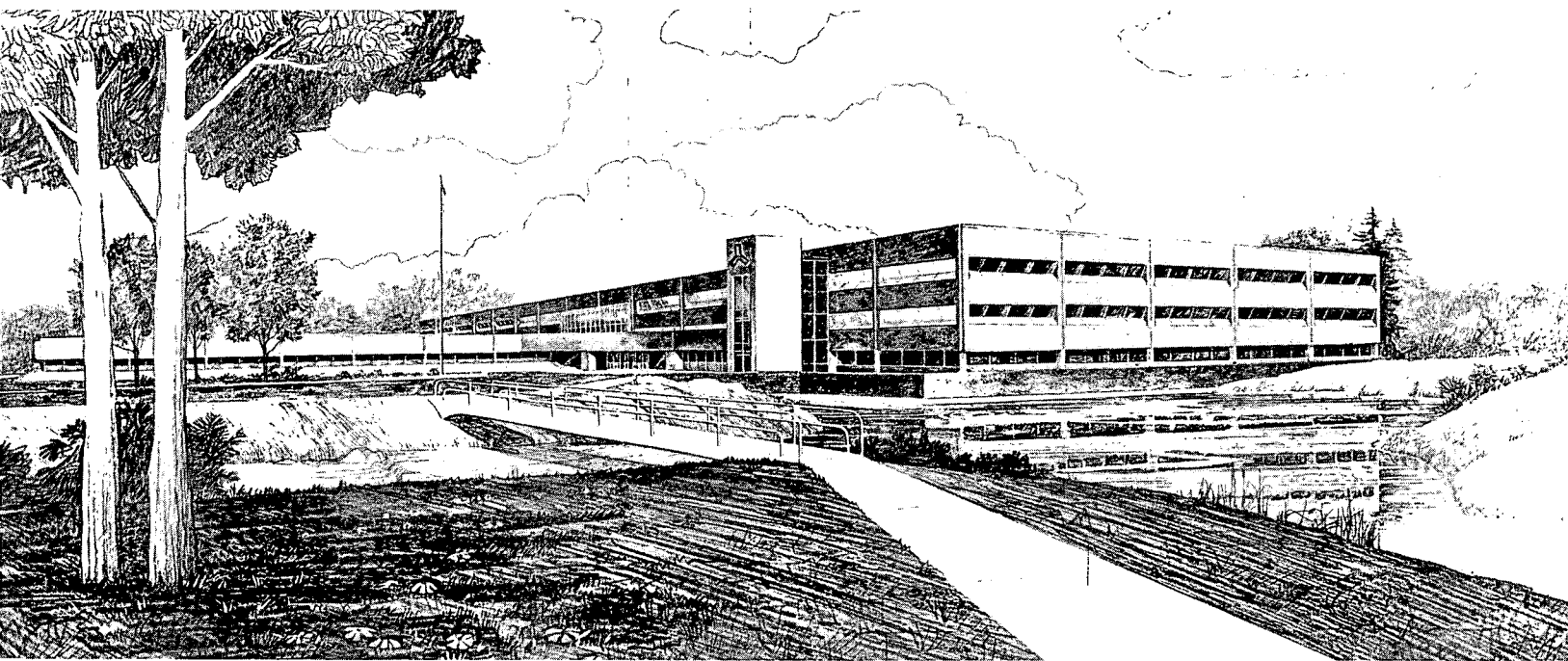


RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS  
(RETS) IMPLEMENTATION - KEWAUNEE NUCLEAR POWER  
PLANT

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Operated by the U.S. Department of Energy

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## ABSTRACT

A review of the Radiological Effluent Technical Specifications (RETS) for the Kewaunee Nuclear Power Plant was performed. The principal review guidelines used were NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," and Draft 7'' of NUREG-0472, Revision 3, "Radiological Effluent Technical Specifications for Pressurized Water Reactors." Draft submittals were discussed with the Licensee by the NRC staff until all items requiring changes to the Technical Specifications were resolved. The Licensee then submitted final proposed RETS to the NRC which were evaluated and found to be in compliance with the NRC review guidelines. The proposed Offsite Dose Calculation Manual and the Radiological Environmental Monitoring Manual were reviewed and generally found to be in compliance with the NRC review guidelines.

## FOREWORD

This Technical Evaluation Report was prepared by EG&G Idaho, Inc. under a contract with the U.S. Nuclear Regulatory Commission (Office of Nuclear Reactor Regulation, Division of Systems Integration) for technical assistance in support of NRC operating reactor licensing actions. The technical evaluation was conducted in accordance with criteria established by the NRC.

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## 1.0 INTRODUCTION

### 1.1 Purpose of the Technical Evaluation

The purpose of this Technical Evaluation Report (TER) is to review and evaluate the proposed changes in the Technical Specifications of the Kewaunee Nuclear Power Plant (KNPP) with regard to Radiological Effluent Technical Specifications (RETS) and the proposed Offsite Dose Calculation Manual (ODCM).

This evaluation used criteria proposed by the Nuclear Regulatory Commission (NRC) staff in the model Technical Specifications for pressurized water reactors (PWRs), NUREG-0472,<sup>[1]</sup> and subsequent revisions. This effort is directed toward the NRC objective of implementing RETS which comply with the regulatory requirements, primarily those of 10 CFR Part 50, Appendix I.<sup>[2]</sup> Other regulations pertinent to the control of effluent releases are also included within the scope of compliance.

### 1.2 Generic Issue Background

Since 1970, 10 CFR Part 50, Section 50.36.a,<sup>[3]</sup> "Technical Specifications on Effluents from Nuclear Power Reactors," has required licensees to provide Technical Specifications which ensure that radioactive releases will be kept as low as is reasonably achievable (ALARA). In 1975, numerical guidance for the ALARA requirement was issued in 10 CFR Part 50, Appendix I. The licensees of all operating reactors were required<sup>[4]</sup> to submit, no later than June 4, 1976, their proposed ALARA Technical Specifications and information for evaluation in accordance with 10 CFR Part 50, Appendix I. However, in February 1976, the NRC staff recommended that proposals to modify Technical Specifications be deferred until the NRC completed the model RETS.

The model RETS deal with radioactive waste management systems and environmental monitoring. Although the model RETS address the 10 CFR Part 50, Appendix I requirements, subsequent revisions include provisions for addressing issues not covered in Appendix I. These provisions are stipulated in the following regulations:

- o 10 CFR Part 20,[5] "Standards for Protection Against Radiation," Sections 20.105.c, 20.106.g and 20.405.c which require that nuclear power plants and other Licensees comply with 40 CFR Part 190,[6] "Environmental Radiation Protection Standards for Nuclear Power Operations," and submit reports to the NRC when the 40 CFR Part 190 limits have been or may be exceeded.
- o 10 CFR Part 50, Appendix A,[7] "General Design Criteria for Nuclear Power Plants," which contains Criterion 60--Control of releases of radioactive materials to the environment; Criterion 63--Monitoring fuel and waste storage; and Criterion 64--Monitoring radioactive releases.
- o 10 CFR Part 50, Appendix B,[8] which establishes the quality assurance required for nuclear power plants.

The NRC position on the model RETS was established in May 1978 when the NRC's Regulatory Requirements Review Committee approved the model RETS: NUREG-0472 for PWRs and NUREG-0473 for Boiling Water Reactors (BWRs). Copies of the model RETS were sent to licensees in July 1978 with a request to submit proposed site-specific RETS on a staggered schedule over a six-month period. Licensees responded with requests for clarifications and extensions.

The Atomic Industrial Forum (AIF) formed a task force to comment on the model RETS. NRC staff members first met with the AIF task force on June 17, 1978. The model RETS were subsequently revised (Revision 1) to

reflect comments from the AIF and others. A principal change was the transfer of much of the material concerning dose calculations from the model RETS to a separate document, the ODCM.

Revision 1 of the model RETS was sent to licensees on November 15 and 16, 1978 with guidance (NUREG-0133)<sup>[9]</sup> for preparation of the RETS and the ODCM and a new schedule for responses, again staggered over a six-month period.

Four regional seminars on the RETS were conducted by the NRC staff during November and December 1978. Subsequently, a preliminary copy of Revision 2 of the model RETS and additional guidance on the ODCM and a Process Control Program (PCP) were issued in February 1979 to each utility at individual meetings. NUREG-0472, Revision 2<sup>[1]</sup> and NUREG-0473, Revision 2<sup>[10]</sup> were published in July 1979 and updated in January 1980 and February 1980. In response to the NRC's request, operating reactor licensees subsequently submitted initial proposals on plant RETS and the ODCM. Review leading to ultimate implementation of these documents was initiated by the NRC in September 1981 using subcontracted independent teams as reviewers.

As the RETS reviews progressed, feedback from the licensees led the NRC to modify some of the provisions in the February 1, 1980 version of Revision 2 to clarify specific concerns of the licensees and thus expedite the reviews. Starting in April 1982, the NRC distributed revised versions of RETS in draft form to the licensees during the site visits. The new guidance on these changes was presented in an AIF meeting on May 19, 1982.<sup>[11]</sup> Some interim changes regarding the Radiological Environmental Monitoring Section were issued in August 1982.<sup>[12]</sup> With the incorporation of these changes, the NRC issued Draft 7'' of Revision 3 of NUREG-0472<sup>[13]</sup> and NUREG-0473<sup>[14]</sup> in September 1982 to serve as new guidance for the review teams.



### 1.3 Plant-Specific Background

The Licensee submitted a letter dated January 14, 1980<sup>[15]</sup> to the NRC stating that existing Technical Specifications satisfied the 40 CFR 190 requirements and the guidelines of NUREG-0472. EG&G Idaho, Inc. (EG&G), selected as an independent task review team initiated a review of the Licensee's existing Technical Specifications. The Specifications were reviewed and compared to the model RETS and assessed for compliance to the requirements of 10 CFR Part 50, Appendix I and 10 CFR Part 50, Appendix A. EG&G review comments were transmitted to the NRC with letter dated March 2, 1983.<sup>[16]</sup> The comments were resubmitted in revised format and transmitted to the NRC with letter dated August 16, 1983.<sup>[17]</sup>

There was no visit to the Kewaunee site by EG&G personnel to discuss the unresolved issues. All correspondence was between the Licensee and the NRC. The Licensee agreed to submit revised Specifications, however, the proposed ODCM was to serve as a basis for the revision.

The Licensee submitted an ODCM to NRC with letter dated December 20, 1984.<sup>[18]</sup> The ODCM was reviewed by EG&G and review comments transmitted to NRC with letter dated January 24, 1985.<sup>[19]</sup> It was concluded the Licensee's ODCM is generally in compliance with the NRC guidelines and uses methods consistent with the methodology and guidance of NUREG-0133. Thus, the Licensee submitted a proposed RETS with letter dated March 29, 1985.<sup>[20]</sup> The RETS submitted was reviewed by EG&G and review comments transmitted to the NRC with letter dated April 25, 1985.<sup>[21]</sup> The NRC resolved all outstanding issues on May 21, 1985<sup>[22]</sup> and transmitted annotated resolution of the issues with the review comments. The resolution to all items allowed EG&G to prepare a TER for submittal to the NRC.

The radiological environmental monitoring program for the Kewaunee Nuclear Power Plant is described in the Radiological Environmental Monitoring Manual (REMM). The Licensee submitted the REMM to NRC with

letter dated January 31, 1985.[23] The REMM was reviewed by EG&G and review comments transmitted to NRC with letter dated April 5, 1985.[24] It was concluded the REMM describes a radiological environmental monitoring program that meets the intent of NUREG-0472.

## 2.0 REVIEW CRITERIA

Review criteria for the RETS were provided by the NRC in three documents:

1. NUREG-0472, RETS for PWRs
2. NUREG-0473, RETS for BWRs
3. NUREG-0133, Preparation of RETS for Nuclear Power Plants

Twelve essential criteria are given for the RETS and ODCM:

1. All significant releases of radioactivity shall be controlled and monitored.
2. Offsite concentrations of radioactivity shall not exceed the 10 CFR Part 20, Appendix B, Table 2 limits.[25]
3. Offsite radiation doses shall be ALARA.
4. Equipment shall be maintained and used to keep offsite doses ALARA.
5. Radwaste tank inventories shall be limited so that failures would not cause offsite doses exceeding 10 CFR Part 20 limits.
6. Hydrogen and/or Oxygen concentrations in the waste gas system shall be controlled to prevent explosive mixtures.

7. Wastes shall be processed to shipping and burial ground criteria under a documented program, subject to quality assurance verification.
8. An environmental monitoring program, including a land use census, shall be implemented.
9. The radwaste management program shall be subject to regular audits and reviews.
10. Procedures for control of liquid and gaseous effluents shall be maintained and followed.
11. Periodic and special reports on environmental monitoring and on releases shall be submitted.
12. Offsite dose calculations shall be performed using documented and approved methods consistent with NRC methodology.

In addition to NUREG-0472 and NUREG-0473 and their subsequent revisions, the NRC staff issued guidelines,[26,27] clarifications,[28,29] and branch positions[30,31,32] establishing a policy that requires the licensees of operating reactors to meet the intent, if not the letter, of the model RETS requirements. The NRC branch positions issued since the RETS implementation review began have clarified the model RETS for operating reactors.

Review criteria for the ODCM are based on the following NRC guidelines: Branch Technical Position, "General Content of the Offsite Dose Calculation Manual";[33] NUREG-0133;[9] and Regulatory Guide 1.109.[34] The format for the ODCM is left to the licensee and may be simplified by tables and grid printouts.

### 3.0 TECHNICAL EVALUATION

#### 3.1 General Description of Radiological Effluent Systems

This section briefly describes the liquid and gaseous radwaste effluent treatment systems, release paths, and control systems installed at the Kewaunee Nuclear Power Plant, a PWR.

##### 3.1.1 Radioactive Liquid Effluents

All potentially contaminated radioactive liquid effluents are released to Lake Michigan through the circulating water discharge. The radioactive liquid treatment system and discharge pathways are block diagrammed in Figure 1. The diagram was obtained from the ODCM. The block diagram shows the turbine building sump continuous release and the steam generator blowdown continuous release. The chemical volume control system (CVCS) monitor tank, the steam generator blowdown monitor tanks and the waste condensate tanks are batch released to the auxiliary building standpipe before release via the circulating water discharge.

##### 3.1.2 Radioactive Gaseous Effluents

There are two release points for radioactive gases to the atmosphere: the containment building vent and the auxiliary building vent. The radioactive gaseous treatment system and discharge pathways are block diagrammed in Figure 2. The diagram was obtained from the ODCM. As can be seen from Figure 2, all gaseous releases are treated and monitored before release.

#### 3.2 Radiological Effluent Technical Specifications

The following subsections describe the primary objectives of each section of the model RETS and a summary of the commitments of the Licensee's RETS. A cross-reference between the numbering in the model

RETS and the Licensee's RETS is contained in Table 1. The chronological sequence of the RETS review was described in the Plant-Specific Background, Section 1.3 of this report.

### 3.2.1 Effluent Instrumentation

The objective of the model RETS with regard to effluent instrumentation is to ensure that all significant liquid and gaseous effluent monitors be operable with periodic surveillance and that alarm/trip setpoints be determined in order to ensure that offsite radioactive effluent concentrations do not exceed maximum permissible concentrations (MPCs) listed in 10 CFR Part 20.

The licensee has provided radiation monitors for all effluent lines with potential for release of significant amounts of radioactivity in liquid or gaseous effluents.

#### 3.2.1.1 Radioactive Liquid Effluent Instrumentation

The monitoring and controls for normal releases of radioactive liquids are indicated in Figure 1. The R-18 monitor provides alarm and automatic termination of release for the liquid radwaste line while the R-19 monitor provides alarm and automatic termination of release for the steam generator blowdown. The R-16 and R-20 monitors provide alarm for the service water discharges.

Grab samples from the turbine building sump are collected weekly and analyzed by gamma spectroscopy. During periods of identified primary-to-secondary leakage, grab samples from the turbine building sump are collected daily and analyzed by gamma spectroscopy.

Thus, the radioactive liquid releases are instrument monitored or monitored with an adequate sampling program.

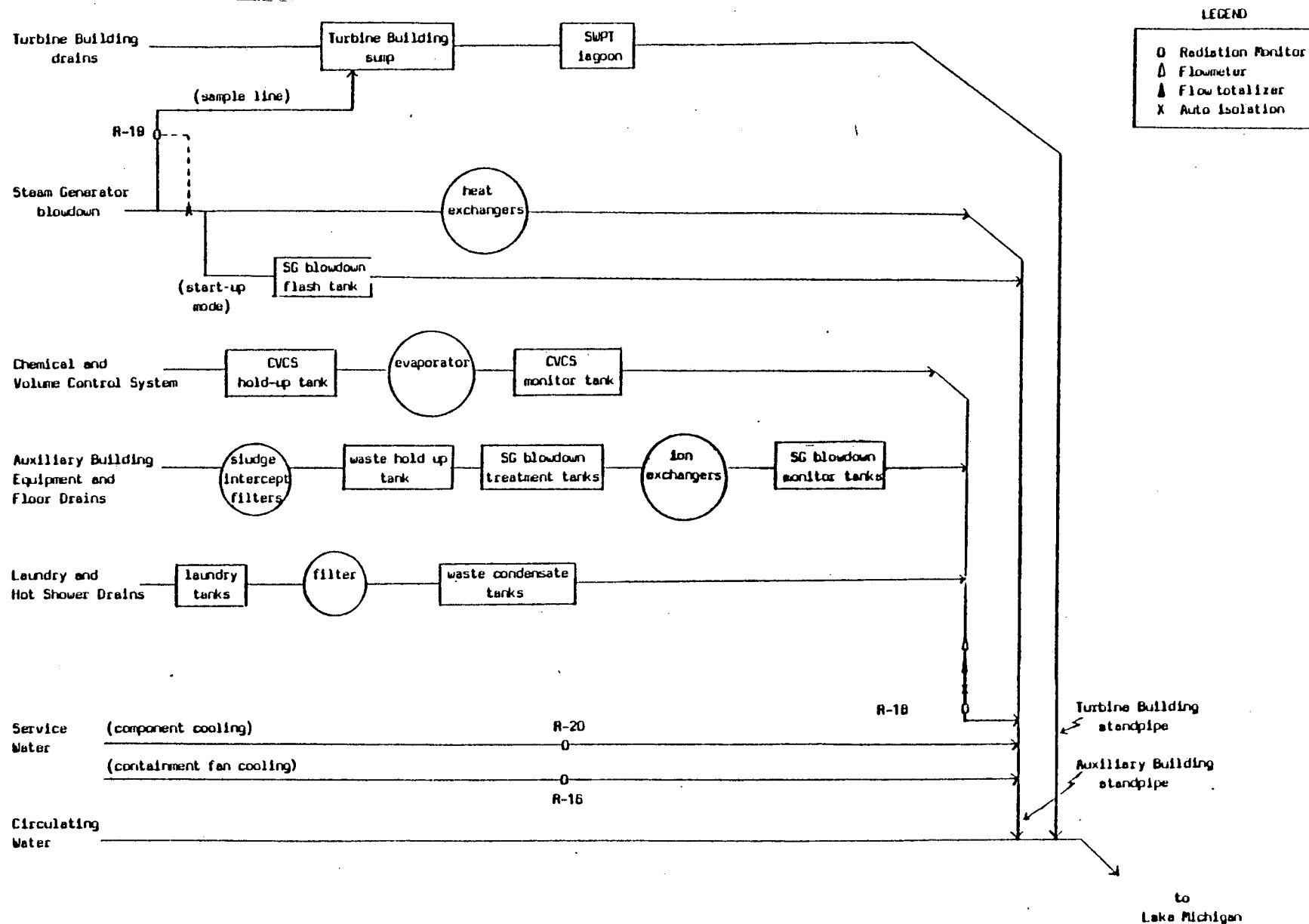


Figure 1 Kewaunee Liquid Radwaste Treatment and Discharge Pathways

- \*\* The containment atmospheric samplers (R-12 and R-11) can also be aligned as needed for sampling containment vent.

**LEGEND**

D	Radiation Monitor
○	Sampler/monitor
X	Auto Isolation
□	Sample point
p	Prefilter
h	HEPA filter
c	Charcoal filter
air	air operated damper
cylinder	cylinder operated damper

Figure 2 Kewaunee Gaseous Radwaste Treatment and Discharge Pathways

#### 3.2.1.2 Radioactive Gaseous Effluent Instrumentation

Waste gas decay tanks are batch released after sampling and analysis. The tanks are discharged via the Auxiliary Building vent. R-13 and/or R-14 provide noble gas monitoring and automatic isolation.

The air ejector discharge is monitored by R-15. Releases from this system are via the Auxiliary Building vent and are monitored by R-13 and/or R-14.

Containment purge and ventilation is via the containment stack. The stack radiation monitoring system consists of: a) a noble gas activity monitor providing alarm and automatic termination of release (R-12 and R-21); b) an iodine sampler; and c) a particulate sampler. Effluent flow rates are determined empirically as a function of fan operation (fan curves). Sampler flow rates are determined by flow rate instrumentation.

The Auxiliary Building vent receives discharges from the waste gas holdup system, condenser evacuation system, fuel storage area ventilation, Auxiliary Building radwaste processing area ventilation, and Auxiliary Building general area. All effluents pass through: a) a noble gas monitor - R-13 and/or R-14; b) an iodine sampler (R-13A); and c) a particulate sampler (R-13A). The noble gas monitor (R-13 and/or R-14) provides auto isolation of any waste gas decay tank releases and diverts other releases through the special ventilation system. Effluent flow rates are determined empirically as a function of fan operation (fan curves). Sampler flow rates are determined by flow rate instrumentation.

#### 3.2.1.3 Liquid and Gaseous Instrumentation Setpoints

The Licensee's Technical Specifications require that the setpoints for the radioactive liquid monitors be established to prevent exceeding the 10 CFR Part 20, Appendix B, Table II, Column 2 concentration limits in



unrestricted areas. The setpoints for the radioactive gas monitors shall be established to prevent exceeding the dose rates specified in NUREG-0472 to areas at and beyond the site boundary. The setpoints for the liquid and gaseous effluent instrumentation will be determined in accordance with the Offsite Dose Calculation Manual (ODCM).

The Licensee's RETS submittal on liquid and gaseous effluent monitoring instrumentation has satisfied the provisions and meets the intent of NUREG-0472.

### 3.2.2 Concentration and Dose Rates of Effluents

#### 3.2.2.1 Liquid Effluent Concentration

The Licensee's RETS include a commitment to maintain the concentration of radioactive liquid effluents released from the site to the unrestricted areas to within 10 CFR Part 20 limits, and if the concentration of liquid effluents to the unrestricted area exceeds these limits, action will be taken without delay to restore concentrations to within the limits. Batch releases are sampled and analyzed periodically in accordance with an acceptable sampling and analysis program.

Therefore, the Licensee's RETS submittal on liquid effluent concentrations meets the intent of NUREG-0472.

#### 3.2.2.2 Gaseous Effluent Dose Rate

The Licensee's RETS include a commitment to maintain the gaseous dose rate to areas at and beyond the site boundary to within NUREG-0472 dose rate limits and if the concentration of gaseous effluents exceeds these limits it will be restored without delay to a value within the limits.

The radioactive gaseous waste sampling and analysis program provides adequate sampling and analysis of the discharges.

Therefore, the Licensee's RETS submittal on gaseous effluent dose rates meets the intent of NUREG-0472.

### 3.2.3 Offsite Doses from Effluents

The objectives of the model RETS with regard to offsite doses from effluents are to ensure that offsite doses are kept ALARA, are in compliance with the dose specifications of NUREG-0472 and are in accordance with 10 CFR Part 50, Appendix I and 40 CFR Part 190.

The Licensee's RETS include a commitment to:

1. Limit the quarterly and annual dose due to liquid effluents to within the NUREG-0472 criteria.
2. Limit the quarterly and annual air dose due to noble gas releases to within the NUREG-0472 criteria.
3. Limit the quarterly and annual dose to any organ due to release of iodine-131, tritium, and radionuclides in particulate form with half-lives greater than eight days to within the NUREG-0472 criteria and to
4. Limit the dose to any member of the public so as not to exceed the 40 CFR Part 190 requirements.

Therefore, the Licensee's RETS submittal on offsite doses from radioactive effluents meets the intent of NUREG-0472.

### 3.2.4 Effluent Treatment

The objectives of the model RETS with regard to effluent treatment are to ensure that the radioactive waste treatment systems are used to keep releases ALARA and to satisfy the provisions for Technical Specifications governing the maintenance and use of radwaste treatment equipment.

The Licensee's RETS commits to using the liquid radwaste treatment equipment when it is projected that the cumulative dose during a calendar quarter would exceed 0.18 mrem to the total body or 0.62 mrem to any organ. The dose projections shall be made in accordance with the ODCM at least once every 31 days.

The Licensee's RETS commits to using the gaseous radwaste treatment system and the ventilation exhaust treatment system when the projected air dose due to gaseous effluent releases beyond the site boundary would exceed 0.62 mrad for gamma radiation and 1.25 mrad for beta radiation in a calendar quarter. The ventilation exhaust treatment system will be used when projected doses exceed 0.94 mrem to any organ in a calendar quarter.

The dose projections shall be made in accordance with the ODCM at least once every 31 days.

Therefore, the Licensee's RETS submittal on the usage of liquid and gaseous radwaste treatment systems meets the intent of NUREG-0472.

### 3.2.5 Tank Inventory Limits

The objective of the model RETS with regard to a curie limit on liquid-containing tanks is to ensure that in the event of a tank rupture, the concentrations in the nearest potable water supply and the nearest surface water supply in an unrestricted area would not exceed the limits of 10 CFR Part 20, Appendix B, Table II. The objective of the model RETS with regard to a curie limit on gas-containing tanks is to ensure that in the event of an uncontrolled release of the tank's contents the resulting total body exposure to an individual at the nearest exclusion area boundary will not exceed 0.5 rem.

There are no outdoor tanks at Kewaunee containing radioactive liquid. Consequently a specification is not required.

There is no specification limiting the curie concentration in gas storage tanks. The Licensee submitted an argument justifying the omission of the specification. The argument is based on the condition that if the gaseous activity of the primary system were released, it would not exceed the 0.5 rem total body exposure to a member of the public at the site boundary as specified in NUREG-0472. Consequently, a specification is not required.

Therefore, the Licensee's RETS submittal on tank inventory limits meets the intent of NUREG-0472.

#### 3.2.6 Explosive Gas Mixtures

The objective of the model RETS with regard to explosive gas mixtures is to prevent hydrogen explosions in the waste gas system.

The NRC staff considers that the current interim program of the Licensee for monitoring explosive gas mixtures is acceptable on an interim basis as meeting the intent of NUREG-0472.[22]

#### 3.2.7 Solid Radwaste System

The objective of the model RETS with regard to the solid radwaste system is to ensure that radwaste will be properly processed and packaged before it is shipped from the plant to the burial site to satisfy the requirements of 10 CFR Part 20, Section 20.301 and 10 CFR Part 71.[35]

The Licensee's RETS include a commitment to use the solid radwaste system in accordance with a Process Control Program to process wet radioactive wastes to meet shipping and burial ground requirements.

Therefore, the Licensee's RETS submittal on solid radioactive waste meets the intent of NUREG-0472.

### 3.2.8 Radiological Environmental Monitoring Program

The objectives of the model RETS with regard to a radiological environmental monitoring program are to ensure that (a) an adequate full-area coverage environmental monitoring program exists, (b) there is an appropriate land use census, and (c) an acceptable Interlaboratory Comparison Program exists. The monitoring program implements Section IV.B.2 of Appendix I to 10 CFR Part 50, the land use census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50, and the requirement for participation in an approved Interlaboratory Comparison Program is provided to ensure that independent checks are performed as part of the quality assurance program for environmental monitoring to demonstrate that valid results are obtained for Section IV.B.2 of Appendix I to 10 CFR Part 50.

The Licensee's RETS on a radiological environmental monitoring program have followed the model RETS and the Branch Technical Position on the subject issued November 1979,[31] as applicable to the site, and have provided an adequate number of sample locations for pathways identified. A detailed description of the program is contained in Section 1 of the REMM. The Licensee's method of sample analysis and maintenance of the monitoring program satisfies the requirements of Appendix I, 10 CFR Part 50. The Licensee's RETS contain a land use census specification which requires the appropriate annual information for a PWR. The RETS also state that the Licensee will participate in an NRC approved Interlaboratory Comparison Program.

Thus, the Licensee's RETS submittal for a radiological environmental monitoring program meets the intent of NUREG-0472.

### 3.2.9 Audits and Reviews

The objective of the model RETS with regard to audits and reviews is to ensure that audits and reviews of the radwaste and environmental monitoring programs are properly conducted.

The Licensee's administrative structure identifies the Plant Operations Review Committee (PORC) and the Nuclear Safety Review and Audit Committee (NSRAC) as the two groups comparable to the Unit Review Group (URG) and the Company Nuclear Review and Audit Group (CNRAG), respectively.

The PORC is responsible for reviewing all changes to the ODCM, the REMM, and the PCP.

The NSRAC is responsible for auditing the radiological environmental monitoring program and the results thereof at least once per 12 months; for auditing the offsite dose calculation manual and process control program and implementing procedures at least once per 24 months; and the performance of activities required by the Quality Assurance Program to meet the criteria of 10 CFR 50 Appendix B at least once per 24 months.

Therefore, the PORC and the NSRAC encompass the total responsibility for reviews and audits and meet the intent of NUREG-0472.

### 3.2.10 Procedures and Records

The objective of the model RETS with regard to procedures is to ensure that written procedures be established, implemented, and maintained for the PCP, the ODCM, and the QA program for effluent and environmental monitoring. The objective of the model RETS with regard to records is to ensure that documented records pertaining to the radiological environmental monitoring program are retained for the duration of the operating license.

The Licensee's RETS include a commitment to establish and implement procedures for the ODCM and PCP and for the Quality Assurance Program for effluent and environmental monitoring. Specification 6.10.1.j satisfies the record retention requirements of NUREG-0472.

Therefore, the Licensee's RETS submittal on procedures and records meets the intent of NUREG-0472.

### 3.2.11 Reports

The objective of the model RETS with regard to reporting requirements is to ensure that appropriate annual and semiannual periodic reports and special reports are submitted to the NRC.

The Licensee's RETS include commitments to submit the following reports:

1. Annual Radiological Environmental Monitoring Report

This report includes summaries, interpretations and analysis of trends of the results of the radiological environmental monitoring surveillance program. The report also includes the results of the land use census and results of participation in the Interlaboratory Comparison Program. The report will be submitted prior to May 1 of each year.

2. Semiannual Radioactive Effluent Release Report

The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released following the format of Regulatory Guide 1.21. Radiation dose assessments shall be included within 60 days after January 1 of each year and shall include an annual summary of hourly meteorological data over the previous year. This same report shall include an assessment of radiation doses due to radioactive liquid and gaseous effluents released during the previous calendar year. This same report shall include an assessment of radiation doses to the likely most exposed member of the public from uranium fuel cycle sources. The reports shall include a list and description of unplanned releases and any changes made to the PCP and ODCM during the reporting period. The Licensee has also committed to reporting any changes to Section 1 of the REMM.

3. Special Reports The Licensee's RETS include a commitment to file a special report within 30 days under the following conditions:

- o Exceeding the liquid effluent dose limits according to Specification 7.3.2.
- o Exceeding the gaseous effluent dose limits according to Specifications 7.4.2 and 7.4.3.
- o Exceeding the total dose limits according to Specification 7.6.
- o Exceeding the reporting levels for the radioactivity measured in environmental sampling program Specification 7.7.1.
- o When radioactive liquid or gaseous effluents require treatment before discharge and the waste treatment equipment is inoperable as specified in 7.3.3 and 7.4.4.

Therefore, the Licensee's RETS submittal on reports meets the intent of NUREG-0472.

#### 3.2.12 Other Administrative Controls

An objective of the model RETS in the administrative controls section is to ensure that any changes to the PCP and ODCM and major changes to the radioactive waste treatment systems are reported to the NRC. Such changes shall be reviewed and accepted by the URG before implementation.

The Licensee's RETS state that the aforementioned changes will be reported to the NRC after review and acceptance by the PORC.

Therefore, the Licensee's RETS submittal for these administrative controls meets the intent of NUREG-0472.



### 3.3 Offsite Dose Calculation Manual

As specified in NUREG-0472, the ODCM is to be developed by the Licensee to document the methodology and approaches used to calculate offsite doses and maintain the operability of the effluent system. As a minimum, the ODCM should provide equations and methodology for the following topics:

- o alarm and trip setpoints for effluent instrumentation.
- o liquid effluent concentration in unrestricted areas.
- o gaseous effluent dose rates or concentrations at or beyond the site boundary.
- o liquid and gaseous effluent dose contributions.
- o total dose compliance, including direct shine.
- o liquid and gaseous effluent dose projections.

In addition, the ODCM should contain flow diagrams, consistent with the systems being used at the station, defining the treatment paths and the components of the radioactive liquid, gaseous, and solid waste management systems. A description and the location of samples in support of the environmental monitoring program are also needed in the ODCM.

#### 3.3.1 Evaluation

The licensee's ODCM satisfies the equation in the addendum of NUREG-0133 to determine the alarm and trip setpoints for the liquid effluent monitors. This assures that the alarm and trip actions will occur prior to exceeding the 10 CFR Part 20, Appendix B, Table II values at the discharge point to the unrestricted area.

The alarm and trip setpoints for the gaseous effluent monitors are calculated to assure that alarm and trip actions will occur prior to exceeding the limits set in 10 CFR Part 20 for annual dose rates to

unrestricted areas. The Licensee uses equations similar to those contained in NUREG-0133 with the dose rate values identified in NUREG-0472.

The Licensee's ODCM contains the calculational method for demonstrating compliance with the concentration limits in the event any liquid or gaseous release results in an alarm setpoint being exceeded.

The Licensee's ODCM demonstrates that noble gas discharges are assured to be within the NUREG-0472 dose rate limits by correctly determining the setpoints for the noble gas monitors. The dose rate due to the release of I-131 and particulates with half-lives greater than eight days is assured to be within the NUREG-0472 limit of 1500 mrem per year by not exceeding the calculated allowable curies per week release rate for I-131 based on the inhalation pathway for the child thyroid.

The ODCM contains methodology for demonstrating compliance with 10 CFR Part 50, Appendix I by calculating dose commitments for liquid and gaseous effluents. Cumulative dose calculations shall be made at least once per 31 days.

The ODCM contains the dose projection methodology to determine if the liquid or gaseous radwaste treatment equipment must be operated.

A complete description of the Kewaunee radiological environmental monitoring program committed to in the RETS is contained in Section 1 of the Kewaunee Radiological Environmental Monitoring Manual (REMM). Specific parameters of distance and the direction sector from the plant have been provided for each and every sample location.

The Licensee's ODCM and Section 1 of the REMM for the Kewaunee Nuclear Plant are generally in compliance with the NRC requirements and uses methods consistent with the methodology and guidance prescribed in NUREG-0133.

#### 4.0 CONCLUSIONS

The Licensee's proposed RETS, ODCM, and REMM were reviewed and evaluated and the following conclusions were reached:

- o The Licensee's proposed RETS for the Kewaunee Nuclear Power Plant submitted March 29, 1985 meets the intent of the NRC staff's "Standard Radiological Effluent Technical Specifications for Pressurized Water Reactors," NUREG-0472.
- o The Licensee's ODCM dated December 1984 uses documented and approved methods that are applicable to the Kewaunee Nuclear Power Plant and are generally consistent with the guidelines of NUREG-0133. Therefore, the ODCM is an acceptable reference.
- o Section 1 of the Licensee's REMM dated January 31, 1985 has followed the model RETS as applicable to the site and meets the intent of the Branch Technical Position<sup>[31]</sup> for an acceptable radiological environmental monitoring program.

A correspondence between (a) NUREG-0472, (b) the Licensee's current RETS, and (c) the Licensee's proposed RETS is shown in Table 1.

TABLE 1  
CORRESPONDENCE OF PROVISIONS OF NUREG-0472, THE LICENSEE'S  
CURRENT TECHNICAL SPECIFICATIONS AND THE LICENSEE'S  
PROPOSAL FOR THE KEWAUNEE NUCLEAR POWER PLANT

<u>RETS Requirements</u>	<u>NUREG-0472</u>	<u>Current Technical Specification</u>	<u>Licensee Proposal (Section)</u>
Effluent	3.3.3.10	3.9.a	7.1
Instrumentation	3.3.3.11	3.9.b.4	7.2
Concentration	3.11.1.1	3.9	7.3.1
	3.11.2.1	3.9	7.4.1
Offsite Doses	3.11.1.2	3.9.a.2	7.3.2
	3.11.2.2	3.9.b.1	7.4.2
	3.11.2.3	3.9.b.2	7.4.3
	3.11.4	-----	7.6
Radwaste Treatment	3.11.1.3	3.9.a	7.3.3
	3.11.2.4	3.9.b	7.4.4
Tank Inventory	3.11.1.4	3.9.a.7	-----
Limits	3.11.2.6	3.9.b.7	-----
Explosive Gas Mixtures	3.11.2.5	-----	-----
Mixtures			
Solid Radwaste	3.11.3	-----	7.5
Environmental Monitoring	3.12.1	4.10.a	7.7.1
Land Use Census	3.12.2	-----	7.7.2
Interlaboratory Comparison	3.12.3	-----	7.7.3
Audits and Reviews	6.5.1	6.5.1.6	6.6.1, 6.5.1.6.j
	6.5.2	6.5.2	6.5.3.8
Procedures and Records	6.8	6.8	6.16
	6.10	6.10.2	6.10.1.j
Reports	6.9	6.9	6.9.3.a, 6.9.3.b
Other Administrative	6.13	-----	6.17
Controls	6.14	-----	6.18
	6.15	-----	6.19

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## 13. ABSTRACT (200 words or less)

A review of the Radiological Effluent Technical Specifications (RETS) for the Kewaunee Nuclear Power Plant was performed. The principal review guidelines used were NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," and Draft 7'' of NUREG-0472, Revision 3, "Radiological Effluent Technical Specifications for Pressurized Water Reactors." Draft submittals were discussed with the Licensee by the NRC staff until all items requiring changes to the Technical Specifications were resolved. The Licensee then submitted final proposed RETS to the NRC which were evaluated and found to be in compliance with the NRC review guidelines. The proposed Offsite Dose Calculation Manual and the Radiological Environmental Monitoring Manual were reviewed and generally found to be in compliance with the NRC review guidelines.

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