides $<5 \times 10^{-7}$ $\mu\text{Ci/ml}$ Dissolved Gases $<10^{-5}$ $\mu\text{Ci/ml}$ I-131 $<10^{-6}$ $\mu\text{Ci/ml}$

## Minimum Sampling Frequency And Analysis Program

<u>Item</u>	<u>Check</u>	<u>Frequency</u>	<u>Lower Limit of Detection(*) of Lab Analysis for Waste</u>
6. (cont'd)	b. Radiochemical Analysis Sr-89 and Sr-90	b. Quarterly from composite sample <sup>(6)</sup>	b. $<5 \times 10^{-8}$ $\mu\text{Ci/ml}$
	c. Tritium	c. Monthly from composite sample <sup>(7)</sup>	c. $<10^{-5}$ $\mu\text{Ci/ml}$
	d. Gross Alpha Activity	d. Monthly from composite sample <sup>(7)</sup>	d. $<10^{-7}$ $\mu\text{Ci/ml}$
7. Radwaste Facility Ventilation	a. Iodine Spectrum <sup>(1)</sup>	a. Continuous monitor, weekly sample <sup>(5)</sup>	a. $<10^{-9}$ $\mu\text{Ci/cc}$ (I-133) $<10^{-11}$ $\mu\text{Ci/cc}$ (I-131)
	b. Particulates <sup>(1)</sup>	b.	b.
	(1) Ce-144 and Mo-99	(1) Weekly Composite <sup>(5)</sup>	(1) $<5 \times 10^{-9}$ $\mu\text{Ci/cc}$
	(2) Other Principal Gamma Emitters <sup>(4)</sup>	(2) Weekly Composite <sup>(5)</sup>	(2) $<10^{-10}$ $\mu\text{Ci/cc}$
	(3) Gross Alpha Activity	(3) Monthly, using composite samples of one week	(3) $<10^{-11}$ $\mu\text{Ci/cc}$
	(4) Radiochemical Analysis Sr 89, Sr-90	(4) Quarterly Composite	(4) $<10^{-11}$ $\mu\text{Ci/cc}$
	c. Cases by Principal Gamma <sup>(4)</sup> Emitters	c. Weekly Grab Sample	c. $<10^{-4}$ $\mu\text{Ci/cc}$
	d. Tritium	d. Weekly Grab Sample	d. $<10^{-6}$ $\mu\text{Ci/cc}$

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NOTES

3. The principal gamma emitters for which the LLD commitment applies exclusively are the following radionuclides: Xe-133, and Xe-135 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 detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported.
4. The principal gamma emitters for which the LLD commitment 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 detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported.
5. 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 SLC 16.11-2.1, SLC 16.11-2.2a, and SLC 16.11-2.2.b.
6. A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released.
7. 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.
8. 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.