LICENSE CHANGE APPLICATION

License Change Application (LCA) 63 requests removal of water quality and monitoring program requirements from Appendix B (Environmental Technical Specifications) to License NPF-1 for the Trojan Nuclear Plant. Other requested changes to the ETS are associated with these deletions or result from completion of commitments established by the ETS. In addition, the results of environmental studies and surveys to date have prompted further change requests. These modifications affect Sections 1.0 (Definitions), 5.1 (Organization Review and Audit) and portions of Section 4.0 (Environmental Surveillance Programs). The majority of the changes covered by this LCA are deletions to the ETS. The sections that fall into this category are listed below. The remainder of the changes are editorial, to compensate for the missing material, or minor text changes. Section numbers have been changed as necessary and the foreword to the ETS has been modified to remove any reference to the deleted material. Attachment A shows the way the ETS will appear with these changes incorporated. The ETS section numbers to be deleted are:

1.0 through 1.13 (Definitions)

2.1 (Thermal Limiting Conditions for Operations)

2.2 (Chemical Limiting Conditions for Operations)

2.3 (Hydraulic Limiting Conditions for Operations)

3.0 through 3.6 (Design Features and Operating Practices)

4.1.1 (The Aquatic Surveillance Program)

4.1.2 (The Terrestrial Surveillance Program)

4.3 (Special Studies)

5.1 (Organization Review and Audits)

Tables 2-1, 2-2, 3-1

Figures 5.1 and 5.2

Section 4.3 was previously submitted for deletion with the last copy of the cooling tower plume study (C. Goodwin, Jr. letter, October 23, 1979). This LCA formally addresses the license considerations of that previous request. Sections 2.4 and 4.2 have also been previously submitted to the NRC for deletion from the ETS and insertion into Appendix A (LCA 50, March 15, 1979). Definitions and other appropriate references to these two sections are being recommended for deletion with this LCR. It is expected that a license amendment will be received in 1980 on LCA 50. For this reason, two versions of the ETS are attached with this LCA. The second set (Attachment B) shows how they will appear when LCA 50 is approved. It is anticipated that these two LCAs can be processed concurrently, which would result in an ETS package as shown in this smaller attachment. Attachment A shows how Appendix B would appear if LCA 63 is approved independent of LCA 50.

REASON FOR CHANGE

This LCA is submitted primarily in response to the Atomic Safety and Licensing Board's (ASLB's) Yellow Creek decision (ALAB-515, December 27, 1978). When considering environmental and site suitability matters for this TVA plant, the Board held that the 1972 amendments to the Federal Water Pollution Control Act (FWPCA) provided the EPA with exclusive jurisdiction over the water quality and monitoring programs. Section 511(C)(2)(b) of the FWPCA prohibits other Federal agencies from envoking NEPA as authority for setting different limitations or requirements under the guise of license conditions. This is consistent with the Congressional directive that the FWPCA be implemented in a manner which minimizes paper work and interagency decisionmaking procedures. Since Oregon is an agreement State, the EPA has passed on their jurisdictional authority on these matters to the Oregon Department of Environmental Quality (DEQ). The DEQ, in turn, regulates discharges to State waters by issuing a National Pollutant Discharge Elimination System (NPDES) permit. To be consistent with the 1972 amendments to the FWPCA, this LCA requests deletion of those portions of the ETS that are also covered by the NPDES permit.

While making these rather substantial changes, other updating to the ETS has been included to account for completion of survey commitments and in response to survey results as outlined in the description of the LCA on Page 1 of this attachment.

SAFETY EVALUATION

Summary

Although this change request would delete much of the Environmental Technical Specifications (ETS), it is consistent with similar amendments issued to Commonwealth Edison (Amendments 51 and 48 to Licenses DPR 39 and 48, respectively) and to Philadelphia Electric Company (Amendment 52 to both Licenses DPR 44 and 56). In these cases, and in others, it has been determined that the 1972 amendments to the Federal Water Pollution Control Act (FWPCA) grant the Environmental Protection Agency (EPA) or applicable state agencies (the Department of Environmental Quality (DEQ) in Oregon) exclusive jurisdiction over the quality, quantity and measurement of effluent streams. The Congressional directive that the FWPCA be administered in a manner to minimize paper work and interagency decision procedures has bolstered this stand. With these items in mind, those sections of the ETS that merely reiterate or redefine the conditions of the NPDES Permit have been deleted. Any future changes to these limits will be controlled by a single document, the NPDES Permit. Therefore, this LCA will have no impact on public health and safety. The lack of any substantive changes to the limits themselves also means that no previously analyzed accidents will be affected and no new accidents will be introduced by this LCA.

Effect on Technical Specifications

This LCA will not impact the Technical Specifications in Appendix A of the operating license. However, Appendix B, the Environmental Technical

Specifications, will be modified substantially. The changes to this document include deletions of material also presented in the NPDES Permit and renumbering and reorganization of the balance of this appendix to account for the deleted material. The specifics of these changes are detailed above and can be seen in Attachments A and/or B as appropriate.

Effect on Bases to the Technical Specifications

Since this LCA deletes, rather than changes the appropriate ETS, the associated bases will be deleted as well. The implicit bases for all water quality controls are the provisions of the FWPCA and its amendments. Since these are the governing documents for the NPDES discharge permit, their intent will continue to be met.

EFFECT ON THE FSAR

The FSAR will not be affected by this change.

Environmental Effect

This LCA will not change any of the discharge limits beyond what is allowed by the NPDES permit. Since both the quality and the quantity of effluent discharged are covered by this permit, there will be no environmental impact resulting from this change.

AMENDMENT CLASS/FEE AND SCHEDULE REQUIREMENTS

The changes requested in this LCA do not involve any significant hazards considerations. A single environmental issue is of concern and acceptability of the issue has been previously established by amendments to other Facility Operating Licenses by the NRC. Therefore, this LCA is determined to result in a Class III amendment, requiring a fee of $4,000. Since the changes requested by this LCA are straightforward, with their acceptability already demonstrated, the Licensee would expect this LCA to be processed expeditiously. The changes requested herein need not wait resolution of LCA 50 on 10 CFR 50, Appendix I matters.

GAZ/JGL/4sa10A26

LCA 63
Attachment A
49 Pages

APPENDIX B

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

FOR

TROJAN NUCLEAR PLANT

COLUMBIA COUNTY, OREGON

DOCKET NO. 50-344

UNITED STATES NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

License No.: NPF-1

Issued:

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ENVIRONMENTAL TECHNICAL SPECIFICATIONS

FOREWORD

Environmental Technical Specifications define Plant controls and reporting requirements necessary to assure a minimized Plant impact on the surroundings in accordance with the NEPA environmental review. The scope of these specifications is in accordance with requirements of 10 CFR 50.50.

1.0 LIMITING CONDITIONS FOR OPERATIONS

1.1 Radioactive Effluents

1.1.1 Objective

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 are reasonably achievable. These releases should not result in radiation exposures in unrestricted areas greater than a few percent of natural background exposures. The concentrations of radioactive materials in effluents shall be within the limits specified in 10 CFR Part 20.

To ensure that the releases of radioactive material above background to unrestricted areas be as low as are reasonably achievable, the following design objectives apply:

For liquid wastes:

a. The annual dose above background to the total body or any organ of an individual from all reactors at a site should not exceed 5 mrem in an unrestricted area.

b. The annual total quantity of radioactive materials in liquid waste, excluding tritium and dissolved gases, discharged from each reactor should not exceed 5 Ci.

For gaseous wastes:

c. The annual total quantity of noble gases above background discharged from the site should result in an

air dose due to gamma radiation of less than 10 mrad, and an air dose due to beta radiation of less than 20 mrad, at any location near ground level which could be occupied by individuals at or beyond the boundary of the site.

d. The annual total quantity, above background, of all radioiodines and radioactive material in particulate forms with half-lives greater than eight days, from all reactors at a site should not result in an annual dose to any organ of an individual in an unrestricted area from all pathways of exposure in excess of 5 mrem.

e. The annual total quantity of iodine-131 discharged from each reactor at a site should not exceed 1 Ci.

1.1.2 Specifications for Liquid Waste Effluents

a. The concentration of radioactive materials released in liquid waste effluents from all reactors at the site shall not exceed the values specified in 10 CFR part 20, Appendix B, Table II, Column 2, for unrestricted areas.

b. The cumulative release of radioactive materials in liquid waste effluents, excluding tritium and dissolved gases, shall not exceed 10 Ci/reactor/ calendar quarter.

c. The cumulative release of radioactive materials in liquid waste effluents, excluding tritium and dissolved gases, shall not exceed 20 Ci/reactor in any 12 consecutive months.

d. During release of radioactive wastes, the effluent control monitor shall be set to alarm and to initiate the automatic closure of each waste isolation valve prior to exceeding the limits specified in 1.1.2.a above.

e. The operability of each automatic isolation valve in the liquid radwaste discharge lines shall be demonstrated quarterly.

f. The equipment installed in the liquid radioactive waste system shall be maintained and shall be operated to process radioactive liquid wastes prior to their discharge when the projected cumulative release could exceed 1.25 Ci/reactor/calendar quarter, excluding tritium and dissolved gases.

g. The maximum radioactivity to be contained in any liquid radwaste tank that can be discharged directly to the environs shall not exceed 10 Ci, excluding tritium and dissolved gases.

h. If the cumulative release of radioactive materials in liquid effluents, excluding tritium and dissolved gases, exceeds 2.5 Ci/reactor/calendar quarter, the licensee shall make an investigation to identify the causes for such releases, define and initiate a program of action to reduce such releases to the design objective levels listed in Section 1.1, and report these actions to the NRC in accordance with Specification 3.5.2.a(1).

i. An unplanned or uncontrolled offsite release or radioactive materials in liquid effluents in excess of 0.5 curies requires notification. This notification shall be in accordance with Specification 3.5.2.a(3).

1.1.3 Specification for Liquid Waste Sampling and Monitoring

a. Plant records shall be maintained of the radioactive concentration and volume before dilution of liquid waste intended for discharge from monitor tanks and the average dilution flow and length of time over which each discharge occurred. Sample analysis results and other reports shall be submitted as required by Section 3.5.1 of these Specifications. Estimates of the sampling and analytical errors associated with each reported value shall be included.

b. Prior to release of each batch of liquid waste, a sample shall be taken from the batch and analyzed for the concentration of each significant gamma energy peak in accordance with Table 1-1 to demonstrate compliance with Specification 1.1.2 using the flow rate into which the waste is discharged during the period of discharge.

c. Sampling and analysis of liquid radioactive waste shall be performed in accordance with Table 1-1. Prior to taking samples from a monitoring tank, at least two tank volumes of entrained fluid shall be recirculated.

d. The radioactivity in liquid wastes shall be continuously monitored and recorded during release. Whenever these monitors are inoperable for a period not to exceed 72 hours, two independent samples of each tank to be discharged shall be analyzed and two plant personnel shall independently check valving prior to the discharge. If these monitors are inoperable for a period exceeding 72 hours, no release from a liquid

waste tank shall be made and any release in progress shall be terminated.

e. The flow rate of liquid radioactive waste being discharged from monitor tanks shall be continuously measured and recorded during release.

f. All liquid effluent radiation monitors shall be calibrated at least quarterly by means of a radioactive source traceable to the National Bureau of Standards. Each monitor shall also have a functional test monthly and an instrument check prior to making a release.

g. The radioactivity in steam generator blowdown shall be continuously monitored and recorded. The flow rate shall be determined and logged whenever steam generator blowdown is being discharged to the river. Whenever the radioactivity monitors are inoperable, the blowdown flow shall not be directly released to the environment.

1.1.4 Basis

The release of radioactive materials in liquid waste effluents to unrestricted areas shall not exceed the concentration limits specified in 10 CFR Part 20 and should be as low as is reasonably achievable in accordance with the requirements of 10 CFR Part 50.36a. These specifications provide reasonable assurance that the resulting annual dose to the total body or any organ of an individual in an unrestricted area will not exceed 5 mrem. At the same time, these specifications permit the flexibility of operation, compatible with consideration of health and safety, to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the design

objective levels but still within the concentration limits specified in 10 CFR Part 20. It is expected that by using this operational flexibility under unusual operating conditions, and exerting every effort to keep levels of radioactive material in liquid wastes as low as practicable, the annual releases will not exceed a small fraction of the concentration limits specified in 10 CFR Part 20.

The design objectives have been developed based on operating experience taking into account a combination of variables including defective fuel, primary system leakage, primary to secondary system leakage, steam generator blowdown and the performance of the various waste treatment systems, and are consistent with 10 CFR Part 50.36a.

Specification 1.1.2.a requires the licensee to limit to concentration of radioactive materials in liquid waste effluents released from the site to levels specified in 10 CFR Part 20, Appendix B, Table II, Column 2, for unrestricted areas. This specification provides assurance that no member of the general public will be exposed to liquid containing radioactive materials in excess of limits considered permissible under the Commission's Regulations.

Specifications 1.1.2.b and 1.1.2.c establish the upper limits for the release of radioactive materials in liquid effluents. The intent of these Specifications is to permit the licensee the flexibility of operation to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the levels normally achievable when the plant and the liquid waste treatment systems are functioning as designed. Releases of up to these levels will result in concentrations of radioactive material in liquid waste effluents at small percentages of the limits specified in 10 CFR Part 20.

Consistent with the requirements of 10 CFR Part 50, Appendix A, Design Criterion 64, Specifications 1.1.2.d and 1.1.2.e require operation of suitable equipment to control and monitor the releases of radioactive materials in liquid wastes during any period that these releases are taking place.

Specification 1.1.2.f requires that the licensee maintain and operate the equipment installed in the liquid waste systems to reduce the release of radioactive materials in liquid effluents to as low as is reasonably achievable consistent with the requirements of 10 CFR Part 50.36a. Normal use and maintenance of installed equipment in the liquid waste system provides reasonable assurance that the quantity released will not exceed the design objective. In order to keep releases of radioactive materials as low as are reasonably achievable, the specification requires operation of equipment whenever it appears that the projected cumulative discharge rate will exceed one-fourth of this design objective annual quantity during any calendar quarter.

Specification 1.1.2.g restricts the amount of radioactive material that could be inadvertently released to the environment to an amount that will not exceed the Technical Specification limit.

In addition to limiting conditions for operation listed under Specifications 1.1.2.b and 1.1.2.c, the reporting requirements of Specification 1.1.2.h delineate that the licensee shall identify the cause whenever the cumulative release of radioactive materials in liquid waste effluents exceeds one-half the design objective annual quantity during any calendar quarter and describe the proposed program of action to reduce such releases to design objective levels on a timely basis. This report must be filed within 30 days following the calendar quarter in which the release occurred as required by Specification 3.5.2 of these Technical Specifications.

Specification 1.1.2.i provides for reporting spillage or release events which, while below the limits of 10 CFR Part 20, could result in releases higher than the design objectives.

The sampling and monitoring requirements given under Specification 1.1.3 provide assurance that radioactive materials in liquid wastes are properly controlled and monitored in conformance with the requirements of Design Criteria 60 and 64. These requirements provide the data for the licensee and the Commission to evaluate the plant's performance relative to radioactive liquid wastes released to the environment. Reports on the quantities of radioactive materials released in liquid waste effluents are furnished to the Commission according to Section 3.5.1 of these Technical Specifications. On the basis of such reports and any additional information the Commission may obtain from the licensee or others, the Commission may from time to time require the licensee to take such actions as the Commission deems appropriate.

The point of release to the environment to be monitored in Section 1.1.3 include all the monitored release points as provided for in Table 1-3.

1.1.5 Specifications for Gaseous Waste Effluents

The terms used in these specifications are as follows:

subscripts v, refers to vent releases

i, refers to individual noble gas nuclide (Refer to Table 1-5 for the noble gas nuclides considered)

Q_T = the total noble gas release rate (Ci/sec)

= Q_i sum of the individual noble gas radionuclides
i determined to be present by isotopic analysis

$\bar{K}$ = the average total body dose factor due to gamma emission (rem/yr per Ci/sec)

$\bar{L}$ = the average skin dose factor due to beta emissions (rem/yr per Ci/sec)

$\bar{M}$ = the average air dose factor due to beta emissions (rad/yr per Ci/sec)

$\bar{N}$ = the average air dose factor due to gamma emissions (rad/yr per Ci/sec)

The values of $\bar{K}$, $\bar{L}$, $\bar{M}$ and $\bar{N}$ are to be determined each time isotopic analysis is required as delineated in Specification 1.1.6. Determine the following using the results of the noble gas radionuclide analysis:

$$\bar{K} = (1/Q_T) \sum_i Q_i K_i$$

$$\bar{L} = (1/Q_T) \sum_i Q_i L_i$$

$$\bar{M} = (1/Q_T) \sum_i Q_i M_i$$

$$\bar{N} = (1/Q_T) \sum_i Q_i N_i$$

where the values of K_i, L_i, M_i and N_i are provided in Table 1-5, and are site dependent gamma and beta dose factors

Q = the measured release rate of the radioiodines and radioactive materials in particulate forms with half-lives greater than eight days.

a. (1) The release rate limit of noble gases from the site shall be such that

$$2.0\ Q_{Tv}\overline{K}_v \leq 1$$

and

$$0.33\ Q_{Tv}(\overline{L}_v + 1.1\overline{N}_v) \leq 1$$

(2) The release rate limit of all radioiodines and radioactive material in particulate form with half-lives greater than eight days, released to the environs as part of the gaseous wastes from the site shall be such that

$$7.9 \times 10^5\ Q_v \leq 1$$

b. (1) The average release rate of noble gases from the site during any calendar quarter shall be such that

$$13\ Q_{Tv}\overline{N}_v \leq 1$$

and

$$6.3\ Q_{TV}\overline{M}_v \leq 1$$

(2) The average release rate of noble gases from the site during any 12 consecutive months shall be such that

$$25\ Q_{Tv}\overline{N}_v \leq 1$$

and

$$13\ Q_{TV}\overline{M}_v \leq 1$$

(3) The average release rate per site of all radioiodines and radioactive materials in particulate form with half-lives greater than eight days during any calendar quarter shall be such that

$$13\ 2.4 \times 10^6\ Q_v \leq 1$$

(4) The average release rate per site of all radioiodines and radioactive materials in particulate form with half-lives greater than eight days during any period of 12 consecutive months shall be such that

$$25\ \ 2.4 \times 10^6\ Q_v \leq 1$$

(5) The amount of iodine-131 released during any calendar quarter shall not exceed 2 Ci/reactor.

(6) The amount of iodine-131 released during any period of 12 consecutive months shall not exceed 4 Ci/reactor.

c. Should any of the conditions of 1.1.5.c(1), (2) or (3) listed below exist, the licensee shall make an investigation to identify the causes of the release rates, define and initiate a program of action to reduce the release rates to design objective levels listed in Section 1.1 and report these actions to the NRC within 30 days from the end of the quarter during which the releases occurred.

(1) If the average release rate of noble gases from the site during any calendar quarter is such that

$$50 \quad Q_{tV}\overline{N}_v \qquad >1$$

or

$$25 \quad Q_{Tv}\overline{M}_v \qquad <1$$

(2) If the average release rate per site of all radioiodines and radioactive materials in particulate form with half-lives greater than eight days during any calendar quarter is such that

$$50 \quad 2.4 \times 10^6 \, Q_v \qquad >1$$

(3) If the amount of iodine-131 released during any calendar quarter is greater than 0.5 Ci/ reactor.

d. During the release of gaseous wastes from the primary system waste gas holdup system the effluent control monitor shall be operating and set to alarm and to initiate the automatic closure of the waste gas discharge valve prior to exceeding the limits specified in 1.1.5a above. The operability of each automatic isolation valve listed in Table 1-4 shall be demonstrated quarterly.

e. The maximum activity to be contained in one waste gas storage tank shall not exceed 150,000 curies (considered as Xe-133).

f. An unplanned or uncontrolled offsite release of radioactive materials in gaseous effluents in excess of 5 curies of noble gas or 0.02 curie of radioiodine in gaseous form requires notification. This notification shall be in accordance with Specification 3.5.2.a(3).

1.1.6 Specifications for Gaseous Waste Sampling and Monitoring

a. Plant records shall be maintained and reports of the sampling analyses results shall be submitted in accordance with Section 3.5 of these Specifications. Estimates of the sampling and analytical error associated with each reported value should be included.

b. Gaseous releases to the environment, except from the turbine building ventilation exhaust and as noted in Specification 1.1.6.c, shall be continuously monitored for gross radioactivity and the flow measured or controlled. Whenever these monitors are inoperable, grab samples shall be taken and analyzed daily for gross radioactivity. If these monitors are inoperable for more than seven days, these releases shall be terminated.

c. During the release of gaseous wastes from the primary system waste gas holdup system, the gross activity monitor, the iodine collection device, and the particulate collection device shall be operating.

d. All waste gas effluent monitors shall be calibrated at least quarterly by means of a known radioactive source traceable to the National Bureau of Standards. Each monitor shall have a functional test at least monthly and instrument check at least daily.

e. Sampling and analysis of radioactive material in gaseous waste, including particulate forms and radioiodines shall be performed in accordance with Table 1-2.

1.1.7 Bases

The release of radioactive materials in gaseous waste effluents to unrestricted areas shall not exceed the concentration limits specified in 10 CFR Part 20 and should be as low as is reasonably achievable in accordance with the requirements of 10 CFR Part 50.36a. These specifications provide reasonable assurance that the resulting annual air dose from the site due to gamma radiation will not exceed 10 mrad, and an annual air dose from the site due to beta radiation will not exceed 20 mrad from the noble gases, that no individual in an unrestricted area will receive an annual skin dose greater than 15 mrem from fission product noble gases, and that the annual dose to any organ of an individual from radioiodines and radioactive material in particulate form with half-lives greater than eight days will not exceed 15 mrem per site.

The ASLB took notice of the arrangement made between the intervenor and the applicant. The Staff's position is that the annual dose to an individual from iodine and particulates should not exceed 15 mrem. Even though the numerical values of the Staff's design objectives and those in these Technical Specifications are different, at the request of the applicant the lower limit of 5 mrem per year has been imposed. 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 under unusual operating conditions which may temporarily result in releases higher than the design objective levels but still within the concentration limits specified in

10 CFR Part 20. Even with this operational flexibility under unusual operating conditions, if the licensee exerts every effort to keep levels of radioactive material in gaseous waste effluents as low as practicable, the annual releases will not exceed a small fraction of the concentration limits specified in 10 CFR Part 20.

The design objectives have been developed based on operating experience taking into account a combination of system variables including defective fuel, primary system leakage, primary to secondary system leakage, steam generator blowdown and the performance of the various waste treatment systems.

Specification 1.1.5.a(1) limits the release rate of noble gases from the site so that the corresponding annual gamma and beta dose rate above background to an individual in an unrestricted area will not exceed 500 mrem to the total body or 3000 mrem to the skin in compliance with the limits of 10 CFR Part 20.

For Specification 1.1.5.a(1), gamma and beta dose factors for the individual noble gas radionuclides have been calculated for the plant gaseous release points and are provided in Table 1-5. The expressions used to calculate these dose factors are based on dose models derived in Section 7 of Meteorology and Atomic Energy-1968 and model techniques provided in Draft Regulatory Guide 1.AA.

Dose calculations have been made to determine the site boundary location with the highest anticipated dose rate from noble gases using onsite meteorological data and the dose expressions provided in Draft Regulatory Guide 1.AA. The dose expression considers the release point location, building wake effects, and the physical characteristics of the radionuclides.

The offsite location with the highest anticipated annual dose from released noble gases in 662 meters in the north direction (vent $X/Q = 1.3 \times 10^{-5}$ sec/m^3).

The release rate Specifications for a radioiodine and radioactive material in particulate form with half-lives greater than eight days are dependent on existing radionuclide pathways to man. The pathways which were examined for these Specifications are: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, and 3) deposition onto grassy areas where milch animals graze with consumption of the milk by man. Methods for estimating doses to the thyroid via these pathways are described in Draft Regulatory Guide 1.AA. The offsite location with the highest anticipated thyroid dose rate from radioiodines and radioactive material in particulate form with half-lives greater than eight days was determined using onsite meteorological data and the expressions described in Draft Regulatory Guide 1.AA.

Specification 1.1.5.a(2) limits the release rate of radioiodines and radioactive material in particulate form with half-lives greater than eight days so that the corresponding annual thyroid dose via the most restrictive pathway is less than 1500 mrem.

For radioiodines and radioactive material in particulate form with half-lives greater than eight days, the most restrictive location is a dairy farm located 3200 meters in the south direction (vent $X/Q = 5.0 \times 10^{-7}$ sec/m^3).

Specification 1.1.5.b establishes upper offsite levels for the releases of noble gases and radioiodines and radioactive material in particulate form with half-lives greater than eight days at twice the design objective annual quantity during any calendar quarter, or four times the design objective annual quantity

during any period of 12 consecutive months. In addition to the limiting conditions for operation of Specifications 1.1.5.a and 1.1.5.b, the reporting requirements of 1.1.5.c provide that the cause shall be identified whenever the release of gaseous effluents exceeds one-half the design objective annual quantity during any calendar quarter and that the proposed program of action to reduce such release rates to the design objectives shall be described.

Specification 1.1.5.d requres that suitable equipment to monitor and control the radioactive gaseous releases are operating during any period these releases are taking place.

Specification 1.1.5.e limits the maximum quantity of radioactive gas that can be contained in a waste gas storage tank. The calculation of this quantity should assume instantaneous ground release, a X/Q based 5 percent meteorology, the average gross energy is 0.19 Mev per disintegration (considering Xe-133 to be the principal emitter) and exposure occurring at the minimum site boundary radius using a semi-infinite cloud model. The calculated quantity will limit the offsite dose above background to 0.5 rem or less, consistent with Commission guidelines.

Specification 1.1.5.f provides for reporting release events which, while below the limits of 10 CFR Part 20, could result in releases higher than the design objectives.

The sampling and monitoring requirements given under Specification 1.1.6 provide assurance that radioactive materials released in gaseous waste effluents are properly controlled and monitored in conformance with the requirements of Design Criteria 60 and 64. These requirements provide the data for the licensee and the Commission to evaluate the plant's performance relative to radioactive waste effluents released to the environment. Reports on the quantities of radioactive

materials released in gaseous effluents are furnished to the Commission on the basis of Section 3.5.1 of these Technical Specifications. On the basis of such reports and any additional information the Commission may obtain from the licensee or others, the Commission may from time to time require the licensee to take such action as the Commission deems appropriate.

The points of release to the environment to be monitored in Section 1.1.6 include the monitored release points as provided for in Table 1-4.

Specification 1.1.6.b excludes monitoring the turbine building ventilation exhaust since this release is expected to be a negligible release point. Many PWR reactors do not have turbine building enclosures. To be consistent in this requirement for all PWR reactors, the monitoring of gaseous releases from turbine building is not required.

1.1.8 Specifications for Solid Waste Handling and Disposal

a. Measurements shall be made to determine or estimate the total curie quantity and principle radionuclide composition of all radioactive solid waste shipped offsite.

b. Reports of the radioactive solid waste shipments, volumes, principle radionuclides, and total curie quantity, shall be submitted in accordance with Section 3.5.1.

1.1.9 Bases

The requirements for solid radioactive waste handling and disposal given under Specification 1.1.8 provide assurance that solid radioactive materials stored at the plant and shipped are packaged in conformance with 10 CFR Part 20, 10 CFR Part 71, and 49 CFR Parts 170-178.

2.0 ENVIRONMENTAL SURVEILLANCE PROGRAMS

2.1 Aerial

2.1.1 Applicability

Applies to the aerial monitoring of the impact of Plant operation on the surroundings.

2.1.2 Objective

To determine if slow changes in species composition or in plant pigmentation are occurring.

2.1.3 Specification

Black and white photographs will be taken twice a year (summer and winter) at the same elevations and flight patterns as the initial baseline photographs and examined to identify significant changes in vegetation. Color and color infrared photographs, taken in summer, will evaluate changes in plant pigments with emphasis on vegetation surrounding the Plant site. Differences in species composition and pigmentation in existing plant communities will be determined by comparison with similar communities distant from the site and with preoperational measurements. Detectable change (i.e., apparent to the trained observer) exclusive of normal seasonal or growth patterns as indicated by nearby areas will be reported in accordance with Section 3.5.

2.1.4 Basis

Normal progress and evolution of plant communities should not be affected by Plant operations. Changes, should these occur, will be slow, occurring over a period of years and will most likely manifest themselves over a relatively large area of the

Plant environs. Gross changes in plant distribution and health can be best detected over a large area by photographic methods, with preoperational data used as a baseline for comparison.

An annual and seasonal record of vegetation surrounding the Plant is adequate to detect gross changes in growth patterns, species composition, and changes in plant pigmentation.

2.2 Radiological Environmental Monitiring

2.2.1 Applicability

Applies to radiological monitoring outside the Plant security fence for the purpose of establishing population dose.

2.2.2 Objective

The objective of the radiological monitoring program is to quantify concentrations of radioactive materials and direct radiation levels in the Plant environs in order to verify that as a result of Plant operations, persons in unrestricted areas are not exposed to concentrations of radioactive materials or radiation levels greater than those specified in 10 CFR 20. In addition, these measurements will provide assurance that offsite doses resulting from radioactive materials in Plant effluents are as low as practicable.

2.2.3 Specification

a. The basic program of sample collection, sample analyses and radiation dose measurements shall be conducted in accordance with Table 2-1. Milk samples shall be obtained monthly from the cow (or cows) located at 2.0 miles south of the Plant (location 3, Figure 2.1-21, Trojan Final Safety Analysis Report). If the required milk samples cannot be obtained by

the licensee, the licensee shall certify this condition in writing to the Director of Licensing. If the milk-producing animal is at this locations and the licensee cannot obtain the required samples, the licensee shall sample green forage monthly, as close as possible to this location. However, if the milk-producing animal (or animals) is no longer located at 2.0 miles south of the Plant, the licensee shall obtain monthly milk samples from the milk-producing animals actually in the area of highest dose potential.

b. The gross beta and alpha radioactivity analyses, as well as the I-131 analyses in milk, listed in Table 2-1 shall be initiated within eight days after the samples are collected.

c. For I-131 activity levels in milk at or above 0.5 pCi/l, the overall error (one sigma confidence level) of the analysis shall be within $\pm$ 25%. The analytical detection limits listed in Table 2-1 shall apply to the date of sample collection.

d. Sample collections and radiation measurements required to meet the schedule given in Table 2-1 shall be conducted at locations which are identified in Table 2-2 and Figures 2-1 and 2-2. (Applicant shall supply locations of stations 1J, 16, 17, 18 and 19 to NRC staff within six months of issuance of these technical specifications.)

e. Deviations are permitted from the required sampling schedule if biological specimens are not obtained or if due to the malfunction of an automatic sampler. If the latter, corrective actions shall be completed prior to the end of the next sampling period. All

deviations from the sampling schedule shall be described in the semiannual reports.

f. A continual awareness shall be maintained of the locations of individual milk cows and goats, and dairy farms within a five-mile radius of the Plant. If goats are being milked for human consumption, the milk will be sampled and analyzed as available. The results of this surveillance program will be reported on an annual basis. If estimated annual thyroid doses resulting from the consumption of milk produced at the identified locations exceed 5 mrem/yr based on measured releases of radioiodine in gaseous effluent and annual average meteorological dispersion, the location of highest estimated dose will be added to the milk sampling schedule of Table 2-1.

2.2.4 Reporting Requirements

If concentrations of radioactive materials in environmental samples at individual sampling locations, when averaged over a calendar quarter, exceed those values set forth in Table 2-3, a determination will be made to identify whether such concentrations are attributable to Plant operation. If attributable to Plant operation, a report will be submitted to the Director of Licensing in accordance with reporting requirements cited in Section 3.5.2.b. If not attributable to Plant operation, the rationale for this conclusion shall be included in the annual report.

2.2.5 Basis

Sample types included in the radiological monitoring program correspond to those which, if ingested or contacted externally, would result in human exposure from their radioactivity. Sample frequency is such that both short-term changes from

intermittent releases and long-term accumulations from continuous low-level releases will be detected. Sampling locations are appropriate for identifying the source of radioactivity in the environment. Analyses selected will ensure detection of all nuclides of significance which are potentially contained in liquid gaseous effluents. Analytical detection limits are as low as practical, and are sufficient to ensure that doses to the whole body and individual body organs of the highest exposed offsite individuals which are attributable to Plant operation are less than 5 mrem/yr.

Specification a) sets forth a minimum program of environmental radiological surveillance to be conducted during reactor operation. This minimum program is less comprehensive than the preoperational monitoring program described in the Trojan Environmental Report[1] and the Trojan FSAR[2], and reflects experience gained during the preoperational program. The sampling sites and sample types of the required monitoring program set forth in Table 2-1 correspond to those included in the preoperational program.

The analytical detection limits given in Table 2-1 are based on the practicability of routine radioactivity measurement techniques, and in all cases will be sufficient to quantify radionucilde concentrations which would result in conservatively estimated whole body and individual organ doses of 5 mrem/yr, as indicated in Table 2-3. The detection limits for gamma spectrometric analyses are based on the detectability of 100 pCi/sample/isotope, by either NaI or GeLi techniques, and the analysis of the following mass of samples:

Air	300 m^3
Water	4 ℓ
Milk	2 ℓ

Soil	1 kg dry
Terrestrial Vegetation	2 kg wet
Terrestrial Animals	2 kg wet
All other Biota	1 kg wet

The detection limits for gross beta and gross alpha radioactivity analysis are based on the detectability of 0.5 pCi/sample using low background beta and alpha counting techniques, and the analysis of the following mass of samples:

Air	300 m^3
Water	1 ℓ
Soil	1 g dry
Biota	5 g wet

The detection limits for Sr-89 and Sr-90 are based on the detectability of 0.5 pCi/sample/isotope by a radiochemical separation and subsequent low background beta counting, and the analysis of the following mass of samples:

Milk	0.5 ℓ
Soil	50 g dry
Terrestrial Vegetation	0.5 kg wet
All other Biota	0.1 kg wet

The detection limit for I-131 in milk is based on the detectability of 0.5 pCi/sample by a radiochemical separation and subsequent low background beta counting, and the analysis of one liter of milk.

Specification b) ensures that unidentified radionuclides having short half-lives; eg, I-131, will be detected by gross radioactivity measurements, by minimizing radioactive decay between sample collection and analysis.

Specification c) ensures that the analytical detection limits are adequate for dose estimation at 5 mrem/yr levels, under the assumption that no radioactive decay occurs between crop harvest, fish catch, water withdrawal, etc., and human consumption or external exposure.

Specification d) requires that a consistent set of locations be sampled, and that these locations correspond insofar as is practicable with those included in the preoperational monitoring program.

Specification e) will permit deviations from the required sampling program during circumstances which are beyond the control of monitoring personnel.

Specification f) requires a continual assessment of the potentially important environmental exposure pathway involving the transfer of radioiodine into the milk of cows grazing on open pasture.

The reporting requirement and supporting report levels set forth in Table 2-3 require quarterly reporting of radionuclide concentrations in environmental media at levels which, if sustained, would result in offsite doses in excess of 5 mrem/yr. The derivation of the report levels given in Table 2-3 correspond with the method of assessing offsite doses from radioactive materials in estimated gaseous and liquid effluents at Trojan[3,4], and is consistent with the recommendations of the Federal Radiation Council[5] and the International Commission on Radiological Protection[6]. The following rates of consumption of various dietary items by the maximum exposed offsite individual have been assumed:

Water	2200 ml/day
Milk	1000 ml/day

Meat	200 g/day
Fish	50 g/day
Vegetables	200 g/day

The breathing rate of an adult has been taken to be 20 m^3/day and that for an infant to be 3 m^3/day. It has been assumed that an individual spends 4380 hr/yr out-of-doors and 500 hr/yr at shoreline locations.

Report levels for certain gross beta and gross alpha radioactivity measurements must of necessity be based on preoperational radioactivity levels because of the signifiant natural radioactivity content of these samples.

The radiological monitoring program will integrate fully with ongoing programs of the States of Oregon and Washington. Quality assurance is achieved in part by a semiannual program of split sample analysis with the two state agencies and by participation in the EPA analytical quality assurance program.

Table 2-2 implements condition (v) of the Initial Decision dated February 4, 1974. Specification 2.2.3.f implements condition (vi).

2.2.6 References

1. ASER, Section 5.2.

2. FSAR, Section 11.6.

3. FSAR, Section 11.2.

4. FSAR, Section 11.3.

5. Federal Radiation Council, background material for the Development of Radiation Protection Standards, Report 2 (1961).

6. International Commission on Radiological Protection, report of Committee II on Permissible Dose for Internal Radiation, Publication 2 (1959).

TABLE 2-1

BASIC RADIOLOGICAL MONITORING PROGRAM

Sample Type	Frequency	Analysis	Analytical Detection[a] Limit	Number of Sampling Stations Onsite	Offsite
Terrestrial Samples					
Air Particulate	Weekly	Gross Beta	0.002 pCi/m^3	2	4
	Monthly Composite	Gross Alpha	0.002 pCi/m^3	2	4
		Gamma Scan[b]	0.3 pCi/m^3/isotope	2	4
Air Radioiodine	Weekly	I-131	0.1 pCi/m^3	2	4
Direct Radiation	Quarterly	TLD	1.25 mrem/quarter increase	8	10
Rainfall	Monthly	Gross Beta	0.5 pCi/l	1	2
		Tritium	1000 pCi/l	1	2
		Gamma Scan[c]	25 pCi/l/isotope	1	2
Soil	Semiannually	Sr-89, Sr-90	0.01 pCi/g (dry)	3	3
		Gamma Scan	50 pCi/kg/isotope (wet)	3	3
Vegetation	Semiannually	Sr-89, Sr-90	5 pCi/kg (wet)	2	3
		Gamma Scan	50 pCi/kg/isotope (wet)	2	3
Animals	Semiannually	Sr-89, Sr-90	5 pCi/kg (wet)	2	3
		Gamma Scan	50 pCi/kg/isotope (wet)	2	3
Milk	Monthly	Sr-89, Sr-90	1.0 pCi/l	0	5[d]
		I-131	0.5 pCi/l	0	5[d]
		Gamma Scan	50 pCi/l/isotope	0	5[d]
Aquatic Samples					
Surface Water	Monthly	Gross Beta	0.5 pCi/l	3	3
		Tritium	1000 pCi/l	3	3
		Gamma Scan[c]	25 pCi/l/isotope	3	3
Well Water	Quarterly	Gross Beta	0.5 pCi/l		3
		Tritium	1000 pCi/l		3
		Gamma Scan[c]	25 pCi/l/isotope		3
Bottom Sediment	Semiannually	Gamma Scan	0.1 pCi/g/isotope (dry)	3	3
Shoreline Soil	Semiannually	Gamma Scan	0.1 pCi/g/isotope (dry)	0	3
Vegetation	Semiannually	Sr-89, Sr-90	5 pCi/kg (wet)	2	3
		Gamma Scan	100 pCi/kg/isotope (wet)	2	3
Fish	Semiannually	Sr-89, Sr-90	5 pCi/kg (wet)	2	3
		Gamma Scan	100 pCi/kg/isotope (wet)	2	3

[a] Analytical detection limit is defined here as that concentration that is three standard deviations above the average concentration in a blank sample, and assures accuracy limits of ±25%.
[b] To be performed if gross beta exceeds 0.1 pCi/m^3.
[c] To be performed if gross beta exceeds 10 pCi/l.
[d] Includes one sample from a local milk processor (Standard Dairy, Longview).

TABLE 2-2

LOCATIONS OF SAMPLES COLLECTION SITES
FOR RADIOLOGICAL MONITORING PROGRAM

Site	Radial[a] Mileage	Radial[a] Direction	Elevation (Ft)	Latitude	Longitude	Sample[b] Types
1A Trojan Site	0.75	NW	20	46°02'52"	122°53'46"	b,d,f,h,j,l,m
1B Trojan Site	0.47	W	20	46°02'22"	122°53'38"	b,h,j
1C Trojan Site	0.65	SW	60	46°01'58"	122°53'32"	b,h
1D Trojan Site	0.68	S	20	46°01'52"	122°53'09"	h,j,l,m
1E Trojan Site	0.75	S	20	46°01'49"	122°53'03"	b
1F Trojan Site	0.48	S	20	46°02'01"	122°53'00"	a,b,c,d,e
1G Trojan Site	0.06	E	10	46°02'25"	122°52'56"	i
1H Trojan Site	0.20	N	60	46°02'37"	122°53'03"	a,b
1I Trojan Site	0.56	NNW	20	46°02'54"	122°53'21"	a,b,d,e,f
1J Trojan Site						b
2 Rainier	3.84	NNW	25	46°05'22"	122°55'51"	b,c
3 Lindberg	1.96	NNW	185	46°04'04"	122°53'53"	b,d,e,i
4A Prescott	0.56	NNW	20	46°02'54"	122°53'21"	h
4B Prescott	1.33	NNW	200	46°03'31"	122°53'46"	b
5 Neer City	1.40	SW	725	46°01'44"	122°54'29"	a,b,d,e,f
6A Goble	1.72	SSE	20	46°00'59"	122°52'24"	i
6B Goble	1.28	SSE	120	46°01'21"	122°52'42"	a,b
6C Goble	1.71	SW	480	46°01'24"	122°54'37"	h
7 Shiloh Basin	5.75	SW	400	45°58'29"	122°57'43"	b,g
8 Deer Island	6.72	S	25	45°56'40"	122°51'27"	b,d,e
9 Woodland	11.1	SSE	20	45°54'18"	122°45'20"	b,c
10 Kalama	2.98	SE	10	46°00'22"	122°50'41"	b
11A Kalama	0.69	ESE	10	46°02'01"	122°52'14"	b
11B Kalama River	1.44	E	20	46°02'37"	122°51'14"	a,b,d,f,i
12 Carrolls Bluff	1.78	NNE	150	46°03'50"	122°51'55"	b
13 Vision Acres	3.35	NNE	80	46°05'16"	122°52'00"	b
14 Longview	7.83	NNW	10	46°08'57"	122°56'21"	a,b
15 Kelso	13.1	N	20	46°13'55"	122°54'50"	g
16 Smith Dairy						f,g,i
17 Palmer Dairy						g
18 Standard Dairy						g
19 Portland						a

COLUMBIA RIVER SAMPLES

Site	Columbia River Mileage	Cross-Sectional Location	Water Depth (Ft)	Latitude	Longitude	Sample Types
CRI Rainier	68.3	W	30	46°05'26"	122°55'47"	h,k,l
CRIA	66.6	W	2	46°06'02"	122°57'04"	m
CR2 Lindberg	69.6	W	15	46°04'44"	122°54'12"	j
CR3 Trojan	72.4	W	30	46°02'28"	122°52'53"	h,j,k,l,m
CR4 Kalama	75.2	E	40	46°00'26"	122°51'00"	j
CR5 Woodland	81.5	E	40	45°55'10"	122°48'17"	h,k,l,m

[a] Measured from the Trojan Containment.
[b] Sample designations:

Terrestrial Samples:
a = Air particulate and radioiodine
b = Direct radiation
c = Rainfall
d = Soil
e = Vegetation
f = Animals
g = Milk

Aquatic Samples:
h = Surface water
i = Well water
j = Bottom sediment
k = Shoreline soil
l = Vegetation
m = Fish

TABLE 2-3

DESIGN OBJECTIVES FOR RADIONUCLIDE CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Nuclide	Water (pCi/l)	Milk (pCi/l)	Meat (pCi/kg) Wet	Fish (pCi/kg) Wet	Terrestrial Vegetation (pCi/kg) Wet	Soil (pCi/g) Dry	Aquatic Sediment (pCi/g) Dry	Air (pCi/m3)
H-3	3×10^{4}	NA	NA	NA	NA	NA	NA	NA
Sr-89	NA	2×10^{1}	1×10^{2}	4×10^{2}	1×10^{2}	SSI	NA	NA
Sr-90	NA	2×10^{0}	1×10^{1}	4×10^{1}	1×10^{1}	SSI	NA	NA
Gamma Emitters:								
Cr-51	7×10^{3}	2×10^{4}	7×10^{4}	3×10^{5}	8×10^{4}	4×10^{1}	3×10^{2}	3×10^{2}
Mn-54	3×10^{2}	7×10^{2}	4×10^{3}	1×10^{4}	4×10^{3}	1×10^{0}	1×10^{1}	3×10^{0}
Mn-56	3×10^{2}	7×10^{2}	4×10^{3}	1×10^{4}	4×10^{3}	7×10^{-1}	6×10^{0}	7×10^{1}
Fe-59	2×10^{2}	5×10^{2}	2×10^{3}	9×10^{3}	2×10^{3}	1×10^{0}	9×10^{0}	7×10^{0}
Co-58	3×10^{2}	7×10^{2}	4×10^{3}	1×10^{4}	4×10^{3}	1×10^{0}	1×10^{1}	7×10^{0}
Co-60	2×10^{2}	4×10^{2}	2×10^{3}	7×10^{3}	2×10^{3}	5×10^{-1}	4×10^{0}	1×10^{0}
Zn-65	3×10^{2}	7×10^{2}	4×10^{3}	1×10^{4}	4×10^{3}	2×10^{0}	2×10^{1}	7×10^{0}
Zr-95	2×10^{2}	5×10^{2}	2×10^{3}	9×10^{3}	2×10^{3}	5×10^{-1}	4×10^{0}	3×10^{0}
Mo-99	7×10^{2}	2×10^{3}	7×10^{3}	3×10^{4}	8×10^{3}	9×10^{0}	8×10^{1}	2×10^{1}
Ru-103	3×10^{2}	6×10^{2}	3×10^{3}	1×10^{4}	3×10^{3}	2×10^{0}	2×10^{1}	1×10^{1}
Ru-106	3×10^{1}	7×10^{1}	4×10^{2}	1×10^{3}	4×10^{2}	4×10^{0}	4×10^{1}	7×10^{-1}
I-131	3×10^{1}[a]	8×10^{-1}	5×10^{1}[a]	2×10^{2}	5×10^{1}[a]	3×10^{0}	2×10^{1}	3×10^{-1}
Cs-134	3×10^{1}	7×10^{1}	4×10^{2}	1×10^{3}	4×10^{2}	7×10^{-1}	6×10^{0}	1×10^{0}
Cs-137	7×10^{1}	2×10^{2}	7×10^{2}	3×10^{3}	8×10^{2}	2×10^{0}	2×10^{1}	2×10^{0}
Ba-140	1×10^{2}	2×10^{2}	1×10^{3}	4×10^{3}	1×10^{3}	4×10^{-1}	4×10^{0}	3×10^{0}
Ce-141	3×10^{2}	7×10^{2}	3×10^{3}	1×10^{4}	3×10^{3}	1×10^{1}	1×10^{2}	2×10^{1}
Ce-144	3×10^{1}	7×10^{1}	4×10^{2}	1×10^{3}	4×10^{2}	2×10^{1}	2×10^{2}	5×10^{-1}
Gross Beta	9×10^{-1}[b]	SSI	SSI	SSI	SSI	SSI	SSI	1×10^{-1}[b]
Gross Alpha	9×10^{0}[c]	SSSI	SSI	SSI	SSI	SSI	SSI	1×10^{-2}[a]

[a] Based on minimum practicable detection limit.
[b] Based on design objective for Sr-90, which is not routinely analyzed.
[c] Based on design objective for Pu-239, which is not routinely analyzed.
NA - Not analyzed routinely.
SSI - Statistically significant increase above average concentration determined during preoperational monitoring program ($\bar{x} + 3\sigma$). Values to be specified upon completion of preoperational monitoring program.

TABLE 2-4

GAMMA AND BETA DOSE FACTORS FOR
TROJAN NUCLEAR PLANT

Noble Gas Radionuclide	Dose Factors for Vent			
	K_{iv} Total Body $(\frac{rem/yr}{Ci/sec})$	L_{iv} Skin $(\frac{rem/yr}{Ci/sec})$	M_{iv} Beta Air $(\frac{rad/yr}{Ci/sec})$	N_{iv} Gamma Air $(\frac{rad/yr}{Ci/sec})$
Kr-83m	5.6 x 10-4	0	3.9	0.34
Kr-85m	5.5	20	26	5.8
Kr-85	0.064	18	26	0.068
Kr-87	18	130	140	19
Kr-88	42	32	39	45
Kr-89	13	140	140	14
Xe-131m	2.0	6.4	15	2.6
Xe-133m	1.6	13	20	2.2
Xe-133	1.8	4.1	14	2.3
Xe-135m	8.4	9.5	9.9	9.0
Xe-135	8.1	25	33	8.6
Xe-137	1.6	160	170	1.7
Xe-138	20	55	64	21

3.0 ADMINISTRATIVE CONTROLS

3.1 Action to Be Taken if an Environmental Limit for Operation is Exceeded

3.2 Specification

a. Any occurrence of exceeding an environmental limit for operation shall be reported immediately to and investigated by the Plant Superintendent or persons designated by him. This is an abnormal environmental occurrence.

b. The Plant Review Board shall review and prepare a ~~separate~~ report for each occurrence. This report shall include an evaluation of the cause of the occurrence and recommendations to prevent a recurrence.

c. The Plant Superintendent or designated alternate shall forward reports and evaluations of each occurrence prepared by the Plant Review Board to the Nuclear Operations Board.

d. The Plant Superintendent shall notify the Director of the Regional Regulatory Operations Office of each occurrence, by telephone and telegraph, within 24 hr. of the occurrence. A written report shall be submitted within one week of the occurrence to the Director of the Regional Regulatory Operations Office (copy to Director of Licensing).

3.3 Action to be Taken if Environmental Surveillance Program Report Levels are Violated

3.3.1 Specification

a. In the event that biological report levels as described in Section 2 are reached, the Plant Review

Board shall review the data and prepare a report, including recommendations, to the Nuclear Operations Board.

b. The Plant Superintendent shall notify by written report the Director of the Regional Operations Office (copy to Director of Licensing), including data summary and analysis. This report shall be submitted within 30 days of the identification of the violation.

3.4 Records

3.4.1 Specification

All records of data collected in conformance with these Technical Specifications including strip charts, chemical analysis results, photographs, and other documentation of monitoring activities shall be retained for the life of the facility.

3.5 Reporting Requirements

3.5.1 Routine Reports

a. Annual Operating Report

A report on environmental surveillance programs for the previous year of operation shall be submitted as part of the Annual Operating Report within 60 days after January 1 of each year. The period of the first report shall begin with the date of initial criticality. The report shall be a summary and interpretation of the results of the environmental activities for the 6 month period, including a comparison with preoperational studies, and an assessment of the observed impacts of the plant operation on the environment.

b. Radioactive Effluent Release Report

A report on the radioactive discharge released from the unit during the previous six months of operation shall be submitted to the Director, Office of Inspection and Enforcement, Region V (with a copy to the Director of Nuclear Reactor Regulation) within 60 days after January 1 and July 1 of each year. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit as outlined in NRC Regulatory Guide 1.21, Revision 1, issued June 1974, "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", with data summarized on a quarterly basis following the format of the Regulatory Guide.

3.5.2 Non-Routine Reports

a. Radioactive Discharge

(1) PWR Liquid Radioactive Wastes Report. If the cumulative releases of radioactive material in liquid effluents, excluding tritium and dissolved gases, should exceed one-half the design objective annual quantity during any calendar quarter, the licensee shall make an investigation to identify the causes of such releases and define any initiate a program of action to reduce such releases to the design objective levels. A written report of these actions shall be submitted to the NRC within 30 days from the end of the quarter during which the release occurred.

(2) PWR gaseous Radioactive Wastes Report. Should the conditions (a), (b), or (c) listed below exist, the licensee shall make an investigation to identify the causes of the release rates and define and initiate a program of action to reduce the release rates to design objective levels. A written report of these actions shall be submitted to the NRC within 30 days from the end of the quarter during which the releases occurred.

(a) If the average release rate of noble gases for the site during any calendar quarter exceeds one-half the design objective annual quarterly.

(b) If the average release rate per site of all radioiodines and radioactive materials in particulate form with half-lives greater than eight days during any calendar quarter exceeds one-half the design objectives annual quantity.

(c) If the amount of iodine-131 released during any calendar quarter is greater than 0.5 Ci/reactor.

(3) PWR Unplanned or Uncontrolled Release Report. Any unplanned or uncontrolled offsite release of radioactive materials in excess of 0.5 curie in liquid or in excess of 5 curies of noble gases or 0.02 curies of radioiodines in gaseous form requires notification. This notification must be made by a written report

within 30 days to the NRC. The report shall describe the event, identify the causes of the unplanned or uncontrolled release and report actions taken to prevent recurrence.

b. Radiological Environmental Monitoring

(1) If a measured level of radioactivity in "important pathway environmental medium samples"* indicates that the resultant annual dose to an individual from these levels could equal or exceed 4 or 8 times** the design objectives given in Table 2-3, a plan will be submitted within one week advising the NRC of the proposed action to ensure the plant related annual doses will be within the design objective.

(2) If samples of critical pathway environmental media collected over a calendar quarter show total levels of radioactivity that could result in accumulated plant related doses to an individual for that quarter of 1/2 the annual design objective, the results shall be reported and a plan submitted and implemented within 30 days to limit conditions so that the annual dose to an individual will not exceed the design objective.

3.5.3 Changes

a. A report shall be made to the NRC prior to implementation of a change in plant design, in plant operation,

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* As identified by the AEC Staff in the environmental statement.

** Four times the design objective for doses received from ingestion of radioiodine and doses received from submersion in noble gases. For all other pathways, eight times the design objective is the action level.

or in procedures described in Section 3.5 if the change would have a significant adverse effect on the environment or involves an environmental matter or question not previously reviewed and evaluated by the NRC. The report shall include a description and evaluation of the change and a supporting justification.

b. Request for changes in environmental technical specifications shall be submitted to the Deputy Director of Reactor Projects, Directorate of Licensing, USNRC, for review and authorization. The request shall include an evaluation of the impact of the change and a supporting justification.

TABLE 3-1

RADIOACTIVE LIQUID SAMPLING AND ANALYSIS

Liquid Source	Sampling Frequency	Type of Activity Analysis	Detectable Concentrations (μCi/ml)[a]
A. Monitor Tank Releases	Each Batch	Principal Gamma Emitters	5×10^{-7}[b]
	One Batch/Month	Dissolved Gases[f]	10^{-5}
	Weekly Composite[c]	Ba-La-140, I-131	10^{-6}
	Monthly Composite[c]	H-3	10^{-5}
		Gross α	10^{-7}
	Quarterly Composite[c]	Sr-89	5×10^{-8}
		Sr-90	5×10^{-8}
B. Primary Coolant	Weekly[d]	I-131, I-133	10^{-6}
C. Steam Generator Blowdown	Weekly[c]	Principal Gamma Emitters	5×10^{-7}[b]
		Ba-La-140, I-131	10^{-6}
	One Sample/ Month	Dissolved Gases[f]	10^{-5}
	Monthly Composite[e]	H-3	10^{-5}
		Gross α	10^{-7}
	Quarterly Composite[e]	Sr-89	5×10^{-8}
		Sr-90	5×10^{-8}

See Sheet 2 of 2 for footnotes.

TABLE 3-1 (Cont'd)

[a] The detectability limits for activity analysis are based on the technical feasibility and on the potential significance in the environment of the quantities released. For some nuclides, lower detection limits may be readily achievable, and when nuclides are measured below the stated limits, they should also be reported.

[b] For certain mixtures of gamma emitters, it may not be possible to measure radionuclides in concentrations near their sensitivity limits when other nuclides are present in the sample in much greater concentrations. Under these circumstances, it will be more appropriate to calculate the concentrations of such radionuclides using measured ratios with those radionuclides which are routinely identified and measured.

[c] A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged.

[d] The power level and cleanup or purification flow rate at the sample time shall also be reported.

[e] To be representative of the average quantities and concentrations of radioactive materials in liquid effluents, samples should be collected in proportion to the rate of flow of the effluent stream. Prior to analyses, all samples taken for the composite should be thoroughly mixed in order for the composite sample to be representative of the average effluent release.

[f] For dissolved noble gases in water, assume a MPC of 4×10^{-5} μCi/ml of water.

TABLE 3-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS

Gaseous Source	Sampling Frequency	Type of Activity Analysis	Detectable Concentrations (μCi/ml)[a]
A. Waste Gas Decay Tank Releases	Each Tank	Principal Gamma Emitters	10^{-4}[b]
		H-3	10^{-6}
B. Containment Purge Releases	Each Purge	Principal Gamma Emitters	10^{-4}[c]
		H-3	10^{-6}
C. Condenser Air Ejector	Monthly	Principal Gamma Emitters	10^{-4}[b,c]
		H-3	10^{-6}
D. Environmental Release Points	Monthly (Gas Samples)	Principal Gamma Emitters	10^{-4}[b,c]
		H-3	10^{-6}
	Weekly (Charcoal Sample)	I-131	10^{-12}
	Monthly (Charcoal Sample)	I-133, I-135	10^{-10}
	Weekly (Particulates)	Principal Gamma Emitters (Ba and La-140, I-131 and others)	10^{-11}
	Monthly Composite[d] (Particulates)	Gross α	10^{-11}
	Quarterly Composite[d] (Particulate)	Sr-90	10^{-11}
		Sr-89	10^{-11}

See Sheet 2 of 2 for footnotes.

TABLE 3-2 (Cont'd)

[a] The above detectability limits for activity analysis are based on technical feasibility and on the potential significance in the environment of the quantities released. For some nuclides, lower detection limits may be readily achievable, and when nuclides are measured below the stated limits, they should also be reported.

[b] For certain mixtures of gamma emitters, it may not be possible to measure radionuclides at levels near their sensitivity limits when other nuclides are present in the sample at much higher levels. Under these circumstances, it will be more appropriate to calculate the levels of such radionuclides using observed ratios with those radionuclides which are measurable.

[c] Analyses shall also be performed following each refueling, startup or similar operational occurrence which could alter the mixure of radionuclides.

[d] To be representative of the average quantities and concentrations of radioactive materials in particulate form released in gaseous effluents, samples should be collected in proportion to the rate of flow of the effluent stream.

TABLE 3-3

PRESSURIZED WATER REACTOR LIQUID WASTE SYSTEM
LOCATION OF PROCESS AND EFFLUENT MONITORS AND SAMPLERS REQUIRED BY TECHNICAL SPECIFICATIONS

Process Stream or Release Point	Radiation Alarm	Auto Control to Isolation Valve	Continuous Monitor	Grab Sample Station	Measurement						High Liquid Level Alarm
					Gross Activity	I	Dissolved Gases	Alpha	H-3	Isotopic Analysis	
CVCS Monitor Tanks				X		X	X	X	X	X	X
Treated Waste Monitor Tanks				X		X	X	X	X	X	X
Dirty Waste Monitor Tanks				X		X	X	X	X	X	X
Primary Coolant System				X		X					
Liquid Radwaste Discharge Pipe	X	X	X		X						
Steam Generator Blowdown System[a]	X		X	X	X	X	X	X	X	X	
Service Water Discharge Pipe				X[b]	X[b]						
Outdoor Storage Tanks (Potentially Radioactive)				X		X				X	X
Component Cooling Systems	X		X		X						
Turbine Building Sumps (Floor Drains)				X[c]	X[c]					X[c]	X

[a] In some PWRs processed liquid from the steam generator blowdown system is returned directly to the secondary system, and the need for continuous monitoring at this release point is eliminated.
[b] When activity in the Component Cooling Water System (CCWS) exceeds 10^{-5} microcuries/ml and a leak in the CCWS is observed, gross activity in the service water discharge will be determined (by grab sample analysis) daily.
[c] A composite sample shall be taken daily whenever activity in the secondary cooling system exceeds 10^{-5} microcuries/ml.

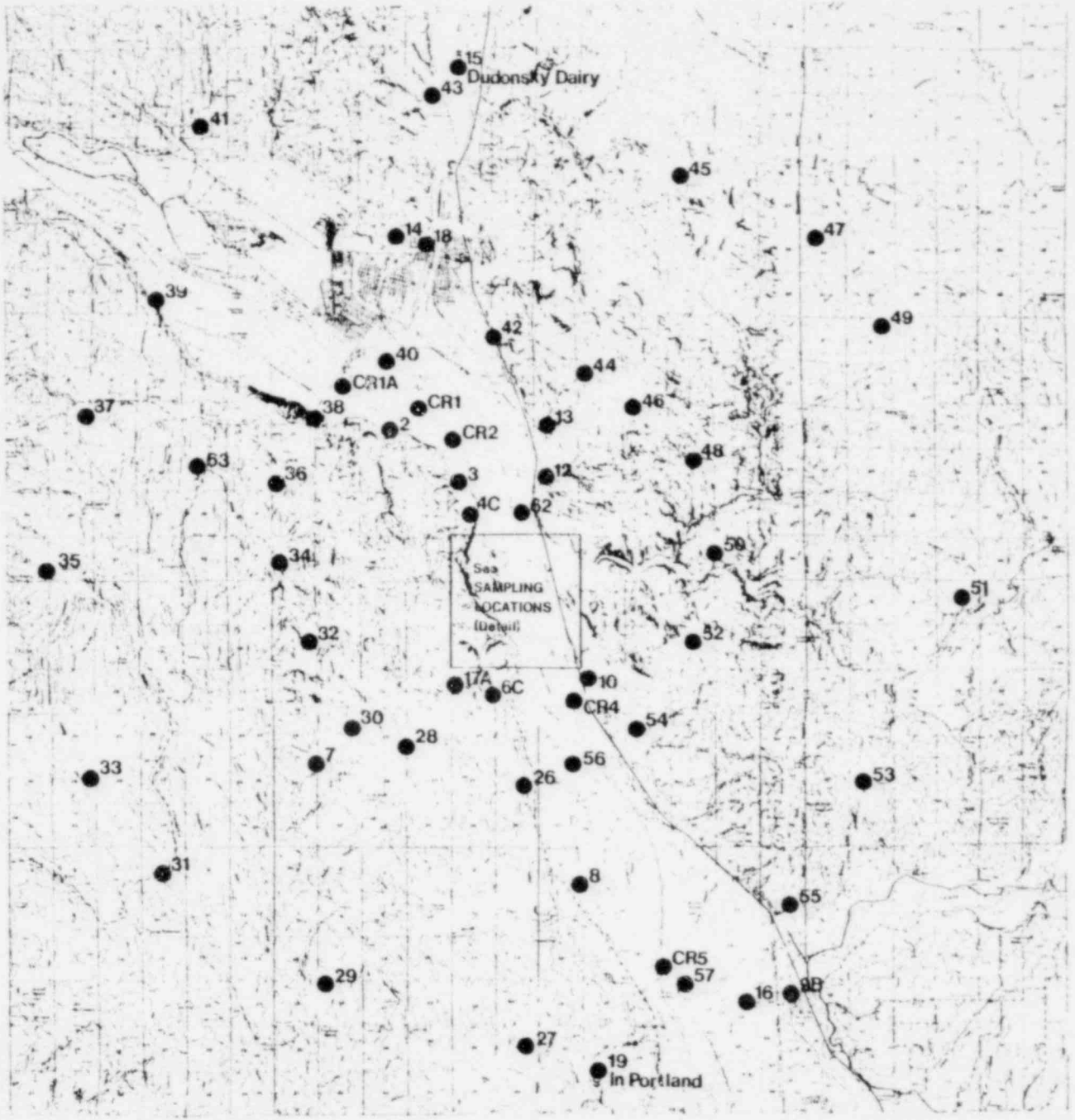

FIGURE 3-1 SAMPLING LOCATIONS
December 31, 1979

1 0 1 2 miles

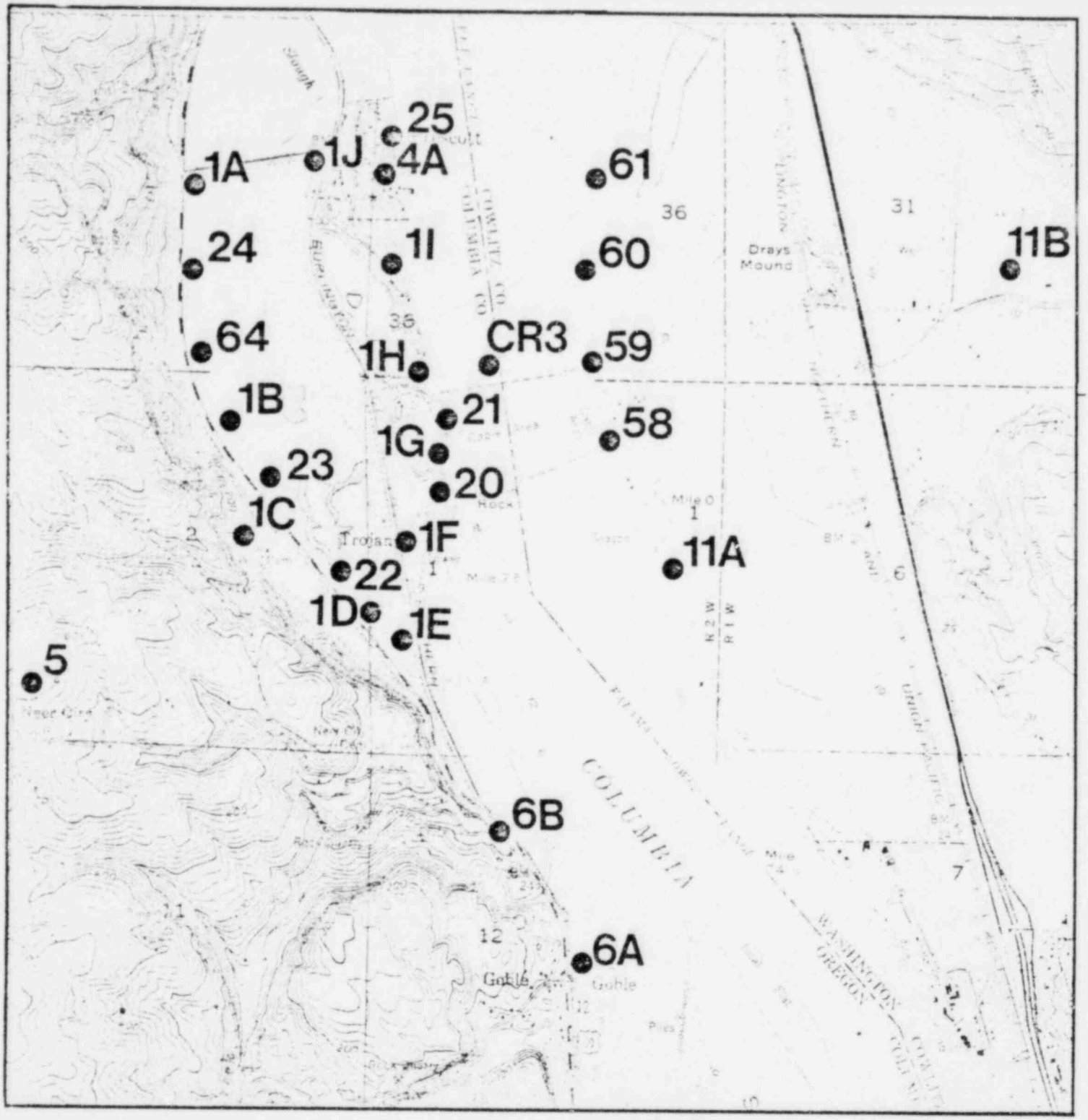

FIGURE 3-2 **SAMPLING LOCATIONS (Detail) December 31, 1979**

1 ½ 0 1mi.

LCA 63
Attachment B
6 Pages

APPENDIX B

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

FOR

TROJAN NUCLEAR PLANT

COLUMBIA COUNTY, OREGON

DOCKET NO. 50-344

UNITED STATES NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

License No.: NPF-1

Issued:

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

FOREWORD

Environmental Technical Specifications define Plant monitoring and reporting requirements necessary to assure a minimized Plant impact on the surroundings in accordance with the NEPA environmental review. The scope of these specifications is in accordance with requirements of 10 CFR 50.50.

TABLE OF CONTENTS

1.0 ENVIRONMENTAL SURVEILLANCE PROGRAMS

1.1 Aerial

1.1.1 Applicability

Applies to the aerial monitoring of the impact of Plant operation on the surroundings.

1.1.2 Objective

To determine if slow changes in species composition or in plant pigmentation are occurring.

1.1.3 Specification

Black and white photographs will be taken twice a year (summer and winter) at the same elevations and flight patterns as the initial baseline photographs and examined to identify significant changes in vegetation. Color and color infrared photographs, taken in summer, will evaluate changes in plant pigments with emphasis on vegetation surrounding the Plant site. Differences in species composition and pigmentation in existing plant communities will be determined by comparison with similar communities distant from the site and with preoperational measurements. Detectable change (i.e., apparent to the trained observer) exclusive of normal seasonal or growth patterns as indicated by nearby areas will be reported in accordance with Section 2.0.

1.1.4 Basis

Normal progress and evolution of plant communities should not be affected by Plant operations. Changes, should these occur, will be slow, occurring over a period of years and will most likely manifest themselves over a relatively large area of the

Plant environs. Gross changes in plant distribution and health can be best detected over a large area by photographic methods, with preoperational data used as a baseline for comparison.

An annual and seasonal record of vegetation surrounding the Plant is adequate to detect gross changes in growth patterns, species composition, and changes in plant pigmentation.

2.0 ADMINISTRATIVE CONTROLS

2.1 Action to Be Taken if Environmental Limits for Operation are Exceeded

2.1.1 Specification

a. Any occurrence of exceeding an Environmental Limit for operation shall be reported immediately to and investigated by the Plant Superintendent or persons designated by him. This is an abnormal environmental occurrence.

b. Further actions will be dictated by the requirements of the controlling agency. For nonradiological discharges the conditions of the National Pollutant Discharge Elimination System Permit will be met. For radiological discharges, the procedures outlined in Appendix A Technical Specifications shall apply.

2.2 Records

2.2.1 Specification

All records of data collected in conformance with these Technical Specifications including strip charts, chemical analysis results, photographs, and other documentation of monitoring activities shall be retained for the life of the facility.

2.3 Reporting Requirements

2.3.1 Routine Reports

a. Annual Operating Report

A report on environmental surveillance programs for the previous year of operation shall be submitted as part of the Annual Operating Report within 60 days

after January 1 of each year. The period of the first report shall begin with the date of initial criticality. The report shall be a summary and interpretation of the results of the environmental activities for the 6 month period, including a comparison with preoperational studies, and an assessment of the observed impacts of the plant operation on the environment.

2.3.2 Changes

a. A report shall be made to the NRC prior to implementation of a change in plant design, in plant operation, or in procedures described in Section 3.5 if the change would have a significant adverse effect on the environment or involves an environmental matter or question not previously reviewed and evaluated by the NRC. The report shall include a description and evaluation of the change and a supporting justification.

b. Request for changes in environmental technical specifications shall be submitted to the Deputy Director of Reactor Projects, Directorate of Licensing, USNRC, for review and authorization. The request shall include an evaluation of the impact of the change and a supporting justification.