EGG-PBS-6931

TECHNICAL EVALUATION OF RETS-REQUIRED REPORTS FOR FORT ST. VRAIN NUCLEAR GENERATING STATION

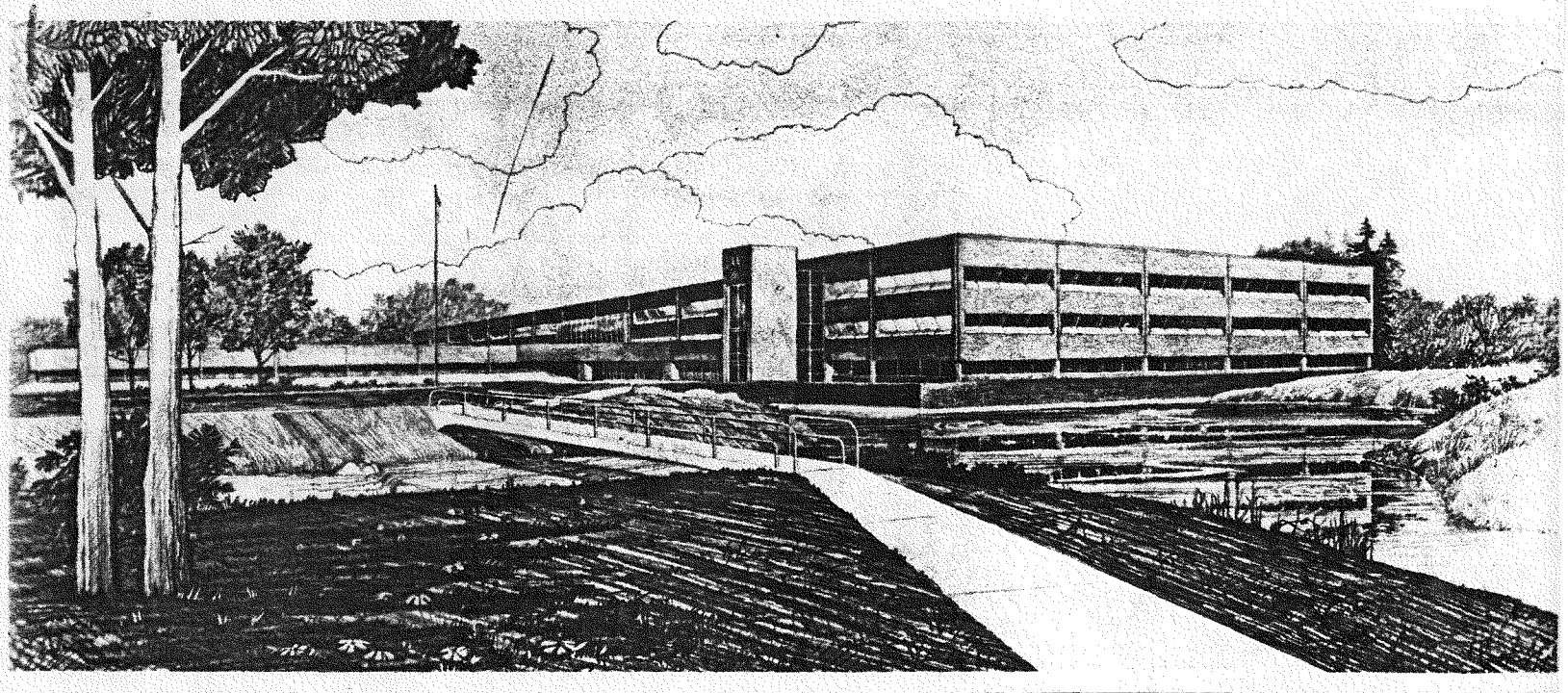
EGG-PBS--6931

DE85 017461

T. E. Young
E. H. Magleby

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

Informal Report



Prepared for the
U.S. NUCLEAR REGULATORY COMMISSION
Under DOE Contract No. DE-AC07-76ID01570

EG&G Idaho

INFORMAL REPORT

EGG-PBS-6931

TECHNICAL EVALUATION OF RETS-REQUIRED REPORTS FOR FORT ST. VRAIN NUCLEAR GENERATING STATION

T. E. Young and E. H. Magleby

June 14, 1985

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

Prepared for the
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Under DOE Contract No. DE-AC07-761D01570
FIN No. 6808

DISCLAIMER

ABSTRACT

A review of the reports required by Federal regulations and the plant-specific Radiological Effluent Technical Specifications (RETS) for operations conducted during 1983 was performed. The periodic reports reviewed were the Annual Radiological Environmental Operating Report for 1983 and the Semiannual Radioactive Effluent Release Reports for 1983. The principal review guidelines were the plant's specific RETS, NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants", and NRC Guidance on the Review of the Process Control Programs.

The Licensee's submitted reports were found to be reasonably complete and consistent with the review guidelines.

FOREWORD

This report is supplied as part of the "Selected Operating Reactor Issues Program (III)" being conducted for the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Division of Licensing, by EG&G Idaho, Inc., Physics Branch.

The U.S. Nuclear Regulatory Commission funded the work under the authorization B&R 20 19 10 11 1, FIN A6808.

SUMMARY

This report summarizes EG&G Idaho's review of the reports required by Federal regulations and the Radiological Effluent Technical Specifications (RETS) of the Fort St. Vrain Nuclear Generating Station for operations conducted during 1983. The reviewers examined the reports for completeness and for consistency and reasonableness of the reported radiological data.

The periodic reports reviewed were:

1. Two Semiannual Effluent Reports for 1983.
2. Two Environmental Radiation Surveillance Program Summary Reports for 1983.

The Licensee did not report any changes to their PCP, ODCM, or radwaste systems. The RETS in effect during 1983 did not require reporting of these changes.

The Licensee's reports contained data and analyses comparable to most of the requirements of their current RETS, which was used for the review. (The RETS used for the review did not become effective until January 1, 1984.) The main deficiencies, compared to the requirements of the current RETS, were lack of reporting gaseous and liquid effluents as percents of technical specification limits. In many respects, the environmental monitoring program was more comprehensive than the program required beginning January 1, 1984.

Tritium was the only radionuclide detected in the environment that could be attributed to plant effluents, and this only occasionally in downstream surface water. No tritium was detected in beef or milk pathways near the affected surface water.

The only reports of dose commitments in unrestricted areas were the TLD measurements, which showed no plant effect.

CONTENTS

1.0 INTRODUCTION

This Technical Evaluation Report presents a review and summary of the reports required during 1983[1-4] by the Radiological Effluent Technical Specifications (RETS)[5] of the Licensee of the Fort St. Vrain Nuclear Generating Station. Special emphasis is placed on any reported changes to the Licensee's Process Control Program (PCP), Offsite Dose Calculation Manual (ODCM), and radioactive waste treatment systems.

This report also includes results of a survey of reported releases of radioactive materials, calculated dose commitments to persons in unrestricted areas, and radioactivity levels in environmental media.

Appendices include a tabulation of reporting commitments from the Licensee's RETS and a check list containing an item-by-item comparison of reporting commitments and the contents of reports submitted.

The Fort St. Vrain Nuclear Generating Station consists of a single high-temperature gas-cooled reactor (HTGR) manufactured by General Atomic Co. with a rated power of 330 MWe. The circulating water system operates with a cooling tower which discharges to Goose Quill Ditch which drains to the South Platte River, or to a slough which drains to St. Vrain Creek. The primary source of radioactive liquids in the radioactive liquid waste system is water removed from the primary coolant by the helium purification system. Radioactive liquids may also be released from the reactor building sump and turbine building sump. Releases from the radioactive liquid waste system are by batch mode, and releases from the turbine building and reactor building sumps are by continuous mode. Radioactive gaseous effluents are released via the reactor building vent. Diagrams of the liquid and gaseous radwaste discharge pathways and the site detail are shown in Figures 1 through 3.

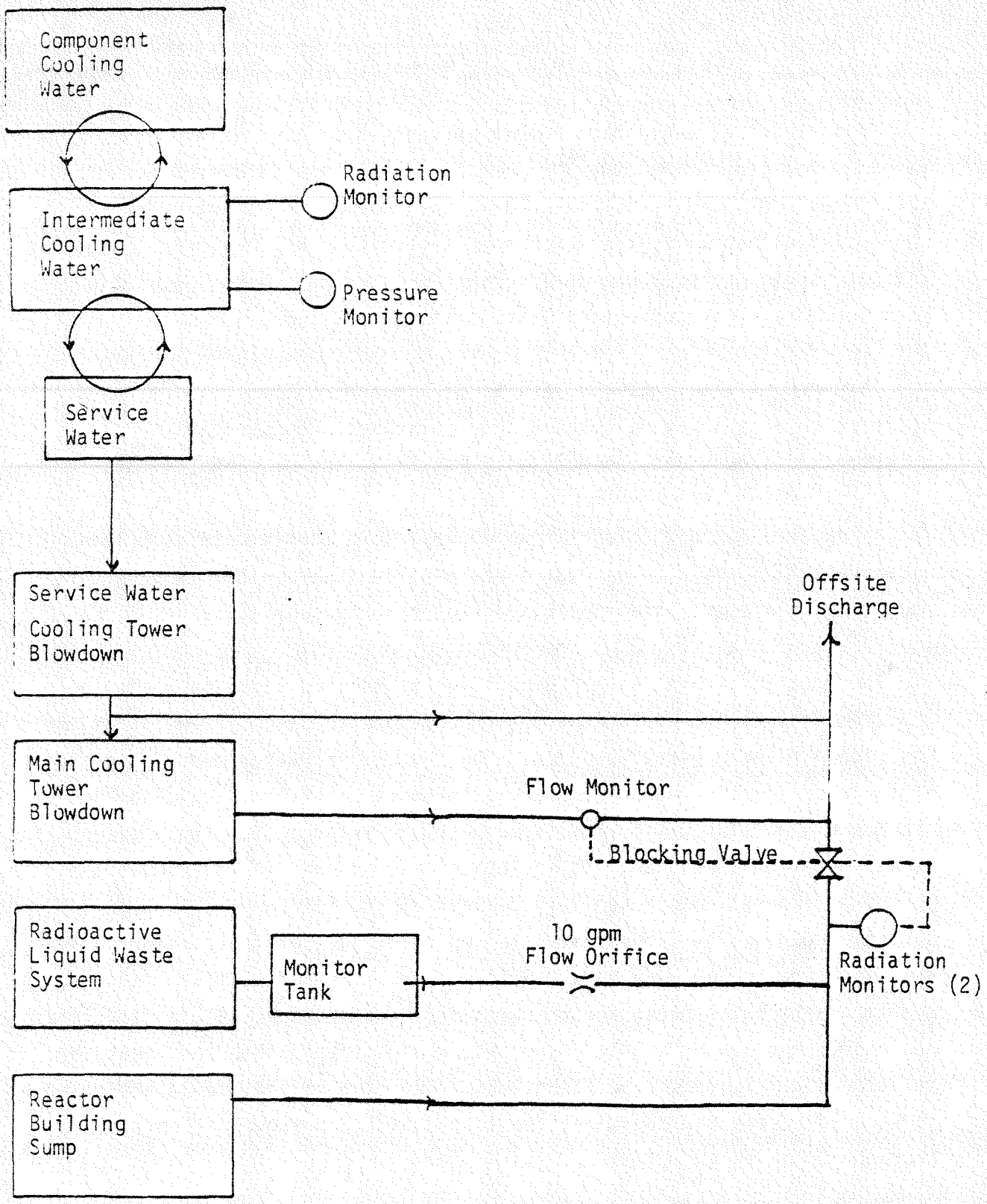


Figure 1. Fort St. Vrain Radioactive Liquid Discharge Pathway.

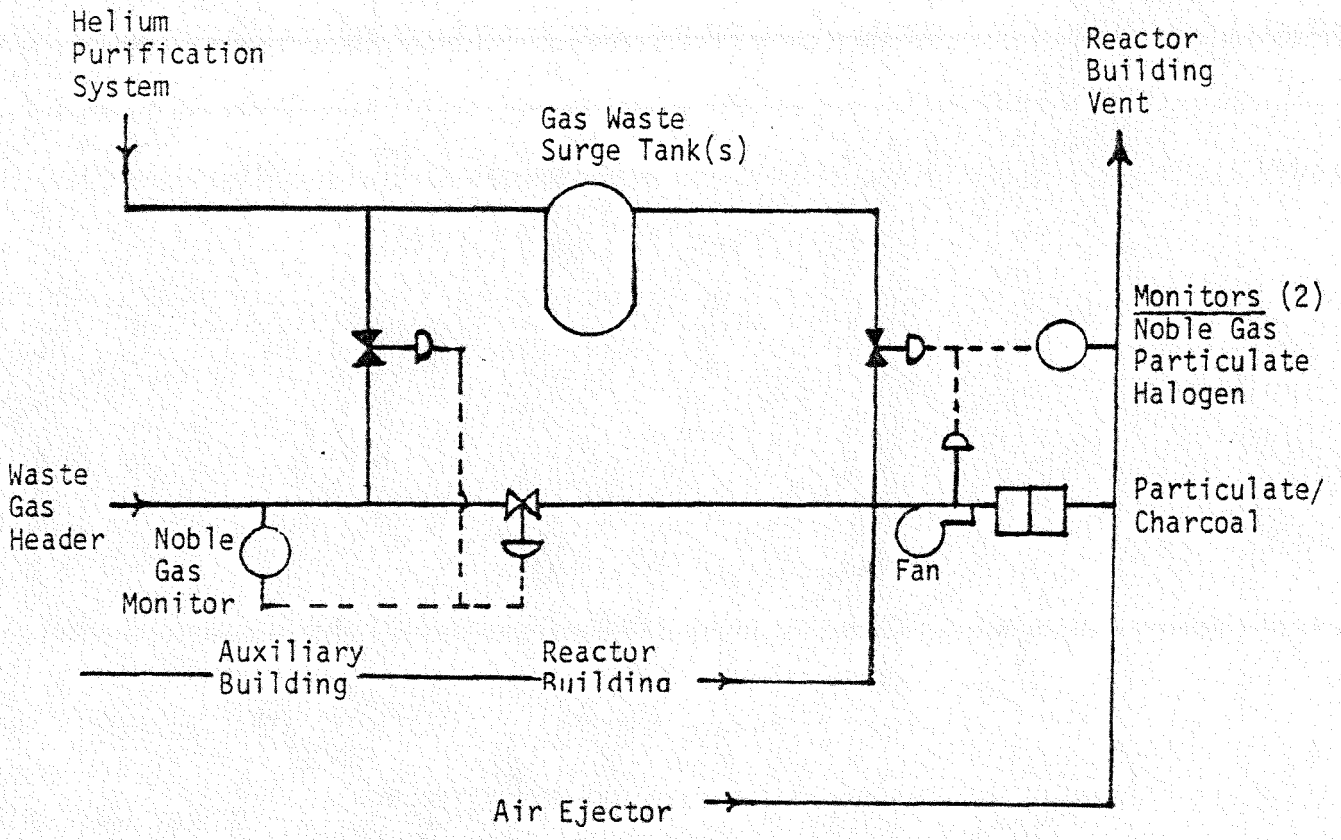


Figure 2. Fort St. Vrain Radioactive Gaseous Discharge Pathway.

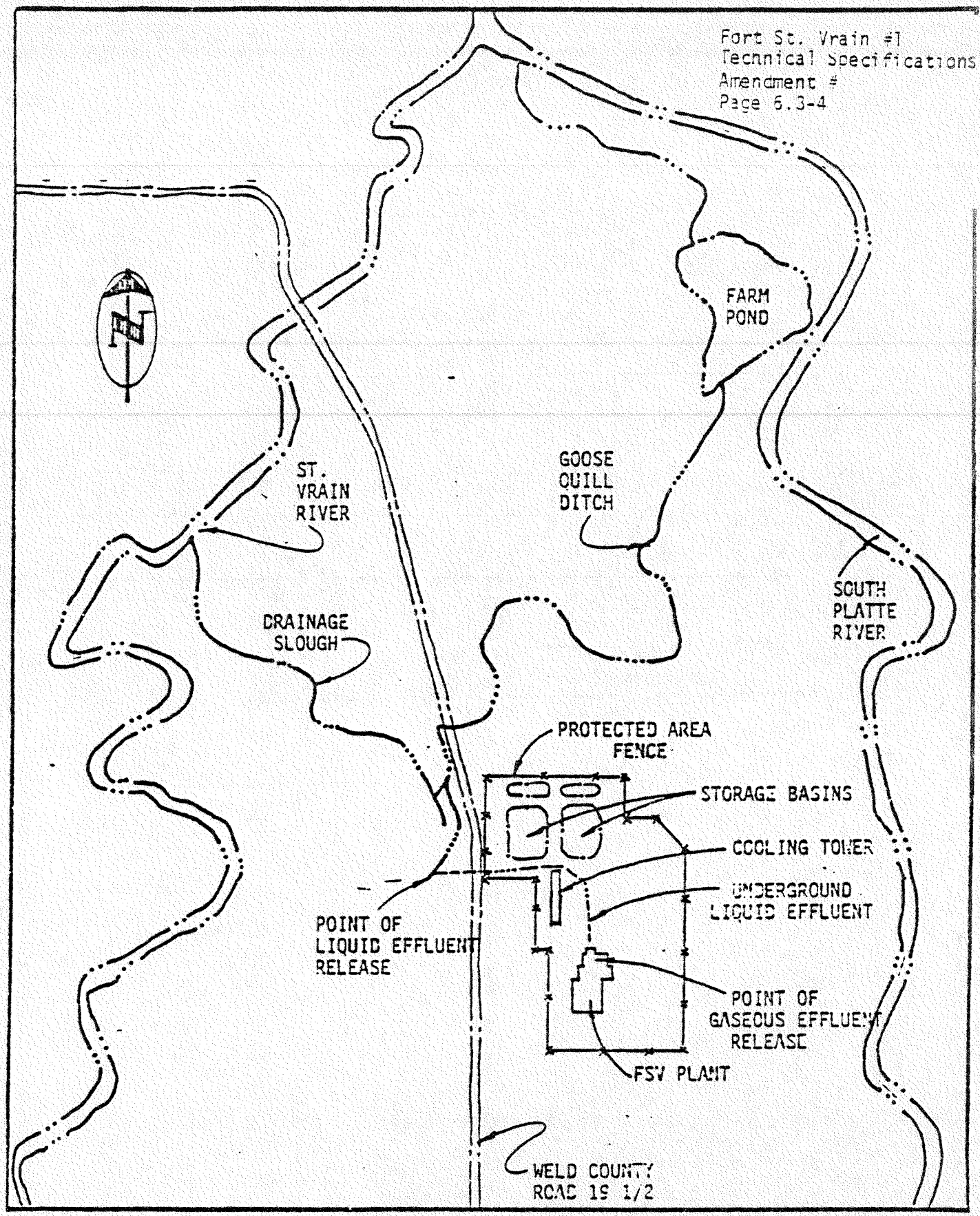


FIGURE 3

Fort St. Vrain Site Detail

2.0 CHECK LIST FINDINGS

The reports required by the RETS for the Fort St. Vrain Nuclear Generating Station are similar to those required by the model RETS for pressurized water reactors.[6] (The NRC did not publish any specific guidance for the preparation of RETS for HTGRs.) The information reported by the Licensee in the reports reviewed here is provided to fulfill the reporting requirements of their RETS. Apparent omissions or inconsistencies identified by the reviewers are as follows:*

2.1 Annual Radiological Environmental Monitoring Report for 1983

Several environmental media were sampled and analyzed at more frequent intervals, collected from more locations, or were analyzed more extensively than required by the Licensee's current RETS. Also, results were reported for several sampling and analysis programs not required by the RETS. Since these deviations are additions to the requirements, they are not included in the list of discrepancies below. The omissions or inconsistencies noted in the reporting of the Licensee's radiological environmental monitoring program are:

1. The Licensee's radiological environmental monitoring was reported in two reports covering six-month periods instead of a single report for the entire year.

2. The summarized and tabulated results of the analyses of environmental samples are not in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 19, 1979 (e.g., the Licensee's table does not include the lower limit of detection (LLD), the fraction of detectable measurements, location with highest annual mean with mean and range, control locations with mean and range or the number of nonroutine reported measurements).

* It should be noted that these reports, submitted for 1983, were compared with the reporting requirements of the Licensee's RETS which became effective January 1, 1984.

3. The report records only 37 direct radiation monitoring locations, whereas 40 locations are required by the RETS. The 37 locations include both nearby and distant positions, but do not include monitors in all 16 meteorological sectors at both the near and far positions.

4. Results were not reported from sampling and analysis of the two ground water sources most likely to be affected by plant discharges or a drinking water control sample.

5. Results of sampling and analysis of milk from a control location were not reported.

6. Fish sampling and analysis met the requirements of the RETS but sampling was done at slightly different locations than those specified in the Offsite Dose Calculation Manual (ODCM).

7. The sampling and analysis of food products (crops) was not reported.

8. The results of weekly analyses for I-131 were reported for composites of all sampling locations instead of for individual samples. In the same section, the results of gamma isotopic analyses of airborne particulates were reported for composites of all locations weekly instead of for composites by location quarterly.

9. The results of gross beta and gamma isotopic analyses of drinking water were reported monthly instead of every two weeks.

10. The results of I-131 and gamma isotopic analyses of milk samples were reported for composites of Facility, Adjacent, and Reference locations instead of for individual locations.

11. Gamma isotopic analyses of the various environmental samples did not include all of the gamma emitters for which Lower Limits of Detection are given in Table 8.2-2 of the Licensee's RETS.

12. Radioactivity levels in environmental samples were not compared with previous environmental monitoring reports except in the cases of gross beta concentrations in air, tritium concentrations in water, and tritium concentrations in milk.

13. No comparisons were made with pre-operational studies, but the observation was made that such comparisons would be of little value for most sample types because the fallout deposition was considerably greater during the pre-operational period. (Note: During the operational period the gross beta activity in air samples has varied by a factor of 25 due to fallout.)

14. No results were reported from the Land Use Census.

15. Approximately 30% of the Licensee's measurements of EPA cross-check samples gave values outside the estimated laboratory precision ($3/\sqrt{n}$). The reports for 1983 describe work and changes in procedures being done to improve the agreement. (The sentence in Section II.G.1 describing the notation used in Table II.G.1 to identify measurements outside the recommended EPA limits actually says the measurements identified are the ones within the EPA limits.)

16. The measured values of I-131 concentration in milk (Tables II.D.4 and II.H.2) are not consistent with the LLD of 1 pCi/L specified in the Licensee's RETS and the method described in Section II.H for obtaining the arithmetic mean. (i.e., Tables II.D.4 contain too many values much greater than the LLD to be consistent. This implies that the LLD is unrealistic.)

2.2 Semi-annual Radioactive Effluent Release Report

The 1983 semiannual effluent release reports for the Fort St. Vrain Nuclear Generating Station were very good in covering a majority of the reporting commitments of their new RETS. Deficiencies noted are:

1. Fort St. Vrain does not discuss the percent of applicable technical specification limits for (a) mixed fission and activation products, (b) tritium, and (c) dissolved and entrained gases. Also, they provided no estimates of total error associated with total release values.

2. The year 1983 was the first year that any solid waste was removed from the plant. Information about the waste shipped was not complete.

3. The major deficiency in the 1983 Semi-annual Effluent Release Reports was the absence of any reporting on Radiological Dose Assessment.

3.0 RETS-RELATED CHANGES

3.1 PCP Changes

The Licensee's RETS require that the Radioactive Effluent Release Reports shall include any changes made during the reporting period to the Process Control Program (PCP). No changes were reported for 1983.

3.2 ODCM Changes

The Licensee's RETS require that the Radioactive Effluent Release Reports shall include any changes made during the reporting period to the Offsite Dose Calculation Manual (ODCM). No changes were reported for 1983.

3.3 Radioactive Waste Treatment System Changes

The Licensee's RETS require that Licensee-initiated major changes to the radioactive waste systems "shall be reported to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the Plant Operations Review Committee." No changes were reported for 1983.

4.0 RADIOACTIVITY IMPACT

4.1 Releases of Radioactive Materials

Releases of radioactive materials in gaseous and liquid effluents are summarized below for the Fort St. Vrain Nuclear Generating Plant. The Licensee's releases are generally very low.

4.1.1 Gaseous

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
Fission and Activation Gases				
Total Release (Ci)	3.43E+01	1.28E+01	2.90E+01	7.28E+01
Iodines				
Total I-131 (Ci)	NSA	NSA	NSA	NSA
Particulates				
Particulates (with half-lives > 8d) (Ci)	1.44E-07	1.74E-07	1.86E-07	1.85E-07
Tritium				
Total Released (Ci)	7.21E-01	5.54E-01	5.61E-01	3.96E-01

NSA - No Significant Activity

4.1.2 Liquid

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
Fission and Activation Products				
Total Release (Ci)	5.01E-03	1.21E-02	1.43E-04	2.39E-05
Tritium				
Total Release (Ci)	1.13E+02	8.57E+01	1.67E+01	2.55E+00
Dissolved Noble Gas				
Total Release (Ci)	1.40E-04	2.10E-04	4.40E-06	2.86E-06
Gross Alpha Activity				
Total Release (Ci)	3.02E-05	1.32E-05	5.27E-06	2.09E-06

4.1.3 Solid Waste Shipped Offsite

For the first time in the history of Fort St. Vrain, low level radioactive solid waste was removed from the station. Approximately 850 cubic feet of waste, consisting of irradiated graphite reflector blocks and reserve shutdown material, were removed from the site. The waste contained approximately 18 curies of activity.

No irradiated fuel shipments were made from the site in 1983.

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
Number of shipments	8	1	0	0
Total Vol. (Cu. Ft.)	840	3.4	0	0
Total Activity (Ci)	18.16	0.27	0	0

4.1.4 Abnormal Releases

There were no abnormal releases reported from the Fort St. Vrain Nuclear Generating Station in 1983.

4.2 Calculated Dose Commitments

The Fort St. Vrain Nuclear Generating Station Semiannual Radioactive Effluent Release Reports do not discuss dose or dose commitments. Their RETS reporting commitments did not require dose information in 1983.

4.3 Dilution of Liquid Waste

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
Vol. of Liquid Waste Discharged (L)	1.91E+06	7.03E+05	2.88E+05	1.13E+05
Vol. of Dilution Water During Release (L)*	4.42E+08	1.50E+08	5.15E+07	2.13E+07

* During 1983 the Fort St. Vrain reactor operated for the equivalent of 28.5% of a full year of operation at the rated power. It appears that the dilution water volume reported here does not include the extra factor allowed for closed-cycle cooling systems for the purpose of calculating offsite doses.

4.4 Environmental Radioactivity Levels

The Environmental Radiation Surveillance Program for the Fort St. Vrain site during 1983 consisted of collection and analysis of environmental samples as shown in the following table. The Licensee's sampling and analysis program conducted in 1983 followed their RETS that were in effect prior to the revision dated November 23, 1983.

Environmental Radiation Surveillance Program Sampling and Analysis

Medium	Number of Locations	Type of Analysis (No. of Analyses)
Direct Radiation (TLD)	37	Gamma dose (441)
Airborne Particulates	7	Gross alpha (330), Gross beta (332), Gamma spectrum (52)
Airborne Iodine	7	I-131 (52)
Airborne Tritium	7	Tritium (366)
Surface Water	7	Gross beta (123), Tritium (119), Sr-89,-90 (24), Gamma spectrum (24)
Potable Water	2	Gross beta (24), Tritium (24), Sr-89,-90 (24), Gamma spectrum (24)
Sediment	7	Gross beta (84), Sr-98,-90 (84), Gamma spectrum (84)
Precipitation	2	Gross beta (30), Tritium (30), Gamma spectrum (30), Sr-89,-90 (30)
Milk	13	Tritium (84), Sr-89,-90 (84) I-131 (83), Gamma spectrum (83)
Forage	12	Tritium (15), Sr-98,-90 (70), Gamma spectrum (70), Gross beta (70)
Soil	12	Gross beta (70), Gamma spectrum (70), Tritium (70), Sr-89,-90 (70)
Aquatic Biota (Fish)	3	Gross beta (20), Sr-98,-90 (20), Gamma spectrum (20)
Aquatic Biota (Other)	3	Gross beta (48), Sr-89,-90 (46), Gamma spectrum (46)
Beef	1	Cs-137 (8)

The measurements of direct radiation did not indicate any plant effect. There was no statistically significant difference between values for Facility, Adjacent, and Reference locations. The Licensee notes an anomolously high value at an indicator location 2.5 miles from the site, but cannot explain it. (The location, a feedlot, has occasionally given high readings during previous years.)

No airborne I-131 radioactivity was observed above the LLD of 0.07 pCi/m^3. No gross beta radioactivity attributable to station operation was detected in airborne samples. Elevated tritium concentrations were detected downstream on several occasions, but the overall concentrations were not significantly greater than for upstream samples. No tritium was detected in beef cattle or milk from animals grazing near the reactor. Therefore, the effect on the environment of the tritium releases was minimal.

The Licensee states that, "Tritium was the only radionuclide that was detected in any of the effluent pathways that can be attributed to reactor operation." This statement appears to be justified by the data submitted.

5.0 REFERENCES

1. "Semi-Annual Effluent Report, January-June 1983", Fort St. Vrain Nuclear Generating Station, Public Service Company of Colorado, July 1983 (Available in NRC Public Document Room).

2. "Semi-Annual Effluent Report, July-December 1983" , Fort St. Vrain Nuclear Generating Station, Public Service Company of Colorado (Available in NRC Public Document Room).

3. "Environmental Radiation Surveillance Program Summary Report, January-June 1983", Fort St. Vrain Nuclear Generating Station, Public Service Company of Colorado, August 25, 1983 (Available in NRC Public Document Room).

4. "Environmental Radiation Surveillance Program Summary Report, July-December 1983", Fort St. Vrain Nuclear Generating Station, Public Service Company of Colorado, February 24, 1984 (Available in NRC Public Document Room).

5. "Technical Specifications for the Fort St. Vrain Nuclear Generating Station", Public Service Company of Colorado (Available in NRC Public Document Room).

6. "Standard Radiological Effluent Technical Specifications for Pressurized Water Reactors", NUREG-0472, Revision 3, September 1982 (Available in NRC Public Document Room).

TABLE 1. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF ANNUAL RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT[+]

Part I - Routine Reporting Requirements

Title	Technical Specifications -- LCO/Surveillance Licensee RETS No.	Specific Commitments	Report Commitments
A. Radiological Environmental Monitoring Program			
1. Monitoring Program	ELCO 8.2.1.a	A Radiological Environmental Monitoring Program (REMP) shall be conducted in accordance with the Table 8.2-1.	A report on the REMP for the previous calendar year shall be submitted to the NRC by May 1 of each year. (7.5.1.d)
2. Sampling Locations	ELCO 8.2.1.b	The REMP samples shall be collected pursuant to Table 8.2-1 from the specific locations given in the table and figure(s) in the ODCM.	The reports shall include at least two legible maps* covering all sampling locations keyed to a table giving distances and directions from the center line of the reactor. (7.5.1.d) * One map shall cover stations near the site boundary; a second shall include more distant stations.
B. Radiological Environmental Program Surveillance			
Monitoring Program	8.2.1.b	The radiological environmental monitoring samples shall be collected pursuant to Table 8.2-1 from the specific locations given in the table and figure(s) in the ODCM, and shall be analyzed pursuant to the requirements of Table 8.2-1 and the detection capabilities required by Table 8.2-2.	1. Shall include the results of analyses of all radiological environmental samples and of all measurements taken during the period pursuant to the Table and Figures in the ODCM. 2. Summarized and tabulated results of these analyses and measurements in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November, 1979.

[+] This report covering the operation of the program during the previous calendar year shall be submitted prior to May 1 of each year. (7.5.1.d)

TABLE 1. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF ANNUAL RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT (Cont.)

Part I - Routine Reporting Requirements

Title	Technical Specifications -- LCO/Surveillance: Licensee RETS No.	Specific Commitments	Report Commitments
Monitoring Program (Cont.)			3. Shall include summaries, interpretations, and an analysis of trends of the results of the radiological environmental monitoring activities for the report period. 4. A comparison with preoperational studies, operational controls (as appropriate) and previous environmental monitoring reports. 5. Assessment of the observed impacts of the plant operation on the environment. 6. Identify results not available for inclusion with the report and provide an explanation for the missing results. (Note: A supplementary report is required in such case as soon as results are available.) (7.5.1.d) 7. Table 8.2-2 list does not mean that only those nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the listed nuclides, shall also be identified and reported. (Table 8.2-2 Note)
C. Land Use Census	8.2.1.h	A census shall be conducted to determine the location of the nearest resident, the nearest milk animal, and the nearest garden greater than 50 square meters (500 sq. ft.) producing broad leaf vegetation in each of the 16 meteorological sectors within a distance of 8 kilometers (5 miles).	The results of the land-use census required by specification ELCO 8.2.1. (7.5.1.d)

TABLE 1. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF ANNUAL RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT (Cont.)

Part I - Routine Reporting Requirements

	Technical Specifications -- LCO/Surveillance		
Title	Licensee RETS No.	Specific Commitments	Report Commitments
D. Interlaboratory Comparison Program	8.2.1.g	Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program that has been approved by the Nuclear Regulatory Commission.	A summary of the results of Licensee participation in the Interlaboratory Comparison Program. (7.5.1.d)

Table 1. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF ANNUAL RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT (Cont.)

Part II. - Reporting Requirements Subject to Conditions

Title	Licensee RETS No.	Technical Specifications -- LCO/Surveillance Specific Commitments	Report Commitments
A. Radiological Environmental Monitoring Program			
1. Monitoring Program	8.2.1.g.1	If analyses are not being performed as required, corrective actions are to be taken to prevent a recurrence,...	Shall be reported to the NRC in the Annual Radiological Environmental Monitoring Report. (8.2.1.g.1) Description of the reasons the program was not conducted as specified in Table 8.2-1 and the plans for preventing recurrence. (7.5.1.d) Identification of results not available for inclusion with the annual report and provide an explanation for the missing results. (Note: A supplementary report is required in such a case as soon as results are available. (7.5.1.d)
B. Radiological Environmental Monitoring Program Surveillance			
1. Reporting Levels	7.5.3.d.1	If the level of radioactivity not as a result of plant effluents in an environmental sample medium at a specified location exceeds the reporting levels of Table 8.2-3 of ELCO 8.2.1, when averaged over any calendar quarter,... When more than one of the radionuclides in Table 8.2-3 are detected in the sampling medium, this report shall be submitted if: $\frac{\text{Concentration (1)}}{\text{Reporting Level (1)}} + \frac{\text{Concentration (2)}}{\text{Reporting Level (2)}} + \ldots \geq 1.0$ When radionuclides other than those in Table 8.2-3 are detected and are not the result of plant effluents, a report shall be submitted if the potential annual dose to a member of the public is equal to or greater than the calendar year limits of Specifications ELCO 8.1.1.1 and ELCO 8.1.2.g.	This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event the condition shall be reported and described in the Annual Radiological Environmental Monitoring Report. (7.5.3.d.1)

Table 1. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF ANNUAL RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT (Cont.)

Part II - Reporting Requirements Subject to Conditions

Title	Technical Specifications -- LCO/Surveillance Licensee RETS No.	Specific Commitments	Report Commitments
2. Lower Limit of Detection (LLD)	7.5.1.d	Lower Limits of Detection (LLDs) as required by Table 8.2-2 was not achievable.	Discussion of all analyses in which the LLD required by Table 8.2-2 was not achievable. (7.5.1.d, Table Notation 8.2-2a)
C. Interlaboratory Comparison Program	8.2.1.g	Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program that has been approved by the Nuclear Regulatory Commission. If analyses are not being performed as required,...	Corrective actions taken to prevent a recurrence. (8.2.1.g.1)
D. Radiological Environmental Monitoring Program			
1. Sampling Relocation	ELCO 8.2.1.f	Milk or fresh leafy vegetable samples are unavailable as specified in Table 8.2-1.	Cause of unavailability of samples and new location(s) will be reported in the next Annual Radiological Environmental Monitoring Report. New locations will be identified for the ODCM. (ELCO 8.2.1.f)
2. Land Use Census	ELCO 8.2.1.h.2	New location(s) yields calculated dose commitment 20% greater than those previously calculated.	Identify the new location(s) and add to the monitoring program within 30 days. Written report included in the next annual report per Specification 7.5.1. (ELCO 8.2.1.h.2)

TABLE 2. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT[+]

Part I - Routine Reporting Requirements

Title	Technical Specifications -- LCO/Surveillance Licensee RETS No.	Specific Commitments	Report Commitments
A. Radioactive Effluent Releases			
1. Effluent Release Summary Liquid Gaseous	7.5.1.e 10 CFR 50.36a		Summary of the quantities of radioactive liquid and gaseous effluents released from the unit as outlined in Regulatory Guide 1.21, Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof. (7.5.1.e)

[+] Routine Radioactive Effluent Release Reports covering the operation of the unit during the previous six months of operation shall be submitted within 60 days after January 1 and July 1 of each year. (7.5.1.e)

TABLE 2. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Cont.)

Part I - Routine Reporting Requirements

Title	Technical Specifications -- LCO/Surveillance: Licensee RETS No.	Technical Specifications -- LCO/Surveillance: Specific Commitments	Report Commitments
2. Unplanned Effluent Releases Liquid Gaseous	10 CFR 50.36a	See A.1 above.	The Radioactive Effluent Release Reports shall include a list and description of unplanned releases from the site to unrestricted areas of radioactive materials in gaseous and liquid effluents made during the reporting period. (7.5.1.e)
B. Solid Waste	7.5.1.e	As specified in 10 CFR 61.	Offsite solid radioactive waste shipments during a report period (as defined by 10 CFR Part 61) shall include: a) Container volume b) Total curie quantity (measured or estimated) c) Principal radionuclides (measured or estimated) d) Source of waste, and processing employed e) Type of container f) Solidification agent or absorbent. (7.5.1.e)

TABLE 2. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Cont.)

Part I - Routine Reporting Requirements

	Technical Specifications -- LCO/Surveillance		
Title	Licensee RETS No.	Specific Commitments	Report Commitments
C. Radiological Dose Assessment	10 CFR 50.36a	See A.1 above	The Radioactive Effluent Release Report to be submitted 60 days after January 1 of each year shall include an annual summary of hourly meteorological data collected over the previous year shall be maintained for five years by the licensee. This annual summary may be either in the form of an hour-by-hour listing on magnetic tape of wind speed, wind direction, atmospheric stability, and precipitation (if measured), or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability. This summary report shall include an assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year, and shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to members of the public due to their activities inside the site boundary (Figure 6.3-1) during the report period. All assumptions used in making these assessments (i.e., specific activity, exposure time, and location) shall be included in these reports. The meteorological conditions concurrent with the time of release of radioactive materials in gaseous effluents (as determined by sampling frequency and measurement) shall be used for determining the gaseous pathway doses. (For operating reactors, conservative approximate methods are acceptable.) The assessment of radiation doses shall be performed in accordance with the Offsite Dose Calculation Manual (ODCM).

TABLE 2. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Cont.)

Part I - Routine Reporting Requirements

Title	Licensee RETS No.	Technical Specifications -- LCO/Surveillance Specific Commitments	Report Commitments
C. Radiological Dose Assessment (Cont.)			The Radioactive Effluent Release Report to be submitted 60 days after January 1 of each year shall also include an assessment of radiation doses to the likely most exposed member of the public from reactor releases (including doses from primary effluent pathways and direct radiation) for the previous calendar year to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operation. Acceptable methods for calculating the dose contribution from liquid and gaseous effluents are given in Regulatory Guide 1.109, Revision 1, October, 1977. (7.5.1.e)

TABLE 2. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Cont.)

Part II - Routine Reporting Requirements Subject to Conditions

Title	Technical Specifications -- LCO/Surveillance Licensee RETS No.	Specific Commitments	Report Commitments
A. Monitoring Instrumentation			
1. Liquid Effluent	ELCO 8.1.2.d	One or more radioactive liquid effluent monitoring instruments inoperable and efforts to repair within 30 days fail (liquid waste holdup system).	Failure to correct inoperability in a timely fashion will be explained. (ELCO 8.1.2.d)
	ELCO 8.1.2.e	Recorder associated with the holdup system liquid monitors inoperable and efforts to repair within 30 days fail).	Failure to correct inoperability in a timely fashion will be explained. (ELCO 8.1.2.d)
	ELCO 8.1.3.e	One or more radioactive liquid effluent monitoring instruments monitoring reactor building sump effluent become inoperable and efforts to repair within 30 days fail.	Failure to correct inoperability in a timely fashion will be explained. (ELCO 8.1.3.e)
	ELCO 8.1.3.f	Recorder associated with liquid sump effluent monitors inoperable and efforts to repair within 30 days fails.	Failure to correct inoperability in a timely fashion will be explained. (ELCO 8.1.3.f)
2. Gaseous Effluent	ELCO 8.1.1.g.8	One or more radioactive gaseous effluent monitoring instruments inoperable and efforts to repair within 30 days fail.	Failure to correct inoperability in a timely fashion will be explained. (ELCO 8.1.1.g.8)
	ELCO 8.1.2.J	Recorder associated with the gas waste compressor cooling water activity monitors inoperable and efforts to repair within 30 days fail.	Failure to correct inoperability in a timely fashion will be explained. (ELCO 8.1.2.J)
B. Radioactive Material Inventory			
Liquid Holdup Tanks	ELCO 8.1.2.c	Liquid effluent releases continuously monitored by two monitors with automatic shutdown and control room alarm.	None (See ELCO 8.1.2.d and ELCO 8.1.2.e of Table 2, Item II.A)
C. Radiological Environmental Monitoring Program			
1. Sampling Relocation	ELCO 8.2.1.f	Milk or fresh leafy vegetable samples are unavailable as specified in Table 8.2-1.	None (See Table 1, Part II-D1)

TABLE 2. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Cont.)

Part II - Routine Reporting Requirements Subject to Conditions

Title	Technical Specifications -- LCO/Surveillance Licensee RETS No.	Specific Commitments	Report Commitments
2. Land Use Census	ELCO 8.2.1.h.1	New location(s) yielding dose commitment greater than currently being calculated in Specification ESR 8.1.1.h.	New location(s) will be identified in the next semiannual report pursuant to Specification 7.5.1.e. (ELCO 8.2.1.h.1)
	ELCO 8.2.1.h.2	New location(s) yields calculated dose commitment 20% greater than those previously calculated.	None (See Table 1, Part II-D2)
D. Licensee-Initated Changes to ODCM/PCP/Radwaste Systems			
1. PCP	7.5.1.e	Changes made to the PCP during the reporting period.	State changes made to the Process Control Program (PCP) during the reporting period and explain. (7.5.1.e)
2. ODCM	7.5.1.e	Changes made during the reporting period to the ODCM.	Include any changes made during the reporting period to the Offsite Dose Calculation Manual (ODCM) (7.5.1.e)
3. Radwaste Systems	7.5.1.e	Licensee-initiated major changes to waste treatment systems (Liquid, gaseous, and solid): Shall be reported to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the Plant Operations Review Committee.	The discussion of each proposed change shall contain: a) A summary of the evaluation that led to the determination that the change could be made in accordance with 10 CFR Part 50.59. b) Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information; c) A detailed description of the equipment, components, and processes involved and the interfaces with other plant systems;

TABLE 2. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Cont.)

Part II - Routine Reporting Requirements Subject to Conditions

Technical Specifications -- LCO/Surveillance			
Title	Licensee RETS No.	Specific Commitments	Report Commitments
3. Radwaste Systems (Cont.)			d) An evaluation of the change, which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the Licensee application and amendments thereto; e) An evaluation of the change, which shows the expected maximum exposures to individuals in the unrestricted area and to the general population that differ from those previously estimated in the Licensee application and amendments thereto; f) A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period prior to when the changes are to be made; g) An estimate of the exposure to plant operating personnel as a result of the change; and h) Documentation of the fact that the change was reviewed and found acceptable by the Plant Operations Review Committee. (7.5.1.e)

TABLE 3. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SPECIAL 30-DAY REPORTS[+]

Technical Specifications -- LCO/Surveillance

Title	Licensee RETS No.	Specific Commitments	Report Commitments
A. Liquid Effluent Doses	ELCO 8.1.2.G	With the calculated dose or dose commitment to a member of the public from radioactive materials in liquid effluents released from any reactor unit to unrestricted areas exceeding: 1. 1.5 mrems to the total body or 5 mrems to any organ during any calendar quarter or, 2. 3 mrems to the total body or 10 mrems to any organ during any calendar year,...	Prepared and submit to the NRC within 30 days pursuant to ESR 8.1.2.e a special report that identified the cause(s) for exceeding the limit(s) specified in ELCO 8.1.2.g and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. (7.5.3.B.1)
B. Liquid Radwaste Treatment System	7.5.3.B.2	With radioactive liquid waste being discharged without treatment pursuant to ELCO 8.1.2.h, and in excess of the limits,...	Prepared and submitted to the NRC within 30 days a special report that includes the following information: a) Explain why liquid radwaste was discharged without treatment, identify an inoperable equipment or subsystems, and reason for inoperability, b) Action(s) taken to restore inoperable equipment to operable status, and c) Summary description of actions taken to prevent a recurrence. (7.5.3.B.2)
C. Noble Gas Effluent Dose	ELCO 8.1.1.h	With the air dose doe to noble gases released in gaseous effluents at the unrestricted area exceeding: a. 5 millirad gamma and 10 millirad beta during any calendar quarter, or b. 10 millirad gamma and 20 mrad beta during any calendar year,	Prepared and submitted to the NRC within 30 days a special report that identifies the cause(s) for exceeding any of the limits in ELCO 8.1.1.h and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. (7.5.3.A.1)

[+] The special 30-day reports are filed within 30 days of the reportable event, pursuant to specification 7.5.3.

TABLE 3. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SPECIAL 30-DAY REPORTS (Cont.)

Technical Specifications -- LCO/Surveillance

Title	Licensee RETS No.	Specific Commitments	Report Commitments
D. Iodine-131, Iodine-133, Tritium and Radionuclides in Particulate Form Doses	ELCO 8.1.1.h	With the dose to a member of the public due to I-131, tritium, and radioactive particulates with half-lives longer than eight days in gaseous effluents exceeding: a. 7.5 millirem to any organ during any calendar quarter, or b. 15 millirem to any organ during any calendar year.	Prepared and submitted to the NRC within 30 days a special report that identifies the cause(s) for exceeding any of the limits in ELCO 8.1.1.h and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. (7.5.3.A.1)
E. Gaseous Radwaste Treatment System	7.5.3.a.2	Gaseous waste discharged without treatment and in excess of the limits,...	Prepare and submitted to the NRC within 30 days a special report that includes the following information: a) Explanation of why gaseous radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability, b) Action(s) taken to restore the inoperable equipment to operable status, and c) Summary description of action(s) taken to prevent a recurrence. (7.5.3.a.2)
F. Ventilation Exhaust Treatment System	7.5.3.a.2	Gaseous waste discharged without treatment and in excess of limits,...	Prepare and submitted to the NRC within 30 days a special report that includes the following information: a) Explanation of why gaseous radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability, b) Action(s) taken to restore the inoperable equipment to operable status, and c) Summary description of action(s) taken to prevent a recurrence. (7.5.3.a.2)

TABLE 3. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SPECIAL 30-DAY REPORTS (Cont.)

Technical Specifications -- LCO/Surveillance

Title	Licensee RETS No.	Specific Commitments	Report Commitments
G. Total Dose	ELCO 8.1.5.a	With the calculated annual dose or dose commitment to any member of the public due to release of radioactivity and to radiation from uranium fuel cycle sources exceeding 25 millirems to the total body or any organ, except the thyroid, which shall be limited to less than 75 millirems,...	Prepare and submit to the NRC a special 30-day report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes a schedule for achieving conformation with the above limits. This report as defined in 10 CFR Part 20.405C shall include an analysis that estimates the radiation exposure (dose) to a member of the public from uranium fuel cycle source, including all effluent pathways and direct radiation. It shall describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete. (7.5.3.C)
H. Radiological Environmental Monitoring	7.5.3.d.1	If the level of radioactivity as a result of plant effluents in an environmental sample medium at a specified location exceeds the reporting level of Table 8.2-3 of ELCO 8.2.1, when averaged over any calendar quarter,... When more than one of the radionuclides in Table 8.2-3 are detected in the sampling medium, this report shall be submitted if: $\frac{\text{Concentration (1)}}{\text{Reporting Level (1)}} + \frac{\text{Concentration (2)}}{\text{Reporting Level (2)}} + \ldots \geq 1.0$	Pursuant to Specification ELCO 8.2.1.c, a special report will be prepared and submitted to the NRC within 30 days, that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents such that the potential annual dose to a member of the public is less the calendar year limits of Specifications ELCO 8.1.1.h and ELCO 8.1.2.g. (7.5.3.d.1)

TABLE 3. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF SPECIAL 30-DAY REPORTS (Cont.)

Technical Specifications -- LCO/Surveillance

Title	Licensee RETS No.	Specific Commitments	Report Commitments
		When radionuclides other than those in Table 8.2-3 are detected and are the result of plant effluents, a report shall be submitted if the potential annual dose to a member of the public is equal to or greater than the calendar year limits of Specification ELCO 8.1.1.1 and ELCO 8.1.2.g.	

APPENDIX A

TABLES OF RETS-REQUIRED REPORTS

FOR THE

FORT ST. VRAIN NUCLEAR GENERATING STATION

(Technical Specification Master File Verification Date: August 9, 1984)

June 14, 1985

Prepared by
EG&G Idaho, Inc.

TABLE 4. FORT ST. VRAIN NUCLEAR GENERATING STATION: COMMITMENTS OF LER's, RO's, AO's

Technical Specifications --- LCO/Surveillance

Title	Licensee RETS No.	Specific Commitments	Report Commitments
A. Reportable Occurrences	7.5.2	Reportable occurrences, including corrective actions and measures to prevent recurrence, shall be reported to the NRC. Supplemental reports may be required to fully describe final resolution of occurrence. In case of corrected or supplemental reports, a licensee event report shall be completed and reference shall be made to the original report date.	
1. Prompt Notification with Written Followup	7.5.2.a	The types of events listed below shall be reported as expeditiously as possible, but within 24 hours by telephone and confirmed by telegraph, mailgram, or facsimile transmission to the appropriate NRC Regional Administrator or his designee no later than the first working day following the event, with a written followup report within two weeks. A copy of the confirmation and the written followup report shall also be sent to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.	The written followup report shall include, as a minimum, a completed copy of a licensee event report form, and shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event. (7.5.2.a)
2. Thirty-day Written Reports	7.5.2.b	The reportable occurrences discussed below shall be the subject of written reports to the appropriate NRC Regional Administrator within thirty days of occurrence of the event. A copy of the written report shall also be sent to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.	The written report shall include, as a minimum, a completed copy of a licensee event report form. Information provided on the licensee event report form shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event. (7.5.2.b)

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT+
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
A. Radiological Environmental Monitoring Program Summary Description				
1. Direct Radiation TLD Locations (# 40)		X		
2. Airborne Sampling Locations (# 7)	X			
3. Waterborne				
a. Surface water sampling locations (# 5)	X			
b. Ground water sampling locations (# 2)			X	
c. Drinking water sampling locations (# 2)	X			
d. Sediment from shoreline sampling locations (# 1)	X			
4. Injestion				
a. Milk sampling locations (# 7)	X			
b. Fish and invertebrates sampling locations (# 3)	X			
c. Food products sampling locations (# 7)			X	
5. Table and Maps of Sample Locations (Offsite Dose Calculation Manual)				
a. Table and map of sample locations near the site, giving distance and directions from one reactor				

+ Licensee's specific report title if different: Annual Radiological Environmental Monitoring Report

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
5. Table and Maps of Sample Locations (cont.)				
b. Table and map of sample locations at more distant stations, giving distances and direction from the centerline of one reactor	X			
B. Radiological Environmental Monitoring Program (Surveillance)				
1. Direct Radiation				
o Results of quarterly TLD gamma doses for all sample locations (# mnts = 160)		X		
o Summaries, interpretations, and an analysis of trends of the results	X			
o Comparison with preoperational studies			X	
o Assessment of the observed impact of plant operation on the environment	X			
2. Airborne				
o Results of weekly iodine-131 analyses (# anal = 364)		X		
o Results of weekly gross beta radioactivity analyses (# anal = 364)		X		
o Results of quarterly composite gamma isotopic analyses (# anal = 28)		X		
o Summaries, interpretations, and an analysis of trends of the results		X		
o Comparison with preoperational studies			X	
o Assessment of the observed impact on the environment	X			

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
3. Waterborne				
a. Surface Water				
o Results of monthly gamma isotopic composite analyses (# anal = 76)	X			
o Results of quarterly tritium composite analyses (# anal = 36)	X			
o Summaries, interpretations and an analysis of trends of the results		X		
o Comparison with preoperational studies			X	
o Assessment of the observed impact on the environment	X			
b. Ground Water				
o Results of quarterly gamma isotopic analyses (# anal = 8)			X	
o Results of quarterly tritium composite analyses (# anal = 8)			X	
o Summaries, interpretations, and an analysis of trends of the results			X	
o Comparison with preoperational studies			X	
o Assessment of the observed impact on the environment			X	
c. Drinking Water				
o Results of biweekly iodine-131 composite analyses (# anal = 0)			X	NR
o Results of monthly gross beta composite analyses (# anal = 52)		X		

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
o Results of monthly gamma isotopic composite analyses (# anal = 52)		X		
o Results of quarterly tritium composite analyses (# anal = 52)		X		
o Summaries, interpretations, and an analysis of trends of the results		X		
o Comparison with preoperational studies			X	
o Assessment of the observed impact on the environment	X			
d. Sediment from Shoreline				
o Results of semiannual gamma isotopic analyses (# anal = 2)		X		
o Summaries, interpretations, and an analysis of trends of the results		X		
o Comparison with preoperational studies			X	
o Assessment of observed impact on the environment	X			
4. Ingestion				
a. Milk				
o Results of semimonthly/monthly iodine-131 analyses (# anal = 84-168)		X		
o Results of semimonthly/monthly gamma isotopic analyses (# anal = 84-168)		X		
o Summaries, interpretations, and an analysis of trends of the results		X		
o Comparison with preoperational studies			X	

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
4. Ingestion (Cont.)				
o Assessment of the observed impact on the environment	X			
b. Fish and Invertebrates				
o Results of semiannual gamma isotopic analyses on edible portions (# anal = 6)		X		
o Summaries, interpretations, and an analysis of trends of the results		X		
o Comparison with preoperational studies			X	
o Assessment of the observed impact on the environment	X			
c. Food Products (Irrigation)				
o Results of gamma isotopic analyses (# anal = 7)			X	
o Summaries, interpretations, and an analyses of trends of the results			X	
o Comparison with preoperational studies			X	
o Assessment of the observed impact on the environment			X	
d. Food Products (Broad Leaf Vegetation)				
o Results of monthly iodine-131 analyses during growing season (# anal = 0)			X	NR
o Results of monthly gamma isotopic analyses during growing season (# anal = 0)			X	NR

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal			
	Complete	Partial	Not Addressed	Not Applicable/ Not Required
d. Food Products (Cont.)				
o Summaries, interpretations, and an analysis of trends of the results.			X	NR
o Comparison with preoperational studies			X	NR
o Assessment of observed impact on the environment			X	NR
C. Land Use Census				
Results of the land use census for the past 12 months			X	
D. Interlaboratory Comparison Program				
Results of Licensee participation in the Interlaboratory Comparison Program	X			

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT (Cont.)
(Reporting Period: 1983)

Part II - Reporting Requirements Subject to Conditions

Reporting Contents	Is the Subject Reported in the Submittal? Yes	No	Not Applicable/ Not Required	If Yes, Indicate Completeness of Licensee's Submittal Complete	Partial
A. Radiological Environmental Monitoring Program Any deviation from monitoring program of Table 8.2-1 (3.12.1 in Model RETS) of the Technical Specifications? If there are deviations, discuss reasons and plans for preventing recurrences.		X			
B. Radiological Environmental Monitoring Program Surveillance					
1. Is the potential annual dose to a MEMBER OF THE PUBLIC equal to or greater than the calendar year limits of Specifications ELCO 8.1.1.b _____, and ELCO 8.1.2.g (3.11.1.2, 3.11.2.2, and 3.11.2.3 in Model RETS)? If yes, then is it the result of plant effluent releases? If no, the condition should be reported and described.					NR
2. Were any LLDs required by Table 8.2-2 (Table 4.12.1, Note c in Model RETS) of the Technical Specifications unachievable? If so, identify and describe the factors contributing to not achieving the required LLD.		X			

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT (Cont.)
(Reporting Period: 1983)

Part II - Reporting Requirements Subject to Conditions

Reporting Contents	Is the Subject Reported in the Submittal? Yes	No	Not Applicable/ Not Required	If Yes, Indicate Completeness of Licensee's Submittal Complete	Partial
C. Interlaboratory Comparison Program					
Failure to perform analyses on radioactive materials in accordance with Interlaboratory Comparison Program during the reporting period? If there was a failure, state corrective actions taken to prevent a recurrence of the failure.		X			

Table B-1. CHECK LIST FOR ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT (Cont.)
(Reporting Period: 1983)

Part III - Other Special RETS-Related Reporting Commitments of the Licensee[+]

Reporting Contents	Is the Subject Reported in the Submittal? Yes	No	Not Applicable/ Not Required	If Yes, Indicate Completeness of Licensee's Submittal Complete	Partial
Radiological Environmental Monitoring Program					
1. Sampling Relocation					
a. Causes of unavailability of milk and fresh leafy vegetable samples	____	X			
b. Revised figure(s) and table for the ODCM reflecting the new locations.	____	X			
c. Identification of the new locations	____	X			
2. Land Use Census					
Written report identifying the new location (distance and direction) if it is learned from the census that milk animals or gardens are present at a location which yields a calculated dose or dose commitment 20% greater than those previously calculated, or if the census results in changes in the sampling location.	____	X			

[+] The requirements are those of the licensee's RETS-related reporting commitments which are different from those of the model RETS.

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS
(Reporting Period: 1983)

Part I - Routine Reporting Requirements*

Reporting Contents	Completeness of Licensee's Submittal			
	Complete	Partial	Not Addressed	Not Applicable/ Not Required
A. Radioactive Effluent Releases				
1. Liquid Effluent Release Summary				
a. Mixed Fission and Activation Products				
(1) Quarterly sums of total curies of radioactive material released in liquid effluents (not including tritium, dissolved and entrained gases, and alpha-emitting material). (Table 2A of Reg. Guide 1.21)	X			
(2) Average concentrations (uCi/ml) of mixed fission and activation products released to unrestricted areas, averaged over the quarterly periods covered by the report. (Table 2AA)	X			
(3) Percent of applicable technical specification limit of average concentrations released to unrestricted areas. Include the limit used and the bases in the supplemental report information. (Table 2AA)			X	
(4) Quarterly sums of total curies for each of the radionuclides released in liquid effluents, based on analyses performed. Data should be separated by type of release mode, i.e., continuous or batch. (Table 2B)		X		

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS
(Reporting Period: 1983)

Part I - Routine Reporting Requirements*

Reporting Contents	Completeness of Licensee's Submittal			
	Complete	Partial	Not Addressed	Not Applicable/ Not Required
b. Tritium				
(1) Quarterly sums of total curies of tritium released in liquid effluents (Table 2AB)	X			
(2) Average concentrations (uCi/ml) of tritium released in liquid effluents to unrestricted areas, averaged over the quarterly periods covered by the report. (Table 2AB)	X			
(3) Percent of applicable technical specification limit of average concentrations released to unrestricted areas, i.e., percent of 3×10^{-3} uCi/ml. Include the limit and the bases in the supplemental report information. (Table 2AB)			X	
c. Dissolved and Entrained Gases (Regulatory Guide 1.21, Appendix B, Section C)				
(1) Quarterly sums of total curies of gaseous radioactive material released in liquid effluents. (Table 2A)	X			
(2) Average concentrations (uCi/ml) of dissolved and entrained gaseous radioactive material released to unrestricted areas, averaged over the quarterly periods covered by the report. (Table 2AC)	X			

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS (Cont.)
(Reporting Period: _____)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal			
	Complete	Partial	Not Addressed	Not Applicable/ Not Required
(3) Percent of applicable technical specification limit of average concentrations released to unrestricted areas. Include the limit used and the bases in the supplemental report information. (Table 2AC)			X	
(4) Quarterly sums of total curies for each of the radionuclides released as dissolved and entrained gases in liquid effluents (Table 2A)	X			
d. Alpha Radioactivity Quarterly sums of total curies of gross alpha-emitting material determined to be released in liquid effluents.	X			
e. Volumes				
(1) Quarterly sums, in liters, of total measured volume, prior to dilution of liquid effluent released.	X			
(2) Quarterly sums of total determined volume, in liters, of dilution water used during the period of the report.	X			
f. Estimates of the total error associated with certain total values should be provided in each report. (Table 2A of Reg. Guide 1.21) These error values should be the best effort at an overall estimate of the errors associated with the totals in the report.			X	

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
2. Gaseous Effluent Release Summary				
a. Gases				
(1) Quarterly sums of total curies of fission and activation gases released and estimated total error (%).		X		
(2) Average release rates (uCi/sec) of fission and activation gases for the quarterly periods covered by the report.		X		
(3) Percent of applicable technical specification limit for releases of fission and activation gases. This should be calculated in accordance with technical specification limits.			X	
(4) Quarterly sums of total curies for each of the radionuclides determined to be released, based on analyses of fission and activation gases. The data should be categorized by (1) elevated releases, batch and continuous modes, and (2) ground level releases, batch and continuous modes. (Tables 1B and 1C of Reg. Guide 1.21)		X		
b. Iodines				
(1) Quarterly sums of total curies of iodine-131 released and estimated total error (%).		X		
(2) Average release rate (uCi/sec) of iodine-131.		X		
(3) Percent of applicable technical specification limit for iodine-131.			X	

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
b. Iodines (cont.)				
(4) Quarterly sums of total curies of each of the isotopes, iodine-131, iodine-133, and iodine-135 released. (Tables 1B and 1C of Reg. Guide 1.21)			X	
c. Particulates				
(1) Quarterly sums of total curies of radioactive material in particulate form with half-lives greater than 8 days determined to be released and estimated total error (%).		X		
(2) Average release rate (uCi/sec) of radioactive material in particulate form with half-lives greater than 8 days.			X	
(3) Percent of applicable technical specification limit for radioactive material in particulate form with half-lives greater than 8 days.			X	
(4) Quarterly sums of total curies for each of the radionuclides in particulate form released based on analyses performed. (Tables 1B and 1C of Reg. Guide 1.21)	X			
(5) Quarterly sums of total curies of gross alpha radioactivity released.	X			
d. Tritium				
(1) Quarterly sums of total curies of tritium released in gaseous effluents and estimated total error (%).	X			
(2) Average release rate (uCi/sec) of tritium.			X	

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
d. Tritium (cont.)				
(3) Percent of applicable technical specification or MPC limits for tritium.			X	
e. Estimates of the total error associated with certain total values should be provided in each report. (Table 1A of Reg. Guide 1.21). These error values should be the best effort at an overall estimate of the errors associated with the totals in the report.			X	
B. Solid Waste				
1. The semiannual total quantity in cubic meters and the semiannual total radioactivity in curies for the categories or types of waste. (Reg. Guide 1.21, Table 3)				
a. Spent resins, filter sludges, evaporator bottoms			X	
b. Dry compressible waste, contaminated equipment, etc.		X		
c. Irradiated components, control rods, etc.		X		
d. Other, (furnish description)		X		
2. An estimate of the major nuclide composition in the waste categories.			X	
3. The disposition of solid waste and irradiated fuel shipments. (Identify the number of shipments, the mode of transport, and the destination.)			X	

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal: Complete	Partial	Not Addressed	Not Applicable/ Not Required
4. Estimates of the total error and estimated total error (%) associated with certain total values should be provided in each report. (Table 3A of Reg. Guide 1.21) These error values should be the best effort at an overall estimate of the errors associated with the totals in the report.			X	
5. Provide the following information for each class of solid waste (as defined by 10 CFR Part 61) shipped offsite during the report period:				
a. Container volume, in liters		X		
b. Total curie quantity (specify whether determined by measurement or estimate)		X		
c. Principal radionuclides (specify whether determined by measurement or estimate)		X		
d. Source of waste and processing employed (e.g., dewatered spent resin, compact dry waste, evaporator bottoms)		X		
e. Type of container (e.g., LSA, Type A, Type B, Large Quantity)			X	
f. Solidification agent or absorbent (e.g., cement, urea formaldehyde)			X	
C. Radiological Dose Assessment*				
1. Total body and significant organ doses to individuals in unrestricted areas from receiving-water-related exposure pathways.			X	

* This report to be submitted only with the Effluent Release report due March 1 of each year.

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS (Cont.)
(Reporting Period: 1983)

Part I - Routine Reporting Requirements

Reporting Contents	Completeness of Licensee's Submittal			
	Complete	Partial	Not Addressed	Not Applicable/ Not Required
2. Total body and skin doses to individuals exposed at the point of maximum offsite ground-level concentrations of radioactive materials in gaseous effluents.			X	
3. Organ doses to individuals in unrestricted areas from radioactive iodine and radioactive material in particulate form from all pathways of exposure.			X	
4. Total body doses of individuals and populations in unrestricted areas from direct radiation from the facility.			X	
5. Total body doses to the population and average doses to individuals in the population from all receiving-water-related pathways.			X	
6. Total body doses to the population and average doses to individuals in the population from gaseous effluents to a distance of 50 miles from the site. If a significantly large population area is located just beyond 50 miles from the site, the dose to this population group should be considered.			X	
7. Total doses to the most exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources.			X	
8. An assessment of the radiation doses from radioactive effluents:				
a. Released from the plant during the previous calendar year.			X	
b. To individuals due to their activities inside the site boundary during the report period.			X	

Item listed in the model RETS but not in Reg. Guide 1.21.

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORTS (Cont.)
(Reporting Period: 1983)

Part II - Reporting Requirements Subject to Conditions

Reporting Contents	Is the Subject Reported in the Submittal? Yes	No	Not Applicable/ Not Required	If Yes, Indicate Completeness of Licensee's Submittal Complete	Partial
A. Monitoring Instrumentation					
Explanation of why inoperability was not corrected in a timely manner for:					
1. Liquid Effluent		X			
2. Gaseous Effluent		X			
B. Radioactivity Inventory					
Description of event(s) leading to exceeding curie limit for liquid holdup tanks		X	NR		
C. Radiological Environmental Monitoring Program					
1. Sampling Relocation					
a. Causes of unavailability of milk and fresh leafy vegetable samples			(See Table B-1, Part III)		
b. Revised figure(s) and table for the ODCM reflecting the new location(s)	"				
c. Identification of the new locations	"				

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Cont.)
(Reporting Period: 1983)

Part II - Reporting Requirements Subject to Conditions

Reporting Contents	Is the Subject Reported in the Submittal? Yes	No	Not Applicable/ Not Required	If Yes, Indicate Completeness of Licensee's Submittal: Complete	Partial
2. Land Use Census					
a. Identification of the new location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated per specification ESR 8.1.1.h (4.11.2.3 in Model RETS)		X			
b. Identify the new locations and include a revised figure(s) and table for the ODCM reflecting the new location(s) as a result of a calculated dose 20% greater than locations in Specification ELCO 8.2.1.h.2 (3.12.1 in Model RETS)		(see Table B-1, Part III)			
D. Licensee-Initiated Changes of Programs					
1. PCP					
a. Changes made		X			
b. Rationale for changes		X			
c. Compliance with existing PCP criteria		X			
d. Review and acceptance by the plant Unit Review Group (URG)		X			
2. ODCM					
a. Changes made		X			

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Cont.)
(Reporting Period: _____)

Part II - Reporting Requirements Subject to Conditions

Reporting Contents	Is the Subject Reported in the Submittal? Yes	No	Not Applicable/ Not Required	If Yes, Indicate Completeness of Licensee's Submittal Complete	Partial
b. Rationale for changes		X			
c. Compliance with existing ODCM criteria		X			
d. Review and acceptance by the plant URG		X			
3. Major Changes to Waste Treatment Systems					
a. Description of change		X			
b. Detailed rationale for changes		X			
c. Compliance with 10 CFR 50.59		X			
d. Comparison of predicted releases and exposures before and after the changes		X			
e. Comparison of predicted releases to actual releases before the change		X			
f. Estimated exposures to plant personnel as a result of changes		X			
g. Review and acceptance by the plant URG		X			

APPENDIX B

CHECK LIST OF RETS-REQUIRED REPORTS

FOR THE

FORT ST. VRAIN NUCLEAR GENERATING STATION

June 14, 1985

Prepared by
EG&G Idaho, Inc.

Table B-2. CHECK LIST FOR SEMIANNUAL RADIOACTIVE EFFLUENTS RELEASE REPORT (Cont.)
(Reporting Period: 1983)

Part III - Other Special RETS-Related Reporting Commitments of the Licensee*

Reporting Contents	Is the Subject Reported in the Submittal? Yes	No	Not Applicable/ Not Required	If Yes, Indicate Completeness of Licensee's Submittal Complete	Partial
None					

* The requirements are those of the licensee's RETS-related reporting commitments which are different from those of the model RETS.