

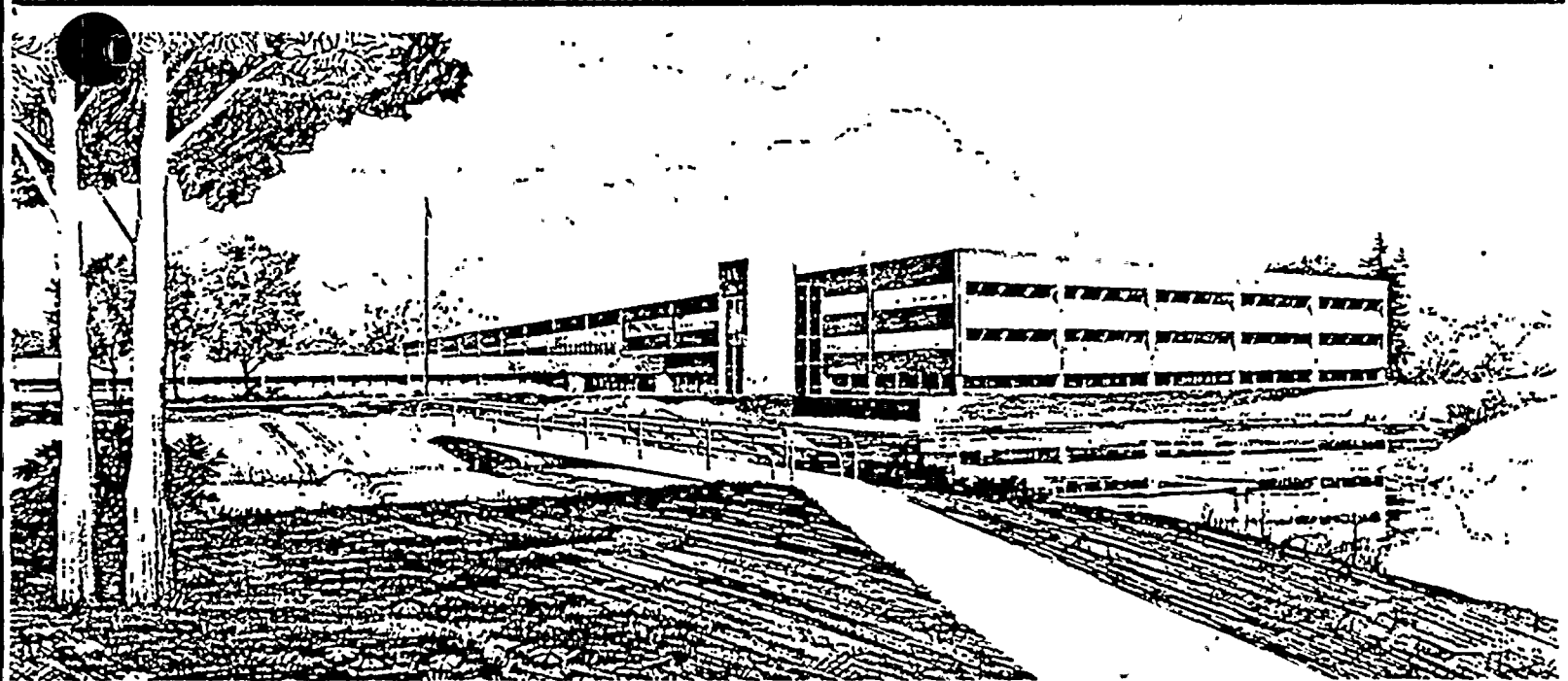
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RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS (RETS)
IMPLEMENTATION - ST. LUCIE UNIT NO. 1 NUCLEAR
GENERATING PLANT

F. B. Simpson
W. Serrano
S. W. Duce
T. E. Young
J. W. Mandler
D. W. Akers

Idaho National Engineering Laboratory
Operated by the U.S. Department of Energy



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Prepared for the
U. S. NUCLEAR REGULATORY COMMISSION
Under DOE Contract No. DE-AC07-76TD01570

 **EG&G** Idaho



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Ferrol B. Simpson
William Serrano
Stephen W. Duce
Thomas E. Young
John W. Mandler
Douglas W. Akers

EG&G Idaho, Inc.
Idaho Falls, Idaho 83415

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FIN No. A6459

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.

ABSTRACT

A review of the Radiological Effluent Technical Specifications (RETS) of the St. Lucie Unit No. 1 Nuclear Generating 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 PWR's." Draft submittals were reviewed and discussed with the Licensee 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 requirements of the NRC review guidelines. The Offsite Dose Calculation Manual and Process Control Program will be used for both the St. Lucie Unit Nos. 1 and 2 and were reviewed and approved by the NRC staff.

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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 St. Lucie Unit No. 1 Nuclear Generating Plant with regard to Radiological Effluent Technical Specifications (RETS). The Offsite Dose Calculation Manual (ODCM) and the Process Control Program (PCP) are the same as for St. Lucie Unit No. 2 which have been reviewed and accepted by the Nuclear Regulatory Commission (NRC) staff.

The evaluation used criteria proposed by the NRC staff in the model Technical Specifications for pressurized water reactors (PWR's), NUREG-0472,^[1] 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.^[2] 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 50.36a,^[3] "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^[4] 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 initial NRC position on the model RETS was established in May 1978 when the NRC's Regulatory Requirements Review Committee approved the first model RETS (NUREG-0472 for PWR's and NUREG-0473 for boiling water reactors [BWR's]).



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:

- 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.
- 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.
- 10 CFR Part 50, Appendix B,^[8] which establishes the quality assurance required for nuclear power plants.

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)^[9] 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 PCP were issued in February 1979 to each utility at individual meetings. NUREG-0472, Revision 2^[1] and NUREG-0473, Revision 2^[10] 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.^[11] Some interim changes regarding the Radiological Environmental Monitoring Section were issued in August 1982.^[12] With the incorporation of these changes, the NRC issued a draft Revision 3 of NUREG-0472^[13] in September 1982 to serve as new guidance for the review teams.

1.3 Plant-Specific Background

In conformance with the 1975 directive^[4] Florida Power and Light Company (FPL), the Licensee of the St. Lucie Unit No. 1 Nuclear Generating Plant, submitted information for an "Appendix I Evaluation"^[14] dated June 4, 1976; it was accompanied by a "Proposed Ammendment for Facility Operating License."^[15] These submittals showed the capability for compliance with Appendix I, but did not propose new RETS.

The RETS were addressed in subsequent submittals by the Licensee to the NRC dated March 15, 1979, August 23, 1979, February 23, 1982, May 13, 1982,

November 5, 1982, March 7, 1983 and March 29, 1983.^[16,17,18,19,20,21,22] The submittals followed the format of NUREG-0472 for PWR's. EG&G Idaho, Inc. (EG&G), selected as an independent task review team, initiated the review by the evaluation of the March 15, 1979 submittal.^[16] This submittal was compared with the model RETS and assessed for compliance with the requirements of 10 CFR Part 50, Appendix I, and 10 CFR Part 50, Appendix A.

Copies of a draft review of the RETS dated February 22, 1982,^[23] were mailed to the NRC and the Licensee prior to a site visit to the St. Lucie Unit No. 1 Nuclear Generating Plant. The site visit was arranged for the purpose of resolving questions identified in the EG&G review.

Prior to the site visit (March 3 - 4, 1982) the Licensee submitted a revised RETS^[18] and copies of an ODCM^[24] dated February 23 and 24, 1982, respectively.

During the site visit technical discussions with the Licensee resolved many of the shortcomings of the St. Lucie Unit No. 1 RETS (e.g., missing information and other deviations from the requirements) identified in the draft review.

On March 29 and April 9, 1982 telephone conferences^[25,26] were held between the Licensee and EG&G representatives to discuss the suggested changes and revisions to the latest RETS and ODCM submittals. On May 13, 1982 the Licensee submitted a revised RETS and ODCM^[19,27] and these documents were reviewed by EG&G. Comments of the review were prepared and transmitted to the NRC on September 9, 1982.^[28] On November 5, 1982 the Licensee submitted a revised RETS^[20] for St. Lucie Unit No. 1 which was to be as close as practicable to the St. Lucie Unit No. 2 RETS. Because the St. Lucie Unit No. 2 RETS were undergoing NRC review and approval at the time, the St. Lucie Unit No. 1 revised RETS were submitted in a marked up form as requested by the NRC staff. This submittal was reviewed by EG&G.

Because of confusion resulting from the marked up form and due to additional changes to the St. Lucie Unit No. 2 RETS another St. Lucie Unit

No. 1 RETS was received on March 7, 1983.^[21] This draft was reviewed by EG&G and review comments transmitted to the NRC^[29].

The NRC also transmitted to EG&G a copy of the up-to-date St. Lucie Unit No. 2 ODCM dated December 1982,^[30] which is also to be used for St. Lucie Unit No. 1.

The final revised submittal dated March 29, 1983 of the St. Lucie Unit No. 1 Nuclear Generating Plant RETS^[22] was received by the review team on April 4, 1983. The submittal was reviewed and discussed with the NRC on April 6, 1983.^[31] It was desirable that the St. Lucie Unit Nos. 1 and 2 RETS be compatible. Therefore, there are specifications in the St. Lucie Unit No. 1 submittal that were dictated by the previously approved St. Lucie Unit No. 2 RETS. It was concluded that no open items remained. All items regarded as deviations from the intent of the NUREG-0472 requirements were resolved, allowing the EG&G review team to complete a TER for submittal to the NRC.

2.0 REVIEW CRITERIA

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

1. NUREG-0472, RETS for PWR's
2. NUREG-0473, RETS for BWR's
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 II limits.^[32]
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,^[33,34] clarifications,^[35,36] and branch positions^[37,38,39] 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.

The review of the ODCM was based on the following NRC guidelines: Branch Technical Position, "General Content of the Offsite Dose Calculation Manual"^[40]; NUREG-0133^[9]; and Regulatory Guide 1.109^[41]. The format for the ODCM is left to the Licensee and may be simplified by tables and grid printouts.

Review of the Process Control Program was based on the guidance provided by the NRC staff^[42].

3.0 TECHNICAL EVALUATION

3.1 General Description of Radiological Effluent System

This section briefly describes the liquid and gaseous radwaste effluent treatment systems, release paths, and control systems installed at St. Lucie Unit, No. 1 Nuclear Generating Plant, a PWR.

3.1.1 Radioactive Liquid Effluents

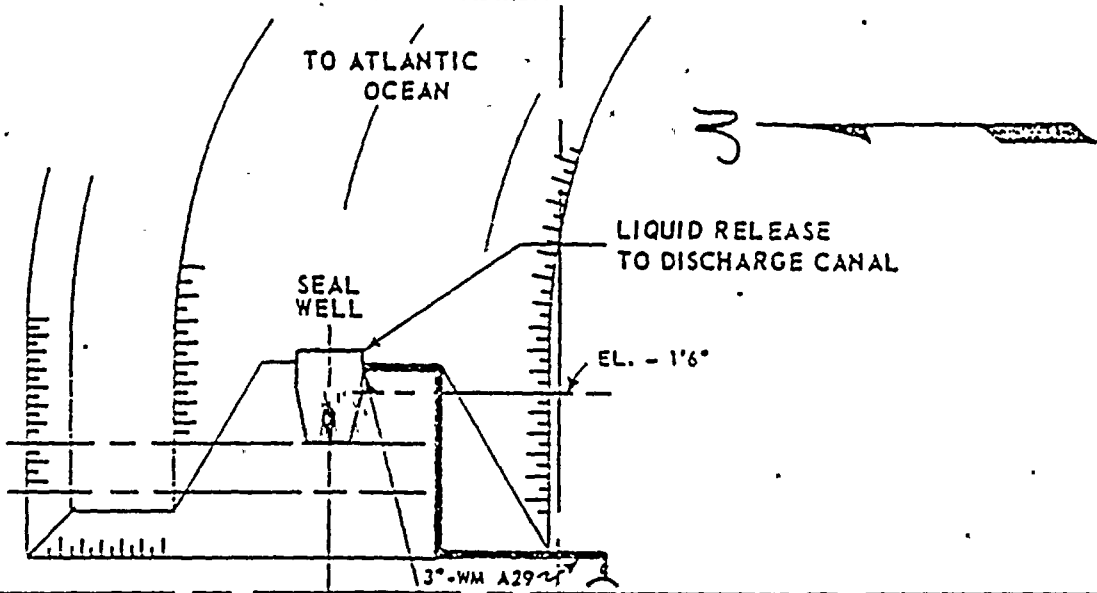
The circulating water for operation of the St. Lucie Unit No. 1 is taken from and returned to the Atlantic Ocean. The discharge and intake pipes are separated by 2400 feet of ocean shoreline which results in a negligible recirculation of discharged water. The liquid release point from the waste management system to the environs is via the boric acid condensate or via the waste condensate pumps discharge to the circulating water discharge. Figures 1 and 2 are diagrams showing the liquid release point. The turbine building sumps are pumped to a settling pond which is sampled and analyzed weekly. The surrounding municipalities do not depend on the ocean as a source of potable water and all local groundwater runoff is toward the ocean. Thus, the liquid releases from the plant do not result in doses via drinking water.

3.1.2 Radioactive Gaseous Effluents

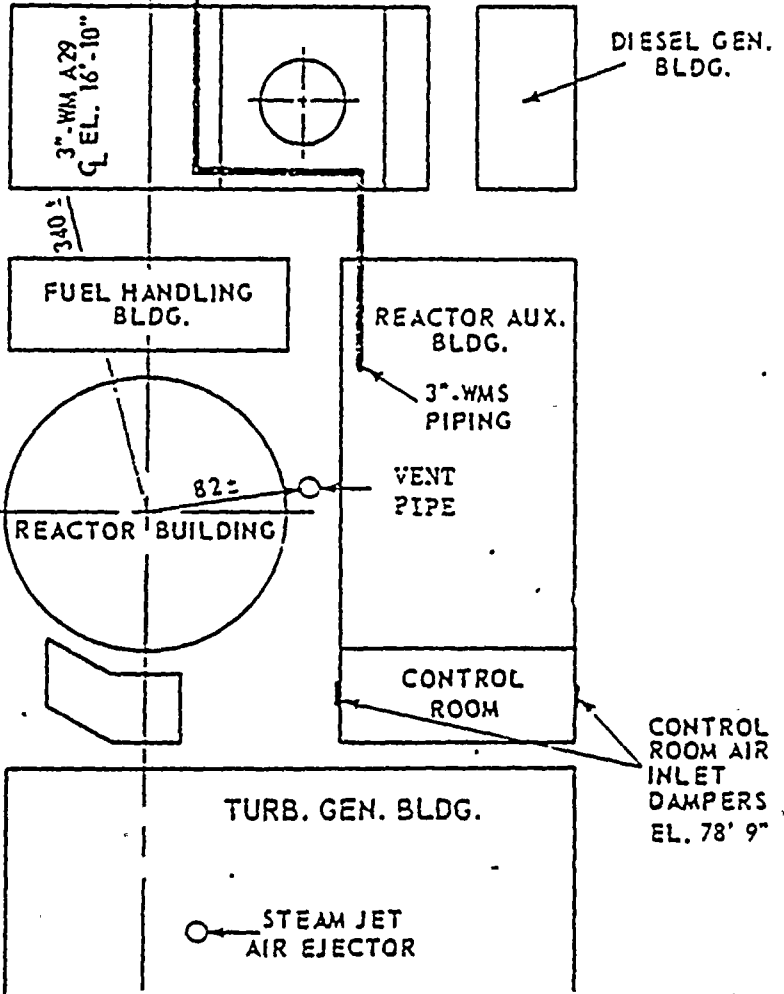
There are three gaseous release points shown in Figure 3; the plant vent, the condenser air ejector vent and the steam generator blowdown building vent. Gaseous effluents from the reactor auxiliary building ventilation system, turbine system leakage, steam jet air ejector operation, gland steam condenser operation and containment purge are normally released through the plant vent. The exhaust from the condenser air ejector can be released through a separate release point but is normally released via the plant vent.

3.2 Radiological Effluent Technical Specifications

The following sub-sections describe the primary objectives of each section of the model RETS and a summary of the commitments of the Licensee's



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NOTE: NOT TO SCALE



Rev. 19 - 1/20/74

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT
UNIT 1

PLANT LIQUID AND
GASEOUS RELEASE POINTS

FIGURE 1

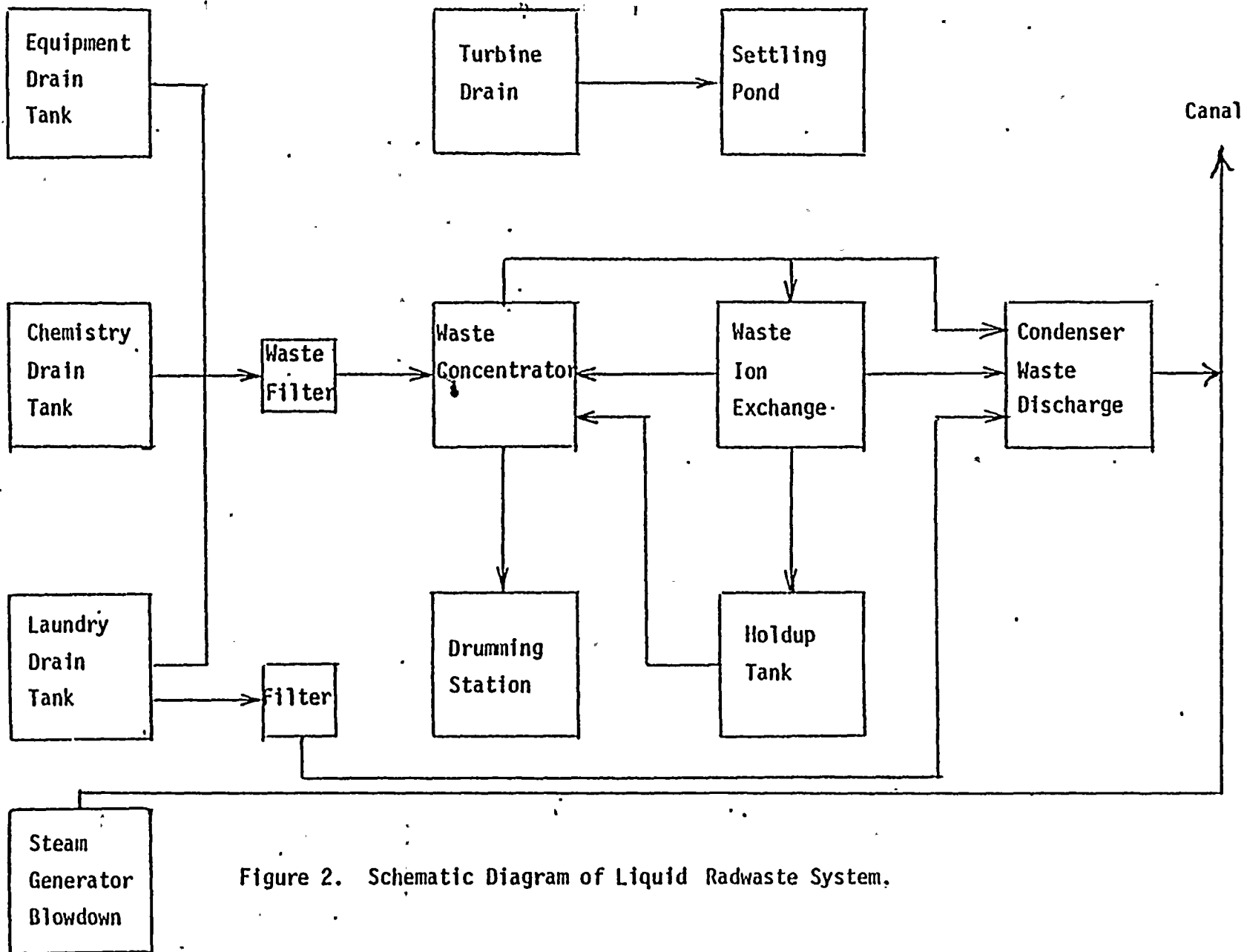


Figure 2. Schematic Diagram of Liquid Radwaste System.

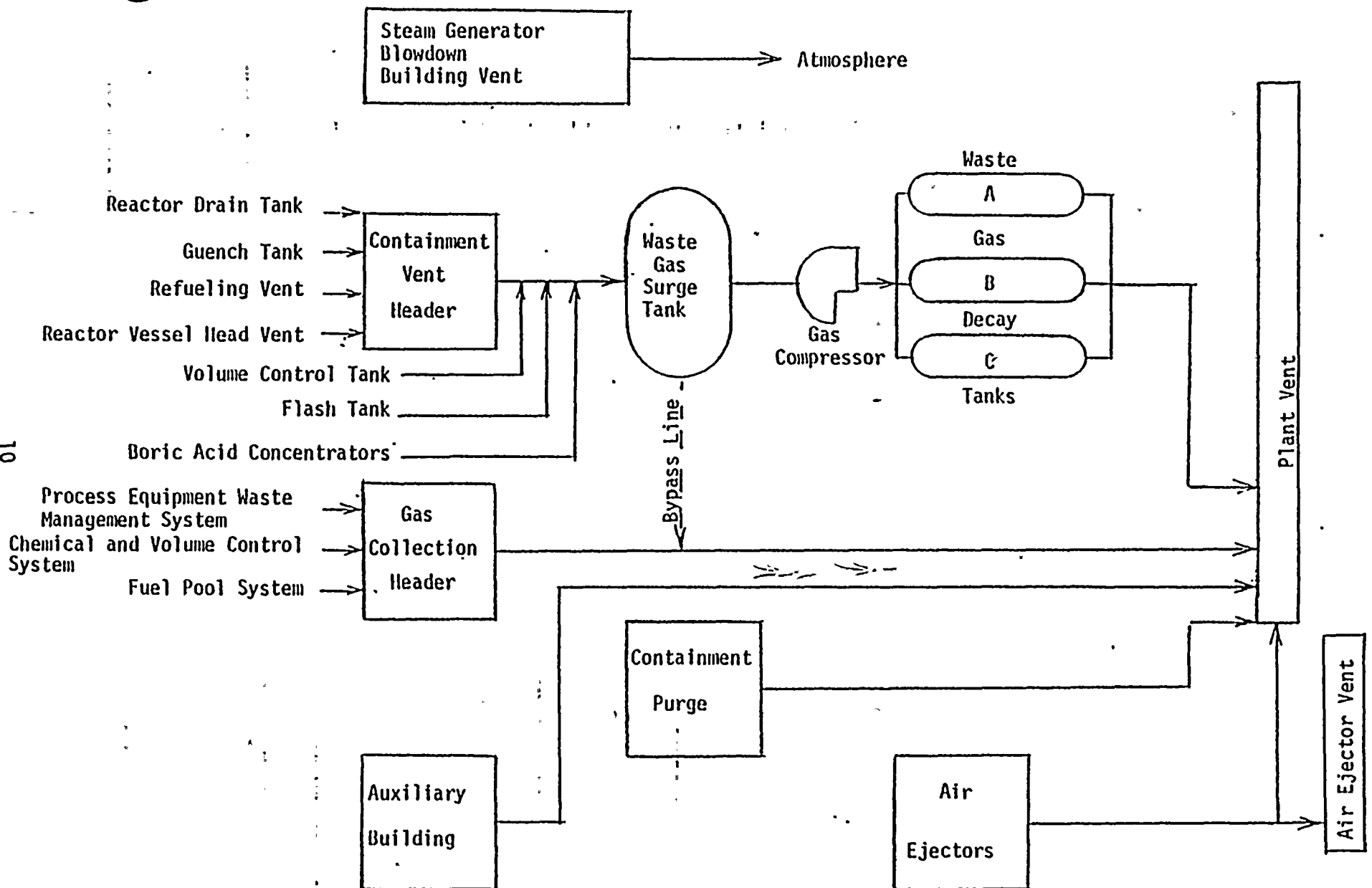


Figure 3. Schematic Diagram of Gaseous Radwaste System.

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 radioactive effluents are monitored. The model RETS specify that all 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 (MPC's) listed in 10 CFR Part 20.

The Licensee's RETS include the requirement that the radioactive liquid release points are monitored. There is one radioactive liquid effluent release point, with three inputs of which two are monitored, the liquid radwaste discharge line and the steam generator blowdown effluent line. Effluents from these two discharge lines are released to the environs through the discharge canal as indicated in Figures 1 and 2. Each discharge line is monitored with alarm and automatic termination of release.

The Service Water System (SWS) is the third loop on the cooling cycle, i.e., primary coolant, closed component cooling system, and service water system. Two barriers would have to fail before radioactivity could get into the SWS. Therefore, monitoring of this system is not required. The component cooling water is also not monitored. This is identical to the St. Lucie Unit No. 2 system which has been accepted by the NRC.^[43]

Liquids from the turbine building sumps are pumped to a settling pond which is sampled and analyzed once per week; this is also identical to St. Lucie Unit No. 2 and has been accepted by the NRC.^[43]

Flow rates for the liquid radwaste effluent line, the discharge canal, and the steam generator blowdown effluent line are determined using pump curves.

There are no continuous composite samplers for the continuous releases. The effluent is continuously monitored with automatic termination of release and the total volume released is determined from the make-up volume to the secondary side. Thus, the daily grab samples which are composited weekly are adequate and meet the intent of the requirements of the model RETS.

The Licensee's RETS include the commitment that all radioactive gaseous effluent releases from St. Lucie Unit No. 1 are monitored. There are three gaseous release points, i.e., the plant vent, the steam generator blowdown building vent, and the air ejector vent. Alarm and automatic termination of release are provided for effluents from the waste gas holdup system which are released through the plant vent. However, there is no specification for automatic termination of releases from the containment purge thru the plant vent and no action item prohibiting containment purge if the proper monitors are inoperable. This is identical to St. Lucie Unit No. 2 and has been accepted by the NRC staff^[43].

The discharges from the steam jet air ejector are normally released thru the plant vent. However, there is a separate release point which is monitored at all times with a noble gas monitor except when releases are discharged to the plant vent.

The flow rates for the three release points are determined using fan design flow rates which are conservative. An outside vendor is used to verify flow rates in the ventilation system every eighteen months. The flow rate for the waste gas holdup system is restricted with an orifice in the discharge line.

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, it will be restored without delay to a value equal to or less than the MPC values specified in 10 CFR Part 20.

The Licensee's RETS state that the concentration of radioactive liquid effluents will be monitored "at all times," or "during releases" for batch releases. The monitor alarm/trip setpoints at each release point are established in accordance with the ODCM to prevent exceeding the 10 CFR Part 20 concentrations in unrestricted areas. The release rates of liquid effluents will be determined in accordance with the ODCM. The liquid effluent release pathways are the liquid radwaste effluent line, steam generator blowdown effluent line, and turbine building sumps. The turbine building sumps are pumped to a pond and grab samples are taken and analyzed weekly. The effluent lines have all the sampling, analysis, and instrumentation requirements for liquid radwaste releases.

Therefore, the Licensee's RETS submittal on radioactive 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 offsite gaseous dose rate from the site to areas at and beyond the site boundary to within 10 CFR Part 20 limits, and if the concentration of gaseous effluents exceeds these limits or the equivalent dose rate values, it will be restored immediately to a value equal to or less than these limits.

The Licensee's RETS state that the waste gas holdup system is equipped with an alarm and automatic termination of release. All other gaseous monitoring systems have an alarm function. Should release rates be found to exceed the dose rates specified in NUREG-0472, based on monitoring setpoint values, release rates will be decreased immediately.

The concentration of radioactive materials in releases will be determined as required by the model RETS, except the definition of LLD's uses the

elapsed time as the time between the end of sample collection instead of the midpoint of sample collection. This is identical to St. Lucie Unit No. 2 which has been accepted by the NRC staff.^[43] The tritium sample frequency is less frequent for the plant, fuel building, and steam generator blowdown building vents. The tritium concentration in the fuel handling pool remains essentially static and the pool temperature is restricted; therefore, the airborne tritium concentration will remain fairly constant during any one month. Also in the containment building after flooding the refueling canal, the airborne tritium concentration will reach an equilibrium concentration. Therefore, sampling four times a month in the plant and fuel building vents is considered adequate. The sampling requirement for startups, shutdowns, and 15% power change in one hour is proposed when analysis shows that the DOSE EQUIVALENT I-131 concentration in the primary coolant has increased more than a factor of three, and the noble gas activity monitor shows that effluent activity has increased by more than a factor of three. This is identical to St. Lucie Unit No. 2 which has been accepted by the NRC for meeting the intent of NUREG-0472.^[44]

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 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 commitments (a) to meet the quarterly and yearly dose criteria for liquid effluents and to use the ODCM methodology for determining the cumulative dose to individuals, (b) to maintain the air doses for noble gases in unrestricted areas to those specified in 10 CFR Part 50, Appendix I, Section II.B., (c) to maintain the dose level to an individual from the release of iodine-131, iodine-133, tritium, and particulates with half-lives greater than eight days to meet the design objectives of 10 CFR

Part 50, Appendix I, Section II.C, and (d) to limit the annual dose to the maximally exposed member of the public due to releases of radioactivity and radiation from uranium fuel cycle sources to within the requirements of 40 CFR Part 190.

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 state that the liquid and gaseous radwaste treatment system will be used when the projected doses from the site, averaged over 31 days, exceed the values specified in Sections 3.11.1.3 and 3.11.2.4 of the model RETS, respectively. The Licensee has also committed that the liquid radwaste system components shall be operable when required to process waste. The necessary dose projections will be made in accordance with the ODCM, at least once per month.

Therefore, the Licensee's RETS submittal on effluent treatment 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.

The Licensee does not have nor plan to have any outside tanks containing radioactive liquid that would require this specification. All of their outside tanks are diked. Therefore, a specification limiting curie contents in liquid storage tanks has not been included.

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

A specification limiting the curie content in a Waste Gas Decay Tank (WGDT) has been included in the proposed RETS. The Licensee states in the bases that the quantity of radioactive gas available for storage in a WGDT is insufficient to exceed the dose limit of 0.5 rem at the nearest exclusion area.

Therefore, the Licensee's RETS submittal on gas 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 Licensee's RETS include a commitment to maintain a safe concentration of oxygen in this system since hydrogen is present in excess. The oxygen concentration will be maintained at $\leq 2\%$ by volume whenever the hydrogen concentration exceeds 4% by volume. If the oxygen concentration increases above this limit but is $\leq 4\%$ it will be reduced to the limit within 48 hours. If the oxygen concentration exceeds 4% , and the hydrogen concentration is greater than 2% the Licensee will immediately suspend all additions of waste gases to the system and immediately commence to reduce the concentration of oxygen to $\leq 2\%$ by volume. The monitor is upstream of the compressor and the system is maintained at a positive pressure. Specifications 3.11.2.5 and 4.11.25 reference the concentration and monitoring of the hydrogen gas, respectively. However, Table 3.3-13 does not include a hydrogen monitor. The surveillance Table 4.3-9 specifies one oxygen monitor and one alternate oxygen monitor. This is identical to St. Lucie Unit No. 2 which has been accepted by the NRC. [44]

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

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.^[45]

The Licensee does not solidify radioactive wastes but they dewater resins. The resins are dewatered in accordance with a PCP to meet shipping requirements and disposal site requirements. The PCP is the same for St. Lucie Unit Nos. 1 and 2 and has been reviewed and accepted by the NRC.^[43]

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 radiological environmental monitoring 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 of 10 CFR Part 50, the land use census satisfies the requirements of Section IV.B.3 of Appendix I of 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 of 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,^[38] as applicable to the site, and have provided an adequate number of sample locations for pathways identified. However, they

do not specify two TLD's per location. The Licensee's method of sample analysis and maintenance of the monitoring program satisfies the requirements of Appendix I, 10 CFR Part 50. The radiological environmental monitoring program is a site specific program and has been approved by the NRC for both St. Lucie Unit Nos. 1 and 2.^[43] 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 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 Facility Review Group (FRG) and the Company Nuclear Review Board (CNRB) as the two groups comparable to the Unit Review Group (URG) and the Company Nuclear Review and Audit Group (CNRAG), respectively.

The FRG is responsible for reviewing every unplanned release of radioactive material and any changes to the ODCM and PCP, as required by the model RETS.

The CNRB is responsible for auditing the radiological environmental program and results thereof, the ODCM and implementing procedures, the PCP and implementing procedures, and the performance of activities required by the quality assurance (QA) program to meet the criteria of Appendix B, 10 CFR Part 50. It is the interpretation of the NRC that for this plant the QA audit requirement to meet the criteria of Regulatory Guide 1.21, Revision 1, June 1974 and Regulatory Guide 4.1, Revision 1, April 1975 is met by the criteria of Appendix B, 10 CFR Part 50. This is identical to the St. Lucie Unit No. 2 RETS which has been approved by the NRC.^[31]

The FRG and CNRB encompass the total responsibility for reviews and audits specified in 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 the documented records pertaining to the radiological environmental monitoring program are retained.

The Licensee's RETS include a commitment to establish, implement, and maintain written procedures for the PCP, ODCM, and the QA program. The Licensee's RETS state that the records of the radiological environmental monitoring program will be retained for the duration of the facility operating license.

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 semi-annual 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 Operating Report This report includes summaries, interpretations and analysis of trends of the results of the radiological environmental surveillance program. The report also includes the results of the land use census and results of the participation in the interlaboratory comparison program. The report will be submitted prior to May 1 of each year.



2. Semiannual Radioactive Effluent Release Report This report contains a summary of the quantities of radioactive liquid and gaseous effluents and is submitted within 60 days after January 1 and July 1 of each year. The report also includes a summary of solid waste shipped offsite, an assessment of offsite doses, doses to members of the public due to their activities inside the site boundary, the prescribed meteorological data, and a list of unplanned releases. The report will include an assessment of doses to the likely most exposed Member of the Public from reactor releases for the previous calendar year. This is identical to the reporting requirements for St. Lucie Unit No. 2 which has been approved by the NRC.^[43] A listing of new locations required by the land use census as well as any changes to ODCM, and PCP is included. It does not include major changes to the radioactive waste treatment system. This has been accepted by the NRC staff^[43] for St. Lucie Unit No. 1.

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

- Exceeding the liquid effluent dose limits according to Specification 3.11.1-2
- Exceeding the gaseous effluent dose limits according to Specifications 3.11.2-2 and 3.11.2.3
- Exceeding the total dose limits according to Specification 3.11.4.
- Exceeding the reporting levels for the radioactivity measured in the environmental sampling program Specification 3.12.1.
- When radioactive liquid or gaseous effluents require treatment before discharge and the waste treatment equipment is inoperable as specified in 3.11.1.3 and 3.11.2.4.

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 FRG.

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:

- alarm and trip setpoints for effluent instrumentation
- liquid effluent concentration in unrestricted areas
- gaseous effluent dose rate or concentrations at or beyond the site boundary
- liquid and gaseous effluent dose contributions
- total dose compliance, including direct shine
- 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 ODCM addresses the RETS requirements for both St. Lucie Unit No. 1 and St. Lucie Unit No. 2. The Licensee's ODCM proposal was reviewed and approved by the NRC in their review for the St. Lucie Unit No. 2.

3.4 PROCESS CONTROL PROGRAM

NUREG-0472 specifies that the Licensee develop a PCP to ensure that the processing and packaging of solid radioactive wastes will be accomplished

in compliance with 10 CFR Part 20, 10 CFR Part 71, and other federal and state regulations or requirements governing the offsite disposal of the low-level radioactive waste.

The PCP is not intended to contain a set of detailed procedures; rather, it is the source of basic criteria for the detailed procedures to be developed by the Licensee. The criteria used for the PCP are to address only today's requirements. The uncertainty about PCP requirements results from the recent promulgation of 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." The NRC staff's technical positions are presently being developed by the Division of Waste Management^[42].

3.4.1 Evaluation

The PCP addresses the RETS requirements for both St. Lucie Unit No. 1 and St. Lucie Unit No. 2. The Licensee's PCP proposal was reviewed and approved by the NRC in their review for the St. Lucie Unit No. 2.

4.0 CONCLUSIONS

The Licensee's proposed RETS was reviewed and evaluated and the following conclusions were reached:

- The Licensee's proposed RETS for the St. Lucie Unit No. 1 Nuclear Generating Plant, submitted March 29, 1983, meet the intent of the NRC staff's "Standard Radiological Effluent Technical Specifications," NUREG-0472.
- The Licensee's ODCM for St. Lucie Unit No. 1 is the same as for St. Lucie Unit No. 2. The ODCM was reviewed and approved by the NRC.
- The Licensee's PCP for St. Lucie Unit No. 1 is the same as for St. Lucie Unit No. 2. The PCP was reviewed and approved by the NRC.

A correspondence between (a) NUREG-0472, (b) the Licensee's current RETS, and (c) the Licensee's proposed RETS is shown in Table 1. A more detailed explanation of how each Specification in the Licensee's RETS meets the intent of NUREG-0472 is contained in Appendix A.



TABLE 1. CORRESPONDENCE OF PROVISIONS OF NUREG-0472, THE CURRENT TECHNICAL SPECIFICATIONS, AND THE LICENSEE'S PROPOSAL FOR ST. LUCIE UNIT NO. 1

<u>RETS Requirement</u>	<u>NUREG-0472⁽¹⁾ (Section)</u>	<u>Current Technical Specifications (Section)⁽²⁾</u>	<u>Licensee Proposal (Section)</u>
Effluent Instrumentation	3.3.3.10 3.3.3.11	2.4.1.d 2.4.3.d	3.3.3.9 3.3.3.10
Concentrations	3.11.1.1 3.11.2.1	2.4.1.a 2.4.3.b	3.11.1.1 3.11.2.1
Offsite Doses	3.11.1.2 3.11.2.2 3.11.2.3 3.11.4	2.4.1.b 2.4.1.c 2.4.3.a 2.4.3.b	3.11.1.2 3.11.2.2 3.11.2.3 3.11.4
Effluent Treatment	3.11.1.3 3.11.2.4	2.4.1.f 2.4.4.c	3.11.1.3 3.11.2.4
Tank Inventory Limits	3.11.1.4 3.11.2.6	2.4.1.g 2.4.3.e	-- 3.11.2.6
Explosive Gas Mixtures	3.11.2.5	---	3.11.2.5
Solid Radwaste	3.11.3	2.4.5	3.11.3
Environmental Monitoring	3.12.1	3.2	3.12.1
Land Use Census	3.12.2	3.2.d	3.12.2
Interlaboratory Comparison Program	3.12.3	---	3.12.3
Audit and Review	6.5.1 6.5.2	5.3	6.5.1 6.5.2
Procedures & Records	6.8, 6.10	5.5	6.8, 6.10
Reports	6.9 6.10	5.6.1.b, 5.6.1.c	6.9 6.10
Other Administrative Controls	6.13, 6.14, 6.15	---	6.17, 6.18, --

(1) Section number sequence is according to NUREG-0472, Rev. 3, Draft 7'.

(2) Being Revised or Deleted.

5. REFERENCES

1. United States Nuclear Regulatory Commission, Standard Radiological Effluent Technical Specifications for Pressurized Water Reactors, NUREG-0472, Revision 2, July 1979.
2. United States Office of The Federal Register, Title 10, Code of Federal Regulations, Part 50, Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low as is Reasonably Achievable' for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents."
3. United States Office of the Federal Register, Title 10, Code of Federal Regulations, Part 50, Section 50.36a, "Technical Specifications on Effluents from Nuclear Power Reactors."
4. United States Office of the Federal Register, Title 10, Code of Federal Regulations, Part 50, Appendix I, Section V.B, "Effective Dates."
5. United States Office of the Federal Register, Title 10, Code of Federal Regulations, Part 20, "Standards for Protection Against Radiation."
6. United States Office of the Federal Register, Title 40, Code of Federal Regulations, Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations."
7. United States Office of the Federal Register, Title 10, Code of Federal Regulations, Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants."
8. United States Office of the Federal Register, Title 10, Code of Federal Regulations, Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."
9. United States Nuclear Regulatory Commission, Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, NUREG-0133, October 1978.
10. United States Nuclear Regulatory Commission, Standard Radiological Effluent Technical Specifications for Boiling Water Reactors, NUREG-0473, Revision 2, July 1979.
11. C. A. Willis and F. J. Congel, "Summary of Draft Contractor Guidance of RETS," AIF environmental Subcommittee Meeting, Washington, D.C., May 19, 1982.

12. F. J. Congel, memo to RAB Staff (NRC), Interim Changes in the Model RETS, August 9, 1982.
13. United States Nuclear Regulatory Commission, Standard Radiological Effluent Technical Specifications for Pressurized Water Reactors, NUREG-0472, Revision 3, Draft 7', September 1982.
14. Florida Power and Light Company, letter of transmittal, Appendix I Evaluation, L-76-211, June 4, 1976.
15. Florida Power and Light Company, letter of transmittal, Proposed Amendment for Facility Operating License, L-76-213, June 4, 1976.
16. Florida Power and Light Company, letter of transmittal, Proposed Amendments to Appendices A and B of St. Lucie Unit 1 Technical Specifications, L-79-61, March 15, 1979.
17. Florida Power and Light Company, letter of transmittal, Proposed Amendments to Appendices A and B of St. Lucie Unit 1 Technical Specifications, L-79-232, August 23, 1979.
18. Florida Power and Light Company, St. Lucie Units 1 & 2, STS-A Appendix I Draft, Rev. 0, February 23, 1982.
19. Florida Power and Light Company, letter of transmittal, St. Lucie Unit 1 Docket No. 50-335 Proposed License Amendment Radiological Effluent Technical Specifications, L-82-201, May 13, 1982.
20. Florida Power and Light Company, letter of transmittal, St. Lucie Unit 1 Docket No. 50-335 Radiological Effluent Technical Specifications, L-82-490, November 5, 1982.
21. St. Lucie Unit 1 Draft of Radiological Effluent Technical Specifications, private communication, March 7, 1983.
22. Florida Power and Light Company, letter of transmittal, St. Lucie Unit 1 Docket No. 50-335 Radiological Effluent Technical Specifications, L-83-187, March 29, 1983.
23. W. Serrano, letter of transmittal, Transmittal of Questions-for St. Lucie RETS Review, Serr-3-82, February 22, 1982.
24. Florida Power and Light Company, St. Lucie Plant Offsite Dose Calculation Manual (ODCM) Draft Revision, February 24, 1982.

25. A. Gould (FPL), R. Frichette (FPL), E. LaPierre (FPL) and W. Serrano (EG&G), telephone conference, March 29, 1982.
26. A. Gould (FPL) and W. Serrano (EG&G), telephone conference, April 9, 1982.
27. Florida Power and Light Company, letter of transmittal, St. Lucie Unit 1 Docket No. 50-335 Offsite Dose Calculation Manual, L-82-200, May 13, 1982.
28. S. W. Duce, letter of transmittal, Draft of Review Document For The St. Lucie RETS Submittal, SWD-3-82, September 9, 1982.
29. F. B. Simpson, letter of transmittal, Transmittal of Unresolved Issues For St. Lucie Unit 1, SIM-7-83, March 14, 1983.
30. United States Nuclear Regulatory Commission, notegram transmittal, Up-to-Date St. Lucie Unit No. 2 Offsite Dose Calculation Manual, December 1982.
31. W. W. Meinke (NRC), F. B. Simpson (EG&G), and W. Serrano (EG&G), telephone conference, April 6, 1983.
32. United States Office of the Federal Register, Title 10, Code of Federal Regulations, Part 20, Appendix B, "Concentrations in Air and Water Above Natural Background."
33. C. A. Willis, letter to F. B. Simpson (summarizing changes to RETS requirements following meeting with Atomic Industrial Forum), November 20, 1981.
34. W. E. Kreger (NRC), memo to R. J. Mattson (NRC), Plans for Dealing with The Explosive Gas Issue in Implementing The Radiological Effluent Technical Specifications (RETS), December 14, 1981.
35. C. A. Willis and F. J. Congel, "Status of NRC Radiological Effluent Technical Specification Activities," Atomic Industrial Forum Conference on HEPA and Nuclear Regulations, October 4-7, 1981.
36. C. A. Willis, memo to P. C. Wagner, Plans for Implementing Radiological Effluent Technical Specifications for Operating Reactors, November 4, 1981.



37. W. P. Gammill (NRC), memo to P. C. Wagner (NRC), Current Position on Radiological Effluent Technical Specifications (RETS) including Explosive Gas Controls, October 7, 1981.
38. United States Nuclear Regulatory Commission, Radiological Assessment Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program, November 1979.
39. United States Nuclear Regulatory Commission, Methods for Demonstrating LWR Compliance with the EPA Uranium Fuel Cycle Standard (40 CFR Part 190), NUREG-0543, February 1980.
40. United States Nuclear Regulatory Commission, Branch Technical Position, General Contents of the Offsite Dose Calculation Manual, Revision 1, February 8, 1979.
41. Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, " Revision 1, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, October 1977.
42. C. A. Willis, letter of transmittal, Guidance on the Review of the Process Control Programs (PCP), January 3, 1983.
43. W. W. Meinke (NRC), private communication, March 31, 1983.
44. W. W. Meinke (NRC) and F. B. Simpson (EG&G), telephone conferences, April 11, 1983.
45. United States Office of the Federal Register, Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions."

APPENDIX A

Evaluation of Proposed Radiological
Effluent Technical Specifications (RETS) ..



EVALUATION OF PROPOSED
RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS
(RETS)

1.0 INTRODUCTION

This appendix contains a comparison of the model Technical Specifications (NUREG-0472) and the Licensee's proposed RETS with explanatory statements where further comment is required. Those sections, where the Licensee has either equivalent requirements or where the "intent" of the model is met, are identified.



TABLE A-1. ST. LUCIE UNIT 1 MODEL RETS COMPARISON

<u>NUREG-0472</u>	<u>St. Lucie Unit 1</u>	<u>Equivalent Requirement</u>	<u>Meet the Intent</u>	<u>Explanatory Statement</u>
1.2	---		X	1
1.3	---		X	1
1.4	---		X	1
1.5	---		X	1
1.6	1.31	X		
1.7	1.32	X		
1.8	1.33	X		
1.11	1.34		X	2
1.12	1.35	X		
1.14	1.36	X		
1.15	---		X	2
1.16	1.37	X		
1.18	1.38	X		
1.19	---		X	3
1.20			X	4
Table 1.2	Table 1.2	X		
3.3.3.10	3.3.3.9	X		
Action a	Action a	X		
Action b	Action b	X		
Action c	Action c	X		
4.3.3.10	4.3.3.9	X		
Table 3.3-12	Table 3.3-12			
1.a	1.a	X		
1.b	1.b	X		
2.a	--		X	5
2.b	--		X	6
2.c	--		X	7
3.a	--		X	8
3.b	--		X	7

TABLE A-1. Continued

<u>NUREG-0472</u>	<u>St. Lucie Unit 1</u>	<u>Equivalent Requirement</u>	<u>Meet the Intent</u>	<u>Explanatory Statement</u>
4.a	2.a		X	9
4.b	2.c		X	9
4.c	2.b		X	9
4.d	--		X	7
5	--		X	10
6	--		X	11
Action 28	Action 1	X		
Action 29	Action 2		X	12
Action 30	--		X	6
Action 31	Action 3		X	9
Action 32-33	--		X	13
Table 4.3.12	Table 4.3.8			
1.a	1.a	X		
1.b	1.b	X		
2.a	--		X	5
2.b			X	6
2.c			X	7
3.a	--		X	8
3.b	--		X	7
4.a	2.a		X	14
4.b	2.b		X	14
4.c	--		X	9
4.d	--		X	7
5	--		X	10
6	--		X	11
Notation 1	Notation 1	X		
2	--		X	5,6,7
3	2	X		
4	--		X	14
3.3.3.11	3.3.3.10	X		
Action a	Action a	X		

TABLE A-1. Continued

<u>NUREG-0472</u>	<u>St. Lucie Unit 1</u>	<u>Equivalent Requirement</u>	<u>Meet the Intent</u>	<u>Explanatory Statement</u>
Action b	Action b	X		
Action c	Action c	X		
4.3.3.11	4.3.3.11	X		
Table 3.3.13	Table 3.3.13			--
1.a	1.a	X		--
1.b,c	--		X	15
1.d	--		X	16
1.e	--		X	17
2.B	2		X	18
3.a	3.a	X		
3.b-e			X	19
4	4	X		
5.a	--		X	20
5.b-e	--		X	15
6	--		X	15 --
7	5	X		
8	--		X	15
9.a-c	6.a-c	X		--
9.d	6.d		X	21 --
9.e	6.e	X		
Action 35	Action 1	X		
Action 36	Action 2	X		
Action 37	Action 3	X		
Action 38	--		X	22
Action 39	N/A			
Action 40	Action 5		X	23
Action 41	Action 6	X		
--	Action 4		X	24
Table 4.3-13	Table 4.3-9			
1.a	1.a	X		
1.b-c	--		X	15
1.d	--		X	16
1.e	--		X	17

TABLE A-1. Continued

<u>NUREG-0472</u>	<u>St. Lucie Unit 1</u>	<u>Equivalent Requirement</u>	<u>Meet the Intent</u>	<u>Explanatory Statement</u>
2.B	2		X	18
3.a	3.a	X		
3.b-e			X	19
4.a-c	4.a-c	X		
4.d	4.d		X	25
5.a	--		X	20
5.b-e	--		X	15
6	--		X	15
7.a-c	5.a-c	X		
7.d	--		X	21
7.e	5.d		X	25
8.a-d	--		X	15
8.e	4.d		X	25
9.a-c	6.a-c	X		
9.d	--		X	21
9.e	6.d		X	25
Notation 1	Notation 1	X		
2	2	X		
3	3	X		
5	4	X		
3.11.1.1	3.11.1.1	X		
4.11.1.1.1	4.11.1.1.1	X		
4.11.1.1.2	4.11.1.1.3	X		
Table 4.11-1	Table 4.11-1			
A	A	X		
B	B		X	26
--	C		X	27
Notation	Notation			
a	a		X	28
b	c	X		
c	e	X		
d	b	X		
e	d	X		



TABLE A-1. Continued

<u>NUREG-0472</u>	<u>St. Lucie Unit 1</u>	<u>Equivalent Requirement</u>	<u>Meet the Intent</u>	<u>Explanatory Statement</u>
f	--		X	29
--	f		X	27
--	g		X	30
3.11.1.2	3.11.1.2	X		
Action a	Action a	X		
Action b	Action b	X		
4.11.1.2	4.11.1.2	X		
3.11.1.3	3.11.1.3	X		
Action a	Action a	X		
Action b	Action b	X		
4.11.1.3	4.11.1.3.1	X		
---	4.11.13.2	X		
3.11.1.4	---		X	31
Action a	Action a	X		
Action b	---		X	32
4.11.2.1.1	4.11.2.1.1	X		
4.11.2.1.2	4.11.2.1.2	X		
Table 4.11.2	Table 4.11.2			
A	A	X		
B	B	X		
C	C		X	33
D	D	X		
Notation	Notation			
a	a		X	28
b	e	X		
c	b	X		
d	--		X	33
e	--		X	33
f	d	X		
g	c		X	33.b
3.11.2.2	3.11.2.2	X		
Action a	Action a	X		
Action b	Action b	X		

TABLE A-1. Continued

<u>NUREG-0472</u>	<u>St. Lucie Unit 1</u>	<u>Equivalent Requirement</u>	<u>Meet the Intent</u>	<u>Explanatory Statement</u>
4.11.2.2	4.11.2.2	X		
3.11.2.3	3.11.2.3	X		
Action a	Action a	X		
Action b	Action b	X		
4.11.2.3	4.11.2.3	X		
3.11.2.4	3.11.2.4	X		
Action a	Action a			
Action b	Action b	X		
4.11.2.4.1	4.11.2.4.1	X		
---	4.11.2.4.2	X		
3.11.2.5	3.11.2.5	X		
Action a	Action a	X		
Action b	Action b	X		
Action c	Action c	X		
4.11.2.5	4.11.2.5	X		
3.11.2.6	3.11.2.6	X		
Action a	Action a		X	34
Action b	Action b	X		
4.11.2.6	4.11.2.6		X	35
3.11.3	3.11.3		X	36
4.11.3	4.11.3		X	36
3.11.4	3.11.4	X		
Action a	Action a	X		
Action b	Action b	X		
4.11.4.1	4.11.4.1	X		
4.11.4.2	4.11.4.2	X		
3.12.1	3.12.1	X		
Action a	Action a	X		
Action b	Action b	X		
Action c	Action c	X		
Action d	Action d	X		
4.12.1	4.12.1	X		



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TABLE A-1. Continued

<u>NUREG-0472</u>	<u>St. Lucie Unit 1</u>	<u>Equivalent Requirement</u>	<u>Meet the Intent</u>	<u>Explanatory Statement</u>
Table 3.12-1	Table 3.12-1			
Item 1	Item 1		X	37
Item 2	Item 2	X		
Item 3	Item 3	X		
Item 4	Item 4		X	38
Table 3.12.2	Table 3.12-2	X		
Table 4.12.1	Table 4.12.1	X		
Notation	Notation			
a	a	X		
b	b	X		
c	c	X		
d	d	X		
--	e	X		
3.12.2	3.12.2	X		
Action a	Action a	X		
Action b	Action b	X		
Action c	Action c	X		
4.12.2	4.12.2	X		
3.12.3	3.12.3	X		
Action a	Action a	X		
Action b	Action b	X		
4.12.3	4.12.3	X		
Bases			X	39
6.5.1.6	6.5.1.6			
k	k	X		
l	l	X		
6.5.2.8	6.5.2.8			
k	h	X		
l	i	X		
m	j	X		
n	k		X	40
6.8.1	6.8.1			
g	g	X		

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TABLE A-1. Continued

<u>NUREG-0472</u>	<u>St. Lucie Unit 1</u>	<u>Equivalent Requirement</u>	<u>Meet the Intent</u>	<u>Explanatory Statement</u>
h	h	X		
i	i-j	X		
6.9.1	6.9.1	X		
6.9.1.12 (Rev. 2)	6.9.1.8		X	41
6.9.1.9	6.9.1.9			
a	a	X		
b	b	X		
c	c	X		
d	d	X		
--	e	X		39
6.9.1.11	6.9.1.11	X		
6.9.1.12	6.9.1.10		X	42
6.9.2	6.9.2	X		
6.10.2	6.10.2	X		
6.13.1	6.17.1	X		
6.13.2.1.a	6.17.2.1.a	X		
1.b	1.b	X		
1.c	1.c	X		
2	2	X		
6.14.1	6.18.1	X		
6.14.2.1	6.18.2.1	X		
a	a	X		
b	b	X		
c	c	X		
6.14.2.2	6.18.2.2	X		
6.15	---		X	43

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EXPLANATORY STATEMENTS FOR DEVIATIONS (ST. LUCIE 1)

1. This definition is in existing Technical Specifications.
2. St. Lucie Unit 1 does not solidify waste they only dewater resins. However, if they ever want to solidify waste, they will need a change in the Technical Specifications and their PCP.
3. The technical specifications reference a ventilation exhaust treatment system only once. It was agreed at the site visit a definition is not required as this definition is well understood by the industry.
4. St. Lucie Unit 1 does not "vent" therefore, this definition is not necessary.
5. The Service Water System (SWS) uses ocean water and is the third loop on the cooling cycle; (i.e., primary coolant, closed component cooling system, SWS). Before contamination could get into the SWS two barriers would have to fail; therefore, monitoring of this system is not required.
6. Monitoring of the component cooling water system is not addressed in the submittal. This is identical with the St. Lucie 2 RETS which has been accepted by the NRC staff.
7. The turbine building sumps are pumped to a settling pond. There are no radioactivity monitors on the turbine building sumps or settling pond. This is identical with the St. Lucie 2 RETS which has been accepted by the NRC staff.
8. Full flow of the steam generator blowdown effluent is continuously monitored and grab samples are taken daily and composited weekly. Therefore, the compositing equipment is not required.
9. Flow rates for the liquid radwaste effluent line, the discharge canal, and steam generator blowdown are determined using pump curves.
10. There are no recorders controlling alarm/trip functions at the facility.
11. There are no outside tanks that require tank level indicating devices.
12. The LLD of the analysis is 2×10^{-7} microcuries/gram. This is identical with the St. Lucie 2 RETS which has been accepted by the NRC staff.
13. These action items are not necessary.
14. Channel checks, channel calibrations, and channel functional tests are unnecessary when pump curves are used to determine flows. Therefore item 2 could be removed from Table 4.3-8.
15. These effluents are released and monitored through the plant vent.

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16. The flowrate is limited by a restrictive orifice in the discharge line. Therefore a flowrate monitoring device is not required.
17. Independent measurement of the sampler flow rate is not required since it is not a sidestream monitor.
18. They operate the system hydrogen rich. They have two oxygen monitors of which one is used as an alternate. Both monitors have the same surveillance requirements. This is identical to the St. Lucie Unit No. 2 RETS which has been accepted by the NRC staff.
19. The Air ejectors are normally vented thru the plant vent. There is a tech. spec. for a Noble Gas Monitor on the Air Ejector Vent which is in service at all times when air ejector exhaust is not directed to the plant vent. The moisture content in the air ejector vent is too high for reliable operation of sampling equipment for iodines and particulates.
20. The submittal does not address the model RETS requirement that alarm and automatic termination of releases from the containment be provided by the noble gas monitor on the effluent pathway. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
21. The flow rate of the vent is determined using fan design flow. Every eighteen months an outside vendor verifies the flow rate value used for the ventilation.
22. There is no action item that prohibits purging of the containment if the proper monitors are inoperable. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
23. Sampling every 24 hours is used instead of every 4 hours. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
24. Maximum flow rates are used in lieu of flow measuring devices.
25. Channel functional tests of the sampler flow rate monitor are not performed quarterly. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
26. For principal gamma emitters and ^{133}I a daily sampling frequency meets the intent, since all continuous release systems are secondary side systems with low probability of being contaminated.
27. The settling basin is sampled weekly when there is confirmed primary to secondary system leakage indicated by the air ejector monitor indicating $\geq 2\text{X}$ background. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
28. The LLD definition is in ρCi where the table LLDs are in μCi . They are using the definition for $\Delta\tau$ as the elapsed time between the end of sample collection and time of counting. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.

29. This notation is not required because continuous sampling is not performed and has been determined not to be necessary. See statement 26.
30. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
31. At the St. Lucie facility any outside tank that had a leak or massive rupture would not affect the ground water because the tank water would be discharged to the ocean and not affect ground water.
32. They may want to add the action statement that Specification 6.9.1.9.b is not applicable.
33. Model RETS Rev. 3 Notations c, d, and e were not committed for the plant vent, fuel building vent, and steam generator blowdown building vent. Notation c is not required since there are noble gas monitors on line at the release points. It is expected that airborne ^3H concentration will reach maximum equilibrium concentration very soon after flooding of the refueling canal; therefore, sampling at a frequency of 4/M meets the intent of Notation d. The fuel handling pool ^3H concentration remains essentially static and the pool temperature is restricted; therefore, it is expected that the airborne ^3H concentration will remain fairly constant during any one month. Therefore a grab sample for ^3H at a frequency of 4/M from the fuel building vent will meet the intent of Notation e.
- 33.b The model RETS Rev. 3 Notation g states that the sampling requirement does not apply if (1) analysis shows that the Dose Equivalent I-131 concentration in the primary coolant has not increased more than a factor of 3; and the noble gas monitor shows that effluent activity has not increased more than a factor of 3. The Licensee's RETS (Notation c) states that sampling requirement does apply if (1) analysis shows that the Dose Equivalent I-131 concentration in the primary coolant has increased more than a factor of 3; and (2) the noble gas activity monitor shows that effluent activity has increased by more than a factor of 3. This is identical to St. Lucie Unit No. 2 RETS which has been accepted by the NRC staff.
34. The Licensee chooses to provide prompt notification to the commission in lieu of "within 48 hours reducing the tank contents to within the limits". They prefer to discuss the situation with the NRC before taking action to restore the tanks contents to within the limit.
35. An existing tech spec limits the activity in the primary coolant to $100/\bar{E}$ which is equivalent to a total activity in the primary coolant of 43,000 Ci. Converting this value to the equivalent Xe-133 concentration results in a total curie limit in the primary coolant of 86,000 Ci. Thus, if the entire noble gas inventory (Xe-133 eq) were concentrated in a single tank, it would be less than the 286,000 Ci limit calculated for the gas storage tank tech. spec. The calculation is shown in Appendix D of the ODCM.

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36. St. Lucie Unit 1 only dewateres resins. They do not solidify any waste. Their LCO and Surveillance Requirements meets the intent of NUREG-0472 for dewatering resins. However, if they ever want to solidify waste they will need a change in the Technical Specifications and their PCP.
37. It is not specified that two TLDs will be at each location. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
38. The environmental monitoring program is the same program for St. Lucie Unit 1 and Unit 2. This program has been accepted by the NRC for St. Lucie Unit 2.
39. Regulatory Guide 1.109 March 1976 is referenced instead of Rev. 1, October 1977. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
40. There is no requirement to audit the Quality Control Program to meet the criteria of Regulatory Guide 1.21, Revision 1, June 1974, and Regulatory Guide 4.1, Revision 1, April 1975, at least once per 12 months. This is identical with the St. Lucie 2 RETS which has been accepted by the NRC staff.
41. The Prompt Notification Report is not required in NUREG-0472 Rev. 3 Draft 7.
42. In specification 6.9.1.10 the wording "and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, . . . to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standard for Nuclear Power Operation" is not included in the submittal. This is identical to the St. Lucie 2 RETS which has been accepted by the NRC staff.
43. The submittal does not include a specification requiring that major changes to the radioactive liquid, gaseous and solid waste treatment systems be reported to the Commission in the Semiannual Radioactive Effluent Release Report. However, the NRC accepts this deviation on a plant specific basis because of the justification given by telecon from Mr. Stevens of FP&L on 3/29/83.

NRC FORM 335 (11-81)		U.S. NUCLEAR REGULATORY COMMISSION BIBLIOGRAPHIC DATA SHEET		1. REPORT NUMBER (Assigned by DDC) EGG-PHYS-6241	
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7. AUTHOR(S) F. B. Simpson, W. Serrano, S. W. Duce T. E. Young, J. W. Mandler, D. W. Akers				5. DATE REPORT COMPLETED MONTH YEAR April 26 1983	
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16. ABSTRACT (200 words or less) A review of the Radiological Effluent Technical Specifications (RETS) of the St. Lucie Unit No. 1 Nuclear Generating 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 PWR's." Draft submittals were reviewed and discussed with the Licensee 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 requirements of the NRC review guidelines. The Offsite Dose Calculation Manual and Process Control Program will be used for both the St. Lucie Unit Nos. 1 and 2 and were reviewed and approved by the NRC staff.					
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